Document # 1124668 Book SD154 Page 326 - 497
Filed at 12:00 PM on 12/16/2020 Fees: $ 0.00
Lori Smallwood, Big Horn County By RCraft Deputy

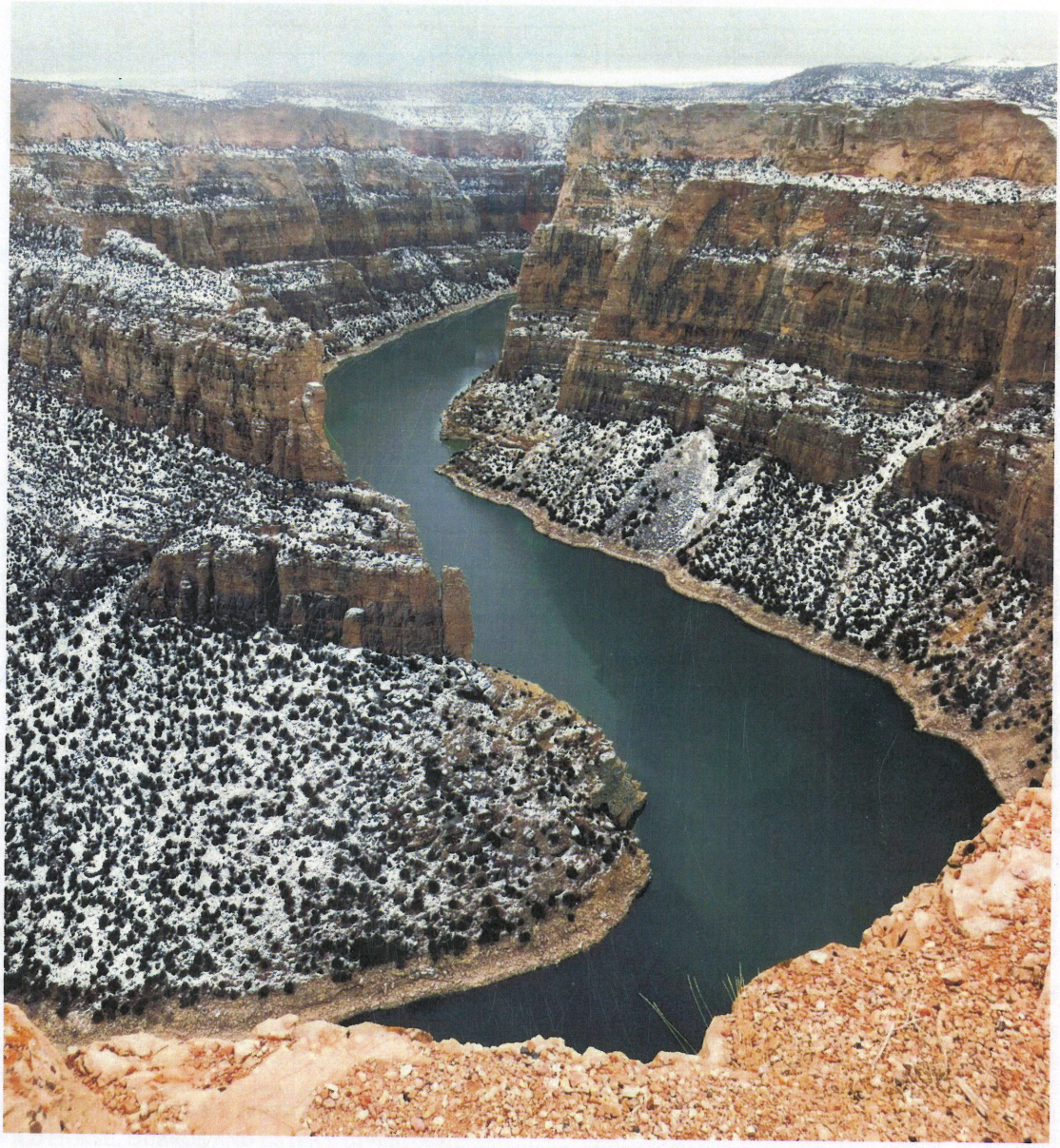
1124668 Bk: SD154
Pg: 326-497

APPROVED
DEC 15 2020
L.C.

BIG HORN COUNTY

NOVEMBER 24, 2020

Big Horn County
Natural Resource Management Plan



1124668

(Intentionally Left Blank)

CONTENTS

ACRONYMS

ACEC- Areas of Critical Environmental Concern

APHIS – Animal and Plant Health Inspection Service

ARPA – Archeological Resources Protection Act

AUM- Animal Unit Month

BHCNRMP – Big Horn County Natural Resource Management plan

BLM- Bureau of Land Management

BMP-Best Management Practice

BOR- Bureau of Reclamation

CAA- 1970 Clean Air Act

CAP-SSE-- Community Assistance Program – State Support Services

CCA – Candidate Conservation Agreements

CCAA – Candidate Conservation Agreements with Assurances

CEQ- Council on Environmental Quality

CLG – Certified Local Government

CRP – Conservation Reserve Program

CWA – Clean Water Act

DEQ- Department of Environmental Quality

DOD- Department of Defense

EA- Environmental Assessment

EIS- Environmental Impact Statement

ENSO- El Niño-Southern Oscillation

EPA- Environmental Protection Agency

ERFO – Emergency Relief for Federally Owned Roads

ESA- 1973 Endangered Species Act

FAST – Fixing America's Surface Transportation act

FDQA – Federal Data Quality Act

FHWA- Federal Highway Administration

FLAP – Federal Lands Access Program

FLPMA- 1976 Federal Land Policy and Management Act

FLTP – Federal Lands Transportation Program

FSA – Farm Service Agency

FUDs – Formerly Used Defense Sites

FWS – Fish and Wildlife Service

GHG- Greenhouse Gas

GLO - General Lands Office

GPC—Groundwater Pollution Control

IMR – Intermountain Range

IPCC- International Governmental Panel on Climate Change

LUP- Land Use Plan

LWC – Lands with Wilderness Characteristics

LWCF- Land and Water Conservation Fund Act of 1964

MOA - Memorandum of Agreement

MOU - Memorandum of Understanding

MUSY- 1960 Multiple Use Sustained Yield Act

NAAQS – National Ambient Air Quality Standards

NAO- North Atlantic Oscillation

NEPA- 1973 National Environmental Policy Act

NFHL – National Flood Hazard Layer

NFIP – National Flood Insurance Program

NFMA- 1976 National Forest Management Act

NFS – National Forest System

NPS- National Park Service

NRCS – Natural Resource Conservation Service

NRMP- Natural Resource Management Plan

NSFLTP – Nationally Significant Federal Lands and Tribal Projects Program

NSS – Native Species Status

NWR – National Wildlife Refuge

OAA-1897 Organic Administration Act

OHV – Off-Highway Vehicle

OMB - Office of Management and Budget

PDO -Pacific Decadal Oscillation

PFC—Proper Functioning Condition

PILT- Payments In Lieu of Taxes

RTP – Recreational Trails Program

SWAP – State Wildlife Action Plan

UNEP- United Nations Environment Programme

USACE – US Army Corps of Engineers

USFS- United States Forest Service

USFWS – US Fish and Wildlife Service

USGS- United States Geological Survey

USRS- United Stated Reclamation Service

WDEQ – Wyoming Department of Environmental Quality

WEQA – Wyoming Environmental Quality Act

WGFD – Wyoming Game and Fish Department

WMO- World Meteorological Organization

WOGCC – Wyoming Oil and Gas Conservation Commission

WQD—Wyoming Quality Division

WSA – Wilderness Study Area

WSFR – Wildlife and Sport-Fish Restoration

WWDC – Wyoming Water Development Commission

WWDO – Wyoming Water Development Office

WYDEQ- Wyoming Department of Environmental Quality

WY G&F- Wyoming Game and Fish Department

WYDOT- Wyoming Department of Transportation

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

PURPOSE

Natural Resource Management Plan

A Natural Resource Management Plan (NRMP) is a document prepared and adopted by a local government that federal agencies are required to review and consider when making decisions that may affect the local area. Locally elected governments and elected officials have far ranging and important responsibilities to their constituents, described by state statute as protecting their "health, safety and welfare." That responsibility includes specifically interacting with federal agencies on all federal issues impacting the local community and counties. Rural counties' socioeconomic well-being, health, safety, and culture can be strongly impacted by the management of the surrounding federal and public lands. To give the locally elected government the strongest voice it can have during "government-to-government" interaction, local governments can formally adopt "local land use plans" (LUPs) or NRMPs. These plans establish local policy regarding the use and management of federal lands in their jurisdiction and can influence the development and implementation of federal policies, programs and other types of federal decision-making regarding federal lands that affect a local community. NRMPs are intended to help protect the local citizens' use of, and access to, federal and public lands and resources and to ensure the socioeconomic wellbeing, culture, and customs of a local community are adequately considered in federal decisions (Budd-Falen, 2018).

This county natural resource plan serves as a basis for communicating and coordinating with the federal government and its agencies on land and natural resource management issues. Counties are particularly well-suited to understand the impacts that federal land management decisions may have on the local economy, custom and culture. Under Wyoming statute, a county is deemed to have special expertise on all subject matters for which it has statutory responsibility, including but not limited to, all subject matters directly or indirectly related to the health, safety, welfare, custom, culture and socio-economic viability of a county (Wyo. Statute 18-5-208(a)).

These local LUPs are not zoning and do not regulate the use of private lands. When people think of LUPs, they typically think of the general planning document that counties use to determine zoning on private lands. A NRMP is a separate type of land use plan prepared by rural counties and conservation districts, containing policies relating to the management of federal and public land in the county and reflecting the local government's position on federal decisions concerning those lands (Budd-Falen, 2018).

Local governments do not have jurisdiction over the federal government or federal land. NRMPs cannot require federal agencies to take specific actions. However, federal agencies and departments are mandated by various federal statutes to engage local governments during the decision-making process on federal plans, policies, and programs that will impact the management of land and natural resources within a community and ultimately affect the local tax base and lives of local citizens. Federal agencies are required to coordinate and consult with local governments and to give meaningful consideration to policies asserted in written plans prepared and adopted by local governments concerning management of federal lands in their area (Budd-Falen, 2018).

Statutory Requirements and Legal Framework

Federal agencies are required to identify and analyze the impacts to local economies and community culture when making decisions. *See for e.x.* 42 U.S.C. § 4331 (stating the purpose of NEPA is to "maintain conditions under which man and nature exist in productive harmony and fulfill the social, economic, and other requirements of present and future generations of Americans"; 42 U.S.C. § 4331(b)(4) (NEPA was enacted in order to "preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice";

see also 36 C.F.R. § 221.3 (requiring that management of national forest timber resources "[p]rovide [and]… facilitate the stabilization of communities and of opportunities for employment"; 16 U.S.C. § 1533(b)(2) (requiring economic analysis of all critical habitat designations); 16 U.S.C. § 1604(b) (In the development and maintenance of land management plans for use on units of the National Forest System, the Secretary shall use a systematic interdisciplinary approach to achieve integrated consideration of physical, biological, *economic*, and other sciences). NRMPs outline the present economic and cultural conditions and desired future conditions of a local community and demonstrate how those conditions are tied to activities on adjoining federal and public lands. The plan establishes the local government's preferred policies for the planned use, management, protection, and preservation of the natural resources on the federal and public lands within its jurisdiction. The goal is to protect private property, the local tax base, and local custom and culture. An adopted NRMP is a critical tool that allows a local government to have a substantive impact on federal decisions, plans, policies, and programs. A written plan can play a key role in the success of a local government engaging the federal government (Budd-Falen, 2018).

Required engagement between federal agencies and local governments takes the form of "consistency review" under the National Environmental Policy Act (NEPA) and the Federal Lands Policy and Management Act (FLPMA), the requirement for "coordination" under both FLPMA and the National Forest Management Act (NFMA) and engaging local governments acting as a "cooperating agency" under NEPA, and a State Governor's consistency review process.

The National Environmental Policy Act

The National Environmental Policy Act (NEPA) applies to "every major Federal action significantly affecting the quality of the human environment" (42 U.S.C. § 4332(1)(C)). The courts have interpreted this to generally mean that every time the federal government makes a decision for almost any action that may have an environmental impact, NEPA compliance is required. Some courts have even required agencies to follow NEPA when the agency spends a small amount of money on a project or program that they are not the lead agency. *See e.g. Citizens Alert Regarding the Environment v. United States Environmental Protection Agency*, 259 F.Supp.2d 9, 20 (D.D.C. 2003). On July 15, 2020 the Trump Administration and the Council on Environmental Quality announced major regulation reforms to NEPA, including new rules trying to clarify what is a "major federal action." The new regulations clearly demarcate that only actions that include major federal involvement and are major in scale are those actions that require NEPA. This means that those projects that the government has a minor role are not included. This also means that minor actions (such as allowing certain range improvements on a grazing allotment) are not included. *See* 85 F.R. 43304 (July 16, 2020). As of the finalization of this plan the rule is being challenged by several states and organizations.

NEPA requires that agencies undertake an environmental analysis to determine whether a federal action has the potential to cause significant environmental effects. If a proposed major federal action is determined to significantly affect the quality of the human environment, federal agencies are required to prepare an Environmental Impact Statement (EIS). The regulatory requirements for an EIS are more detailed and rigorous than the requirements for an Environmental Assessment (EA). There are several ways local governments can participate in the NEPA process depending on the type of federal decision, the level of commitment of the local government, and the goals of the local government.

First, local government can use these plans as part of the federal agency's "consistency review" process. Under this provision, if the federal agency receives a local plan in the course of writing an EIS or EA, NEPA commands the federal agency to "discuss any inconsistency of a proposed action with any approved state or local plan and laws (whether or not federally sanctioned). Where an inconsistency exists, the [environmental impact] statement should describe the extent to which the [federal] agency would reconcile its proposed action with the [local government] plan or law." (40 C.F.R. §§ 1506.2, 1506.2(d)). For the local government to take advantage of the consistency review requirements, a written and adopted local

plan is required. With a written plan, this analysis happens even when the local government does not know about the pending decision or action as long as the LUP was provided in advance to the reviewing federal agency.

NEPA requires that copies of comments from state or local governments accompany the EIS or EA throughout the review process (42 U.S.C. § 4332(c)). Written comments submitted by a local government not tied to a formally adopted NRMP require less consideration than those tiered to an adopted NRMP.

Local governments can separately participate in the NEPA process as a "cooperating agency" (40 C.F.R. § 1508.5). "Cooperating agency status" requires federal agencies to work with local governments before any federal plan or proposal is presented to the general public. It does not require a written land use plan prepared by local governments. If a local government believes that a proposed federal action will impact the local government, and the local government wants to be involved in the federal process at its inception, the government may request "cooperating agency status" to the deciding federal agency. As a part of the scoping process, lead agencies must invite likely affected local agencies and governments to participate as a cooperating agency. 40 C.F.R. § 1501.9. An invitation during the scoping period is not required to participate as a cooperating agency and a local government can request to be a cooperating agency even after the scoping period. With respect to cooperating agencies, a lead agency must (1) request the participation of cooperating agencies at the earliest practicable time; (2) use the environmental analysis and proposals of cooperating agencies with jurisdiction to the maximum extent practicable; (3) meet a cooperating agency at the cooperating agency's request; (4) determine the purpose and need, and alternatives in consultation with the cooperating agency. 40 C.F.R. § 1501.7(h). Should a local government request cooperating agency status for a particular agency decision (for example, the designation of critical habitat for a listed threatened or endangered species), the local government can participate in drafting portions of the relevant NEPA document. This can involve identifying appropriate scientific data, assisting with alternative development for the proposed federal action, and ensuring that the discussion of impacts to the local economy or the local citizens is accurate. A NRMP, while not required, can aide this process and analysis. Cooperating agency status can be reserved for more significant federal decision likely to have a larger impact on a community and is not required for every federal action.

Pursuant to NEPA, an applicant for cooperating agency status must be a locally elected body such as a conservation district, board of supervisors, or a county commission; and possess "special expertise." A local government's special expertise is defined as the authority granted to a local governing body by state statute. See Section 2.5 for county authority under state law.

Cooperating agency status can be an expensive, time consuming, and cumbersome process and may be particularly challenging for small rural communities with limited resources. A NRMP ensures that the federal agency addresses the county's policies for virtually every federal decision without the burden of cooperating agency status by requiring consistency review and coordination.

The National Forest Management Act

The National Forest Management Act (NFMA) governs the U.S. Forest Service (USFS) and requires the agency to "coordinate". The NFMA requirements are as follows:

> *[T]he Secretary of Agriculture shall develop, maintain, and, as appropriate, revise land and resource management plans for units of the National Forest System, coordinated with the land and resource management planning processes of State and local governments and other Federal agencies. (16 U.S.C. § 1604(a)).*

The fact that the USFS is directed to "coordinate" with local governments implies, by its plain meaning, that the USFS must engage in a process that involves more than simply "considering" the plans and policies of local governments; it must attempt to achieve compatibility between USFS plans and local land use plans.

The Federal Land Policy and Management Act

The Federal Land Policy and Management Act (FLPMA), which governs the Bureau of Land Management (BLM), provides detailed requirements for "coordination" and "consistency" with local land use plans. With regard to the requirements for "coordination", FLPMA states that the BLM must:

> *To the extent consistent with laws governing the administration of the public lands, coordinate the land use inventory, planning, and management activities of or for such lands with the land use planning and management programs of other Federal departments and agencies and of the State and local governments within which the lands are located […] by considering the policies of approved State and tribal land resource management programs (43 U.S.C. § 1712(c)(9)).*

Such coordination is to be achieved by:

- To the extent practicable, the BLM must stay apprised of local land use plans.
- The BLM must assure that local land use plans germane to the development of BLM land use plans are given consideration.
- To the extent practicable, the BLM must assist in resolving inconsistencies between local and BLM land use plans.
- The BLM must provide for the meaningful involvement of local governments in the development of BLM land use programs, regulations, and decisions. This includes early notification of proposed decisions that may impact non-federal lands. (43 U.S.C. § 1712(c)(9)).

Additionally, FLPMA requires BLM land use plans to be consistent with local land use plans, provided that achieving consistency does not result in a violation of federal law. FLPMA states: "Land use plans of the Secretary [of the Interior,] under this section shall be consistent with State and local plans to the maximum extent he finds consistent with Federal law and the purposes of this Act." (43 U.S.C. § 1712(c)(9)).

In other words, FLPMA requires both "coordination" and "consistency review." Coordination should include both regularly scheduled meetings between the various local governments and BLM managers, as well as inviting local BLM staff to local government meetings (Bureau of Land Management, 2012b). Pursuant to FLPMA's consistency review requirement, if a BLM land use plan is inconsistent with a local land use plan, the BLM owes an explanation of how achieving consistency would result in a violation of federal law. (43 U.S.C. § 1712(c)(9)).

Governor's Consistency Review Process

FLPMA also requires that the BLM provide for a governor's consistency review as part of their land use planning process (43 C.F.R. § 1610.3-2(e)). State governors are entitled to an additional and entirely separate review of BLM land use plans, revisions, and amendments; this provides an opportunity to identify any inconsistencies with state or local plans. If the governor's comments result in changes to the plan, the public should be re-engaged in the process. The governor may also use policies in the NRMP in their review of the proposed federal action.

National Park Service

The National Park Service (NPS) was established by the Organic Act in 1916 to manage 14 national parks and 21 national monuments. The Preservation of Historic Sites Act of 1935, the Wilderness Act of 1964, and the Wild and Scenic Rivers Act of 1968 all contributed to the evolution of the NPS and how the agency

managed park land. NEPA and the Endangered Species Act (ESA) of 1969 and 1973 increased the complexity and prevalence of science in park management. Throughout this time span the NPS had grown to solely oversee all of the nation's parklands, this included parks previously held by the War Department, the national monuments previously managed by the Forest Service, and the parks which resided in Washington D.C. The National Park Omnibus Management Act of 1998 increased accountability and improved management for multiple NPS programs. This legislation required that the NPS receive authorization from Congress prior to studying potential areas for addition the National Park System (NPS, n.d.).

In accordance with Executive Order 13352, the NPS is required to carry out its natural resource management responsibilities in a cooperative manner that considers the interests of individuals "with ownership or other legally recognized interested in land and other natural resources" (*Executive Order 13352*, 2017). NPS is also expected to accommodate local participation in Federal decision-making (*Executive Order 13352*, 2017).

PLAN ORGANIZATION

This plan considers the current conditions of federal resources, county objectives for each resource, and how the county would like to see those objectives achieved. For all federal resources in the county, this plan addresses the following:

- **Resource Assessment and Legal Framework.** Includes background and detailed information on the resource, including qualitative as well as quantitative information. The assessment includes an evaluation of the importance of the resource to the county, location, quality and size, as well as a map of the resource, where appropriate. The Resource Assessment relies on the best data available at the time of publication, though new data collection or research is not required. The Resource Assessment addresses the question, "What is the state of the resource now?" This section does not describe how the County interprets or proposes to use a particular resource or topic. This section describes how federal agencies are interpreting federal laws, guidance and handbooks.

- **Resource Management Objectives**. Describes general goals in the form of broad policy statements regarding the use, development and protection for each resource. Resource Management Objectives address the question, "What does the county want for and from this resource?"

- **Priorities**. Describes specific priorities on how to achieve the county's Resource Management Objective for each resource. Priorities tier to Resource Management Objectives for each resource and address the question, "How would the county like to see its objectives achieved?" The general agreement or disagreement with the interpretation described in the Resource Assessment section should be used as the defining direction for the priority statements.

PROCESS

Consistent with Wyo. Stat. § 9-4-218(a)(viii)(D), the county developed this plan in public meetings in accordance with Wyo. Stat §§ 16-4-401 through 16-4-408, allowing for participation and contribution from the public.

This NRMP was initiated in 2016. Funding issues delayed completion of the plan, when funding became available from the Governor's Office to complete the plan. A steering committee has guided development of the draft document, including objective and priority development.

The draft document was released for public comment for 60 days beginning in early March 2020. Comments received during the public comment period were incorporated into this final plan as appropriate.

This plan is based on criteria developed by the Office of the Governor of the State of Wyoming in consultation with the counties, consistent with Wyo. Stat. § 9-4-218(a)(viii)(B).

AMENDING THE NRMP

This plan can be amended following the same process for public involvement and adoption as described in the previous section. It is recommended to review the plan every five years.

COUNTY EXPECTATIONS FOR THIS NATURAL RESOURCE MANAGEMENT PLAN

While the statutes and regulations outlined above spell out the legal requirements of the federal agencies in their duties in dealing with local governments, the County recognizes that part of this land use planning process is to develop a solid working relationship with the federal agencies doing business in Big Horn County. The County also recognizes that "coordination," "cooperating agency status" and "consistency review" are required actions on behalf of both the federal agencies and the local governments. To that end, the County commits to the following actions:

1. Within 30 days of the date of adoption of this plan, the County will inform the federal agencies of the date, time, and location of their regularly scheduled meetings with an open invitation that federal agency personnel should attend such meetings if there are issues to discuss. Meetings will be scheduled on a biannual basis.
2. Within 30 days of the date of adoption of this plan, the County will transmit a copy of this local land use plan to the state, regional, and local federal agency offices doing business within Big Horn County for their consideration as part of any consistency review that is required pursuant to federal statute.
3. Within 30 days of the adoption of this plan, the County will contact the BLM and USFS offices to determine a protocol for informal communication that should occur so that each is apprised of issues and concerns as early as possible.
4. In a timely manner, the County will review NEPA documents to determine if they will request "cooperating agency status" and will consider entering into Memorandums of Understanding (MOU) or Memorandums of Agreement (MOA) as appropriate. The County reserves the right to negotiate an MOU or MOA on a case-by-case basis, although an MOU or MOA is not appropriate nor necessary in all cases.

The County supports establishment of a multi-agency stakeholder group hosted by the County Commissioners to review and discuss ongoing issues on public lands and propose regular meetings on a schedule to be determined, but not less than quarterly.

Credible Data

To the greatest extent possible, data should drive all land use planning decisions. In this plan, "data" refers to information that meets, at a minimum, the Federal Data Quality Act (FDQA). The FDQA directs the Office of Management and Budget (OMB) to issue government-wide guidelines that "provide policy and procedural guidance to Federal agencies for ensuring and maximizing the quality, objectivity, utility and integrity of information (including statistical information) disseminated by Federal agencies" (Sec. 552(a) Pub. Law. 106-554; HR 5658; 114 Stat. 2763 (2000)).

The OMB guidelines apply to all federal agencies and require that information disseminated by the Federal government will meet basic informational quality standards 66 Fed. Reg. 49718, Sept. 28, 2001; see also 67 Fed. Reg. 8452, Feb. 22, 2002).

This "standard of quality" essentially requires that data used and published by all Federal agencies meet four elements. These elements include (66 Fed. Reg. at 49718):

a) Quality,
b) Utility (i.e., referring to the usefulness of the data for its intended purpose),
c) Objectivity (i.e., the data must be accurate, reliable, and unbiased), and
d) Integrity.

In addition to following the OMB guidelines, all federal agencies were to issue data quality guidelines by October 1, 2002. 67 Fed. Reg. 8452.

In 2004, the OMB issued a memorandum requiring that, after June 15, 2005, influential scientific information representing the views of the department or agency cannot be disseminated by the federal government until it has been "peer reviewed" by qualified specialists (Office of Management and Budget, 2004). This requirement does not specifically require outside peer review, but internal review.

Priorities:

1. All federal agencies should require the inclusion of the best available scientific and monitoring data that meets credible data criteria, even if the data were not produced by a federal agency. Should quantitative data be available or is affordably attainable, agencies should prioritize including quantitative data in their analysis.
2. Support the use of credible scientific data. Credible scientific data is defined as rigorously reviewed, scientifically valid chemical, physical and/or biological monitoring data, collected in a timely manner under an accepted sampling and analysis plan; including quality control and assurance procedures and available historical data.
3. Require the BLM, USFS, and NPS to only use data that meets the minimum criteria described in their respective handbooks (BLM H-1283-1 Data Administration and Management (Public) (Bureau of Land Management, 2012a) and FS FSH 1909.12, Chapter 40, Land Management Planning Handbook – Key Processes Supporting Land Management Planning (US Forest Service, 2013), unless other criteria are agreed upon between the County and agencies.

CHAPTER 1: CUSTOM AND CULTURE

1.1 COUNTY INTRODUCTION AND OVERVIEW

Big Horn County History, Customs, and Culture

County Commissions in the State of Wyoming have been charged with responsibility for the preservation of the custom and culture of Wyoming counties in matters relating to the NEPA and federal land planning. Since the customs, culture, and history of Big Horn County ("the County") are inseparably tied to the use of and access to land and resources managed by federal agencies, the Board of County Commissioners (Board) will use the policies set forth in this NRMP to represent the vital interests of the County in federal natural resource planning efforts.

From the earliest days of occupation and settlement of the Bighorn Basin and through today, agriculture has been a key contributor to Big Horn County's economy. Water originating from the mountains around the County irrigates private farms and ranches, many of which have been in the same family for multiple generations.

These agricultural operations grow the main cash crops of sugar beets, beans, and malt barley. Other crops grown locally include alfalfa and grass hay, oats, feed barley, native grass, and corn. Some of the irrigated areas are used for pasturing cattle, sheep, horses, and other livestock. Many ranches are operated primarily in support of livestock that graze at least partially on grazing allotments or operated on leased rangeland year-round. The livestock industry accounts for a large portion of Big Horn County's agricultural income, is the oldest continuing industry in the County, and is still a prominent user of public land. It was the livestock industry that originally brought settlement to Big Horn County, followed soon after by families who took up permanent homesteads and built fences, irrigation canals, schools, churches and towns (Hein, 2014).

There are many people from out-of-state who come to Big Horn County to experience the traditional western lifestyle by visiting dude ranches and museums, attending rodeos and the county fair, or simply observing in the beauty of Bighorn Mountains and the high desert of the central basin. Some of the recreation activities enjoyed within the county include off-road vehicle use, snowmobiling, hunting and fishing, rock climbing, rock-hunting, horseback riding, mountain biking, camping, hiking, outdoor photography, bird-watching, observing the many paleontological and geological features, and enjoying the abundant wildlife of the area. Family traditions of outings to camp, hunt, fish, ride horses, backpack, and enjoying the outdoors are central to the County's identity and way of life. To live here is to be connected to the land.

The greatest outside influence on the continuation of these central aspects of the custom and culture of the County has been, and will continue to be, the management actions and policy of State and Federal governments, whose jurisdiction over public lands, its resources, and its water is fundamental to the County's economic structure and way of life. Future land management actions in Big Horn County will protect the historical use, access to, and conservation of the land.

Natural gas, oil, bentonite, and gypsum mining contribute extensively to the current custom, culture, and economy of Big Horn County (Hein, 2014). The extraction and sale of these important minerals employ many residents and is a major contributor to the tax dollars that support county and municipal governments. Some oil and bentonite related products are currently shipped to market by the railroad that runs through the basin. The railroad was central to the early development of the County and was first used for the shipment of livestock, farm produce, and to transport passengers. Today, the railroad remains an important contributor to the custom, culture, and economy of the County, just as it has been for well over 100 years.

County Overview

Big Horn County, named for the Bighorn Mountains which form its eastern boundary, is located in north-central Wyoming, south of the Montana State border (Figure 1). The County encompasses a majority of the northeastern section of the Bighorn Basin and is flanked by the Absaroka Mountains along the County's western boundary. The Bighorn River flows from south to north through the central portion of the county with the Greybull and Shoshone Rivers emptying into it from the west. The highest elevation in the County is the Cloud Peak summit at 13,167 feet in the Bighorn mountains; the lowest point of the basin is 24,000 feet below sea level at the Precambrian basement rock. This totals 38,000 feet of structural relief. (Libra et al., 1981; U.S. Forest Service, n.d.-a)

The settlement of present-day Big Horn County began in the 1870s, primarily by cattle ranchers. In 1895 Mormon settlers out of Utah settled in the basin and began large irrigation operations for crops and small farms (Hein, 2014). Big Horn County was formally established in 1897 out of parcels of Johnson, Fremont, and Sheridan counties.

As the 13th largest county in Wyoming, Big Horn County spans over 2 million acres (3,137 square miles), making it larger than the states of Rhode Island and Delaware. 76.5% of the land in Big Horn County is federally owned, with the largest portions being held by the Bureau of Land Management at 57% (1,159,878 ac), the US Forest Service at 17% (351,168 ac), the Bureau of Reclamation at 1% (20,307 ac), the National Park Service at 0.77% (15,603 ac), and the Department of Defense (DoD) managing 3,500 acres.

The total population in Big Horn County according to 2010 US Census data is 11,668 persons. The population is largely rural, with only about half the population living within the nine incorporated towns (Basin, Burlington, Byron, Cowley, Deaver, Frannie, Greybull, Lovell, and Manderson). Other communities within the County include Emblem, Hyattville, Otto and Shell.

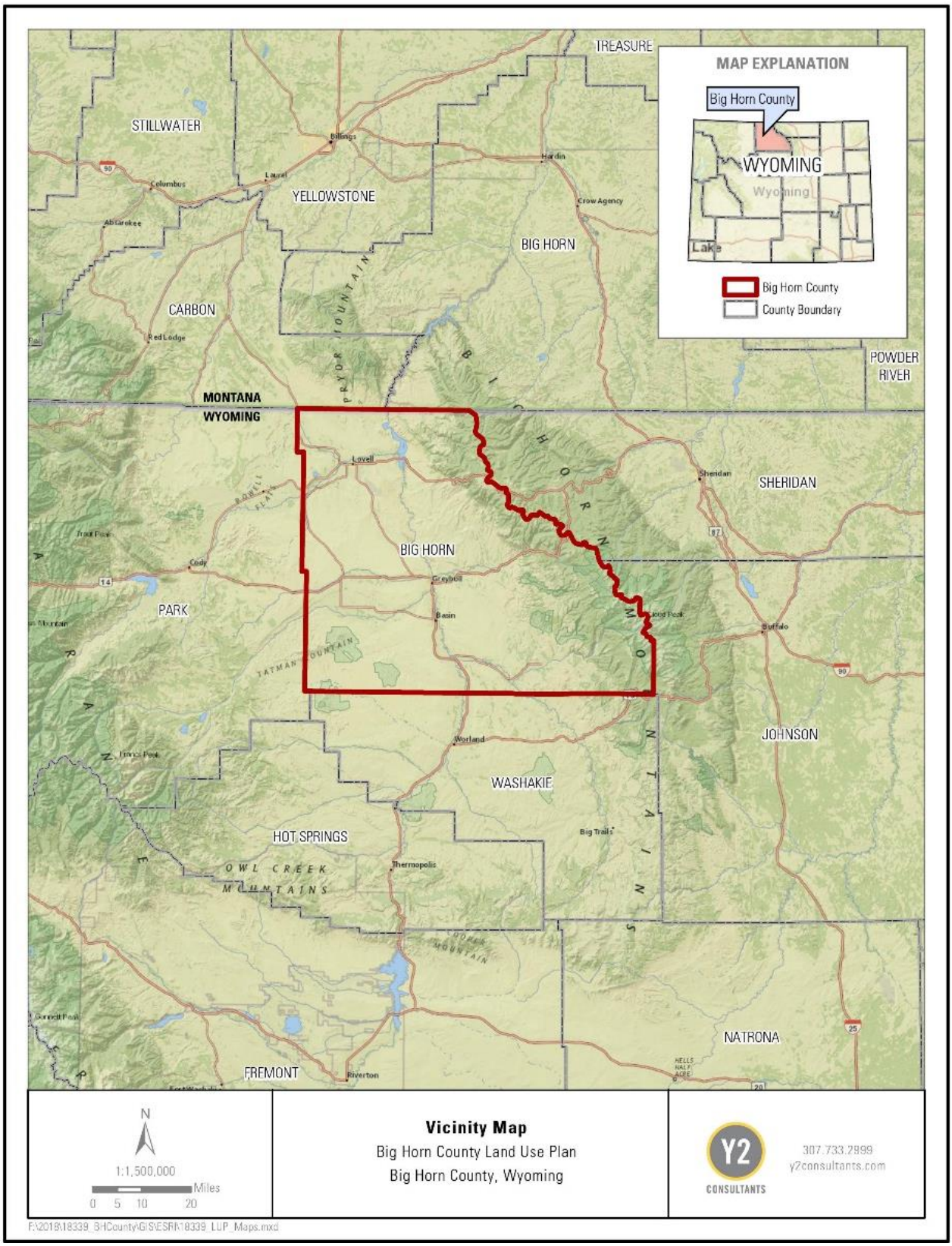


Figure 1. Big Horn County Natural Resource Management Plan area.

Overview of Geographical Area

Big Horn County has a rich geologic history (Figure 2). There are many locations throughout the County where geologic formations exist and display the history of the area. These basin, canyon, and mountain formations contain cultural and recreational value.

Up to 33,000 feet of Cenozoic to Paleozoic sedimentary rocks have been deposited in the Bighorn Basin. These depositions occurred in the mid-Cambrian Period, overlaying Precambrian granite basement rocks.

Paleozoic Era rock reflects a marine transgressive/regressive deposition; these formations are dominated by marine formations with occasional sandstones and shales from beach and shore conditions. Erosion during this time created gaps in the formations. The early Mesozoic Era was characterized by shallow seas that deposited sandstones, siltstones, and shales. These depositions are the Dinwoody, Chugwater, Gypsum Springs, and Sundance formations. (Libra et al., 1981)

A transition to a terrestrial environment occurred during the Jurassic Period, and shales and sandstones of the Morrison Formation were deposited in shallow marine and marshy environments. During the Cretaceous Period thousands of feet of interbedded sandstones and thick shales were deposited under terrestrial, eolian and fluvial conditions. These Cretaceous formations include; the Cloverly, Mowry – Thermopolis, Frontier, Cody, Mesaverde, Meeteetse, and Lance formations. (Libra et al., 1981)

The Bighorn mountains formed in the late Cretaceous period. Mountains surrounding the Bighorn Basin, uplifted by compressional forces, provided a source for the more than 10,000 feet of Tertiary sediments. These deposits are comprised of conglomerates, sandstones, and shales that were deposited in alluvial fans, streams, or lake environments. (Blackstone, Jr. & Huntoon, 1984)

The most recent deposits are primarily alluvial and terrace deposits, with glacial influence, occurring primarily in the Pleistocene and Quaternary periods.

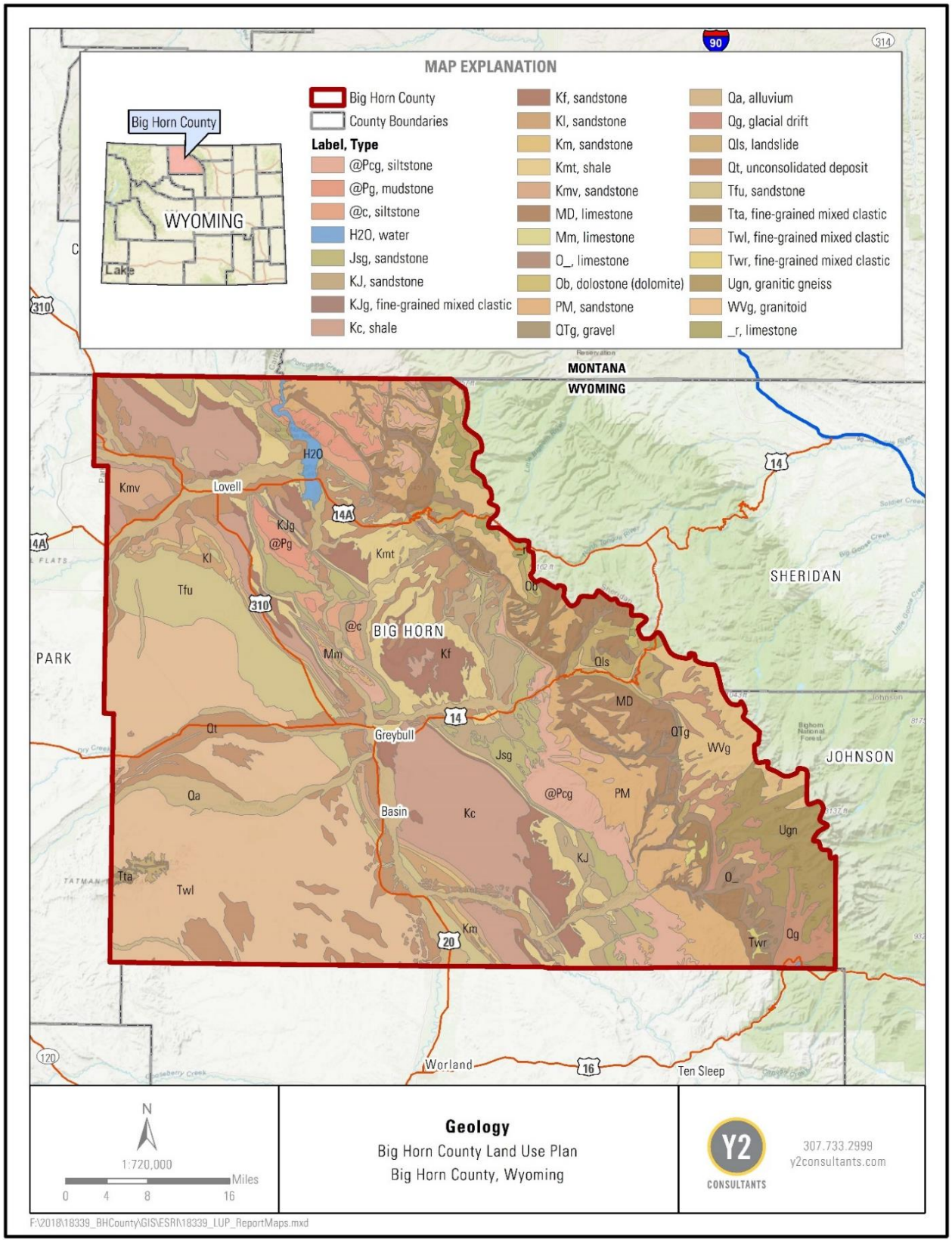


Figure 2. Big Horn County Geologic Formations.

CHAPTER 2: LAND USE

2.1 LAND USE

Big Horn County is the 13th largest county in Wyoming, spanning 2,007,680 acres. Big Horn County is 77% federally owned, with the Bureau of Land Management (BLM) managing 57% (1,159,878 ac), the US Forest Service (USFS) at 17% (351,168 ac), the Bureau of Reclamation (BOR) at 1% (20,307 ac), the National Park Service (NPS) at <1% (15,603 ac), and the Department of Defense (DoD) at <1% (3,500 acres) (Hein, 2014). Big Horn County relies heavily on these federally owned lands for tourism, recreation, mining, oil and gas, hunting, and grazing. Figure 3 shows the land ownership of Big Horn County.

Conservation Districts

During the 1930's, the Dust Bowl made the need to conserve natural resources, particularly soil, very clear. The Soil Conservation Act of 1935 created the Soil Conservation Service, now termed the Natural Resource Conservation Service (NRCS), to develop and implement soil erosion control programs (WACD, n.d.). In 1941, the Wyoming State Legislature passed an enabling act, which established conservation districts in Wyoming. Conservation districts were to direct programs protecting local renewable natural resources. Wyoming now has 34 conservation districts in 23 counties (WACD, n.d.).

Big Horn County encompasses two Conservation Districts: The South Big Horn Conservation District (SBHCD) in the southern half of the County, and The Shoshone Conservation District in the northern half (*Conservation Districts*, n.d.). The SBHCD was formed in 1977 as a merging of the original South Big Horn Conservation District and the Greybull-Shell Conservation District (*History-SBHCD*, n.d.).

Bureau of Land Management (BLM)

The BLM manages approximately 57% of the land in Big Horn County. This includes the Red Gulch Dinosaur Track site and most of the unincorporated county. Big Horn County is included in the Wind River/Bighorn Basin District Office and includes field offices in Cody and Worland. The Cody Field Office encompasses 2.2 million acres. The Worland Field Office encompasses approximately 2 million acres. The Bighorn Basin Resource Management Plan was approved in a record of decision signed September 21, 2015.

The BLM we know today was established in 1946 by combining the General Lands Office (GLO) and the US Grazing Service. The GLO was created in 1812 and was responsible for all public land sales, patents, and entries established within Treasury Department to oversee disposition of ceded and acquired lands (Bureau of Land Management, 2016a). In 1934, the Taylor Grazing Act authorized grazing districts, regulation of grazing, and public rangeland improvements in Western states and established the Division of Grazing (later renamed U.S. Grazing Service) within the Department of the Interior.

The Federal Land Policy and Management Act (FLPMA) is the BLM's governing document outlining the management responsibilities of the BLM to balance public access and multiple-uses with the protection and preservation of the quality of the lands and its resources (43 USC § 1732) (FLPMA, 1976). FLPMA requires the BLM to administer public lands "on the basis of multiple use and sustained yield" of all resources (FLPMA, 1976).

United States Forest Service (USFS)

The United States Forest Service (USFS) manages approximately 17% of the total land in Big Horn County within the Bighorn National Forest. The Bighorn National Forest is headquartered in Sheridan. The Medicine Wheel Ranger District is located in Greybull. The Powder River Ranger District is located in Buffalo. A portion of the district falls within Big Horn County. The Revised Land and Resource

Management Plan was approved in 2005. Two plans, the Northern Rockies Lynx Amendment (2007) and the Greater Sage-Grouse Record of Decision: Northwest Colorado, Wyoming (2015) modify specific activities in the 2005 Revised Land and Resource Management Plan.

In 1876, United States forest management was formalized with the creation of the office of Special Agent within the Department of Agriculture for the purpose of assessing the quality and condition of US forests. In 1881, the Division of Forestry was added to the Department of Agriculture. In 1891 Congress passed the Forest Reserve Act allowing the President to designate western lands as "forest reserves" to be managed by the Department of the Interior. Western communities strongly opposed forest designations because development and use of "reserved lands" were prohibited. In 1897, Congress adopted the Organic Administration Act of 1897 (OAA) to protect the use of forest reserves for United States citizens. The Big Horn Forest Reserve was one of the original reserves in the OAA in 1897. The OAA declared that forest reserves would be created either to protect water resources for local communities and agriculture, and/or to provide a continuous supply of timber. Thus, the purposes for which forests were to be used changed from the land being reserved from local communities to the land being used for economic development by local communities and United States citizens.

Responsibility for forest reserves was transferred to the Department of Agriculture with the Transfer Act of 1905 and the establishment of the United States Forest Service (USFS). The Multiple-Use Sustained-Yield Act of 1960 (MUSY) requires that forests be managed for multiple uses (MUSY of 1960, 1960). This idea was further codified in the National Forest Management Act (NFMA) (16 USC § 1601(d)).

Bureau of Reclamation (BOR)

The Bureau of Reclamation (BOR) manages 1% (20,307 ac) of the land in Big Horn County. The BOR manages the Yellowtail Dam.

The BOR began as the United Stated Reclamation Service (USRS) in 1902, as part of the United States Geological Survey (USGS). The United States Reclamation Service was established in accordance with the Reclamation Act to manage US water resources. In 1907, the USRS was separated from the USGS and designated as a separate agency within the Department of the Interior, the Bureau of Reclamation (BOR) (Bureau of Reclamation, 2018). The BOR is responsible for oversight and operation of irrigation, water supply, water storage, and hydroelectric power plant generation. The BOR was created to manage water projects and promote homesteading and economic development in the West. The mission of the BOR is "to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public," (*Bureau of Reclamation - About Us*, 2019).

National Park Service (NPS)

The National Park Service (NPS) manages approximately 0.77% (15,603 ac) of the land in Big Horn County within the Bighorn Canyon National Recreation Area.

The NPS was created in 1916 within the US Department of the Interior. The NPS is governed by the National Park Service Organic Act, delegating the roles of preserving the ecological and historical integrity of the land entrusted to their management while retaining public access and enjoyment of those lands to the NPS. Most lands under NPS control were designated as National Parks or Monuments by Congress. Some holdings have been designated by the President of the United States via the Antiquities Act.

The Bighorn Canyon National Recreation Area was designated in 1966 and encompasses over 120,000 total acres between Wyoming and Montana. This National Recreation Area is the only NPS designation within Big Horn County.

United States Department of Defense (DOD)

The Department of Defense (DOD) operates the Powell Air Force Station on approximately 3,500 acres of land located in the northwestern corner of Big Horn County southeast of Lovell, WY. The DOD is not classified as one of the main Federal Land Management Agencies. The land under the ownership of the DOD is primarily Military Bases/Stations, and military training areas. DOD owned land is not managed for specific resources other than for military use (Hoover, 2019).

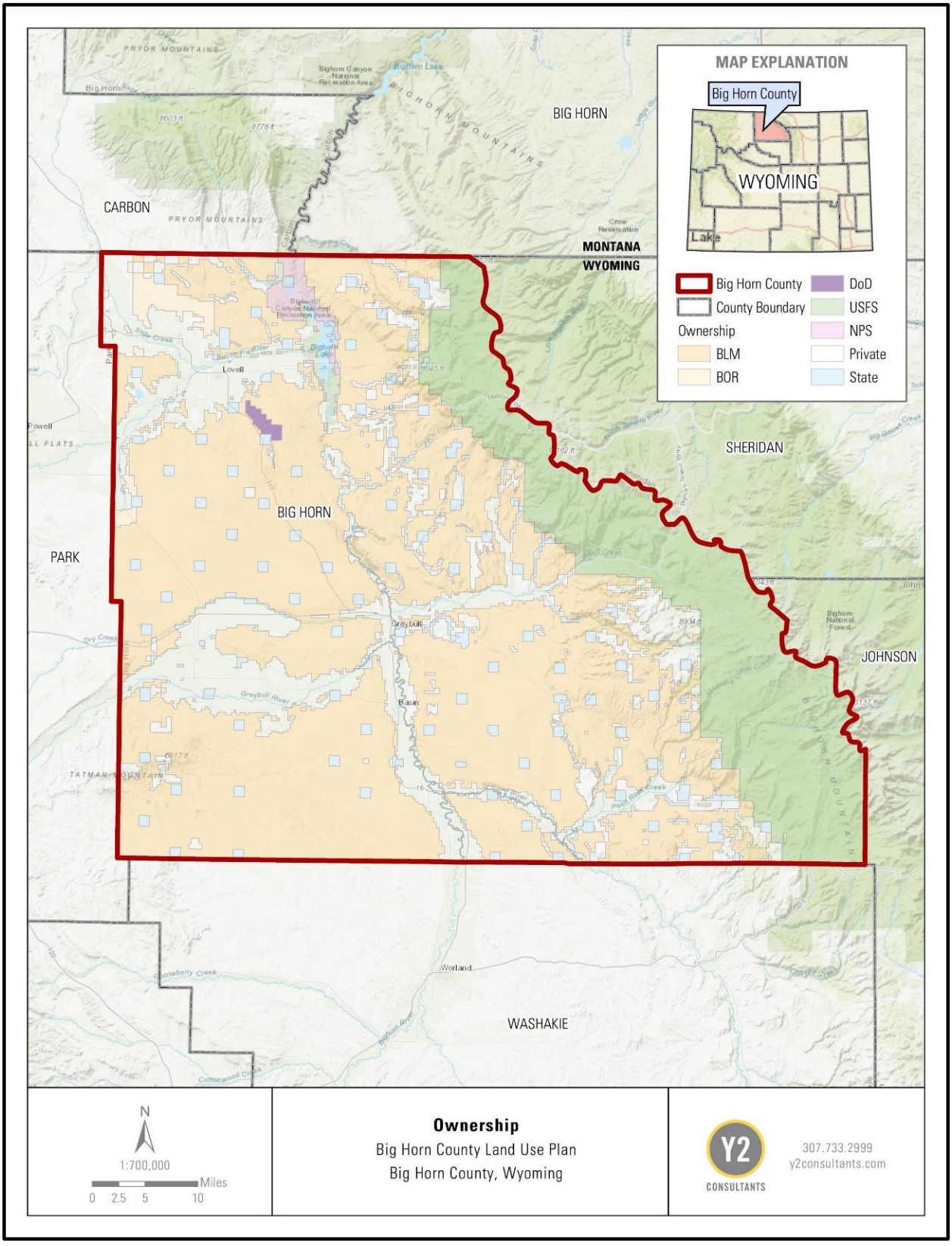


Figure 3. Big Horn County Ownership Map.

2.2 TRANSPORTATION AND LAND ACCESS

History, Custom, and Culture

It is vital to the sustainability of the livestock industry in Big Horn County that grazing areas, and the stock trails that connect them, be open and accessible. Livestock "trailed" from one grazing area to another must access the grazing areas on either end of that process, as well as lands in between. Historical use of stock trails and grazing areas has fluctuated over the years, depending on market prices, and weather conditions, but the need for access availability has remained constant.

The County itself relies on access to federal lands to fulfill its statutory mandate to protect the health, safety, and general welfare of the people within its jurisdiction; including but not limited to fire protection, search and rescue, flood control, law enforcement, economic development, and the maintenance of county improvements.

Big Horn County's transportation corridors have long serviced diverse industries. Tourists constantly travel through the county to various destinations including Yellowstone National Park. There is also a significant amount of oil and gas traffic utilizing these corridors to convey production from the Byron and Basin areas. During mid to late September the sugar beet harvest produces traffic locally in the Lovell area and beyond, conveying beets down southbound US 20 toward Worland from the Basin area. Locals of Big Horn County regularly travel US 310 North to the regional hub of Billings, Montana.

Resource Assessment and Legal Framework

Congress, as the constitutional manager of the federal lands, has made it clear through natural resource statutes that the general public must have use of and access to the federal lands. It is vital to the County's interests and performance of duties that full and complete access to the federal lands continue.

The BLM and USFS both have specific provisions they must follow when considering the closure of roads and trails. A requirement of these provisions is that such activity be conducted in coordination with the County prior to such action being taken. Road closures have occurred in the County by both federal and state agencies without prior coordination, despite the requirement by federal law for coordination prior to a final decision. This has caused economic harm and impacted citizen and visitor enjoyment of the County's natural resources.

It is understood that the federal definition of "roadless" does not mean that there are no roads present, but rather that the area is managed to prohibit the construction of new roads, or the reconstruction of existing roads. Existing roads within roadless areas can continue to be maintained. Refer to the 2001 Roadless Rule for additional information:
https://www.fs.fed.us/emc/nepa/roadless/2001RoadlessRuleFR.pdf

The U.S. Department of Agriculture classifies roads within National Forests by five levels of maintenance: 1, 2, 3, 4, and 5. Level 1 roads refer to roads closed to motorized vehicles. Level 2 roads are maintained for high clearance vehicles, and Level 3-5 roads are maintained for standard passenger cars during the season of use. Refer to the Forest Service Guidelines for Road Maintenance Levels for additional information: https://www.fs.fed.us/t-d//pubs/pdf/11771811.pdf .

The Taylor Grazing Act provides for the establishment, maintenance, and use of stock driveways within established grazing districts. 43 U.S.C. § 316. The National Trails Systems Act defines the standards and methods by which additional trails may be added to the system including scenic, historic, and recreational trails. NEPA requires federal projects and land use decisions, including opening and closing of roads, to go

through an environmental review process. The Wilderness Act of 1964 prohibits motor vehicles in wilderness areas except in emergency situations or when there is a possible management need.

Federal Highway Administration

The Federal Highway Administration (FHWA) is an agency within the US Department of Transportation and was created in 1966.

> *"The mission of FHWA is to enable and empower the strengthening of a world-class highway system that promotes safety, mobility, and economic growth, while enhancing the quality of life of all Americans." (Office of Federal Lands Highway, 2018)*

Under this mission, the FHWA provides resources to municipalities across the nation and in the form of indirect and direct methods. Indirectly, the FHWA provides valuable research and design guidance on numerous topics to push the industry towards a safer, efficient, and wholistic network. Directly, the FHWA provides grants to the local Department of Transportation divisions in order to facilitate project design and construction based upon merit. These grants are distributed through the Federal Highway-Aid Program.

Alongside the FHWA, numerous programs were created under the Federal Lands Highway Division (FLH) to specifically service certain groups and were reauthorized under the Fixing America's Surface Transportation (FAST) Act. These programs are:

- Federal Lands Access Program (FLAP): "established in 23 U.S.C. 204 to improve transportation facilities that provide access to, are adjacent to, or are located within, Federal lands. The Access Program supplements State and local resources for public roads, transit systems, and other transportation facilities, with an emphasis on high-use recreation sites and economic generators." (Office of Federal Lands Highway, 2018).
- Federal Lands Transportation Program (FLTP): "established in 23 U.S.C. 203 to improve the transportation infrastructure owned and maintained by federal land management agencies including NPS, USFWS, USFS, BLM, US Army Corps of Engineers (USACE), BOR, and independent federal agencies with land and natural resource management responsibilities."(Office of Federal Lands Highway, 2018).
- Nationally Significant Federal Lands and Tribal Projects Program (NSFLTP): "…provides funding for the construction, reconstruction, and rehabilitation of nationally significant projects within, adjacent to, or accessing Federal and tribal lands. This program provides an opportunity to address significant challenges across the nation for transportation facilities that serve Federal and tribal lands." (Office of Federal Lands Highway, 2018).
- Emergency Relief for Federally Owned Roads (ERFO): "established to assist federal agencies with the repair or reconstruction of tribal transportation facilities, federal lands transportation facilities, and other federally owned roads that are open to public travel, which are found to have suffered serious damage by a natural disaster over a wide area or by a catastrophic failure." (Office of Federal Lands Highway, 2018).

Wyoming Department of Transportation (WYDOT) can work directly with any of the above programs to help secure funding and has annually. Through the FLAP program alone, Wyoming has secured $73.3 million spread across 16 projects from 2013 to 2022.

National Park Service

The NPS has created national and regional guidance when developing infrastructure on or servicing park lands. Big Horn County is a part of the Intermountain Range (IMR), and while there may not any specified national parks in the county, Big Horn Lake and the surrounding area has been designated as a National

Recreation Area and therefore falls under the guidelines laid out by the NPS. Development in this area should take the IMR Long-Range Transportations Plan (NPS, 2018) into consideration.

United States Fish and Wildlife Service

The USFWS has produced both National Long-Range Transportation plans (LRTP'S) and Regional LRTP's including Roadway design guidelines and other guidelines when developing infrastructure through conservation lands (US Fish and Wildlife Service, 2018).

United States Forest Service

The federal lands managed by the USFS in Big Horn County are to be managed for multiple-use and sustained-yield uses (16 USC 1601(d)) (Multiple-Use Sustained-Yield Act of 1960, 1960) including, but not limited to agriculture (farming, irrigation, livestock grazing); recreation (motorized and non-motorized transport and activities, such as hunting, fishing, water and land sports, hiking, etc.); industry (mining, power production, oil and gas production/exploration, and timbering); intangible values (historical and cultural sites, access to open space, aesthetic values, conservation); and weed, pest, and predator control.

The Land and Water Conservation Fund (LWCF) Act of 1964 was permanently reauthorized as of March 2019 and "…supports the protection of federal public lands and waters – including national parks, forests, wildlife refuges, and recreation areas – and voluntary conservation on private land. LWCF investments secure public access, improve recreational opportunities, and preserve ecosystem benefits for local communities." (US Department of the Interior, 2015) Through the FAST Act, the Recreational Trails Program (RTP) was reauthorized and "provides funds to the States to develop and maintain recreational trails and trail-related facilities for both nonmotorized and motorized recreational trail uses." (Office of Federal Lands Highway, 2018). The LWCF and RTP can be highly reliable sources for funding through grants and loans.

The USFS is directed to coordinate the preparation of Travel Management Plans with the County (36 CFR 212).

> *"The responsible official shall coordinate with appropriate Federal, State, county, and other local governmental entities and tribal governments when designating National Forest System roads, National Forest System trails, and areas on National Forest System lands pursuant to this subpart." (36 CFR 212.53)*

> *"Designations of National Forest System roads, National Forest System trails, and areas on National Forest System lands pursuant to §212.51 may be revised as needed to meet changing conditions. Revisions of designations shall be made in accordance with the requirements for public involvement in §212.52, the requirements for coordination with governmental entities in §212.53, and the criteria in §212.55," (36 CFR 212.54)*

Bureau of Land Management

BLM land is enjoyed by the public for numerous recreational activities. The BLM must follow various federal laws regarding the management of transportation and travel on public lands. FLPMA is the BLM's governing document outlining the management responsibilities of the BLM to balance public access and multiple-uses with the protection and preservation of the quality of the lands and its resources (FLPMA, 1976). The National Trails Systems Act defines the standards and methods by which additional trails may be added to the system including scenic, historic, and recreational trails. The BLM is required to coordinate "inventory" with the County (43 USC § 1712) (FLPMA, 1976).

R.S. 2477

Revised statute 2477 (R.S. 2477) provided that "the right of way for the construction of highways over public lands, not reserved for public uses, is hereby granted." The Act of July 26, 1866, § 8, ch. 262, 14 STAT. 251, 253 (1866) (formerly codified at 43 U.S.C. § 932). Congress enacted a grant of rights-of-way over unreserved public lands for the construction of highways. The grant was originally section 8 of the Mining Act of 1866, which became section 2477 of the Revised Statutes; hence the grant is commonly referred to as R.S. 2477.

The grant is self-executing and an R.S. 2477 right-of-way comes into existence "automatically" when the requisite elements are met. *See*, *Shultz v. Dep't of Army*, 10 F.3d 649, 655 (9th Cir. 1993). One hundred and ten years after its enactment, R.S. 2477 was repealed with the passage of the Federal Land Policy and Management Act of 1976 ("FLPMA"), 43 U.S.C. § 1701 et seq. *See*, 43 U.S.C. § 932, repealed by Pub. L. No. 94-579, § 706(a), 90 STAT. 2743, 2793 (1976). Even though FLPMA repealed R.S. 2477, FLPMA explicitly preserved any rights-of-way that existed before October 21, 1976, the date of FLPMA's enactment. *See*, 43 U.S.C. § 1769(a) (stating that nothing "in this subchapter shall have the effect of terminating any right-of-way or right-of-use heretofore issued, granted, or permitted."); *see also*, 43 U.S.C. § 1701, Savings Provision (a) and (h). Therefore, R.S. 2477 rights-of-way which were perfected prior to October 21, 1976 are valid even after the repeal of R.S. 2477.

The courts have clearly established that the states have the proprietary jurisdiction over rights-of-way within their state. *Colorado v.* Toll, 268 US 228, 231 (1925). This jurisdiction and control over rights-of-way through public lands must be actively ceded by the state (or counties as arms of the state) to the federal government or curtailed by Congress. *US v. Garfield County*, 122 F. Supp.2d 1201, 1235 (D. Utah 2000) *citing Kleppe v. New Mexico*, 426 US 529, 541-46 (1976). Congress has yet to overturn R.S. 2477 or wrest control over the determination of what is a valid R.S. 2477 right-of-way. Thus, the question of whether an R.S. 2477 is established and the scope of the right-of-way is a matter of state law. *See U.S. v. Garfield County*, 122 F.Supp.2d at 1255; *Sierra Club v. Hodel*, 848 F.2d 1068, 1080 (10th Cir. 1988).

The repeal of R.S. 2477 "froze" the scope of the R.S. 2477 right-of-way. Thus, the scope of the R.S. 2477 right-of-way is limited by the established usage of the route as of the date the repeal of the statute. *Southern Utah Wilderness Alliance v. Bureau of Land Management*, 425 F.3d 735, 746 (10th Cir. 2005, as amended 2006). In relation to the roads at issue here, this scope would be access to, and between private land sections.

As discussed earlier, an R.S. 2477 grant is self-executing and the right-of-way comes into existence "automatically" when the requisite state law elements are met. *See*, *Shultz v. Dep't of Army*, 10 F.3d 649, 655 (9th Cir. 1993). Thus, adjudication of R.S. 2477 rights is not a prerequisite to their existence unless the agency contests the existence of the grant. In cases where the federal agency contests the existence of an R.S. 2477 right-of-way, a claim against the United States would need to be made under the Quiet Title Act (28 U.S.C.A. § 2409a). The Quiet Title Act provides that the United States may be named as a party defendant in a civil action to adjudicate a disputed title to real property in which the United States claims an interest, other than a security interest or water right. 28 U.S.C.A. § 2409a(a). In such an action, a plaintiff must demonstrate with particularity the nature of the right, title, or interest which the plaintiff claims in the real property, the circumstances under which it was acquired, and the right, title, or interest claimed by the United States. 28 U.S.C.A. § 2409a(d).

Resource Management Objective:

A. Full open access to Big Horn County federal lands for local purposes such as safety, health, and use of recreation will be maintained and expanded where possible. Access to public lands will not be reduced as assured by federal law.

Priorities:

1. Support designation of all currently open trails, rights of ways, and roads as open. No road, trail, or RS 2477 right of way shall be closed unless public safety or health demands its closing and the proper analysis and disclosure, in consultation with the County, is completed prior to closure.
2. Request that any planning process or activity that restricts or eliminates access to federal or state lands first notify and allow the County to initiate coordination and cooperation to resolve any potential conflicts with the County's objectives, principles, and policies, prior to taking action.
3. Work with federal agencies to reopen roads and trails that were closed by an agency without specific coordination with the County. It is expected that the federal agencies will reopen all access routes that restrict the County's ability to perform its duties or conflict with County policy. If access routes in conflict with County policy are not reopened by any federal agency, said agency shall provide a written explanation for why County policy is not being followed.
4. Designate historic stock trails as valid access routes for the purpose of trailing livestock between grazing areas.
5. All formally established public roads and rights of ways shall be considered valid unless formally abandoned, even if not presently maintained. Public trails shall be considered "public roads and highways".
6. The County considers any road closure a major federal action affecting the human environment. Thus, a road on federal lands may not be closed until a full NEPA analysis has been completed including public review and coordination with the County. Should the agency believe that a road closure falls under a categorical exemption, the County shall be consulted.
7. Federal land managers shall properly manage water under, around, and above mapped landslides to prevent/minimize new movement, especially where landslides could disrupt public transportation or threaten public safety.

2.3 SPECIAL DESIGNATION AREAS AND SCENIC BYWAYS AND VIEWSHEDS

History, Custom, and Culture

The Bighorn National Forest is rich with archaeological and pre-industrial significance. The Medicine Wheel within Bighorn National forest and the Medicine Lodge Archaeological Site were historically used by local Native American tribes for traditional ceremonies. The Medicine Wheel itself is still used periodically for ceremonies. The Medicine Wheel Historic Preservation Plan (MWHPP), passed in 1996, guides the management of the Medicine Wheel National Historic Landmark.

Livestock grazing within the entire Bighorn National Forest was historically important to settlers within the Bighorn mountains. Currently, more than 28,000 cattle and 21,000 sheep graze on the Bighorn National Forest under term grazing permits. Through the end of 2000, the Bighorn National Forest offered approximately 131 million board feet of timber and firewood for sale. Additionally, over 500 special use permits were authorized within the Bighorn National Forest including concessionaires, reservoirs, easements, and campgrounds (Forest Service: Rocky Mountain Region, 2005).

Bighorn Canyon also has substantial historical significance. Historically, Bighorn Canyon was used by Paleo-Indians, including the Crow people (National Park Service, 2019). Bighorn Canyon is also the site of the Bad Pass Trail and four historic ranches dating back more than 100 years.

Resource Assessment and Legal Framework

Areas of Critical Environmental Concern (ACEC) are BLM-managed areas "where special management attention is needed to protect important historical, cultural, and scenic values, or fish and wildlife or other natural resources (BLM, 2016a). ACEC designations include Wilderness Study Areas (WSA), fossil sites, tracksites, Wilderness Areas, National Monuments, National Conservation Lands, Wild and Scenic Rivers,

and National Scenic and Historic Trails. An ACEC may also be designated to protect human life and safety from natural hazards (BLM, 2016a). An ACEC designation must go through the NEPA land use planning process. An ACEC designation may be revisited through subsequent land use planning, revision, or amendment. ACECs and other special designations may compete with the natural resource based businesses that are important to the County's economy, like grazing and mining.

Big Horn County has three scenic byways, one wilderness area, one national forest, one state park, one national recreation area, seven ACECs, eight WSAs, one historic landmark, one National Recreation Trail, and one Research Natural Area. Figure shows the BLM managed ACECs and WSAs. Figure 5 shows the scenic byways, state park, national forest, and the national recreation area.

ACECs within Big Horn County are managed by two separate BLM field offices. The Worland Field Office manages the Red Gulch Dinosaur Tracksite and the Spanish Point Karst Area. The Cody Field Office manages the Brown/Howe Dinosaur, Five Springs Falls, Little Mountain, Sheep Mountain, and Sheep Mountain Anticline ACECs.

Red Gulch Dinosaur Tracksite

Red Gulch Dinosaur Tracksite is the largest tracksite in Wyoming and worldwide one of the only tracksites dating back to the Middle Jurassic Period (Bureau of Land Management, n.d.). This 1,800-acre tracksite was designated as an ACEC in 1999 for its value as a paleontological site. This site contains hundreds of tracks and the discovery and study of this site proved that at least a portion of the Bighorn Basin was dryland during the Jurassic Period and supported non-aquatic dinosaurs (Bureau of Land Management, n.d.; Libra et al., 1981). The area also contains the Red Gulch Dinosaur Tracksite recreation area and a small portion of the Red Gulch/Alkali National Back Country Byway (BLM, 2013).

Spanish Point Karst Area

The Spanish Point Karst Area encompasses 11,416 acres along the west slope of the Bighorn Mountains. This ACEC was designated in 1988 for its cave and recreational resources, as well as sinking stream segments and groundwater quantity and quality (BLM, 2013). This ACEC consists of deep dramatic canyons, rugged mountains, the Medicine Lodge and Trapper Creek WSAs; the Trapper Creek, Medicine Lodge Creek, and Dry Medicine Lodge Creek.

There are four significant cave and karst systems in the Spanish Point Karst Area: Great Expectations, La Caverna de los Tres Charros, Bad Medicine, and P Bar (BLM, 2013). The karst formations are important because they contain caves of national and statewide importance and provide an important recharge area for the Madison aquifer. There are 45,000 feet of explored cave passages and 100,000 feet of subkarstic waterways associated with the cave and karstic systems within the Spanish Point Karst Area (BLM, 2013).

Brown/Howe Dinosaur Area

The Brown/Howe Dinosaur ACEC was designated in 1995 for its paleontological resources and encompasses approximately 5,510 acres of land North of Shell Wyoming. This ACEC lies along the western edge of the Bighorn Mountains on the north-central part of the mountain range (BLM, 2013). This area is characterized by large layers of rock rising dramatically from the floor of the Bighorn Basin extending from the Wyoming-Montana border southwards to Shell Canyon (BLM, 2013).

The Brown/Howe Dinosaur Area ACEC contains fossil bearing sediment with high potential for dinosaur specimens. This ACEC contains two significant fossil-producing formations: the Morrison Formation, which has produced a diverse array of vertebrate fossils including the most complete, well preserved, and articulated subadult specimen of the *Allosaurus fragilis;* and the Cloverly Formation, which has produced fragmentary vertebrate fossils from the Cretaceous period (BLM, 2013).

Five Springs Falls

The Five Springs Falls ACEC encompasses approximately 163 acres of BLM administered land along the west slope of the Bighorn Mountains. The Five Springs Falls ACEC was designated in 1990 for significant scenic and recreational resources, as well as sensitive plants (BLM, 2013). This ACEC contains the Five Springs Falls Campground and trail system, one major and one minor waterfall in a steep rocky canyon, and the Five Springs Thrust Fault, all of which are major visitor attractions.

The vertical cliff walls adjacent to large waterfalls within Five Springs Falls ACEC provide unique habitat for four near-endemic rare and sensitive plant species. These species are the *Erigeron allocotus, Penstemon caryi* (Cary beardtongue), *Stanleya tomentosa* (Princes plume *var*. tomentosa), and *Sullivantia hepemanii* (Sullivantia) (BLM, 2013).

Little Mountain

Little Mountain ACEC is a remote 21,451-acre site northeast of Lovell along the west slope of the Bighorn Mountains, designated in 1990 for its cave, cultural, paleontological, and scenic resources. The karst topography in this ACEC has created a vast cave network for recreational cave-explorers and researchers alike (BLM, 2013). The cave openings contain a fossil record detailing vertebrate and invertebrate species. The caves were home to aboriginals for approximately 11,000 years. Their occupation of these caves provides insight into their prehistoric and protohistoric adaptive strategies (BLM, 2013). The sediments that were deposited in the cave formations contained uranium deposits. These uranium deposits were mined in the early 1950's (BLM, 2013). Once mining activities were abandoned, hazardous tailings and open mine shafts were left throughout the area, creating potential hazards.

Sheep Mountain Anticline

The Sheep Mountain Anticline area encompasses approximately 11,639 acres of land north of Greybull. This ACEC was designated in 1990 for its cave, cultural, scenic and geologic resources. The Sheep Mountain Anticline ACEC is composed of a Laramide anticline which is featured in many geology textbooks and studied by geology classes all over the world (BLM, 2013). The caves within this ACEC provide recreational, educational, and research opportunities, including several significant caves protected under the Federal Cave Resources Protection Act.

Wilderness Study Areas (WSA)

The Wilderness Act of 1964 established the National Wilderness Preservation System to be managed by the USFS, NPS, and the FWS. The passage of FLPMA in 1976 added the BLM as a wilderness management authority to the Wilderness Act. Wilderness areas must have "wilderness character", which is described with four qualities. Wilderness Study Areas (WSAs) are places that have wilderness characteristics; (ie: untrammeled, natural, undeveloped, and outstanding opportunities for recreation) which make them eligible for future designation as wilderness (BLM, 2016b).

The four characteristics that must be met for designation as a WSA or Wilderness Area:

1. The area must be untrammeled by man. Untrammeled refers to wilderness as an area unhindered and free from modern human control and manipulation. Human activities or actions on these lands impairs this quality.
2. The area must be natural. The area should be protected and managed to preserve its natural conditions and should be as free as possible from the effects of modern civilization. If any ecosystem processes were managed by humans, they must be allowed to return to their natural condition.
3. The area must be undeveloped. No human structures or installations, no motor vehicles or mechanical transport, or any other item that increases man's ability to occupy the environment can be present.

4. The area must offer solitude or primitive and unconfined recreation. People should be able to experience natural sights and sounds, remote and secluded places, and the physical and emotional challenges of self-discovery and self-reliance.

WSAs are established three different ways: they are identified by the wilderness review as required by Section 603 of FLPMA; they are identified during the land use planning process under Section 202 of FLPMA; or they are established by Congress.

Section 603(c) of the FLPMA requires that WSAs are managed so as not to impair their suitability for preservation as wilderness and strives to retain their primeval character and influence, without permanent improvements or human habitation (BLM, 2016b). However, the FLPMA also requires that mining, livestock grazing and mineral leasing (e.g., grandfathered uses) continue in the manner and degree as they were being conducted in 1976. Therefore, to the extent that grazing was allowed in the wilderness prior to 1976, its use, specifically including allowing the same number of livestock as existed in 1976, should be continued. Grandfathered uses are protected and must be maintained in the same manner and degree as they were being conducted on October 21, 1976, even if they impair wilderness characteristics according to *Rocky Mountain Oil and Gas Association v. Watt*, 696 F.2d 734, 749 (10th Cir. 1982). This requirement includes the authority to develop livestock related improvements (*Utah v. Andrus*, 486 F. Supp. 995 [D. Utah 1979]).

Alkali Creek WSA

Alkali Creek WSA encompasses 10,100 acres of BLM-administered land near Hyattville, WY with a 680-acre private land inholding. This WSA is classified as elk winter range, crucial winter range for mule deer, and contains two sage-grouse strutting grounds. This WSA is also closed to motorized travel and mineral extraction and entry (Bureau of Land Management, 2017a).

Trapper Creek WSA

Trapper Creek WSA is located near Shell, WY and encompasses approximately 6,200 acres of BLM-administered land with no private or state inholdings. Trapper Creek WSA is "characterized by the dramatic vertical relief of the cliffs, spires, and massive rock outcrops of the canyon walls, as well as the presence of a clear cascading stream," and is habitat for many rare and endangered species (Bureau of Land Management, 2017h). Motorized use is limited to designated routes within the Trapper Creek WSA, except for routes within the Spanish Point Karst ACEC, which are closed to motorized use (Bureau of Land Management, 2017h).

Bobcat Draw Badlands WSA

Bobcat Draw Badlands WSA encompasses 17,150 acres of BLM-administered land and 1,390 acres of state land within the Fifteenmile HMA. This WSA is known for the *devil's garden* or arches, goblins, castles and other rock formations (Bureau of Land Management, 2017c). NPS has identified the Gooseberry Badlands and the east ridge of Fifteenmile Creek as potential National Natural Landmarks (Bureau of Land Management, 2017c).

Medicine Lodge WSA

Medicine Lodge WSA encompasses 7,740 acres of BLM-administered land outside of Hyattville, WY. This WSA includes the towering Medicine Lodge Canyon and Medicine Lodge Creek and provides crucial winter range for elk and deer (Bureau of Land Management, 2017d). Bighorn sheep may use parts of the WSA as summer range. The exposed canyon walls and Madison Limestone Formation within the Medicine Lodge WSA contain myriad fossils and provide a glimpse into the rich geological history of the area. This WSA is closed to motorized travel and mineral extraction and entry (Bureau of Land Management, 2017d).

Pryor Mountain WSA

Pryor Mountain WSA lies partially within Carbon County, MT (12,575 acres) and partially within Big Horn County, WY (4,352 acres) (Bureau of Land Management, 2017e). This WSA is located along the mid-

elevation, south-trending slopes of the Pryor Mountains along the Montana-Wyoming border. Vegetative cover types in this WSA range from Red Desert to salt shrub communities with Douglas fir and lumber pine patches. This WSA is closed to motorized travel and mineral extraction and entry (Bureau of Land Management, 2017e).

Red Butte WSA

Red Butte WSA encompasses 11,350 acres of BLM-administered land outside of Worland, WY. This WSA is categorized by wind-eroded peaks and ridges with irregular drainages. The northeastern portion of this WSA contains a series of small bench-like terraces overlooking Fivemile Creek and supporting moderately dense sagebrush-grass vegetation (Bureau of Land Management, 2017f).

Sheep Mountain WSA

Sheep Mountain WSA encompasses 23,250 acres of BLM-administered land and 640 acres of split estate land west of Basin, WY and northeast of Bobcat Draw WSA. This WSA is categorized by wind-eroded peaks and ridges with irregular drainages radiating from Sheep Mountain. This WSA has vast geological and paleontological resources and is occasionally used by wild horses. The Elk Creek, Dorsey Creek, and Dry Creek drainages are within the Sheep Mountain WSA. This WSA is closed to mineral entry and extraction and motorized travel (Bureau of Land Management, 2017)**.**

Bighorn Tack-On WSA

The Bighorn Tack-On WSA is a narrow strip of BLM-administered land in Montana and Wyoming bordering the Bighorn Canyon National Recreation Area partially located within Big Horn County, WY (80 acres) and partially within Carbon County, MT (2,470 acres) (Bureau of Land Management, 2017b). This WSA prohibits motorized travel and mineral entry and extraction.

Lands with Wilderness Characteristics

Section 201 of FLPMA requires the BLM to maintain, on a continuing basis, an inventory of all public lands and their resources and other values, which includes wilderness characteristics. It also provides that the preparation and maintenance of the inventory shall not, of itself, change or prevent change of the management or use of public lands. It does not address or affect policy related to Congressionally designated Wilderness or existing Wilderness Study Areas.

The BLM uses the land use planning process to determine how to manage lands with wilderness characteristics (LWCs) as part of the BLM's multiple-use mandate. The BLM will analyze the effects of:

- Plan alternatives on lands with wilderness characteristics, and
- Management of lands with wilderness characteristics on other resources and resource uses.

There are 20 LWCs within Big Horn County totaling approximately 211,129 acres. There are seven LWCs that fall within the county but also fall within other surrounding counties. (Bighorn Basin Local Governemnt Cooperating Agencies, 2011) LWCs within the county include:

- 005 PR
- 1535 PR
- 1539 PR
- 31 PR
- 509 AK Dorsey Ck
- 577 AK
- 651 AK
- 668 AK
- 669 AK
- Alkali Creek NW CP
- Coon Creek
- Crystal Creek
- Little Dry Creek
- Medicine Lodge North CP
- Painted Hills
- Paintrock CP 1
- Paintrock CP 2
- Red Butte North CP
- Sheep Mountain South CP
- Trout Creek
- North YU Bench (shared with Park)

- 676 AK, PR (shared with Park and Washakie)
- 639 AK (shared with Park)
- 652 Lower, Upper AK (shared with Park)
- 626 AK (shared with Washakie)
- 508 Tri-state Gooseberry N Platte (shared with Washakie)
- 509 AK (shared with Washakie)

Bighorn Canyon National Recreation Area

The Bighorn Canyon National Recreation Area was established by Congress October 15, 1966 and encompasses approximately 120,000 acres, with 68,000 acres along the Bighorn River in northern Big Horn County (National Park Service, 2019). The entirety of the 12,700 acres of Bighorn Lake is managed by the BOR. It lies within the NPS-managed the Bighorn Canyon National Recreation Area. Bighorn Lake offers multiple visitor recreation opportunities including boating, waterskiing, fishing, scuba diving, camping, and hiking. A portion of the Crow Indian Reservation also lies within the Bighorn Canyon National Recreation Area (National Park Service, 2019).

Medicine Lodge State Park Archaeological Site

The Medicine Lodge State Park Archaeological Site is located approximately 6 miles northeast of Hyattville, Wyoming. This site is situated just east of the Bighorn National Forest. The Medicine Lodge Archaeological Site is open seasonally in the spring and summer with visitor amenities including campgrounds, picnic areas, and restrooms. Access to the site is via a 1.5 mile gravel hiking trail; motorized vehicle access is prohibited except for visitors with disabilities (Hein, 2014).

Research Natural Areas

Research Natural Areas (RNAs) are permanently established areas on USFS lands that maintain areas of natural ecosystems and areas of special ecological significance. RNAs serve as benchmarks for monitoring and evaluating the impacts of land management practices on lands with similar ecosystems, these areas provide sites for research into how ecosystems function, particularly in areas where ecological and evolutionary processes are functioning in a relatively natural state. RNAs provide protection for biological diversity. Acres within established RNAs are removed from the suitable timber base making timber harvest and fuel reduction treatments inappropriate. RNA requirements can be more restrictive than those for wilderness designation. There is one RNA within Big Horn County. (USFS, n.d.-d)

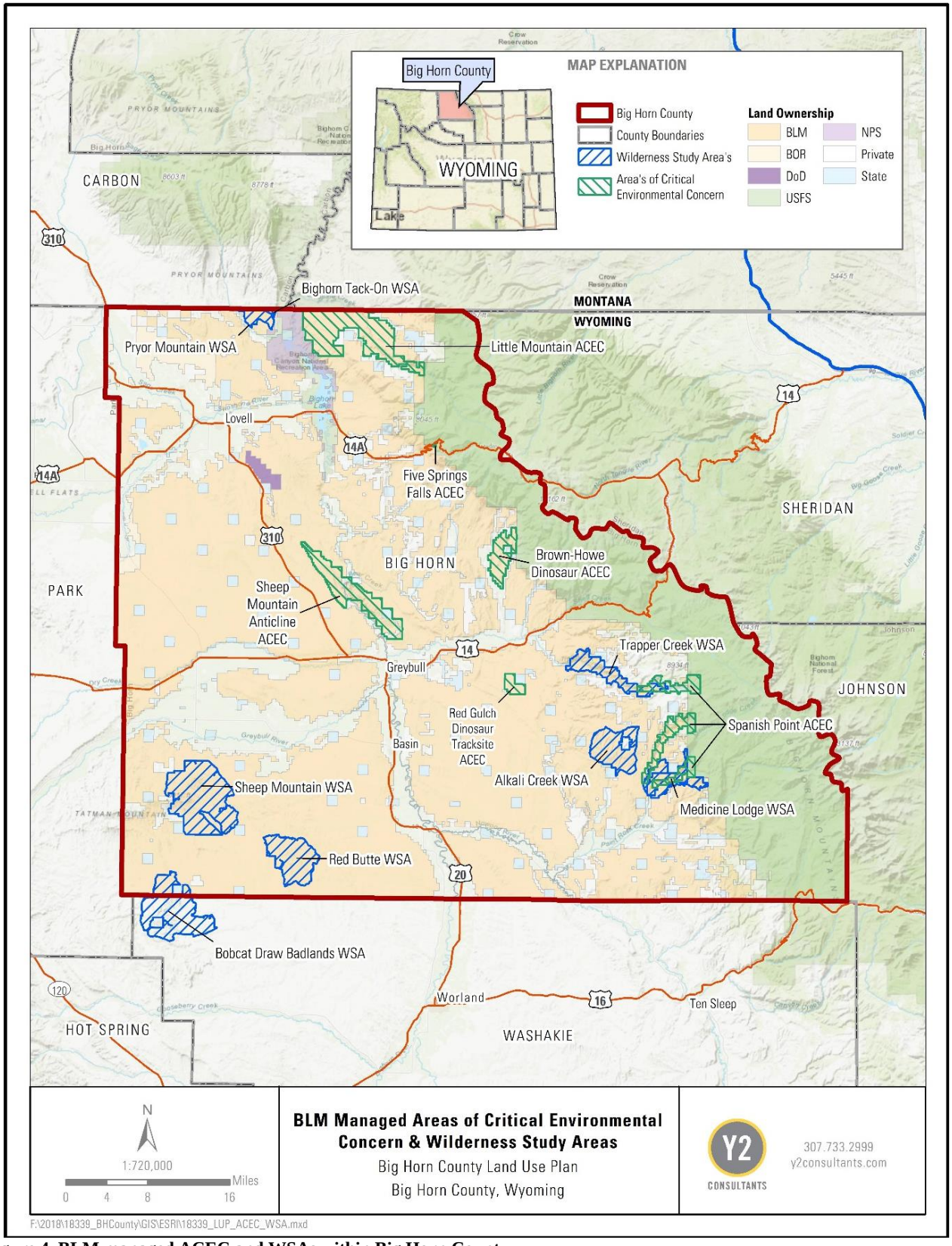


Figure 4. BLM managed ACEC and WSAs within Big Horn County.

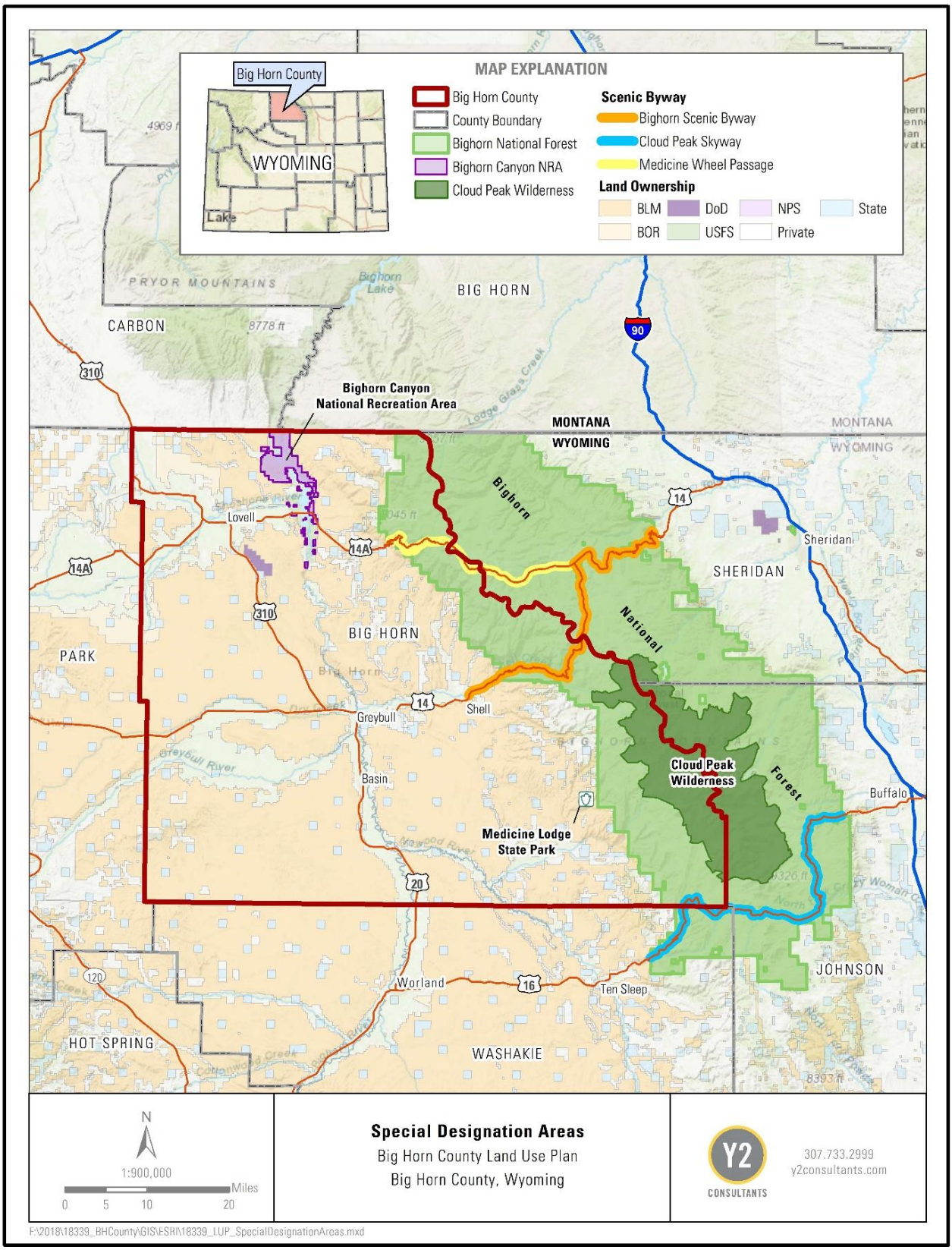


Figure 5. Special Designation Areas within Big Horn County.

Bighorn National Forest

The Bighorn National Forest, established in 1897, is located along the eastern border of Bighorn County and continues into Sheridan and Johnson counties (US Forest Service, 2019). The Bighorn National Forest is subdivided into 3 Ranger Districts: The Tongue River Ranger District is based out of Sheridan, the Powder River Ranger District is based out of Buffalo, and the Medicine Wheel Ranger District is based out of Greybull, Wyoming. The Forest boundary encompasses 1,115,161 acres of federally protected land, with 351,168 acres within Big Horn County (Hein, 2014). The Bighorn National Forest provides recreation and scenic opportunities for the residents of Big Horn and neighboring counties.

NFMA requires that each national forest and grassland be governed by a management plan. The Bighorn National Forest Land and Resource Management Plan was revised in 2005 in accordance with federal statutes (US Forest Service, 2019). Big Horn County participated with the Bighorn National Forest during the plan revision and continues to participate twice a year on a Steering Committee. The Steering Committee has been recognized by the USFS Regional Forester in April 2019 for creating and maintaining resilient landscapes and as a model for effective collaboration. The USFS lands, as well as any forested lands managed by the BLM, within Big Horn County shall be managed and administered for multiple-use and sustained-yield in perpetuity so that future generations will have the opportunity to benefit from, use, and enjoy them as directed in NFMA.

Inventoried Roadless Areas

Inventoried Roadless Areas (IRA) are portions of National Forest that were identified in the USFS 2001 Roadless Area Conservation FEIS as lands without roads that are worthy of protection. Construction and reconstruction of roads is prohibited in roadless areas unless the USFS determines the road is necessary to protect public health and safety or otherwise meets one of the exceptions listed in the rule. These lands are to be periodically evaluated for potential designation as wilderness based on the availability, capability, and need for these areas to be designated as such. Characteristics of roadless areas include things such as natural landscapes, high scenic quality, and traditional cultural properties. To help preserve the characteristics of Roadless Areas, logging is greatly restricted. Figure 6 below shows the IRAs within the Bighorn National Forest.

In 2017 the Bighorn Forest Roadless Collaborative provided recommendation to address the inconsistencies between the Roadless Rule and Forest Plan regarding roadless designations. The collaborative worked together as local members and advisors on a steering committee. The USFS and the Wyoming Governor's office participated in a support role in the Collaborative but were not voting members.

The Collaborative developed a shared understanding that the 2001 Roadless Area Conservation Rule (RACR) inventoried areas were very crudely drawn and were based on outdated USFS data from 1979 Rare II data.

The Collaborative reviewed each parcel that was in conflict between the 2001 RACR and 2005 IRA Forest Plan and developed a shared agreement of the on-the-ground conditions for each parcel. The areas that the Collaborative's inventory proposed for removal from the 2001 RACR inventory were acres that were not truly roadless; they either (1) represent outdated USFS mapping or an incomplete inventory, (2) contained Forest System roads, or (3) contain previous timber harvests. The Collaborative forwarded recommendations for revised roadless designations to the Governor's office based on this analysis.

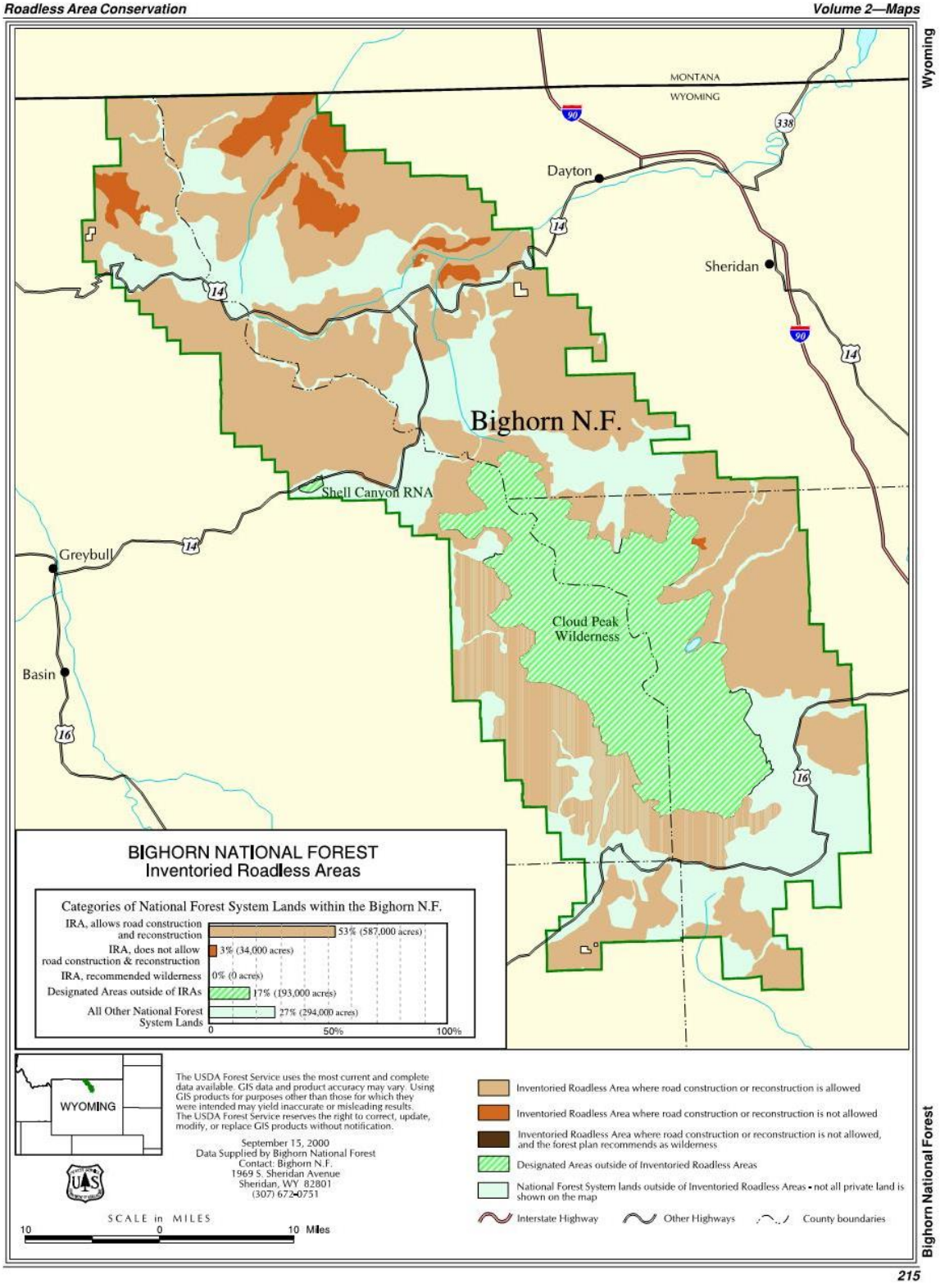


Figure 6. Inventoried roadless areas on the Bighorn National Forest.

Cloud Peak Wilderness

The Cloud Peak Wilderness lies within the Bighorn National Forest. Motorized and mechanized use is not allowed, meaning access is only possible via foot or horseback. The Cloud Peak Wilderness encompasses approximately 189,000 acres (USFS, n.d.-a).

Bighorn Scenic Byway

Also known as US Route 14 in Wyoming, the Bighorn Scenic Byway crosses the Bighorn National Forest just north of the Cloud Peak Wilderness Area (USFS, n.d.-c)

Bucking Mule Falls National Recreation Trail

The Bucking Mules Falls Trail is a five-mile hike-in hike-out recreation trail for hikers and horse riding. The trail is located approximately 35 miles east of Lovell.

Medicine Wheel Passage

Also known as US Highway 14A, the Medicine Wheel passage runs adjacent to the Medicine Wheel National Historic landmark. The Medicine Wheel Passage connects to the Bighorn Scenic Byway at its eastern edge (USFS, n.d.-c). For additional management information review the Medicine Wheel HPP and Addendum (Grant, 2011; Medicine Wheel Ranger District & USFS, 1996).

Cloud Peak Skyway

Also known as US Route 16 in Wyoming, the Cloud Peak Skyway crosses the Powder River Pass, the highest pass in the forest at just over 9,600 ft within the southern section of the Bighorn National Forest (USFS, n.d.-c).

Medicine Wheel/ Medicine Mountain National Historic Landmark

The only National Historic Landmark (NHL) in Big Horn County is the Medicine Wheel/ Medicine Mountain NHL. This NHL is 4,080 acres spanning natural formations and vistas recognized as cultural features and archeological sites including the largest stone medicine wheel in North America. The Medicine Wheel/ Medicine Mountain NHL is managed by the BHNF under the Historic Preservation Plan signed by Medicine Wheel Alliance, Medicine Wheel Coalition, Big Horn County commissioners, Bighorn National Forest, Federal Aviation Administration, Wyoming State Historic Preservation Office, and the Secretary of Interior's Advisory Council on Historic Preservation. This landmark is located 25 miles east of Lovell and 46 miles west of Sheridan. (U.S. Forest Service, n.d.-b)

Resource Management Objectives:

A. Management and designation of lands with wilderness characteristics are coordinated with Big Horn County, to ensure consistency with the BHC NRMP.
B. Designations of land as Areas of Critical Environmental Concern (ACECs), Wild and Scenic Rivers, National Monuments, Wilderness and Wilderness Study Areas (WSAs), and Lands with Wilderness Characteristics (LWC's) are not supported.

Priorities:

1. Ensure that federal agencies responsible for making wilderness recommendations to Congress comply with their respective coordination mandates when making wilderness determinations and developing wilderness inventories.
2. Fully exercise the County's rights to coordination and cooperating agency status with the proposal of any ACEC on land managed by the BLM, in accordance with FLPMA.
3. Areas not designated as wilderness should not be managed for wilderness characteristics. Management for wilderness should follow all federal agency data handbooks.
4. Restriction or elimination of customary uses on proposed or existing national monuments is not supported. The multiple-use sustained yield character of federal lands is crucial for the economic welfare and enjoyment of Big Horn County citizens and visitors.

5. Future special designations, including those identified in the National Landscape Conservation System Act as revised in 2009, are opposed unless agreed to by the County. These include, but are not limited to national monuments, national conservation areas, wilderness study areas, wilderness areas, lands with wilderness characteristics, national scenic trails or components of the National Trails System, components of the National Wild and Scenic Rivers System, and components of the National Wilderness Preservation System.
6. Proposals for ACEC designations shall strictly adhere to the relevance and importance criteria, and the BLM must demonstrate, using credible data, the need for an ACEC designation to protect the area in question and prevent irreparable damage to resources or natural systems.
7. Ensure that decisions regarding Wilderness Study Area designation by Congress are expedited to achieve a decision within 2 years from proposal of the designation. Wilderness Study Areas not designated by Congress as "wilderness" shall be promptly returned to "multiple-use sustained yield" status.
8. Management of special designation areas shall be coordinated with the County and consistent to the maximum degree with the BHC NRMP.
9. Big Horn County supports the Medicine Wheel Historic Preservation Plan (HPP) and the Addendum requiring consensus of the participating parties to these agreements for any changes of management of the Medicine Wheel.
10. Big Horn County believes the FAA radar dome and associated telecommunication towers on Medicine Mountain are vital to public safety and national security.
11. Support the use of herbicides to control noxious weeds in wilderness areas.
12. Support no net loss of private lands in the County through land exchange or other mechanisms.

2.4 WILDFIRE SUPPRESSION, FUELS MANAGEMENT, FIRE REHABILITATION AND COMMUNITY WILDFIRE PLANNING

History, Custom, and Culture

Wildfire is defined as an unplanned, unwanted fire that spreads rapidly and is difficult to extinguish. This includes accidental human-caused fires, unauthorized human-caused fires, escaped fires used as a management tool, and naturally occurring fires. Wildfires have had catastrophic effects in Big Horn County, including severely damaging the County watershed, timber, grazing lands, wildlife habitat, and recreational activities that rely on healthy forests and rangelands (Figure 7).

Resource Assessment and Legal Framework

Proactive planning for response to a wildland fire event is critical to the protection of Big Horn County; its citizen's health, safety, welfare, and private property; and forest and rangeland health. A high degree of coordination between federal, state, and local agencies is necessary for maximal prevention and suppression of wildfire.

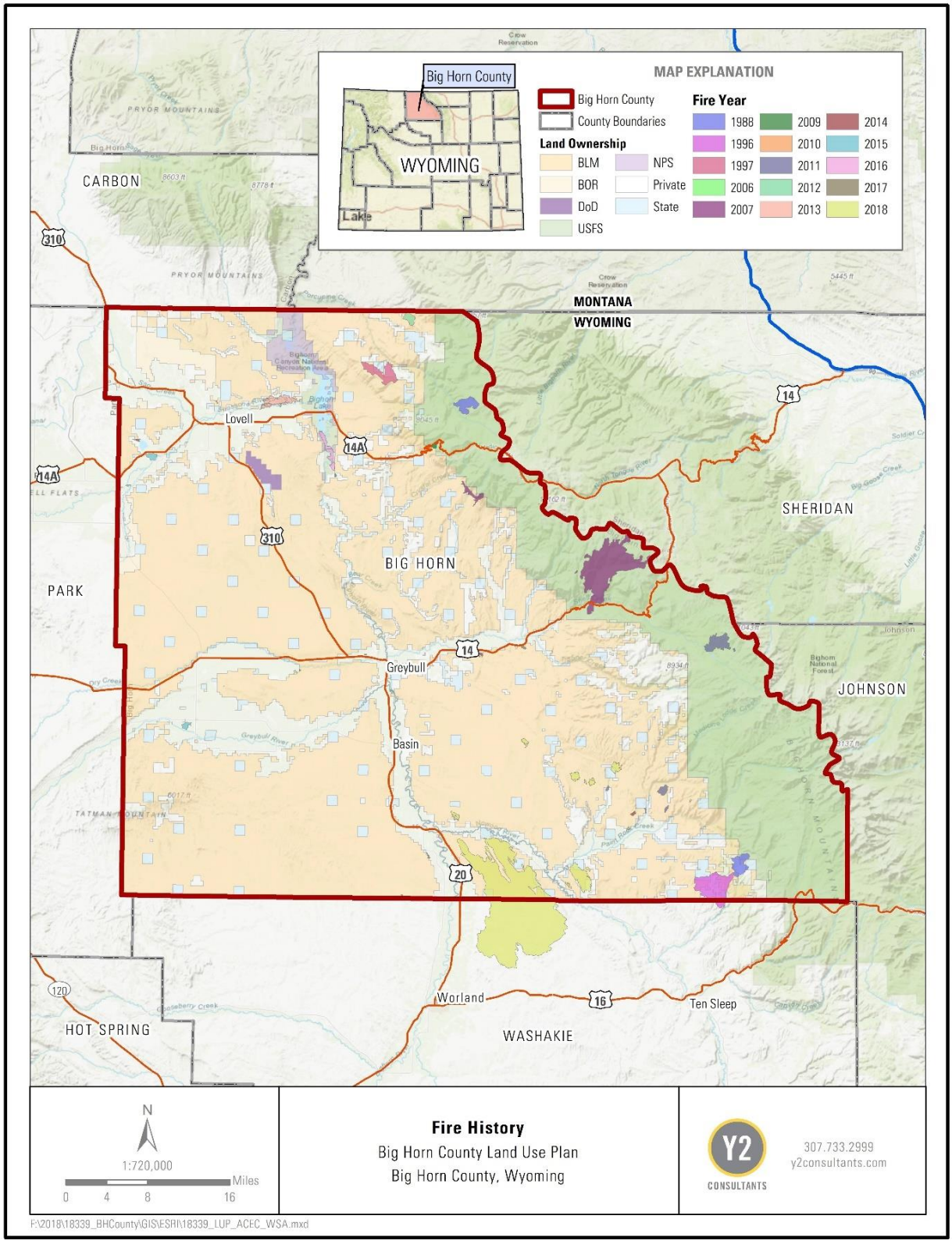


Figure 7. Wildfires Within Big Horn County 2006-2019.

Resource Management Objective:

A. Wildfire, fuels, and fire rehabilitation are managed promptly and effectively using credible data, as defined above, in coordination with the County.

Priorities:

1. Federal agencies shall coordinate with local fire agencies. The USFS shall adhere to all requirements set forth in the Cooperative Forestry Assistance Act *16 USC §2106*, including:
    i. The effective cooperative relationships between the Secretary of Agriculture and the states regarding fire prevention and control on rural lands and in rural communities shall be retained and improved;
    ii. Efforts in fire prevention and control in rural areas shall be coordinated among federal, state and local agencies;
    iii. In addition to providing assistance to state and local rural fire prevention and control programs, the Secretary shall provide prompt and adequate assistance whenever a rural fire emergency overwhelms or threatens to overwhelm the firefighting capability of the affected state and rural area.
2. Federal agencies shall incorporate local fire association plans into their fire suppression and control plans and will support efforts of local fire departments in wildfire suppression activities.
3. Fire suppression efforts will be maximized through full coordination, communication, and cooperation between federal, state, and local fire-suppression units.
4. Support the development of a Master Good Neighbor Agreement between federal, state and local fire-suppression units.
5. In the event that grazing on federal lands is temporarily suspended due to fire, recommence grazing on the basis of monitoring and site-specific rangeland health determinations rather than solely on fixed timelines. Monitoring must occur within two years of the closure. Return livestock grazing to pre-fire levels when post-fire monitoring data shows established objectives have been met or have been achieved to an extent allowed by the site potential. Require the use of credible data as previously defined to make these determinations.
6. Coordinate with other agencies to implement insecticide and herbicide treatments, livestock grazing, biomass fuel removal, slash pile burning, and prescribed burning as fire control tools.
7. Support and encourage temporary fire restrictions based on fire hazard designations to minimize the potential for human caused wildfires. Restrictions will be removed as soon as it is safe for work and recreation on federal lands.
8. Rehabilitate forests and rangelands damaged by wildfires as soon as possible for habitat and wildlife to reduce the potential for erosion and introduction of invasive or noxious weeds.
9. Encourage the use of the authorities granted under the Healthy Forests Restoration Act, Healthy Forests Initiative and Good Neighbor Authority to expedite cross-boundary/agency planning, collaboration processes and project implementation to economically and efficiently treat and protect the resources of Big Horn County.
10. Support the Department of Interior's Secretarial Order 3336-Rangeland Fire Prevention, Management, and Restoration and require the BLM to comply with the order and all subsequent revisions, reports and instructional memos.
11. Use the BLM document *Earning Bridges: Strategies for Effective Community Relations Before, During and After Fire* to improve coordination between the BLM, state, Big Horn County local fire associations and local stakeholders.
12. Oppose prescribed burns on federal lands, unless other management methods are not available. The County's preferred methods for land management are herbicide application, logging, thinning, chaining and increased livestock grazing.
13. Support the management of non-native and noxious weeds after wildland fire events using tools including (but not limited to) livestock grazing; chemical, and other mechanical control that

promote ecosystem health and as a management tool for vegetation manipulation; and fuels reduction for all federal lands. Prioritize the control of newly discovered noxious weeds.

14. Support the use of ongoing research and experimental options for developing new and alternative treatments for the management of non-native noxious weeds after wildland fire events.
15. Conduct surveys of lands affected by fire in a timely manner following a fire to identify noxious weed presence.
16. Consultation and coordination with Big Horn County is expected on proposed changes and updates to the Fire Management Plans on federal lands.
17. Allow for adaptive grazing management practices and include them in term permits to allow for flexible management practices that will decrease fuel loads on the landscape particularly in areas with heavy grass understory.
18. Post-fire objectives shall be consistent with site potential as defined in approved Desired Future Conditions or Ecological Site Descriptions. Require the use of credible data as previously defined to make these determinations.
19. Grazing rest prescriptions related to either wildfires or prescribed burns will be determined on a site-specific basis. Post fire grazing will not be limited when scientific post fire monitoring and evaluation produces relevant, accurate data demonstrating that grazing will not unduly harm the range.
20. Promote the prompt rehabilitation of harvested areas and areas affected by wildfire, including salvage logging operations.

2.5 FOREST MANAGEMENT

History, Custom, and Culture

The beneficial use of forest natural resources has always been a part of Big Horn County's economy, customs, and culture. Early citizens relied on forest resources for timber for buildings, corrals, fences, and fuel. Logging occurred through the years on both federal and private lands. Big Horn County recognizes that historic logging took place within the County as part of a historic stable timber-harvesting program. A healthy forest ecosystem provides employment and economic benefit for individuals and businesses in the county.

The Bighorn National Forest was established in 1897 and has been managed by the Forest Service since. Timber harvesting within the County historically paid for the maintenance of forest roads and allowed more public access and multiple use of the forests. Currently, the main harvesting of forest products within the County are commercial timber harvest, firewood, posts and poles, and Christmas trees. A number of commercial timber sale contracts have been issued and fuels mitigation projects in the wildland urban interface are being conducted.

Resource Assessment and Legal Framework

Over-mature, over stocked, and stagnant conifer forests with extensive ladder fuels create wildfire risk in untreated forests. These stressed trees are subject to insects, disease, and fire, and may have a negative impact on carbon sequestration. A forest management policy of no action could have negative effects on Big Horn County resources.

Resource Management Objective:

A. Manage forests sustainably under multiple-use, promoting the timber industry, grazing, fuels management, and fire rehabilitation in coordination with the County. Manage forest resources with the benefit of the economy of the communities and recreational availability within the County in mind.

Priorities:

1. Encourage policies that support the timber industry to allow for the timber industry's continued economic benefit to the citizens of Big Horn County.
2. Forest management shall follow the mandates of the OAA and adhere to MUSY, as well as the NFMA, NEPA, and the ESA.
3. Roads on USFS and BLM lands shall remain open to provide for the economic benefit, use, and safety of the public. Where road closures are proposed, specific justification for the proposal shall be given on a case-by-case basis, and the proposal shall be discussed in coordination with Big Horn County.
4. Forest management shall support a coordinated timber harvesting and thinning method to promote forest health, reduce disease and insect infestation, reduce wildfire impacts, and prevent waste of forest products while supporting the economy of Big Horn County for future generations.
5. Utilize livestock grazing and fuels management programs to promote forest health and reduce wildfire risk (see Section 2.4).
6. All dead trees shall be promptly harvested before additional loss of economic value occurs. The county encourages the use of Categorical Exclusions to accomplish this.
7. Promote the prompt rehabilitation of harvested areas and areas affected by wildfire, including salvage logging operations, when not in conflict with federal law.
8. Wood burning is needed for the health, safety, and welfare of the County's citizens and shall be maintained as an acceptable practice.
9. The County supports federal Payments in Lieu of Taxes (PILT) to Big Horn County.
10. Access to forest products such as timber, fuel, building materials, and Christmas trees shall be ongoing. Access to these sites shall be through an open roads and cross-country travel system constructed using best management practices for roads.
11. Big Horn County supports and may participate in improving rangeland health to accomplish the 2005 Forest Plan statements and goals.

CHAPTER 3: GEOLOGY, MINING, AND AIR

3.1 COAL, MINING, & MINERAL RESOURCES

History, Custom, and Culture

Mineral production, namely crude oil and locatable minerals has been part of Big Horn County's culture for over 100 years. Mining is one of the historical uses of federally managed lands, predating the establishment of the USFS and BLM. Maintenance of such use is statutorily compatible with multiple use principles. Big Horn County contains some of the largest deposits of bentonite and gypsum in Wyoming. Bentonite and gypsum production have provided an important contribution to the economy. Bentonite production is a large corner of industry in Big Horn County and provides jobs to hundreds of people throughout the region. This industry serves a crucial role in the production of oil and gas and as such is symbiotic with the development of the County.

Production of minerals, and associated economic and cultural activity, have historically waxed and waned with demand and pricing, but mining remains the most significant portion of Big Horn County's tax base. In 2017, the assessed value of Oil and Gas and Minerals totaled $89,966,903. The mining industry makes up an important part of the property tax base of Big Horn County and the payrolls and expenditures for equipment, materials, and supplies are important to the economic stability of the County. The 2017 Mineral Production taxable valuation on production (Wyoming Taxpayer Association, 2017) listed crude oil production of 1,355,749 barrels and gas production of 1,292,084 thousand standard cubic feet. This contrasts with 2016 values for oil and gas of 1,393,367 barrels and 1,314,847 thousand standard cubic feet. The total value of bentonite production was $34,552,261 and represented 51.9% percent of all bentonite sold in Wyoming in 2017 (State of Wyoming, 2018). Bentonite production was up from 2016 where a valuation of $31,838,563 was noted (Wyoming Taxpayer Association, 2017). Total Mineral Valuation for the County was $75,687,266 in 2016, compared to $89,966,903 in 2017 (Wyoming Taxpayer Association, 2017).

Resource Assessment and Legal Framework

Wyoming leads the nation in the production of bentonite, and the County supports the production of all minerals in an environmentally responsible manner by providing infrastructure and services such as roads, bridges, medical services, and law enforcement. The existing governmental regulatory process has limited development due to complicated regulations between local and state authorities. Entities such as the WOGCC, BLM, USFS, and WYDEQ are critical to the development of hydrocarbon reserves but can potentially hinder the development of these resources. Improved relations with these agencies are a crucial element for increasing access to new reserves. To secure economic longevity and prosperity of the County, these challenges and interface issues need to be streamlined. Big Horn County will endeavor to enhance and streamline coordination with all agencies involved in the regulatory process of mineral extraction as provided for by federal and state law.

Figure 8: Bentonite mining line.

The Congressional Act of July 26, 1866 and the General Mining Act of 1872 granted all American citizens the right to go into the public domain to prospect for and develop minerals. Every mining law or act enacted since then has contained a "savings clause" that guarantees that the originally granted rights will not be rescinded. These laws are applicable in Big Horn County. Big Horn County's policies for mineral development are structured to increase the exploration, development, and production of mineral and energy resources within the political jurisdiction of the County. Primary objectives of the County are to establish partnerships with mineral industries and federal agencies, to increase and share knowledge of the mineral estate, and to develop and foster trust among partners. Through these relationships, the County plans to encourage development of mineral and energy production countywide.

Resource Management Objective:

A. Big Horn County supports and encourages the extraction of oil, gas, bentonite, gypsum, silica sand, rare earth metals, and all other minerals within the County. The County asserts its right to be a part of any regulatory process which impacts its cultural and economic stability.

Priorities:

1. Support streamlining the permitting process for new activities within Big Horn County to allow for more exploratory drilling and mining with improved access to reserves.
2. Support consideration of all lands within the political jurisdiction of Big Horn County open to mineral exploration and extraction unless specifically precluded by federal, state, or local law.
3. Decisions to close lands to mineral exploration or extraction shall be coordinated with the County prior to closure to consider the impact such closure will have on the County's economic viability and resolve potential conflicts with County plans and policies, as required by federal and state law.
4. Require that "public lands will be managed in a manner which recognizes the Nation's need for domestic sources of minerals, food, timber, and fiber from the public lands, including implementation of the Mining and Minerals Policy Act of 1970," as stated in FLPMA.
5. Require regular (where regular is defined as not less than bi-monthly) updates on the permit status for current and proposed projects within the County's jurisdiction and support reasonable timelines and explanations for issuance of delays from permitting agencies.
6. Local, state, and federal land use and management plans shall contain a thorough discussion and evaluation of energy and mineral development, including the implications such development may have on surface land uses and the County economy. Additionally, all plans must demonstrate an

understanding of the County's plans and policies and resolve any conflicts or inconsistencies with the County's plans. Should the agency believe that resolving the conflict or inconsistency violate federal law, the agency shall cite to the law that would be violated and provide an explanation as to why the plan cannot be consistent.

7. All exploration, development, and mining on federal lands in the County with mineral or energy potential shall be governed by adherence to all laws which pertain to mining and energy development and production, including but not limited to the General Mining Law of 1872, as amended, and FLPMA and 43 CFR 3809.
8. All lands not lawfully withdrawn from mineral exploration and development shall remain available for their designated use. These lands should be developed in an orderly manner to accommodate exploration, development, and production. These activities will be performed in a manner consistent with the Mining and Mineral Policy Act of 1970.
9. State, federal, and County agencies shall protect the rights of access, occupation, and property of anyone prospecting and/or developing minerals within Big Horn County as required by federal and state law.
10. Access for prospecting, development, processing, and mining of mineral resources must remain open. Any closures shall be coordinated with the County.
11. Integrate mineral resources programs and activities with the planning and management of renewable resources through the Land and Resource Management planning process to ensure efficient policies are implemented.
12. Encourage simultaneous or sequential mineral development with other resource uses in accordance with multiple use management principles in Big Horn County, giving precedence to established mineral rights in the development coordination process.
13. Encourage mining reclamation to use best management practices (BMPs) instead of requiring restoration to as near the same condition as original. Consider nonnative seeding where beneficial. Mining reclamation and restoration in special designation areas would be considered on a case by case basis.
14. Encourage federal agencies to approve oil and gas leases in a timely manner.
15. Encourage justification in deferring lease applications.
16. Release rehabilitation bonds in a timely manner (i.e., two years after reclamation).

3.2 ENERGY RESOURCES

Oil and Gas

History, Custom, and Culture

Oil and gas production have contributed greatly to Big Horn County's taxable income for over 100 years. In the late 1970s, overall production decreased, negatively impacting County revenue. This is illustrated in trending of countywide production records from the Wyoming Oil and Gas Conservation Commission (WOGCC) (Figure 9 and Figure 10).

Decreased production of oil and gas in Big Horn County has been the result of a series of factors. Extraction of hydrocarbons is dependent on the economic and regulatory feasibility of the reservoir and the location from which they are produced. Throughout the County, fields have been abandoned due to short production lives. Many of these fields could potentially go back into production using enhanced oil recovery methods. Additional permitting requirements from the Wyoming Department of Environmental Quality (WYDEQ) and WOGCC for development on state and federal lands have limited development and expansion of fields. In 2016, the WOGCC implemented several new rules that require additional groundwater sampling, gas flaring monitoring, and changes to production setbacks (Watson & Supervisor, 2016). Proposed changes from WYDEQ include monitoring for fugitive emissions and reduction in allowable fugitive emissions (Scott, 2018). Additional limitations exist in the existing production infrastructure. Production

infrastructure in many portions of the County needs to be refurbished to allow for further production. The cost viability of refurbishment is dependent on the economic viability of the field being produced.

In the past decade there have been developments in secondary and tertiary production methods that have made previously depleted fields economically feasible to re-produce and re-complete. From these advances there has been an increase in statewide oil production in the past decade. Conversely, overall natural gas production has declined. The County has seen decreasing trends in overall oil and gas production over the past 30 years. This decline in growth is tied to existing economic conditions at the County, state, and national levels.

Wyoming Oil Production for 1978-2018

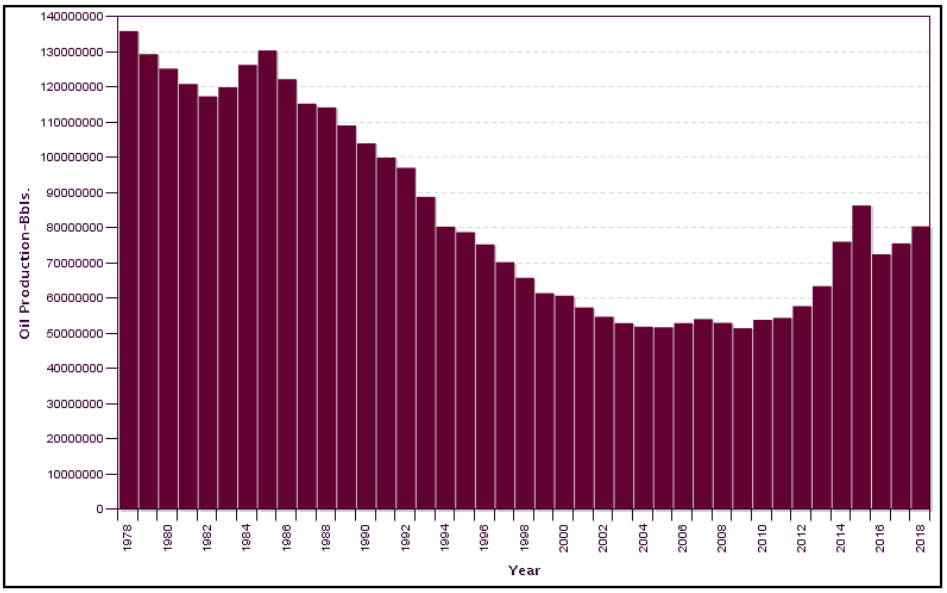


Figure 9: State of Wyoming Oil Production Trends (1978-2018). (WOGCC, n.d.-a)

It is known that substantial reserves of crude oil and natural gas are present in the County. The County's objective is to reverse declining oil and gas production by reducing lease restrictions and land withdrawals. This is intended to create a climate where the use of new technological advancements on existing production leases within the County is encouraged. Advancements in production methods are now more environmentally conscious and strive to mitigate environmental impact on the production area.

Wyoming Gas Production for 1978-2018

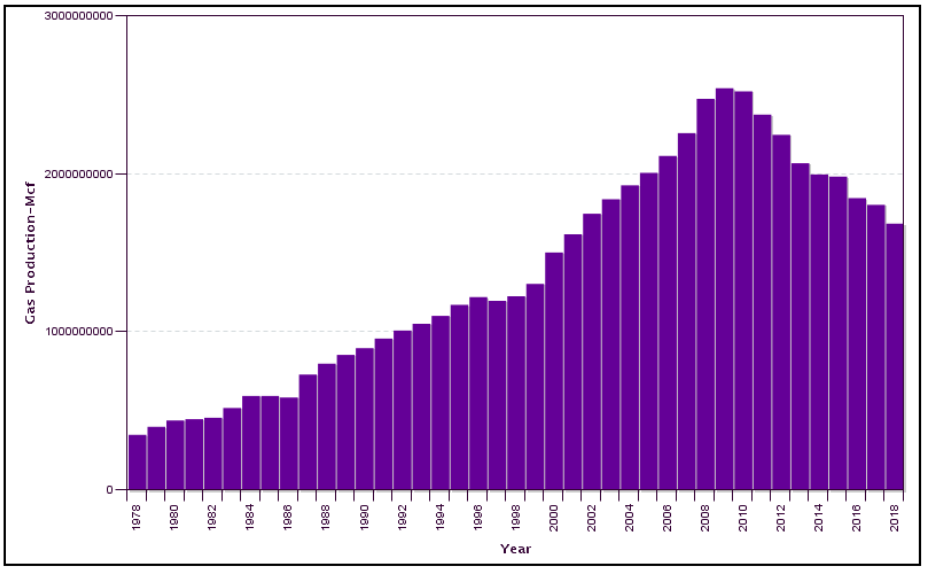


Figure 10: State of Wyoming Gas Production Trends (1978-2018). (WOGCC, n.d.-b)

Resource Assessment and Legal Framework

The extraction of oil and natural gas from deposits is accomplished in three central phases of recovery: primary, secondary and enhanced or tertiary recovery. Primary recovery relies on initial underground pressure to drive the product to the surface. As pressure falls, artificial lift technologies are used to bring the product to the surface. Occasionally the need for artificial lift is eliminated in the case of the artesian, or over-pressured, reservoir. Typically, only 10% of a reservoir's original oil in place is produced through primary recovery. Secondary recovery methods, such as water or gas injection, can extend a field's productive life and result in the extraction of an additional 20-40% of the original oil in place. Enhanced oil recovery techniques offer the potential to produce 30-60% more oil. These techniques include thermal recovery, hydraulic fracturing, gas injection, or chemical flooding.

The production of gas is similar to that of oil. The primary phase of production is driven by initial reservoir pressure and decreases as this pressure and reserves in place are reduced. The production of gas can be augmented in a manner similar to that of oil. Enhanced or tertiary recovery of gas can be further augmented through the utilization of fracturing and other stimulation methods. Enhanced recovery methods are limited by costs and unpredictable effectiveness. These methods have improved drastically over the past decade allowing for more cost-effective and efficient recovery.

The Mineral Leasing Act of 1920, as amended, and the Mineral Leasing Act for Acquired Lands of 1947, as amended, give the BLM responsibility for oil and gas leasing on BLM, USFS, and other federal lands, and on private lands where mineral rights have been retained by the federal government (split estates). The BLM is a multiple use agency and must balance the development of mineral resources in the best interest of the country. The BLM must manage for uses like livestock grazing, recreation, and development and conservation of wildlife habitat. The USFS regulates all surface-disturbing activities on USFS land, (30 U.S. Code § 226 (g)). The USFS is the lead agency applying stipulations on leasing of USFS land conducts environmental analysis for leasing and permitting activities on these lands.

Resource Management Objective:

A. Big Horn County supports and encourages the extraction of oil and gas within the County. The County asserts its right to be a part of any regulatory process which impacts its cultural and economic stability.

Priorities:

1. Support streamlining the permitting process for new drilling activities within Big Horn County to allow for more exploratory drilling and improved access to reserves.
2. Pursue opportunities to encourage the nomination of more leases for sale.
3. Pursue leasing opportunities on all lands not legally withdrawn from sale.
4. Prioritize approval of secondary and enhanced (tertiary) recovery methods where possible (e.g., fluid, gas and steam injection) to extend the production life of a field, while maintaining air quality and available water for agricultural and domestic use.
5. Encourage advanced production techniques to improve access to reserves in place.
6. Encourage coordination among the various federal agencies to facilitate hydrocarbon production permits in a timely manner, as prescribed in federal law.
7. Support the use of enhanced oil recovery and the infrastructure (e.g., carbon dioxide pipelines, processing plants, steam flood facilities).
8. Support the utilization of enhanced production techniques and the development of infrastructure to provide material supply and support to ensure further development throughout Big Horn County.

Renewable Energy

History, Custom, and Culture

Big Horn County does not have an extensive history or culture associated with renewable energy. The County understands that the development of renewable energy is a component of energy infrastructure development. Wyoming does not have a renewable portfolio standard goal to generate a certain amount of the state's electricity from renewable energy (National Conference of State Legislatures, 2019).

Resource Assessment and Legal Framework

New development of renewable energy in the County will be considered on the basis of expanding existing available energy infrastructure (American Energy Independence, 2017).

Resource Management Objective:

A. Big Horn County supports the development of renewable energy resources so long as it does not restrict the development of other energy resources.

Priorities:

1. Consider the development of renewable energy in coordination with the County and stakeholders.
2. Support renewable energy as a means to further develop energy infrastructure and energy independence without encumbering the underlying mineral estate.
3. Reclamation must be planned before projects are approved.
4. Renewable energy should be a lower priority than other multiple uses in the County.
5. Encourage renewable development to be directed to previously disturbed sites (i.e., gravel pits, oil and gas well pads) where feasible.

Pipelines

History, Custom, and Culture

Due to the development of oil and gas within Big Horn County there has been significant development of oil and gas transmission pipelines throughout the County, primarily along the north-south axis. These pipelines are confined to a central corridor within the County. The development of pipelines in the area began in the early 1900s. The County has long been a proponent of pipeline development throughout Big Horn County. Most of the paths for these pipelines were developed as part of early utility corridor development in the County (Figure 11 and Figure 12).

Resource Assessment and Legal Framework

Pipeline infrastructure plays a crucial role in the development and transmission of hydrocarbons at the national, state, and County levels. It is crucial that these avenues for transmission are allowed to thrive and develop within Big Horn County. Pipelines offer a safe and effective means for delivering large amounts of hydrocarbons across extended distances with minimal risk for spills (Global Energy Institute, 2013).

Resource Management Objective:

A. Big Horn County supports and encourages the development of pipelines within the County.

Priorities:

1. Support the development and improvement of future and existing pipeline infrastructure for the transmission of materials in and through Big Horn County when it will not affect pre-existing uses or rights.
2. The County supports streamlined decisions regarding pipelines so long as it does not harm pre-existing uses or rights.
3. Encourage pipeline development to be in the most direct path regardless of land ownership, with a preference to placement on federal lands.

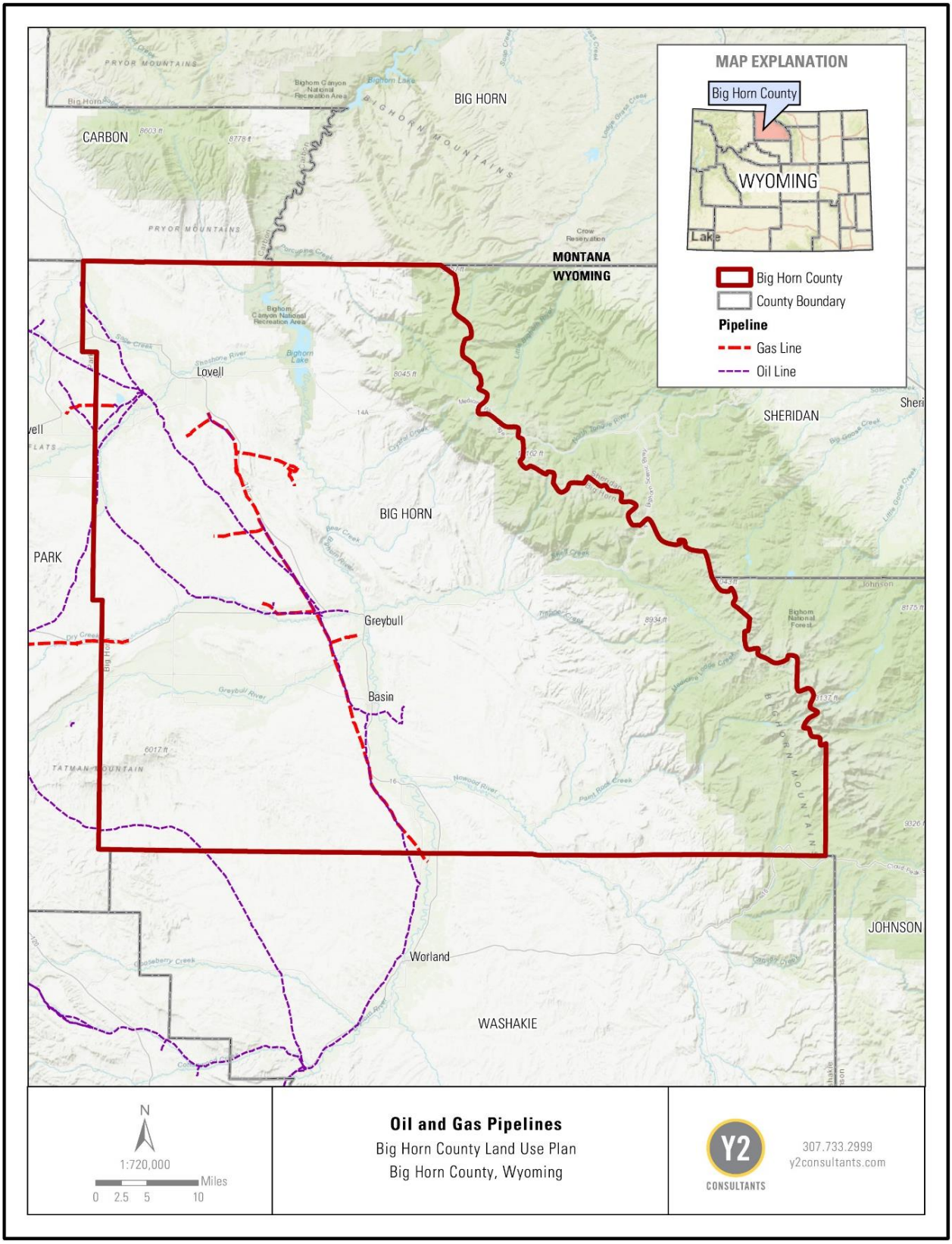


Figure 11. Oil and gas pipelines within Big Horn County.

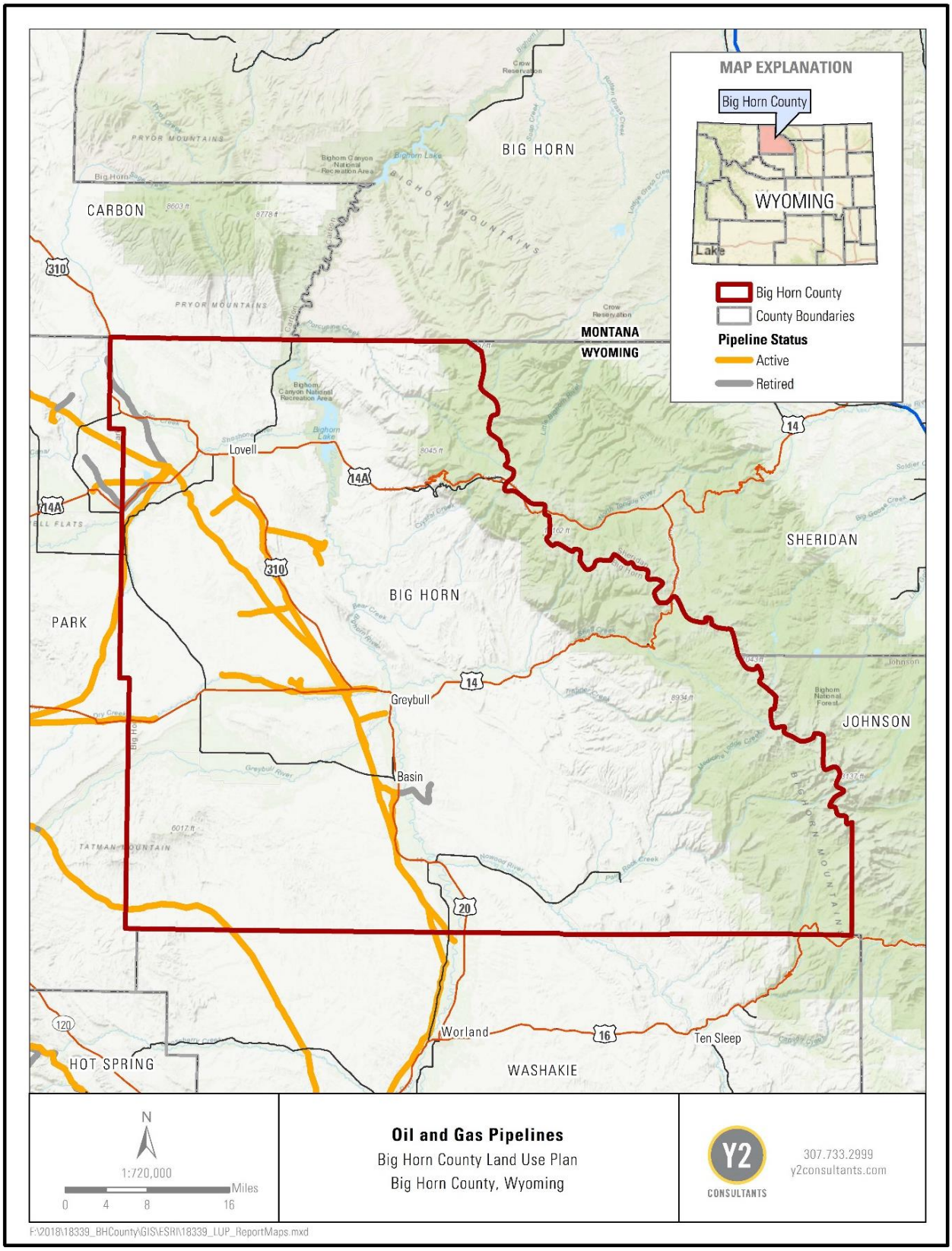


Figure 12. Active and Retired Oil and Gas Pipelines within Big Horn County.

3.3 AIR QUALITY

History, Custom, and Culture

Clean air in the County is important to citizens and visitors. Wildfires burning on federal lands can create air quality issues in the summer and fall. Dust from roads and rangelands can negatively impact air quality, mostly during drought conditions. Clean air is key to people living in this county and also to those who visit and wish to live here.

Resource Assessment and Legal Framework

Air quality is important to the health, safety, and welfare of Big Horn County's residents. Under the Clean Air Act of 1970 (42 U.S.C. §7401 et seq.), the U.S. Environmental Protection Agency (EPA) is responsible for setting and enforcing National Ambient Air Quality Standards (NAAQS). Standards were established for total suspended particulate matter, carbon monoxide, ozone, nitrogen dioxide, and sulfur dioxide. The EPA, working with states and tribes, identifies areas as meeting (attainment) or not meeting (nonattainment) the NAAQS standards. The Clean Air Act requires states to develop a plan to attain air quality standards in their state. These plans are called State Implementation Plans (SIPs) (O. EPA, 2014).

In Wyoming, local enforcement of many air pollutant regulations is delegated to the Department of Environmental Quality (DEQ) (R. 08 EPA, 2014). DEQ's Air Quality Division has established standards for ambient air quality necessary to protect public health and welfare; ambient air refers to that portion of the atmosphere, external to buildings, to which the general public has access (WDEQ, 2018b). DEQ has also established limits on the quantity, rate and concentration of emissions of various air pollutants from various sources including, but not limited to:

- Vehicle engines
- Construction/Demolition activities (asbestos)
- Handling and transport of materials
- Agricultural practices
- Fuel-burning equipment
- Oil and gas operations
- Manufacturing operations

The degradation of air quality in Big Horn County comes from both natural and man-made sources:

- Wind-carried dust (especially during periods of drought)
- Wildfire emissions
- Emissions from the open burning of vegetation
- Emissions from farming and agricultural operations
- Emissions from industrial operations
- Dust from unpaved roadway use

Resource Management Objective:

A. Support the promotion of clean air practices and limiting air pollution within the County, without expansion of regulations that would act as an impediment to economic development.

Priorities:

1. Work with the federal, state, and local agencies to educate all stakeholders involved to develop best management practices (BMP) concepts and plans to protect the air quality in the County.
2. Support the development and implementation of educational programs to provide best management practices on burning to improve air quality in the County.
3. Encourage federal agencies to implement the Wyoming State Forestry's BMPs for forest management to decrease the number of summer wildfires.

4. Acknowledge that wood burning is a "necessity of life" for the health, safety, and welfare of the County's citizens and shall be maintained as an acceptable activity.
5. Encourage federal agencies to take aggressive efforts with forest management to decrease the number of wildfires.

3.4 CLIMATE CHANGE

History, Custom, and Culture

Big Horn County relies heavily upon agriculture and livestock to support the local economy. Climate change, including increased temperatures, reduced precipitation, and changes in airflow have the potential to drastically affect the economy of Big Horn County. Increased occurrence of severe fires over the past decade have led to reduced air quality and various health issues across Wyoming. Big Horn County is committed to preserving the health of its citizens and its economy and, as such, is requiring cooperation and open communication with federal agencies when assessing the effects of proposed federal actions within Big Horn County.

Resource Assessment and Legal Framework

Climate change has been defined as a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods. Climates are defined by long-term patterns of temperature, humidity, atmospheric pressure, precipitation, and airflow generally over years, decades, and/or centuries.

Paleoclimatology, the study of past climates via ice cores, tree rings, sediment cores, etc., has shown that climates vary naturally over time and are subject to the cyclical phenomena of El Niño-Southern Oscillation (ENSO), Pacific Decadal Oscillation (PDO), and North Atlantic Oscillation (NAO). These phenomena, among others, cause yearly variations in precipitation, temperature, and temperatures.

Although Executive Order 13783 withdrew guidance on the consideration of the effects of climate change and greenhouse gas (GHG) emissions, in favor of promoting energy independence and economic growth, federal agencies must still assess the effects of major federal actions on the environment. NEPA-compliant documents may include the following analyses of the proposed action regarding climate change: (1) the extent to which the proposed action and all reasonable alternative(s) contribute to climate change through GHG emissions; (2) the effect of a changing climate over the life of project on the proposed project including flooding considerations and changes in precipitation; and (3) implications of climate change on the proposed project including cumulative impacts to resource availability (Exec. Order No. 13783, 3 C.F.R., 2017).

Agencies are required to consider direct, indirect, and cumulative effects when analyzing any proposed federal action and its environmental consequences. When assessing direct and indirect climate change effects, agencies should take account of the proposed action, including "connected" actions, subject to reasonable limits based on feasibility and practicality. In addition, emissions from activities that have a reasonable nexus to the federal action (e.g. cumulative actions), such as those activities that may be required either before or after the proposed action is implemented, must be analyzed (National Environmental Policy Act 1969, 1969).

Council on Environmental Quality (CEQ) recognizes that land management practices such as prescribed burning, timber stand improvements, fuel load reductions, scheduled harvesting, and grazing can result in both carbon emissions and carbon sequestration.

Resource Management Objective:

A. Require coordination and consultation with Big Horn County when discussing the climate effects of proposed actions within the County and its impacts on the economy, environment, and health of the citizens of the County.

Priorities:

1. Encourage inclusion of additional scientific data that meet the credible data criteria, even if not produced by a federal agency.
2. When required, climate change analysis shall occur on a regional level; the region shall be identified through consultation and coordination with the County.
3. Require a full analysis of the impact each "decision" will have on the local economy. If it is determined that the decision will have significant negative impact on the local economy, the alternative/decision is not supported.
4. Regulation of greenhouse gases through climate change analysis is not supported.

3.5 SOILS

History, Custom, and Culture

Healthy soils sustain plant communities, keep sediment out of streams, and dust out of the air. Land managers of public lands are mandated to manage soils and vegetation to ensure land-health standards are maintained and to safeguard sustainable plant and animal populations (NRCS, 2018). Soil type dictates the vegetation within an area, which determines the area's uses, productivity, resistance to disturbance, and scenic quality.

Anthropogenic land disturbance as well as wildfire can influence soil quality. Soil issues arising from both anthropogenic and natural causes include erosion, drainage, invasive species, soil compaction, salination, and loss of vegetation. (NRCS, 2018)

The two Conservation Districts within Big Horn County work to promote the conservation of soil and water resources within the district. (See Section 2.1 Land Use for more information).

Resource Assessment and Legal Framework

Soil Surveys

Soil surveys provide detailed information on soil limitations and properties necessary for project planning and implementation. Soil surveys document soil properties and distribution to monitor and understand the impacts of various uses. There are five levels or "Orders" of soil surveys depending on the level of detail involved. Order 3 is typical for most public lands projects which do require onsite investigations by expert soil scientists for site specific project related activities or projects (USDA: Soil Science Division Staff, 2017).

Soil survey reports, which include the soil survey maps and the names and descriptions of the soils in a report area, are published by the USDA NRCS and are available online through Web Soil Survey (NRCS, n.d.-d). The soil survey mapping of Big Horn County is current and published to Web Soil Survey (NRCS, n.d.-c). The general soil map units for Big Horn County are depicted in Figure 13 below.

Resource Management Objective:

A. Soil quality and health is maintained and conserved through best management practices.

Priorities:

1. Support projects and policies which improve soil quality and ecology.

2. Support erosion control as a means of flood control.
3. For new soil disturbing projects, support implementation of BMPs to manage runoff and stabilize soils on site.
4. Land use designations that eliminate or reduce the opportunity for implementation of practices that can improve soil health are not supported.
5. Big Horn County supports and encourages the use of natural processes including livestock grazing as key to site reclamation for soil health and biodiversity.
6. Encourage the implementation of BMPs for watershed management including road construction.

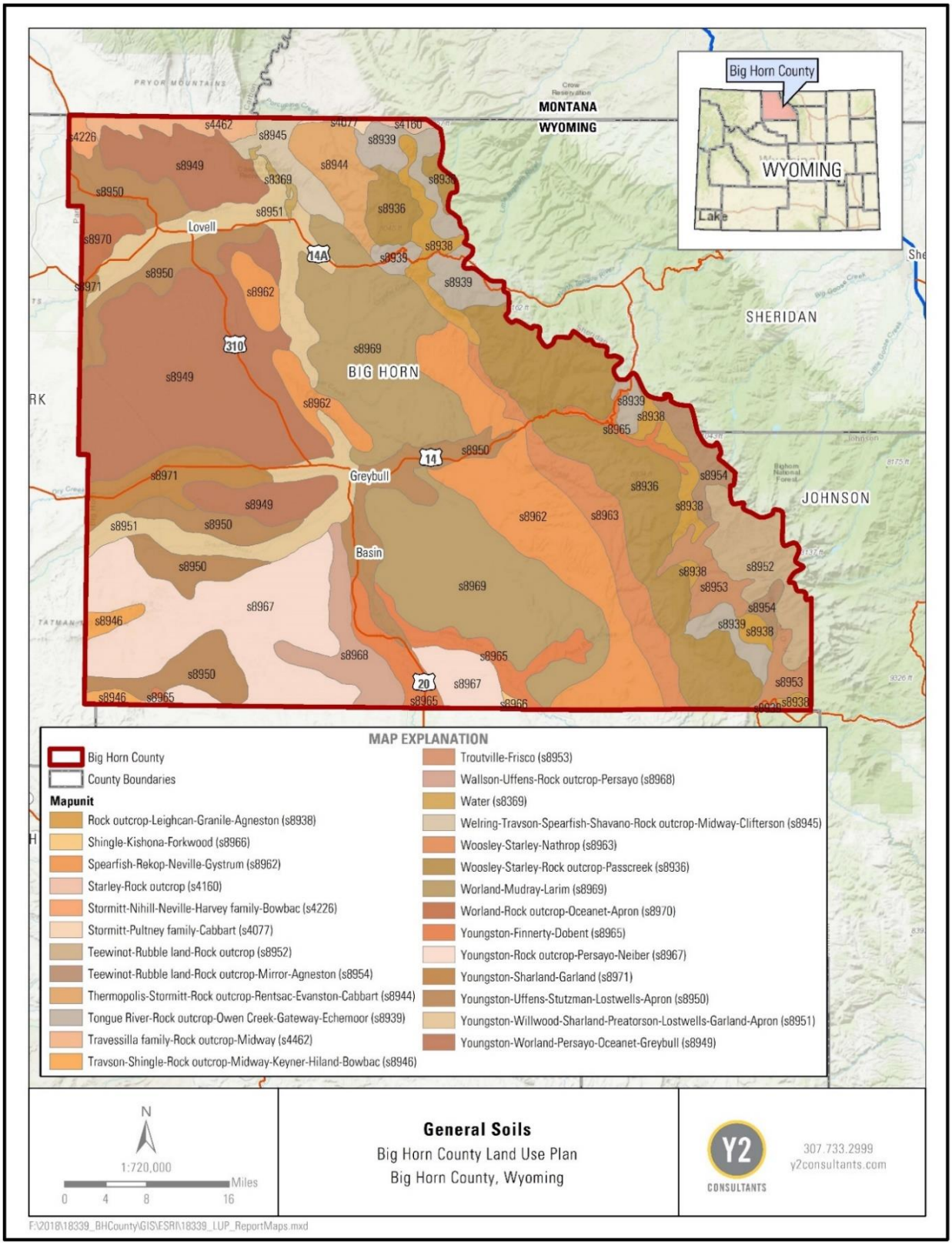


Figure 13. Soils mapped for Big Horn County.

CHAPTER 4: WATER RESOURCES

Overview

Healthy watersheds contain forests that are in good health, have minimal weed infestations, functioning riparian areas, rangelands with a variety of vegetation, and valleys that support farming and urban developments. Healthy watersheds provide recreation opportunities for residents and visitors, serve cultural needs, and provide habitat for native plants, wildlife, and fisheries. The health of Big Horn County's watersheds directly affects the current and future availability of quality water resources and water-dependent natural resources, as well as the ability of watersheds to adapt to climate variability, such as periods of drought or high rainfall and rain-on-snow events.

4.1 WATER USE

History, Custom, and Culture

Big Horn County's watersheds are diverse and dynamic. They consist of a variety of vegetation and topography, including uplands, floodplains, wetlands, channels, springs, lakes, and reservoirs. These watersheds continue to evolve under the influence of climate, floods, landslides, erosion, and human land use. A successful management strategy for Big Horn County's watersheds must consider how the various watershed components and uses interrelate and influence each other from ridgeline to stream, and across adjacent watersheds. Refer to Figure 14 for a map of the watersheds in Big Horn County.

Big Horn County lies within the Bighorn and Shoshone River basins. Big Horn County has one large reservoir that was created for flood control, water storage, and recreation. Two large reservoirs, one in Hot Springs County and one in Park County, provide large quantities of water for Big Horn County. Other reservoirs exist on tributaries and are used primarily for irrigation purposes.

Resource Assessment and Legal Framework

Consumptive Use

The majority of the Big Horn County public is served by public drinking water systems. There are several rural water systems that service large areas outside of incorporated towns. In 2009, 31 of the 39 platted subdivisions in the county were located near or on a rural water system (Big Horn County LUP, n.d.).

According to the Water Resources Investigations Report 93-4021 completed in 1993, there are seven categories of off-stream water use in Big Horn County: public supply, commercial, domestic, industrial, mining, livestock, and irrigation. Off-stream water use consists of surface water use and groundwater use. According to the 1993 report, surface water accounted for the vast majority of off-stream use at 96 percent, and groundwater accounted for 4 percent of total off-stream water use in Big Horn County (Plafcan et al., 1993). Irrigation is the largest water use, by volume in Big Horn County, comprising 99% off-stream surface water and 55% of off-stream groundwater in 1985. The second largest water user is mining.

In 1985 groundwater supplied 89% of water used for domestic purposes and about 16% of water used for public supplies. In rural areas, groundwater is the primary domestic water supply (Plafcan et al., 1993).

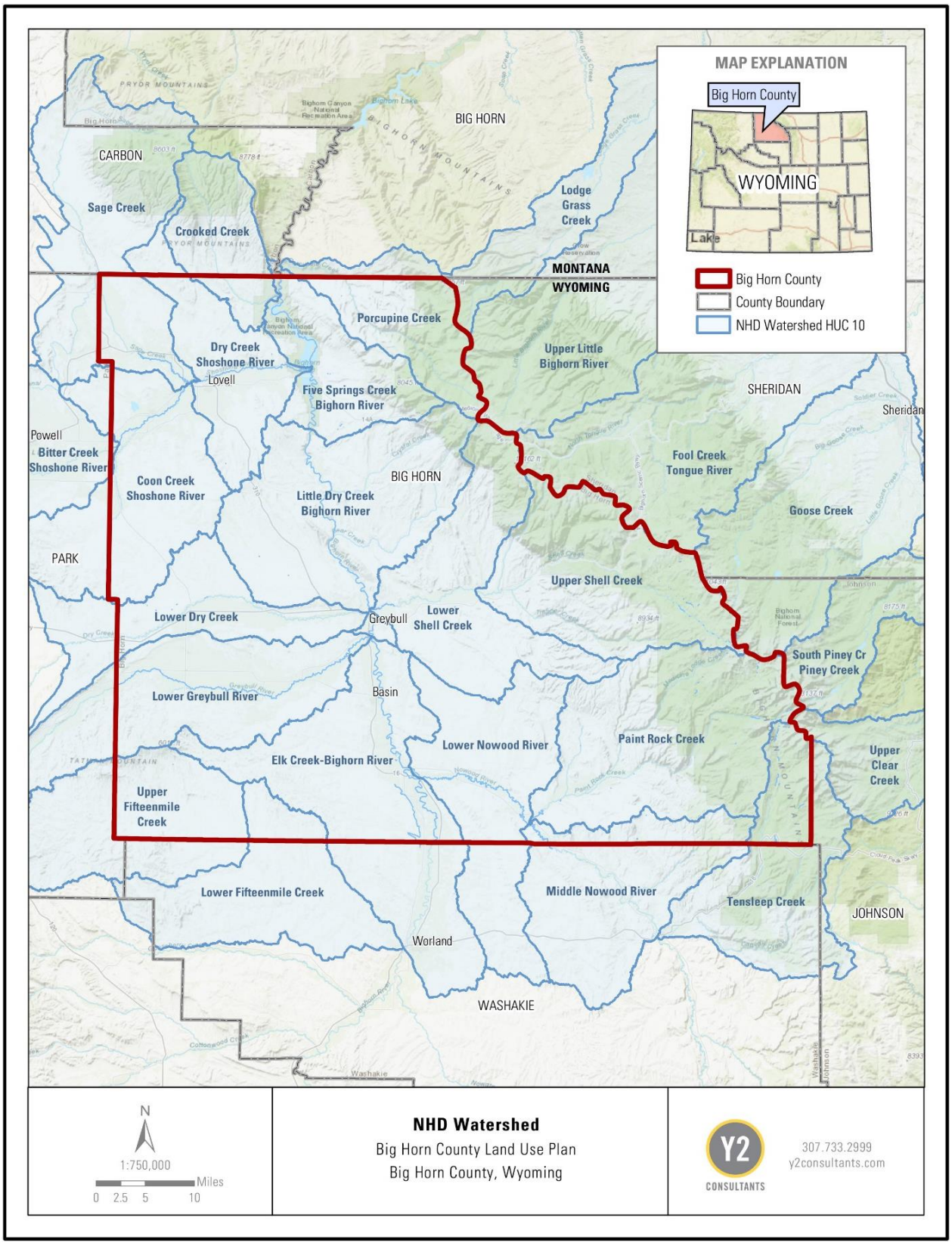


Figure 14. Big Horn County Watersheds.

Table 1. Big Horn County rural water systems (Big Horn County LUP, n.d.).

Name	Population Served	Source
Airport Bench Water District	28 taps	Town of Greybull
Greybull Heights Water Users	30 taps	Town of Greybull
Hyattville Improvement District	48 taps	1 Madison Aquifer Well
Northwest Rural Water District	270 taps	Shoshone Municipal Pipeline
Shell Valley West Water Association	30 taps	Town of Greybull
Shell Water Users, Inc.	36 taps	Town of Greybull
South Big Horn County Joint Powers Board (includes Basin & Manderson)	2,084 persons	2 Madison/ Bighorn Aquifer Wells
South End Water District	47 taps	Town of Cowley

Environmental and Recreational Use

In addition to the consumptive uses, environmental and recreational value is high for multiple water sources in Big Horn County. These non-consumptive water uses, including fishing, boating (including rafting and kayaking), nature viewing, swimming, backpacking, and hunting are a source of economic value to the surrounding areas (BRS Engineering and Donnell & Allred, Inc., 2003).

Big Horn County lies within the Big Horn Lake sub-basin of the Wind/Bighorn River Basin. In the Wind/Bighorn River Basin Plan 2018 update, environmental and recreational value of water sources were considered and scored. Environmental uses are defined as use of permitted or protected waters. For Big Horn Lake sub-basin, high environmental use scores are present along stretches of Shell and Cedar Creeks. The Big Horn River above and below Big Horn Lake rate as moderate to high environmental use. Recreational scores are highest along Shell, Cedar, and Porcupine Creeks, and the Big Horn River above Bighorn Lake, due to the available fisheries and access to National Park and Forest Service lands (MWH Americas et al., 2010).

Resource Management Objective:

A. The County's surface and groundwater resources are managed to sustain economic development and to improve stream, floodplain, wetland, and groundwater functions.

Priorities:

1. Encourage and allow consumptive water right owners to improve water quality and water-use efficiency to provide additional water for economic development and agriculture.
2. Support the recreational and consumptive use of water to support the local economy.
3. Support policies to improve groundwater health for consumptive use.

4.2 IRRIGATION AND RELATED INFRASTRUCTURE

History, Custom, and Culture

The western two thirds, approximately 3,177 square miles, of Big Horn County is located within the Bighorn Basin. This area is characterized as arid and is primarily dependent upon the surface water present in the County for irrigation; 96% of water used originates from surface water sources (Plafcan et al., 1993). In 2017 there were 307,122 acres of agricultural land in the County, making up about 15% of the County or just over 83% of private land in the County. Of the agricultural land in the County 36% is classified as Irrigated crop land (111,368acres) (Big Horn County Commissioners, 2017; Department of Administration & Information Economic Analysis Division, 2017). Irrigation is vital to the agricultural production of Big Horn County. Additional information on crop production is available in section 7.1 Agriculture Production.

Resource Assessment and Legal Framework

Approximately 99% of stream surface waters in Big Horn County are used for irrigation. Approximately 55% of groundwater permitted in Big Horn County is use for irrigation. The amount of water consumed through irrigation is 82%. Of the irrigation water consumed 45% is consumed by crops and 37% of water is lost in conveyance. (Plafcan et al., 1993)

According to the USGS Water Resources Report for Big Horn County, irrigation influences the flow rates and timing of both perennial and ephemeral streams in the County. Return-flow from irrigation can maintain perennial flow in naturally ephemeral streams. During non-irrigation seasons both perennial and ephemeral streams in irrigated areas experience low flows. The use of reservoirs for retaining irrigation water can lower peak flow rates in systems downstream. This water retention can also extend how long spring and early summer runoff is held in the system before being released downstream. This can extend the season prior to low flow and increase low flow rates during the non-irrigation season for downstream systems. An example of this is how the dam at Boysen Reservoir regulates the Bighorn River flow for irrigation supply. The result is peak and low flows that are more moderated; this decreased flow fluctuation can influence the ecology of downstream fisheries and habitat. (Plafcan et al., 1993)

Additional information regarding irrigation acres, conveyance, and capacity can be found in the Wyoming Water Development Commission Irrigation Survey System Reports (Wyoming Water Development Office, 2019a).

Resource Management Objective:

A. Irrigation and water systems are managed to ensure future access to irrigation water and to promote the health and longevity of the County's water systems and supply.

Priorities:

1. Support the development, improvement, and continued use of irrigation and related infrastructure.
2. Work with appropriate partners and agencies to promote the efficient delivery and use of irrigation water.
3. Support the development of downstream and off stream storage facilities that would allow excess spring runoff to be captured and used later in the growing season.
4. Encourage and allow consumptive water right owners to improve water quality and water-use efficiency to provide additional water for economic development and agriculture.
5. Support consideration of the effects of irrigation infrastructure while allowing for other multiple uses on federal land.
6. Encourage negotiation of surface use agreements on split estates and support siting of oil and gas facilities off of irrigated lands, unless otherwise agreed by surface user.

7. Support the continued use and protection of historical irrigation ditch rights-of-way through federal lands whether those rights are permanent or require periodic renewal.
8. Any renewal of rights-of-way for irrigation ditches crossing federal lands should be done expeditiously with as little impact to the historical use as is allowed by law.
9. The County does not support the imposition of instream flows as a condition precedent for renewal of historical irrigation ditch rights-of-way.

4.3 DAMS AND RESERVOIRS

History, Custom, and Culture

Dams and reservoirs are located across Big Horn County and are used for various functions, including storage for irrigation, recreation, industrial, municipal, flood control, and fish propagation. The Wyoming Water Development Office's (WWDO) Dam and Reservoir Planning division works to promote dam and reservoir maintenance and improvement. Funding from the Dam and Reservoir Division account is available for the development of new reservoirs that are 2,000 acre-feet (AF) or larger, or the enlargement of currently existing reservoirs (minimum of 1,000 AF increased capacity). Funding is also available to Level I and Level II feasibility studies identifying possible water storage projects. (WWDC, n.d.)

Resource Assessment and Legal Framework

The Wind-Big Horn River Water Plan evaluated all reservoirs considered 'major reservoirs' within the surface water assessment. Major reservoirs are defined as reservoirs with equal to or greater storage capacity than 500-acre feet. Below is a description of the major reservoirs within Big Horn County. (Wyoming Water Development Office, 2003)

Adelaide Reservoir

Adelaide Reservoir is supplied by Buckley Creek and a tributary to Shell Creek, Adelaide Creek. This reservoir is used for irrigation and is one of the few unadjudicated reservoirs that is considered a major reservoir.

Albert-Wardell Reservoir

The Albert-Wardell Reservoir is used for stock water and irrigation. This reservoir is supplied by Wardell Draw and Fairview Canal.

Alkali Creek Reservoir

Alkali Creek Reservoir was approved for building by the Worland BLM in 2019 and it is anticipated that construction will start in 2021 with completion and filling in 2023. The reservoir will cover approximately 294 acres with a total capacity of approximately 8,000 acre-feet (AF), of which 6,000 AF will serve as supplemental irrigation supply for the Nowood River Watershed Improvement District, leaving 2,000 AF for habitat, fishing ,and recreational use. (BLM, 2019)

Bighorn Lake

Bighorn Lake is unique among the reservoirs in Big Horn County. The lake is located in Wyoming and Montana with the Yellowtail Dam located in Montana. Bighorn Lake is 70 miles long and is used for recreation, power production, and irrigation. The dam was completed in 1967, and due to the dam location, does not have Wyoming water rights associated with it.

Harrington Reservoir

Located south of Burlington, the Harrington Reservoir is used for irrigation and stock water. The reservoir is fed by Manny Draw and the Saint Joe Canal, which diverts from the Greybull River.

Leavitt Reservoir
The Leavitt Reservoir is fed by tributaries to Shell Creek, Beaver Creek and Davis Draw, for irrigation purposes. The Leavitt Reservoir is currently under expansion through the Wyoming Water Development Commission (WWDC) (Wyoming Water Development Office, 2019b).

Shell Creek Reservoir
Shell Creek Reservoir is located near the Big Horn, Johnson, and Sheridan county lines in the Big Horn National Forest. Shell Creek feeds the reservoir, a tributary of the Big Horn River. The reservoir is used for irrigation and recreation. The Shell Reservoir has 1,949 acre-feet capacity.

Tensleep Reservoir
Tensleep Creek supplies the Tensleep Reservoir, also known as Meadowlark Lake. The Tensleep Reservoir is located 16 miles northeast of Tensleep. The reservoir is used for recreation, fire control, and irrigation. Meadowlark Lake is currently a WWDC project for enlargement (Wyoming Water Development Office, 2019b).

Resource Management Objectives:
A. Dams and reservoirs are well maintained, accessible, and functional.
B. Quality of all dams and reservoirs is preserved and water resources are developed responsibly in coordination with the County.

Priorities:
1. Big Horn County shall be consulted regarding federal land management decisions for their potential impact on water quality, yields and timing of those yields; impacts on facilities such as dams, reservoirs, delivery systems, or monitoring facilities; and any other water-related concerns.
2. Support the construction of water storage.
3. Maintain the primary use of all reservoirs within the County for the purpose for which they were originally intended.

4.4 WATER RIGHTS

History, Custom, and Culture
Wyoming water laws and statutes are governed by Title 41. By Wyoming law, all surface and groundwater belong to the State. The Wyoming State Engineers Office is responsible for management of these waters and protecting existing water rights and resources.

Resource Assessment and Legal Framework
Wyoming is a Prior Appropriation Doctrine state, meaning that water rights are established by actual use of the water, and maintained by continued use and need (Wyo. Stat §41-3-101). Wyoming prioritizes water uses as "preferred uses" and all other uses. Wyo. Stat. § 41-3-102. Preferred uses include "rights for domestic and transportation purposes, steam power plants, and industrial purposes." Id. Preferred uses have the right of condemnation against all other water uses and those lesser preferred uses. Id. Wyoming ranks uses in the following order: (1) Water for drinking purposes for both man and beast; (2) water for municipal purposes; (3) Water for the use of steam engines and for general railway use, water for culinary, laundry, bathing, refrigerating (including the manufacture of ice), for steam and hot water heating plants, and steam power plants; and (4) industrial purposes. Id.

In Wyoming, a water right is a right to use the water of the state, when such use has been acquired by the beneficial application of water under the laws of the state relating thereto, and in conformity with the rules and regulations dependent thereon. Beneficial use shall be the basis, the measure and limit of the right to use water at all times. Thus, in Wyoming, a person must (1) obtain a permit; (2) demonstrate a Beneficial Use and (3) use the water in conformity with the permit in order to have a valid water right. Wyo. Stat. §

41-3-101. Wyoming case law also generally holds that water rights appurtenant to land and the means of conveyance of the water (i.e. ditches, pipes, and conduits) pass with the transfer of the land. See Toltec Watershed Improvement Dist. V. Associated Enterprises, Inc., 829 P.2d 819 (Wyo. 1992); Frank v. Hicks, 35 P. 475 (Wyo. 1894). Wyoming also allows for temporary change in water use of a currently valid water right for up to two years with approval from the Wyoming State Engineers Office, so water right users may transfer their water rights for other uses on a temporary basis. Wyo. Stat. § 41-3-110.

Although all surface and groundwater in Wyoming belongs to the state, water rights are considered a property right. Thus, water rights are widely accepted as property of the holder and can be protected under the 5th and 14th Amendments of the United States Constitution when taken through regulation. See *Klamath Irrigation Dist. v. United States, 113 Fed. Cl. 688, 691* (2013).

Resource Management Objective:

A. State water law and policy is supported for all waters on public and private lands.

Priorities:

1. Placing water rights in the name of any state or federal agency when the water right is applied for and proved upon by a private individual or corporation, or as the condition of any permit, is not supported.
2. Support recognition of water rights as a private property right that may be owned separately from federal land.
3. Support the state of Wyoming's prior appropriation principle for water right allocation.
4. Water rights shall not be acquired through exactions, including claims of beneficial use by a federal agency.
5. The reduction of water districts and senior water right holders' allocations below historic levels is not supported.
6. Support protection of senior water right holders' allocations.
7. Support the prohibition of water right exactions for right-of-way and ditch permits. It is the position of the County that in stream flow requirements are exactions.
8. Big Horn County supports Wyoming control of Wyoming water.

4.5 WATER QUALITY

History, Custom, and Culture

The EPA and WDEQ (Wyoming Department of Environmental Quality) establish, administer and monitor standards, policies, rules, and regulations for ground and surface water quality. Big Horn County is located in the NW WDEQ District.

Historically spreader dams were spread throughout the County to assist with surface water management. These dams have fallen into disrepair and disuse, creating issues throughout the County. These dams were important for everything from sediment control to livestock watering.

Resource Assessment and Legal Framework

Surface Water Quality

The Clean Water Act (CWA) is the federal regulatory mechanism that regulates surface water quality. The CWA gives the EPA and Army Corps of Engineers regulatory jurisdiction over all "navigable waters" also known as "Waters of the United States." The CWA makes it illegal to discharge a pollutant from a point source into a navigable water unless a permit is obtained. The definitions surrounding what a "navigable water" or "Water of the United States" has been a creature of controversy in the past several years and there is still some uncertainty as to what bodies of water constitute as Waters of the United States and what

qualifies as a "point source." From the earliest rulemaking efforts following adoption of the CWA in 1972 to the agencies' most recent attempts to define "Waters of the United Sates" in 2015, the lack of a tangible statutory definition has generated hundreds of cases spanning dozens of courts to ascertain the span of the EPA's jurisdiction. *See* Federal Register Vol. 85, No. 77 22255 (April 21, 2020). As of the writing of this Plan, the EPA is finalizing new CWA regulations that are intended to clarify some of the definitions and clearly set forth the jurisdictional limits of the CWA. *Id*. The goal of the final regulations is to (1) include four simple categories of jurisdictional waters; (2) provide clear exclusions for many water features that traditionally have not been regulated; and (3) defines terms in the regulatory text that have never been defined before. The new regulations are set to be implemented on June 26, 2020. Plainly, under the new CWA regulations, (1) territorial seas and navigable waters, (2) tributaries of jurisdictional waters, (3) lakes ponds and impoundments that contribute surface water flow to a jurisdictional water in a typical year, and (4) wetlands adjacent to non-wetland jurisdictional waters all fall under the jurisdiction of the CWA. *Id.* at 2281.

Wyoming surface water quality standards (Water Quality Rules and Regulations, Chapter 1) are developed with the federal Clean Water Act (CWA) and the Wyoming Environmental Quality Act (WEQA). These standards include water quality criteria, antidegradation provisions, and designated surface water uses (WDEQ, 2018a). The Wyoming Water Quality Assessment Program prepares and submits the Integrated 305(b) and 303(d) *Report to the EPA* biennially to maintain compliance with the CWA (WDEQ, n.d.-d). Policies for antidegradation were last updated in September 2013; Surface Water Quality Standards were last updated in April 2018. Surface Water Quality Standards are reviewed triennially as per the requirements of the CWA (WDEQ, n.d.-c). Surface water designated uses are separated into classes and recreational designated uses. For more information on these classifications refer to the Wyoming Surface Water Classification List and the Recreation Designated Uses Web Map (WDEQ, n.d.-b, 2013).

Groundwater Quality

The Water Quality Division (WQD) Groundwater Program works to protect and preserve Wyoming's groundwater by permitting facilities to prevent contamination and investigating and cleaning up known releases.

Groundwater Pollution Control Program

The WQD Groundwater Pollution Control (GPC) Program tracks potential impacts to Wyoming's groundwater through evaluation of activities permitted at federal, state, and local levels. The GPC Program assists federal agencies with the NEPA process on large projects such as the Moneta Divide and the Pinedale Anticline. This program also assists private landowners with suspected contamination of their wells. The GPC Program also evaluates the adequacy of water supply sources and wastewater collection and treatment facilities during subdivision applications to ensure groundwater will not be impacted. (WDEQ, n.d.-a)

The Supreme Court recently opined that groundwater can be a point source to transfer pollutants to Waters of the United States when the groundwater is a "functional equivalent of a direct discharge..." *County of Maui, Hawaii v. Hawaii Wildlife Fund*, 140 d. 1462, 1468 (2020). To determine whether groundwater is a functional equivalent of a direct discharge, the Supreme Court clarified that "distance and time" to surface water are major factors in determining if a CWA permit is required for any groundwater discharges. *Id*. at 76-77. Thus, under the current direction of the United States Supreme Court there can be some circumstances in which some groundwater discharges may require CWA permitting.

Subdivision Review

The WQD Water & Wastewater Program (W&WP) works to ensure safe and adequate supplies of drinking water and the proper disposal of wastewater. Big Horn County has local delegated authority over Small Wastewater Systems (SWS). The review, permitting, installation, repair, replacement and maintenance of a SWS fall under this authority. Subdivision review requires all WQD, W&WP, and GPC standards are

complied with during the review, for approval, and during construction of subdivisions. Big Horn County may consult with, or request assistance from WDEQ for SWS or Subdivision proposals prior to approval.

Resource Management Objectives:

A. Water resources are developed and used to maintain future use
B. Sufficient water resources are available for future community growth.

Priorities:

1. The County reserves the right to refer subdivision water quality reviews to the DEQ in special circumstances.
2. Prioritize locally-led efforts to monitor and improve water quality, and where feasible complete in conjunction with existing state and federal agencies with the same mandate.
3. Require baseline water quality sampling and cataloguing of all collected data for wells (including injection wells) drilled on federal lands.
4. Consult Big Horn County regarding federal land management decisions for their potential impact on water quality, yields and timing of those yields; impacts on facilities such as dams, reservoirs, delivery systems, or monitoring facilities; and any other water-related proposal.
5. Any action, or lack of action or permitted use that results in a significant or long- term decrease in water quality or quantity is not supported.
6. Support implementation of land management actions and practices that contribute to or maintain healthy drainages and watersheds.
7. Encourage good management and maintenance of watersheds to retain and slowly release water for desired plant, animal, and human uses, and to reduce the risk of flash floods.
8. Encourage coordination with the USFS, BLM, BOR, EPA, DEQ, and other relevant public agencies to ensure that management of watersheds, including municipal watersheds, meets the multiple needs of residents and promotes healthy forests and rangelands.
9. Support decisions and actions that comply with Wyoming water laws and statutes.
10. Ensure any recovery plan, habitat management plan, critical habitat designation or any other plan proposing an "in stream flow" requirement adequately considers local existing and anticipated future water uses, local custom and culture, local economic and individual needs and is consistent with Wyoming water laws.
11. Support reclamation activities on mined lands that improve soil productivity and water quality and the function of streams channels, floodplains and wetlands for better productivity.
12. Support construction and management of roads, bridges, culverts, cut slopes, fill slopes, and artificial surfaces to minimize water concentration, erosion, and delivery of polluted water and sediment to streams.
13. Implement land use improvements and practices which promote healthy drainages and watersheds.
14. Expect federal agencies to create watershed BMPs to mitigate water pollution caused by heavy erosion and sedimentation from public lands under their management, and to work with local conservation districts in accomplishing these BMPs.
15. Point sources, as defined under the CWA, should only be considered those areas that directly discharge into a navigable water and should not be considered those sources that are difficult to trace a direct connection to pollution on a navigable water.
16. Because of the difficulties of tracing pollution sources from groundwater, groundwater should not be considered a point source unless there is a clear and immediate connection to the pollution to a navigable water.

4.6 FLOOD PLAINS

History, Custom, and Culture

Federal Emergency Management Agency's (FEMA)

Multiple municipalities within Big Horn County participate in the National Flood Insurance Program (NFIP). At the time this document was written these include Basin, Greybull, Lovell, and Manderson (Big Horn County, n.d.-c). Communities that participate in NFIP, and implement the floodplain management regulations, are eligible for the FEMA Community Assistance Program – State Support Services (CAP-SSE) (FEMA, n.d.-a)). The CAP-SSE provides support and funding for strategic planning, ordinance assistance, technical assistance, mapping coordination, state program and agency coordination assistance, and general outreach and training (FEMA, n.d.-a). Where CAP-SSE provides general preparedness funding, planning, and management the Risk Mapping and Assessment Planning (Risk MAP) projects develop high quality maps and data to assess the factors contributing to increased risk of flooding in an area, and then develops plans to reduce risk (FEMA, n.d.-d). There are currently no active Risk MAP projects within Big Horn County (FEMA, n.d.-c). For more information on flood hazard mapping within Big Horn County refer to FEMA's National Flood Hazard Layer (NFHL) viewer (FEMA, n.d.-b).

Resource Assessment and Legal Framework

Flood and floodplain management are important to the safety, economy, and ecological health of Big Horn County. Flooding is a significant natural hazard within the state of Wyoming and can cause significant damage. From 1905 to present there have been approximately $126.7 million in damages across the state (University of Wyoming, n.d.) from flood damage. Between 1960 and 2015 Big Horn County experienced 24 flood events which incurred $196,833 in crop damage and $3,155,239 in property damage. Big Horn County is categorized as 'Medium Risk' for flooding in the Wyoming State Mitigation Plan (Wyoming Office of Homeland Security, n.d.).

Resource Management Objective:

A. Storm water is managed to ensure the health, safety, and welfare of all residents within the County.

Priorities:

1. Support projects and encourage policies which manage storm water, run-off, and flooding on public lands.
2. The County shall be consulted where flooding and storm water run-off could impact the County.

4.7 RIVERS AND STREAMS

History, Custom, and Culture

Resource Assessment and Legal Framework

There are seven major perennial rivers and streams present within the County. These streams include the Paint Rock and Shell Creeks, and the Bighorn, Nowood, Greybull, and Shoshone Rivers. There are several ephemeral streams in Big Horn County that only flow for short periods of time during runoff periods from precipitation or snow melt. Perennial streams originating from high mountain aquifers and snowpacks are fed throughout the year and experience maximum discharge during the spring and early summer snowmelt. For information on the many other rivers and streams in the County refer to the WWDC Wind/Bighorn River Basin water plan.

Bighorn River

The Bighorn River enters the County from the south and flows northerly, through the center of the County, into Montana. The Nowood River and Shell Creek converge with the Bighorn River from the east, while the Greybull and Shoshone Rivers join from the west.

Shoshone River
The Shoshone River is located in the northwest corner of the County. The Shoshone flows east from Park County into Big Horn County and feeds into Bighorn Lake.

Greybull River
Greybull River flows from Park County into the southwestern quadrant of Big Horn County and enters the Bighorn River south of Greybull.

Nowood River
The Nowood River flows into the County from the south about ten miles east of the Bighorn River. Nowood River arcs to the west to connect with the Bighorn River shortly after entering the County.

Paint Rock Creek
Paint Rock Creek originates in the Bighorn Mountains on the eastern border to the County. This creek flows in a southwest trajectory to connect with Nowood River prior to reaching the Bighorn River.

Shell Creek
Shell Creek enters the County to the east from the Bighorn Mountains and flows west across the County. Shell Creek feeds into the Bighorn River just north of the town of Greybull.

Resource Management Objective:
A. Rivers and streams are managed to maintain water quality and to maintain proper ecologic function needs. Rivers and streams are also managed for municipal use, to control flooding, and for recreational and industrial use including irrigation.

Priorities:
1. The County does not support any new or increased in "in stream" flow requirements.
2. Support management of rivers and streams to meet "in-stream" flow requirements.
3. Support continued use of rivers and streams by all users.
4. The County shall be consulted when impacts to rivers and streams are a potential outcome of a federal action or decision.
5. Support projects and policies which improve or maintain the current ecological function of rivers and streams within the County.
6. Support the recreational and consumptive use of water to support the local economy.

4.8 WETLANDS AND RIPARIAN AREAS

Resource Assessment and Legal Framework
Riparian and wetland areas only make up 4% of the state, however they support over 80% of Wyoming's wildlife (Bureau of Land Management, 2016b). These areas are very important to the health and quality of watersheds and their ecological function. Riparian areas are characterized by vegetation that is adapted to the wetter environments along bodies of water. These areas provide a buffer between open water and upland sites, protecting stream banks from erosion, maintaining stream channel morphology and water table access, filtering runoff sediment and nutrients, and improving stream habitat through lowering stream temperatures and increasing oxygen levels. Wetland areas filter sediment and nutrients, improving water quality, and play an important role in maintaining habitat. Riparian and wetland areas play large roles in a streams ability to release energy from floods onto surrounding floodplain areas, greatly reducing flood damage downstream. (WDEQ, n.d.-e)

There are multiple anthropogenic processes that can harm riparian and wetland areas. A few examples of activities that can degrade these ecosystems and their ability to function properly are urban development along streams and on floodplains, diversion of water, improper timber harvest, and improper grazing practices. (WDEQ, n.d.-e; WGFD, n.d.-c)

Federally, wetlands are protected under the Clean Water Act (CWA). The definition of wetlands protected under CWA have been specified further through the supreme court rulings in 1985 *Riverside Bayview*, 2003 *SWANCC*, and 2008 *Rapanos*. (ASWM, n.d.-a, n.d.-b) The U.S. Army Corps of Engineers (ACOE) is also responsible for protecting aquatic resources and navigable capacity while allowing economic development through fair and balance decisions. The ACOE requires a permit process to minimize the environmental impact of construction and development activities in US waters to ensure protection of these resources. (ACOE, n.d.)

Conservation Reserve Program

The Conservation Reserve Program (CRP) allows landowners to enroll land into CRP land through the NRCS. In this program, participants are compensated to remove cropland from agriculture voluntarily and convert the land into a riparian buffer or filter strip with native grasses and forbs. This conversion will assist in improving water quality, reducing soil erosion, reducing the amount of sediment, phosphorous and other pollutants entering waterways and will help to improve pollinator and other wildlife habitat. Across Wyoming there are several hundred acres held in CRP. (NRCS, n.d.-b, n.d.-a)

Bureau of Land Management

The BLM is required to manage riparian-wetland areas in Proper Functioning Condition (PFC). PFC is the minimum state of resilience needed to withstand moderate flooding and make progress toward a desired condition that supports fish habitat, water quality, and wildlife needs. Riparian and wetland areas may be categorized as Non-Functioning (NF), Functioning At Risk (FAR), or Proper Functioning Condition with upward or downward trend within a PFC assessment. (BLM, 2016c)

Forest Service

Riparian and wetland management standards for the Forest Service are outlined in the Bighorn National Forest Land and Resource Management Plan (BHNF LRMP). Actions within riparian areas or water influence zones (WIZ) must maintain or improve the long-term health and condition of the stream and riparian ecosystem. The BHNF LRMP also defines WIZs and appropriate methods for improvement projects. (BHNF, 2013)

Resource Management Objective:

A. Wetlands and riparian areas are healthy and function properly. Wetlands are clearly defined and identified within the County using credible data.

Priorities:

1. Support the management, maintenance, protection, and restoration of wetland areas to proper functioning condition.
2. Support the use of responsible grazing and vegetation management as a tool to maintain wetlands/riparian areas.
3. Manage riparian areas damaged by non-native species (i.e. salt cedar and Russian olives) to decrease the impact of these species on the watershed, including water quality and to restore the areas to a proper functioning condition.
4. Use appropriate methods and practices to maintain and restore riparian areas to proper functioning condition.
5. Support the use of credible data and scientific standards for wetland designation.
6. The County does not support any CWA jurisdictional wetland designations for any wetlands not located immediately adjacent to a navigable water in the County
7. The County supports the use of Wyoming Forestry Best Management Practices for any treatments within wetland and riparian areas on public lands.

8. The maintenance of the custom, culture, and economic stability of the County and private property rights and interests including investment backed expectations should be considered of high importance in the application of any riparian area management plans, including USFS and BLM allotments or grazing plans, point source, and non-point source pollution laws.
9. The County shall be notified of new wetland designations or activities within riparian areas.

4.9 WILD AND SCENIC RIVERS

History, Custom, and Culture

The National Wild and Scenic Rivers System was created in 1968 to preserve naturally, culturally, and recreationally valued rivers. Rivers are designated for the National Wild and Scenic River System by Congress or, in certain situations, the Secretary of Interior.

Resource Assessment and Legal Framework

Wild and Scenic River Designations

There are currently no rivers in Big Horn County designated as wild, scenic, or recreational within the National Wild and Scenic Rivers System (National Wild and Scenic Rivers System, n.d.).

Resource Management Objective:

A. Any designations for Wild and Scenic rivers are developed through extensive coordination with the County and consider the full range of impacts to the County.

Priorities:

1. Future designation of Wild and Scenic Rivers is not supported.
2. Proposed designation of Wild and Scenic Reivers shall be coordinated with the County.
3. Any proposed designation of a Wild and Scenic river shall analyze the impact to the County's economy.

CHAPTER 5: WILDLIFE

Overview

US Fish and Wildlife Service

The US Fish & Wildlife Service (USFWS) is the agency within the Department of the Interior dedicated to the management of fish, wildlife, and their habitats, and charged with enforcing federal wildlife laws, including the Endangered Species Act (ESA). In addition to managing threatened and endangered species, they manage migratory birds, restore significant fisheries, conserve and restore wildlife habitat including wetlands, and distribute money to state fish and wildlife agencies. They also manage the National Wildlife Refuge (NWR) System created by President Theodore Roosevelt in 1903. (Wilson, 2014)

There are 8 administrative regions for USFWS and approximately 700 field offices across the country. Wyoming is in the Mountain Prairie Region which consists of eight states - Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. The regional office for the Mountain Prairie Region is in Denver, CO. The closest field office is in Cheyenne, WY. There are 7 National Wildlife Refuges totaling 86,681 acres in Wyoming, as of the 2018 Annual Lands Report (USFWS, 2018a). There are no Wetland Management Districts and no Waterfowl Production Areas in the state (USFWS, 2018a).

Wyoming Game and Fish Department

Wildlife in Wyoming are managed by the Wyoming Game and Fish Department (WGFD). Nearly a decade after Wyoming became a state in 1890, the legislature created the office of the State Game Warden in 1899. The Wyoming Game and Fish Commission was created in 1921 but did not receive the ability to actively manage Wyoming's game populations through opening and closing hunting until 1929. The Wyoming Game and Fish Department was created in 1973. Prior to this time, all Game and Fish personnel were employed by the Wyoming Game and Fish Commission. (WGFD, n.d.-a)

The Wyoming Game and Fish Commission acts as the policy making board of the WGFD. The commission is responsible for the direction and supervision of the Director of the WGFD. Through the relationships with the Director, department, and citizens, the board provides a flexible system of control, propagation, management, protection and regulation of all wildlife in Wyoming. WGFDs commission is a board of seven citizens where not more than five can be from the same political party. (WGFD, n.d.-b) The WGFDs mission is 'Conserving Wildlife, Serving People'.

The WGFD utilizes a State Wildlife Action Plan (SWAP), revised in 2017, to provide a strategy for managing various wildlife groups including mammals, birds, reptiles, amphibians, fish, and mussels. This plan is not a legal document, a regulatory document, a recovery Plan under the Endangered Species Act (ESA), or a National Environmental Policy Act (NEPA) decision document (WGFD, 2017b). It is designed to complement existing and future planning and management programs. Wyoming's SWAP was partially funded by the State Wildlife Grants Program, which was created through federal legislation to provide federal funding to states to create a list of wildlife species that have the greatest conservation need. The state plan is built upon eight essential elements, identified by Congress and implemented by the state game agency, with an overall focus on "species of greatest conservation need". The essential elements are:

- Information on the distribution and abundance of species of wildlife including low and declining populations.
- Descriptions of locations and relative condition of key habitats and community types.
- Problems affecting species and priority research, or survey efforts needed.
- Conservation actions needed to conserve the identified species.
- Plans for monitoring species and the effectiveness of conservation actions.
- Plans for reviewing the strategy.

- Coordinating with federal, state, and local agencies and Tribal government on the development and implementation of the strategy; and
- Involve broad public participation.

The species list includes 229 total species including eighty birds, nine amphibians, twenty-four reptiles, fifty-one mammals, twenty-eight fish, eight crustaceans, and twenty-nine mollusks, each with a specific priority designation based on the essential elements listed above. (WGFD, 2017b)

Wyoming's List of Species of Greatest Conservation Need is divided into three tiers: Tier 1 – highest priority, Tier 2 – moderate priority, and Tier 3 – lowest priority. The Wyoming Game and Fish Commission has six approved variables to evaluate the conservation priority of each species. These variables include: the Wyoming Game and Fish Department Native Species Status (NSS); Wyoming's contribution to the species' overall conservation; regulatory/monetary impacts of the species' listing under the Endangered Species Act; urgency of conservation action; ability to implement effective conservation actions; and the species' ecological or management role as keystone, indicator, or umbrella species. The consideration of these variables in the species' priority tier designations are made by WGFD biologists who have considerable knowledge about the species. Individual designations may be reviewed annually if warranted by changing circumstances or new data. State Wildlife Grant Program funds are appropriated annually by congress. In the appropriation process, individual states are evaluated based on their population and total geographical area. From these evaluations, states receive their apportioned funding amounts. Federal grants cover up to 75% of planning grants and 65% of plan implementation grants. (USFWS, n.d.-c; WGFD, 2017b)

The WGFD updates the species on the Conservation Priority List in conjunction with the State Wildlife Action Plan. The current list of species at the writing of this plan is provided in Table 2, Table 3, and Table 4 in the appendices. The Wyoming Species of Conservation Priority List can also be found on the WGFD website (WGFD, 2017a)

5.1 THREATENED, ENDANGERED, AND SENSITIVE SPECIES

History, Custom, and Culture

Endangered Species Act

Protection of endangered species at the federal level began with the enactment of the Endangered Species Preservation Act, passed by Congress in 1966, which provided limited protection for species listed as endangered. The Departments of the Interior, Agriculture, and Defense were to seek to protect listed species and to the extent possible, preserve the habitats of listed species. In 1969, Congress amended the Act to provide additional protection for species at risk of "worldwide extinction" by prohibiting their import and sale in the United States. This amendment called for an international meeting to discuss conservation of endangered species and changed the title of the act to the Endangered Species Conservation Act. In 1973, 80 nations met to sign the Convention on International Trade in Endangered Species of Wild Fauna and Flora (Commission of the European Communities, 1986). As a follow-up, Congress passed the Endangered Species Act (ESA) of 1973. The ESA:

- Defined "endangered" and "threatened" species;
- Made plants and all invertebrates eligible for protection;
- Applied "take" prohibitions to all endangered animal species, and allowed the prohibitions to apply to threatened animal species by special regulation; such "take" prohibitions also include "adverse modification" of critical habitat;
- Required federal agencies to use their authorities to conserve listed species and consult on "may affect" actions;
- Prohibited federal agencies from authorizing, funding, or carrying out any action that would jeopardize a listed species or destroy or adversely modify its "critical habitat";

- Made matching funds available to States with cooperative agreements;
- Provided funding authority for land acquisition for foreign species; and
- Implemented protection in the United States. (USFWS, 1973)

The ESA was amended in 1978, 1982, and 1988. Funds are annually appropriated for the implementation of the ESA and have been since 1993.

The USFWS and the National Marine Fisheries Service (NMFS) administers and enforces the modern ESA. The Service has primary responsibility for terrestrial and freshwater organisms, while the responsibilities of NMFS are mainly marine wildlife such as whales and anadromous fish such as salmon. (USFWS, n.d.-a) NMFS does not oversee any species within Wyoming.

Candidate species are "any species being considered for listing as an endangered or threatened species, but not yet the subject of a proposed rule" (50 C.F.R. § 424.02(b)).

USFWS is responsible for the identification of critical habitat. Critical habitat is a specific geographic area that contains features essential to the conservation and recovery of a listed species and may require special management or protection. Critical habitat can only include areas that qualify as "habitat." *Weyerhaeuser Co. v. US Fish and Wildlife Service*, 139 S. Ct. 361, 368 (2018). Neither the ESA nor USFWS regulations currently define "habitat." *Id*. However, the USFWS is currently proposing new rules to better define habitat and specifically limiting unoccupied habitat for a species to areas "where the necessary attributes to support the species presently exist." Federal Register Vol. 85 No. 151 47334 (August 5, 2020). Thus, under the proposed definition, "habitat" may only exist under the ESA when a listed species could currently survive within the habitat as of the day of the listing. *Id*. Land not currently occupied by an endangered species can only be designated as critical habitat when the Secretary of the Fish and Wildlife Service determines that the land is "essential for the conservation of the species." 16 USC 1532(5)(A). "Essential for the conservation of the species" is also not defined in either the ESA or USFWS regulations. Although economic impacts are not considered during the species listing process, the economic impacts of a critical habitat designation must be analyzed in the designation process. The USFWS may choose to exclude any area from critical habitat if the agency determines that the benefits of such exclusion outweigh the benefits of designating the area unless such exclusion would result in the extinction of the species. 16 U.S.C § 1533(b)(2). A decision not to exclude critical habitat for economic reasons is reviewable by courts under an abuse of discretion standard. *Weyerhaeuser*, 139 S. Ct. at 370.

The ESA created several additional planning tools, including:

- Recovery plans (population and viability goals; define when delisting may be possible; what is required for delisting to begin).
- Reintroduction plans.
- Habitat conservation plans (define when "take" may occur, defines mitigation options).
- Conservation plans or agreements.
- Candidate Conservation Agreements (CCA) and CCAs with Assurances (CCAA) (private landowner arrangements for the protection of Candidate species that provides the landowner with protection if the species is listed) and Species of Concern. (USFWS, 2018b)

Resource Assessment and Legal Framework

Candidate, Threatened, and Endangered Species in Big Horn County

A total of four endangered, threatened, candidate, and proposed species and habitats have been identified for Big Horn County (U.S. Fish and Wildlife Service, n.d.-b). Those species are:

- Canada lynx (*Lynx canadensis*)- Threatened wherever found, and not known to occur within Big Horn County.

- Gray wolf (*Canis lupus*)- Delisted due to recovery and known to occur within Big Horn County.
- North American wolverine (*Gulo gulo luscus*)- Threatened wherever found and known to occur within Big Horn County.
- Ute ladies' tresses (*Spiranthes diluvialis*)- Threatened wherever found, and not known to occur within Big Horn County.

Canada Lynx (Lynx canadensis)

Due to the threats to snowshoe hare, and ultimately Canada lynx, the lynx was listed as threatened in 2000. A five-year review of the species was released in 2017, where it identified that Canada lynx no longer meet the definition of a threatened species. The report recommended removing the Canada lynx from the list of threatened and endangered species. Presented evidence for the recommendation was focused on the low likelihood of extinction by mid-century (2050). While the Canada lynx does have identified non-critical habitat within the County, there have not been any recent sightings or evidence of Canada lynx populations in the County.

Historically Canada lynx were observed in all mountain ranges of Wyoming. However, recent observations have been mainly isolated to the Wyoming, Salt River, Teton, and Absaroka Mountain Ranges. Canada lynx in the drier portions of their range, including Wyoming, prefer late-seral, multi-storied conifer stands dominated by Engelmann spruce (*Picea engelmannii*) and subalpine fir (*Abie lasiocarpa*). They also prefer dense, mid-seral, stands of lodgepole pine (*Pinus contorta*). Forests with these characteristics typically support the most robust populations of snowshoe hare (*Lepus americanus*) and red squirrel (*Tamiasciurus hudsonicus*), major prey sources for lynx.

Current population estimates for Canada lynx are very low. Surveys conducted in the Wyoming, Absaroka, and Wind River Ranges from 2005-06 identified three individuals, two-of-which dispersed from the Colorado release efforts. Due to the reclusive tendencies of the species, the accuracy of this survey effort may underrepresent the population of the species residing in Wyoming. Currently, it is estimated that the spread and population size of lynx is near historic values. The successful establishment of the Colorado population expands upon the assumed historic range of the species and, through dispersal, contributes to Wyoming population. The report also stated concerns that existed at the time of the initial listing regarding timber management practices that could affect lynx at the population level have since been remedied in subsequent federal land management plans. Conservation practices that benefit Canada lynx include protecting large tracts of land from human infrastructure development and maintaining spruce-fir forests that support snowshoe hare populations. In order to better manage the species, refining or improving detection strategies for Canada lynx has been identified as a main goal of Wyoming Game and Fish. (Colorado Natural Heritage Program, 2001; *Colorado Parks & Wildlife - Lynx*, n.d.; *Wyoming ES | Species | Lynx*, n.d.; Colorado Parks and Wildlife, 2015; U.S. Fish and Wildlife Service, 2017; WGFD, 2017b)

Gray Wolf (Canis lupus)

The gray wolf has been delisted due to recovery in the Northern Rocky Mountain Distinct Population Segment which included Montana, Idaho, Wyoming, eastern Washington, eastern Oregon, and north-central Utah. The species remains threatened in Minnesota and is endangered across the remainder of the lower 48 states. The species was initially listed as endangered in 1974 and in 1978 recovery plans were developed for three regions: The Western Great Lakes, Northern Rocky Mountains, and the Southwest. In Wyoming, the species was most recently delisted in 2017 and returned to state management. Previously the state managed the species from 2012-14 until a federal judge's decision returned the species to the endangered species list. Gray wolves are known to exist in Big Horn County.

Across their range, wolves are habitat generalists and are most correlated to ungulate prey availability. Gray wolves are a wide-ranging species that occupy diverse habitats in pursuit of food, mainly large ungulate species. Wild ungulate species found in Big Horn County that may be food sources for wolves include

white-tailed deer (*Odocoileus virginianus*), mule deer (*Odocoileus hemionus*), and elk (*Cervus elaphus nelsoni*). Wolves may also prey upon beaver and other small animals. The species has been observed in sparsely populated forested and wilderness-like areas to more populated areas, such as prairies and agricultural landscapes. While wild and domestic ungulates are their most significant food source, wolves also partake in carrion and pursue birds and small mammals. The territory sizes of gray wolves are dependent on prey density and the presence of other packs. Observed territory sizes range from 25-1,500 square miles and individuals can disperse up to 600 miles. Practices to promote the species rely on Wyoming's Wolf Management Plan which utilizes hunting to manage the species. Hunting removes excess individuals to maintain a sustainable population at objective/carrying capacity. The practice also promotes wolves utilizing less populated areas to reduce conflict with humans and livestock. (U.S. Fish and Wildlife Service, n.d.-a; WGFD, 2017b; Wyoming Game and Fish Department, n.d.-a)

North American wolverine (Gulo gulo luscus)

The North American wolverine is proposed threatened across the entire range of the distinct population segment occurring within the contiguous United States. This mesocarnivore tends to have home ranges that are very large but influenced by the individual's age and gender, food availability, and continuity of habitat. The species' diet is highly variable due to its opportunistic tendencies. Wolverines will consume berries, insect larvae, fish, birds, mammals, and carrion of all types.

Wolverine observations at the southern end of their range have been individual males, who tend to roam extensively, and are not considered breeding entities of the population. Wolverines do not appear to select for specific vegetative or geographic habitat characteristics. The species appears to choose areas that are cold and maintain snow levels into late spring. These areas are limited to high alpine portions of the southern range of the species while wolverines frequent much lower elevation areas at the northern range of the species. In Wyoming, these areas are typically designated wilderness areas.

The historical range of the species included central Colorado and northeast Utah, north, up the Rocky Mountain Range, into Canada and Alaska. This range included all mountain ranges in Wyoming. Current populations of wolverines in the contiguous United States are small, isolated, and receive genetic enrichment from dispersing individuals. Populations in southern Wyoming extending down through the southern Rocky Mountains are designated as a Nonessential Experimental Population. Recent surveillance studies in Wyoming targeted the Bighorn Mountains and the Greater Yellowstone Ecosystem. Wolverine survey efforts in 2016- 2017 did not document any wolverines on the Bighorn National Forest. There have been occasional anecdotal sightings in the past, but nothing verified for the Bighorn National Forest or Big Horn Mountains at this time.". Recent observations of male and female wolverines in the Wind River Range further support predictions of breeding populations in the area. Due to the wide-ranging and seclusive tendencies of the species, estimates of potential habitat come from the presence of snow loads that are predictably deep, persistent, and reliable.

Threats to wolverines are grouped into three major associations including transportation and service corridors, human intrusions and disturbance, and climate change and severe weather. Transportation infrastructure including interstates, highways, and secondary roads, causes mortality of wolverines from collisions, contributes to habitat fragmentation, and further isolates small populations that rely on genetic influence from dispersing individuals. Due to wolverine preference of high alpine habitats, roads are not typical influences, but they affect the continuity between habitat patches. Human disturbance, specifically recreation, is thought to be an increasing threat to the species, which prefers seclusion. These secondary threats to the species are minor when compared to climate change. However, when combined with climate change, they have the ability to significantly compound negative effects. (Colorado Natural Heritage Program, 2001; Colorado Parks and Wildlife, 2015; *Species Profile for North American Wolverine (Gulo Gulo Luscus)*, n.d.; Star-Tribune, n.d.; WGFD, 2017b; Wyoming Game and Fish Department, n.d.-b)

Ute ladies' tresses (Spiranthes diluvialis)

The Ute ladies' tresses is threatened across its range but it is not known to occur in or have potential habitat in Big Horn County.

Resource Management Objective:

A. Threatened, Endangered, and Sensitive species are managed using credible data and in conjunction with multiple use mandates in coordination with the County and other stakeholders.

Priorities:

1. Support creating a unified (cross-agency) definition for "species of concern".
2. Support the use of credible data as information BLM and USFS can use as a basis for a decision that a species shall be designated a "species of concern" or "sensitive" beyond criteria provided in their respective handbooks.
3. The management of non-ESA listed species (e.g., species of concern, species of special concern, or any other non-ESA designation) as though they are protected by the rules of the Endangered Species Act is not supported.
4. Support delisting of any species with insufficient, unsupported, or questionable data not meeting the minimum criteria for its listing or protection level.
5. The County shall be consulted and coordinated with in the species of concern and sensitive species review process, including in the determination of what shall be included as a species of concern or sensitive species.
6. The County shall be consulted and coordinated with in the establishment of recovery objectives for species of concern and the development of management actions to move species off the list of concern. Once recovery objectives have been reached, support removing species from the list of concern.
7. Support the participation of the County and other local governments as a cooperating agency and/or in coordination in federal rulemaking, including any NEPA analysis related to the designation of critical habitat and development of recovery plans.
8. Support full analysis of the economic impacts on all proposed critical habitat designations or species management plans, and the inclusion of the County in this analysis, as required by the ESA.
9. Support cooperation between private landowners and federal agencies to reduce the risk of listing under the ESA.
10. Do not support the introduction or reintroduction of listed species into Big Horn County, unless the County consents to terms and conditions or standard operating criteria that avoid disrupting current land uses.
    a. Shall an agreement not be reached on the potential introduction or reintroduction, and the species is introduced anyway, support the species being introduced only as a non-essential or experimental population.
11. Support participation of the County and other local governments as cooperating agencies in all decisions and proposed actions which affect the County regarding sensitive, threatened, or endangered species; the reintroduction or introduction of listed species; habitat conservation plans; conservation agreements or plans; and candidate conservation agreements.
12. Support the development of recovery plans within 18 months of listing that include clear objectives to reach for delisting to occur; for species already listed support the development of a recovery plan within 18 months of this document.
13. Support the petition of the immediate delisting of a species when population or recovery plan objectives have been met, in accordance with the ESA.

14. Support the development of local solutions (e.g., habitat management plans, conservation plans, or conservation plans with assurances) to keep a species from being listed under ESA or as species of concern/species of special concern.
15. Include consideration of management activities on federal lands as part of the local solutions to keep a species from being listed under ESA or as a species of concern/species of special concern.
16. Single-species management shall be avoided in all federal planning efforts. Multiple uses and sustained yield of lands and resources is supported and shall be implemented as required by federal law.
17. The data used in any listing decision shall meet the minimum criteria defined in Data Administration and Management (Bureau of Land Management, 2006) and FS Handbooks FSH 1909.12, (United States Forest Service, 2013) Supporting Land Management Planning.
18. Support control of predators negatively impacting special status, candidate, or listed species before restricting other multiple uses that could be seen as conflicting.
19. Support control of zoonotic and vector borne diseases negatively impacting special status, candidate, or listed species before restricting other multiple uses that could be seen as conflicting.
20. Support involvement of the County in discussions and decisions regarding any proposed introduction of experimental populations.
21. Management actions which increase the population of any listed species in the County without an approved recovery plan is not supported. Without a recovery plan, management cannot focus on increasing the species population or habitat and cannot move closer to a potential delisting.
22. Support the continued use of existing valid permits and lease rights on lands with listed species wherever possible.
23. At a minimum, copies of legal descriptions showing the exact boundaries of all designated critical habitat shall be provided to local governments in Big Horn County.
24. The designation of potential habitat as critical habitat is not supported unless quantifiable data showing when and how features necessary for species recovery will be achieved on the property.
25. An exclusion analysis shall be completed for all lands within Big Horn County.
26. Big Horn County supports State management of wildlife and management of wildlife on federal lands should reflect Wyoming policy priorities.
27. An exclusion analysis for critical habitat shall be completed for all lands within Big Horn County.
28. Critical habitat shall be only those areas where the listed species could currently survive and should not include any areas that are missing an essential feature for the survival of the species or would require some degree of modification to support a sustainable population of the species.
29. Upon conducting a robust and full local economic analysis of all proposed critical habitat designations in the County, if the analysis indicates that the economic harm to County and its citizens outweigh the benefit of the critical habitat to the listed species, the FWS should immediately exclude such habitat from critical habitat designation.

5.2 WILDLIFE

History, Custom, and Culture

Resource Assessment and Legal Framework

Wildlife Refuges in Big Horn County

In 1903, President Theodore Roosevelt designated the first National Wildlife Refuge by executive order. It was not until 1966 that the refuges were put into the NWR and administered by the USFWS. The USFWS administers 89.1 million acres of federal land in the US, of which 76.6 million are in Alaska (*Federal Land*

Ownership, 2018). The mission of the National Wildlife Refuges is to administer these designated lands for the conservation, management, and if appropriate, restoration of fish, wildlife, and plant resources, and their habitats within the US for the benefit of present and future generations. A number of activities take place on Refuges including hunting, fishing, ice fishing, bird-watching, hiking, bicycling, and water recreation (USFWS, 2018c).

There are 7 National Wildlife Refuges in Wyoming (USFWS, n.d.-b), although none are found within Big Horn County.

Big Game

Big Horn County, while mostly considered a cold desert, has a diversity of habitat that hosts several large wildlife species that are important to the recreational industry of the region. Virtually all the county is habitat of some importance.

Pronghorn (*Antilocapra americana*) are common throughout the County. Pronghorn prefer the open shrublands that most of the county provides. They are intermediate foragers, eating grasses, forbs, and shrubs. Pronghorn use most of the county year-long at some level except for the developed areas and the upper elevations along the eastern boundary of the county. Designated winter/yearlong range occupies about 14% (285,469 ac.) of the County, while general yearlong range is 40% (809,557 ac.) of the County. Pronghorn habitat is stable in the area and pronghorn encroachment onto agricultural lands seems to be increasing. See the following map for details.

Elk (*Cervus canadensis*) are primarily found along the eastern border of the County. Elk are primarily grazers, or bulk foragers, though they will occasionally browse on willows and aspen. Most of the elk habitat within the County, 331,538 ac (or 16% of the area), is listed as spring/summer/fall habitat. Winter habitat accounts for 10% of the County. Elk habitat faces potential degradation from invasive species and some forage competition with cattle grazing. Wildfire has the potential to increase foraging habitat while decreasing sheltering habitat. See the following map for details.

Mule deer (*Odocoileus hemionus*) are ubiquitous in Big Horn County with 90% of the county listed as some level of habitat. However, mule deer have readily adapted to the urban environment and have begun to encroach into developing areas, a common trend in the Bighorn Basin. Mule deer are considered primarily browsers but will use forbs as well. Mule deer will consume grass early in the season while the nutritive value is high, but senescent grasses do not meet their dietary requirements. Just over 50% (1,017,516 ac.) of the County is designated as yearlong mule deer habitat. Crucial winter/yearlong habitat comprises just over 15% (301,068 ac.) of the County. This habitat is located primarily along base of the Bighorn Mountains. These are the areas of primary overlap with USFS and BLM land.

White-tailed deer (*Odocoileus virginianus*) prefer riparian habitats often associated with irrigated lands. Approximately 17% of the County (357,093 acres) provides yearlong habitat. Whitetails, like mule deer, are essentially browsers, supplementing their diet with forbs and occasionally grass. In agricultural areas they will feed more on field and hay crops. There is some habitat overlap with mule deer; however, white-tailed deer are becoming more prevalent in the area. See the following map for details.

Bighorn sheep (*Ovis canadensis*) are documented as occurring in the county. However, less than 1% (18,396 acres) of the County is designated as crucial winter/yearlong habitat in the northeast corner of the County along the Bighorn Mountains. Wyoming manages bighorn sheep according to the 2004 Wyoming State-wide Bighorn/Domestic Sheep Interaction Working Group Final Report and Recommendations created per Wyoming Statute 11-19-604.

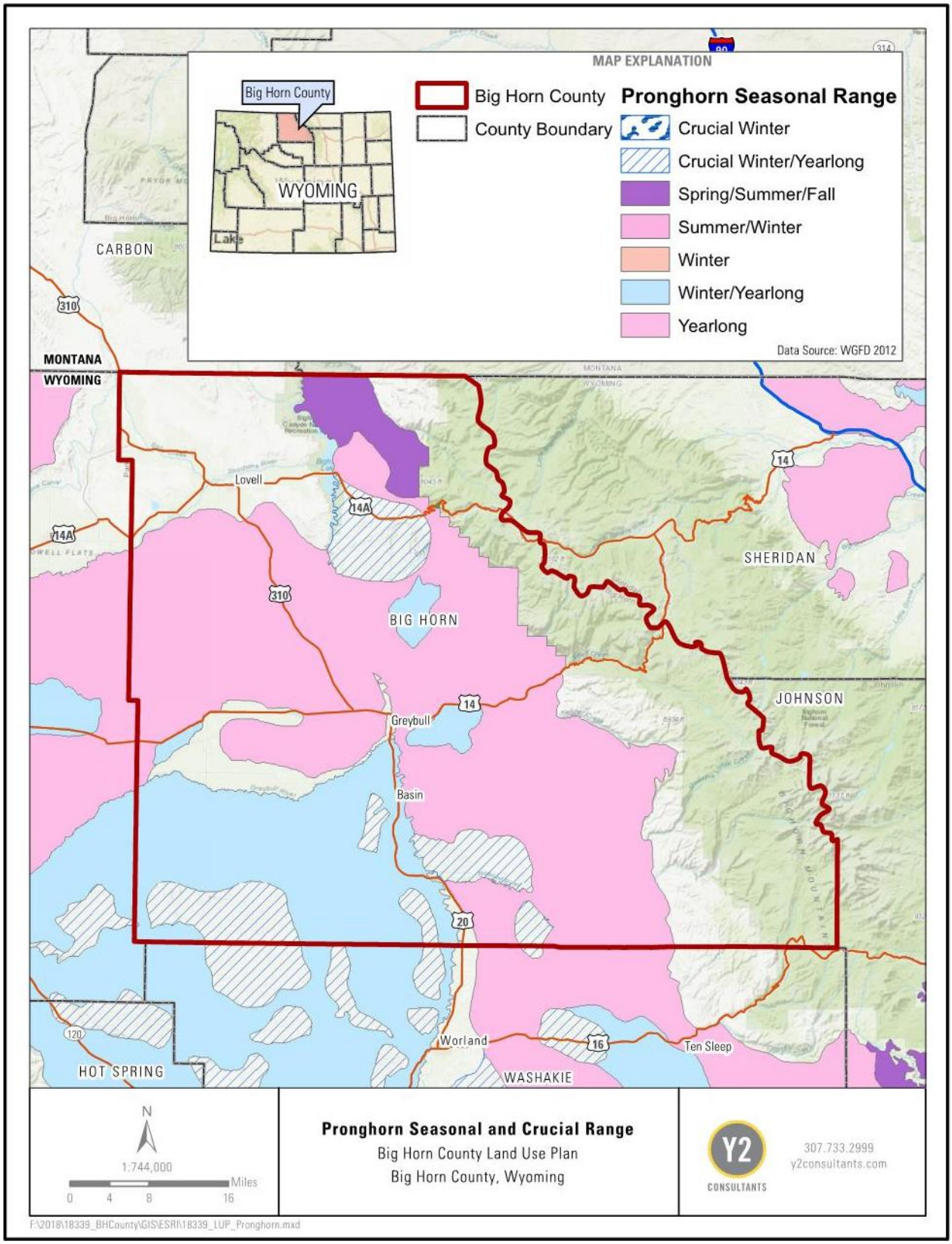


Figure 15. Pronghorn seasonal habitat and crucial range in Big Horn County.

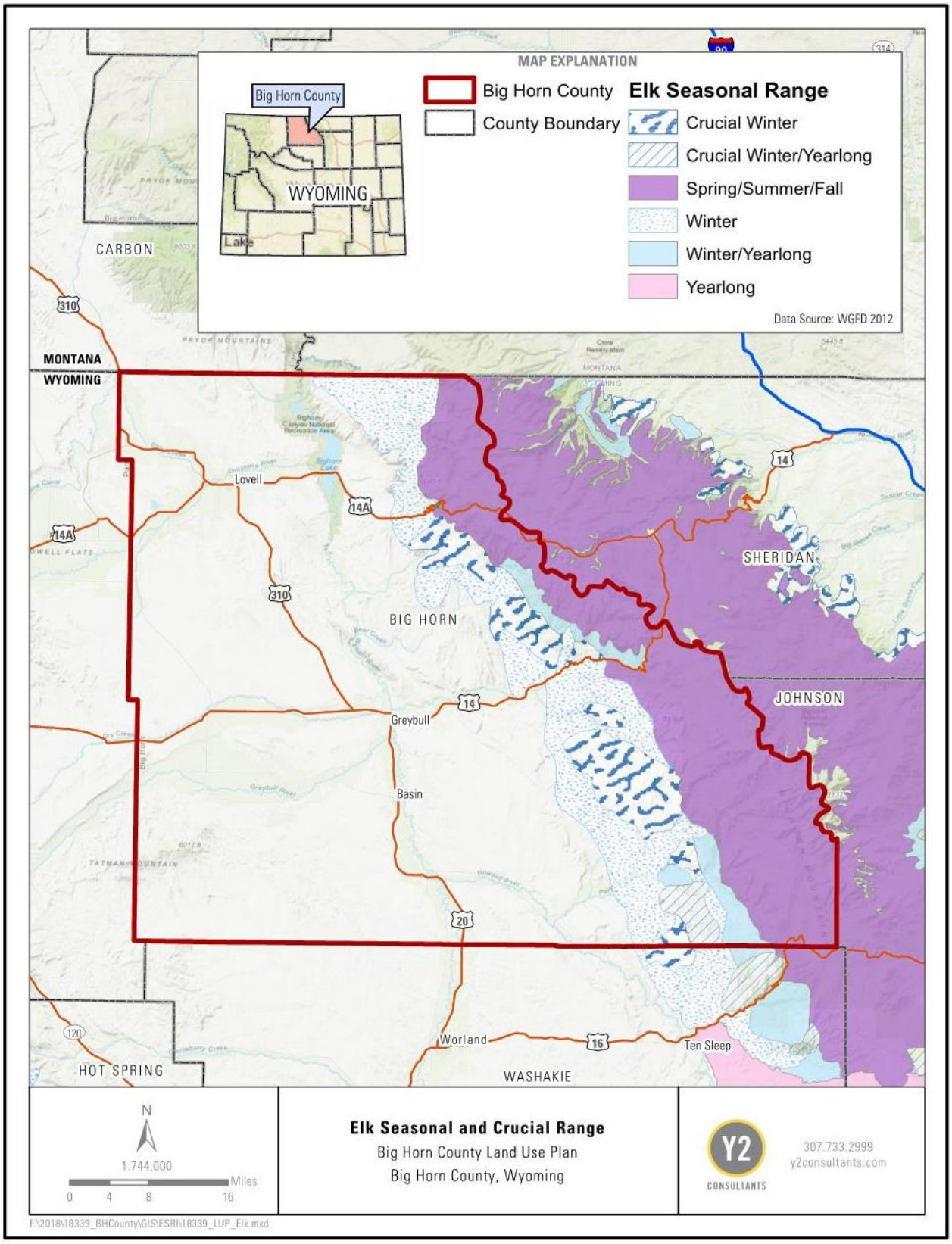


Figure 16. Elk seasonal habitat and crucial range in Big Horn County.

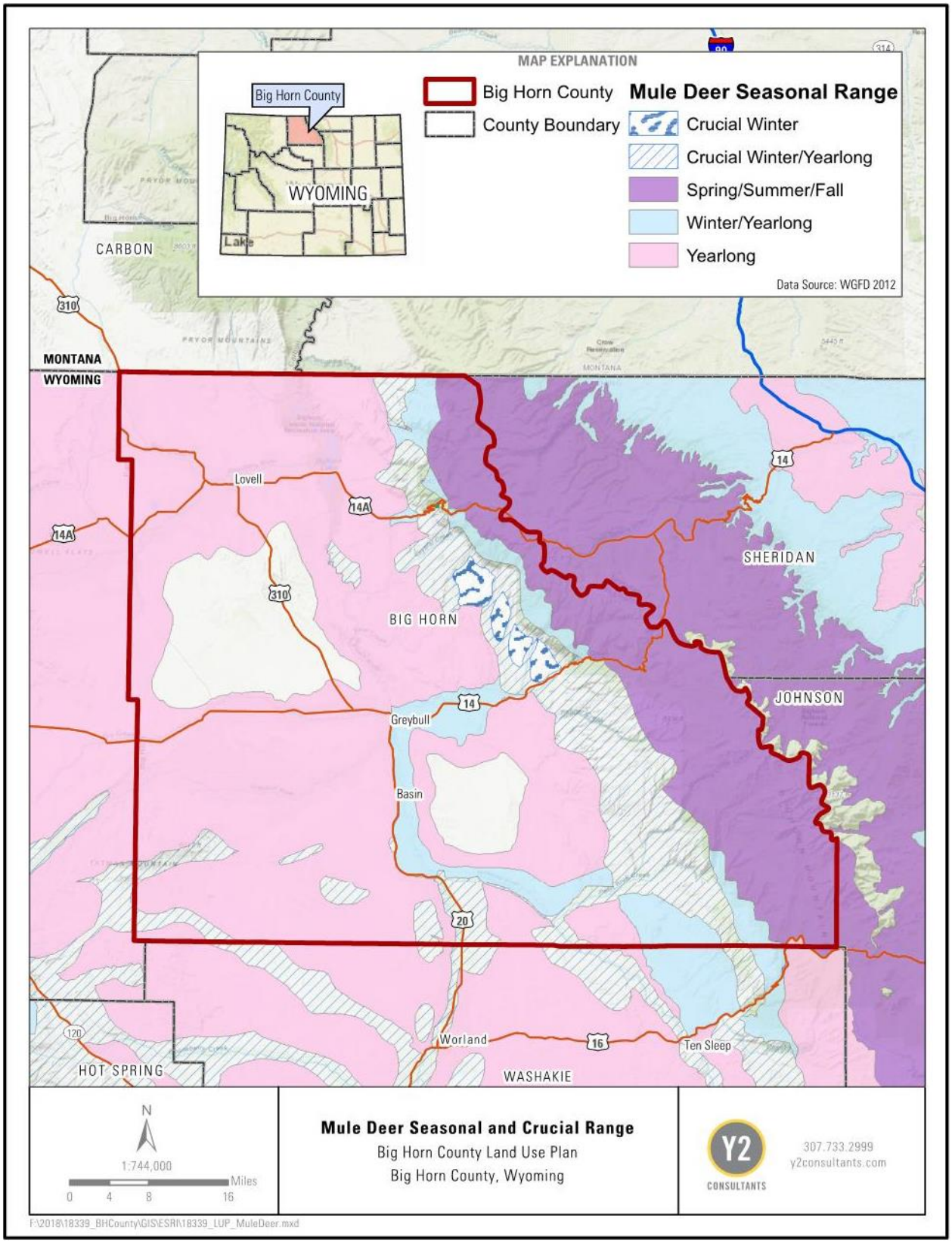


Figure 17. Mule deer seasonal habitat and crucial range in Big Horn County.

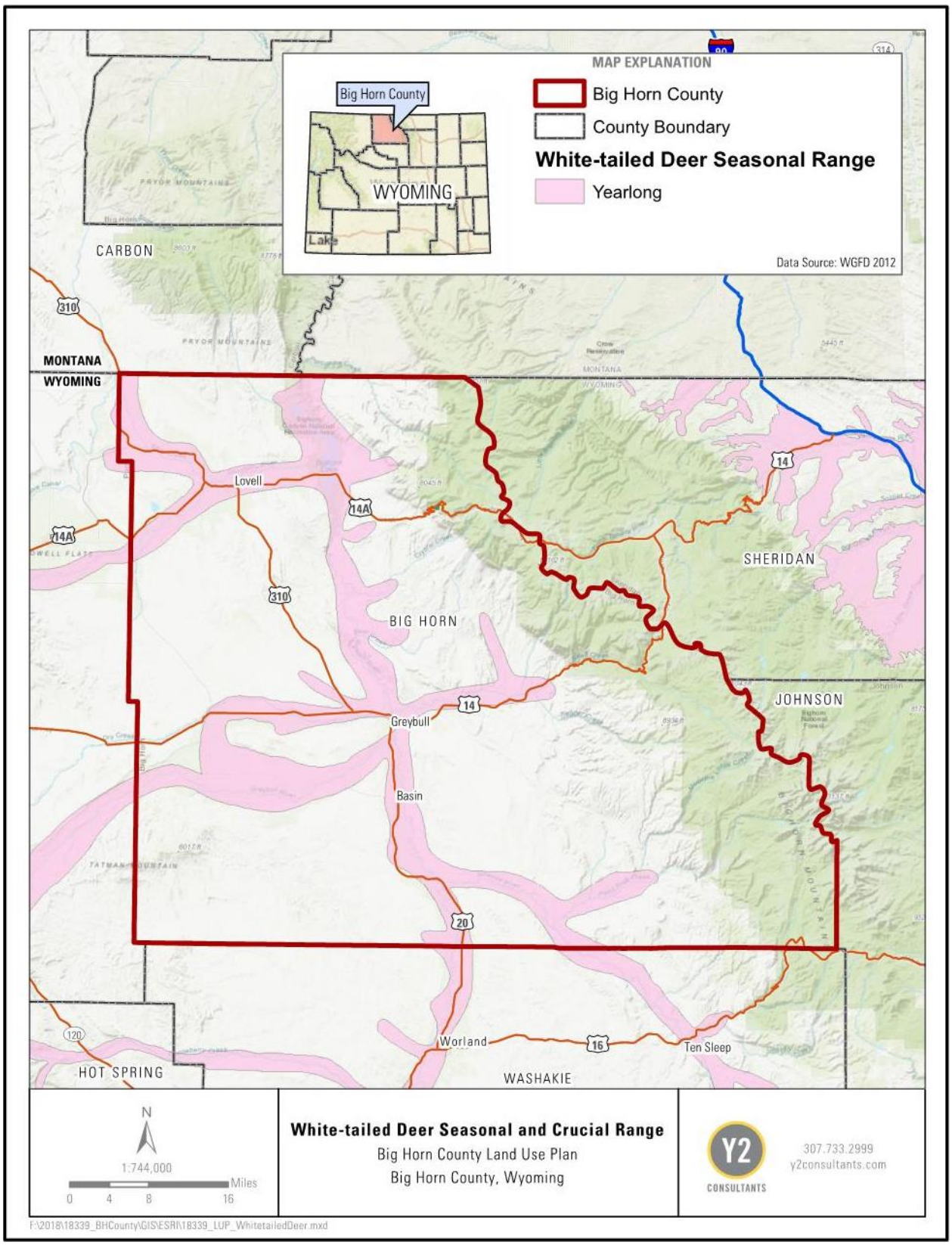


Figure 18. White-tailed deer seasonal habitat in Big Horn County.

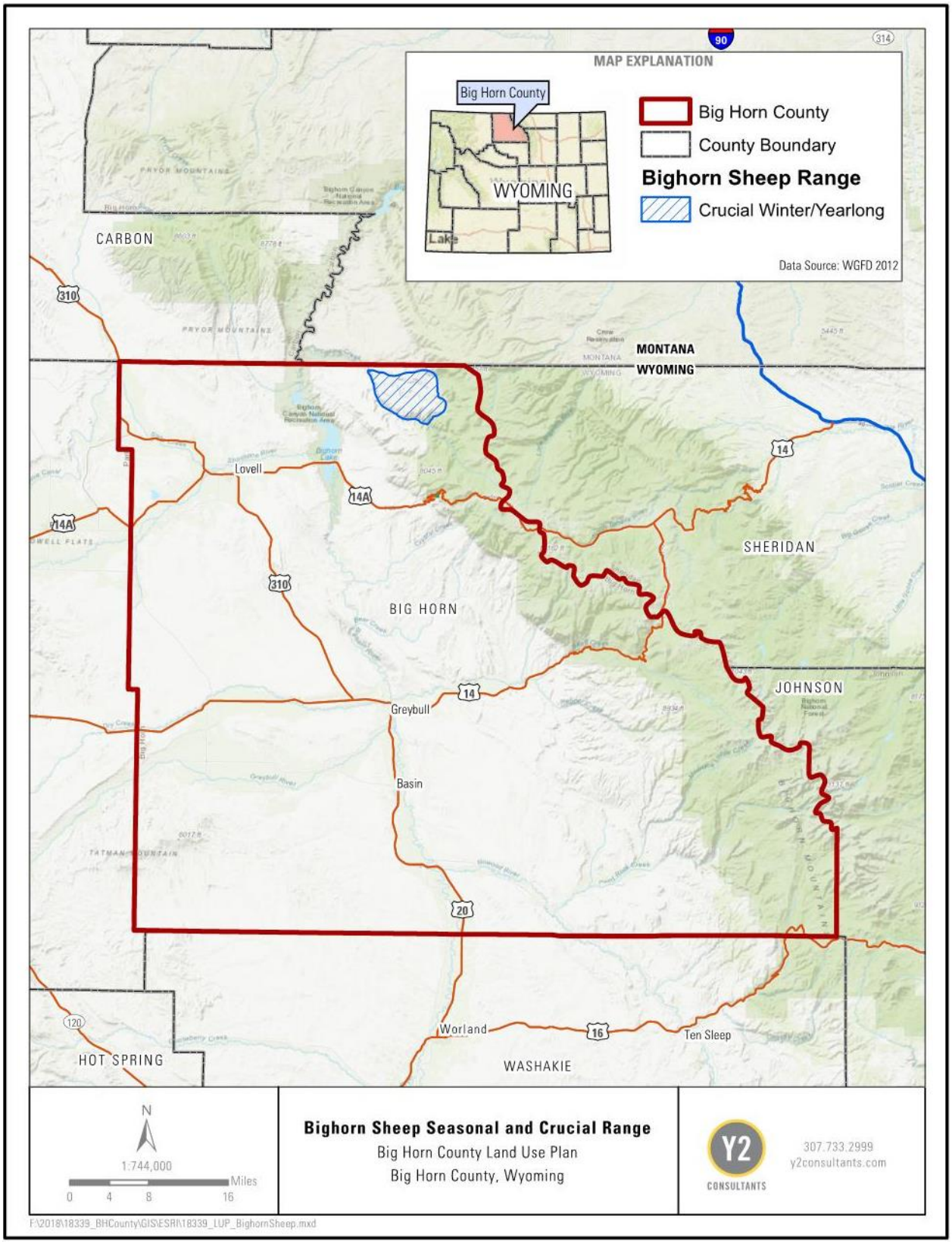


Figure 19. Bighorn sheep crucial winter range in Big Horn County.

Wildlife Habitat Management Areas

The WGFD maintains approximately 450,000 acres of land under deed, lease, or by agreement for wildlife habitat management areas (WHMA).

There are three WHMAs within Big Horn County spanning 7,611 acres, including the Renner WHMA, the Medicine Lodge, and the Yellowtail WHMA. These areas provide the public opportunities for fishing, hunting, camping and hiking. (WGFD, 2020)

State of Wyoming Migration Corridor Protections

In February 2020 Wyoming released the Wyoming Mule Deer and Antelope Migration Corridor Protection Executive Order 2020-1, outlining the State's strategy for managing migration corridors and habitats. The order designated three separate mule deer corridors and a process by which to designate additional corridors in the future. The executive order addresses surface disturbance, state-permitting, and recreation activities within designated mule deer and antelope migration corridors, as well as the cooperation between WYDOT and WGFD (and other related state agencies) to minimize roadway collisions and facilitate big game movement across roadways. (State of Wyoming, 2020)

Executive Order 2020-1 promotes Counties to revise or update land use plans to be consistent with the state designated migration corridor protections. There are currently no migration corridors designated within Big Horn County. (WFGD, 2020)

Greater Sage-Grouse

Greater sage-grouse is a state-managed species that is dependent on sagebrush steppe ecosystems. These ecosystems are managed in partnership across the range of the Greater sage-grouse by federal, state, and local authorities. Efforts to conserve the species and its habitat date back to the 1950s. Over the past two decades, state wildlife agencies, federal agencies, and many others in the range of the species have been collaborating to conserve Greater Sage-Grouse and its habitats. BLM has broad responsibilities to manage federal lands and resources for the public benefit. Nearly half of Greater sage-grouse habitat is managed by the BLM.

In September 2015, the US Fish and Wildlife Service (USFWS) determined that the Greater sage-grouse did not warrant listing under the Endangered Species Act of 1973 (ESA). In its "not warranted" determination, the USFWS based its decision in part on regulatory certainty from the conservation commitments and management actions in the BLM and USFS Greater sage-grouse land use plan amendments (LUPAs) and revisions, as well as on other private, state, and federal conservation efforts. Since 2015 the BLM, in discussion with partners, recognized that several refinements and policy updates would help strengthen conservation efforts, while providing increased economic opportunity to local communities.

The BLM issued its Record of Decision for the Wyoming Greater sage-grouse Approved Resource Management Plan Amendment in March 2019 to update greater sage-grouse management. This document partially supersedes the 2015 Final Bighorn Resource Management Plan revisions. The 2019 Plan Amendment is currently being litigated in the United States District Court for the District of Idaho and is being blocked from implementation under an injunction issued by that court.

In 2019, the Wyoming Governor's Office issued Sage-Grouse Executive Order 2019-3. The Executive Order is the State of Wyoming's primary regulatory mechanism to protect Greater sage-grouse and its habitat. The order outlines procedures that seek to minimize disturbance and incentivize development outside of designated core population areas. The 2019 Executive order can be found here: https://wgfd.wyo.gov/WGFD/media/content/PDF/Habitat/Sage%20Grouse/Governor-Gordon-Greater-Sage-Grouse-EO-2019-3_August-21-2019_Final-Signed_2.pdf

There are approximately 241,776 acres of designated core habitat for sage-grouse within Big Horn County.

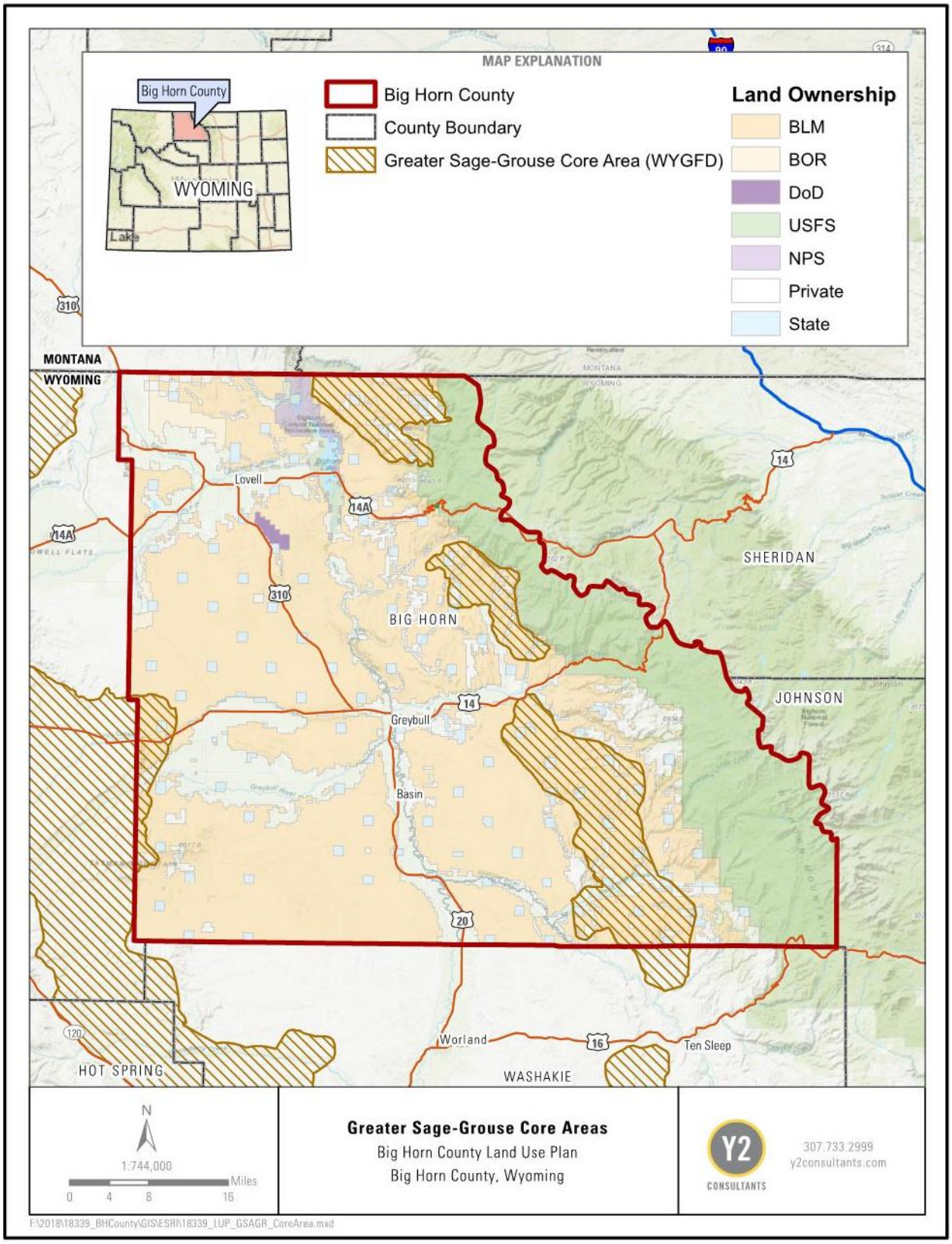


Figure 20. Greater sage-grouse core area in Big Horn County.

Bureau of Land Management

Special Status Species are designated by the BLM and include federally listed or proposed for listing as threatened or endangered, candidate species, state protected and sensitive species, and other special- status species including federal and state "species of concern". The BLM designates special-status species where there is credible scientific evidence to document a threat to the continued viability of a species population. Moreover, Special Status Species are typically designated as sensitive by a BLM state director in cooperation with state agencies that are responsible for managing the particular species. State natural heritage programs are typically involved as well, where applicable. Species are usually those that fall in the following criteria:

- Could become endangered in or extirpated from a state or within a significant portion of its distribution;
- Are under status review by the USFWS;
- Are undergoing significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution;
- At federal listed, proposed, candidate, or state-listed status may become necessary;
- Typically have small and widely dispersed populations;
- Inhabit ecological refugia or other specialized or unique habitats; or
- Are state-listed but which may be better conserved through application of the BLM Sensitive Species Status. (Bureau of Land Management, 2015)

The Wyoming State BLM Office identifies 82 species as sensitive. These species are included in Table 5 in the appendices.

US Forest Service

Regulations in 36 C.F.R. 219.19 and 219.20 call for the selection, evaluation, and monitoring of management indicator species and their habitat. Management indicator species may be "plant or animal species and are selected because their population changes are believed to indicate the effects of management activities on other species of selected major biological communities or on water quality" (US Forest Service, 1982). These regulations do not imply that the population dynamics of management indicator species directly represent the population dynamics of other species. Criteria that direct management indicator species consideration include:

- Species is indigenous.
- Species is a year-long resident of the vicinity (non-migratory), or population trends of the species in the local or regional vicinity are closely tied to habitat conditions resulting from land uses on National Forest System (NFS) lands in the same area.
- Species is considered a keystone species or habitat specialist.
- Species is sensitive to management activities on NFS lands in the local or regional vicinity. Population trends of the species are assumed to be related to changes in habitat composition, structure, ecological processes, and/or human activities.
- Species is appropriate for the scale that best represents the key issues or management concerns.
- Biologically and economically feasible to monitor populations and habitat of the species at similar spatial scales. Populations are of sufficient size or density to be reasonably detected and monitored. Accepted survey protocols exist. Analysis and interpretation of inventory data should produce meaningful and reliable trend information. Species that require high investment for low returns or suspect results should be avoided.
- Species where the scientific literature supports the assumed limiting factors and habitat associations. (USDA Forest Service, 2001)

Bighorn National Forest

Focal species and Threatened, Endangered, Proposed, Candidate and Forest Service Region 2 Sensitive Species identified on the Bighorn National Forest are included in Table 6 and Table 7 in the appendices.

Rocky Mountain Region

The Rocky Mountain Region of the US Forest Service has 173 identified sensitive species. These species are included in Table 8 and Table 9 in the appendices.

Resource Management Objective:

A. Wildlife is managed sustainably using credible data and management plans are developed in coordination with the County and other stakeholders. Species are not managed above their legal designation.

Priorities:

1. The County supports the State of Wyoming's Sage-Grouse Conservation Strategy.
2. Management plans shall be generated to protect the overall health of all natural resources, not specifically managed for one individual species.
3. Encourage and support timely responses from federal agencies when requested by Big Horn County for resources concerns, management plans, and other sensitive, candidate or listed species.
4. Management plans must use independent scientific data, peer-reviewed science, and/or those data meeting the 'credible data' agency specifications to generate plans.
5. Minimize management of "special status" species to decrease single-species management efforts, and to eliminate management of special status species as ESA-protected species.
6. The County shall be consulted and coordinated with in the continued management of greater sage-grouse, and any other species for which a single-species management plan is developed.
7. Create management objectives based on the carrying capacity of the habitat including all multiple use mandates (livestock grazing, mineral extraction, etc.) on federal lands.
8. Support habitat monitoring efforts and refine available habitat data.
9. Consultation and coordination shall occur with Big Horn County where federal monies or resources are committed for the development of management plans, population objectives, wildlife introductions (i.e., big horn sheep or pronghorn), or other decisions that may affect the economic viability of the communities within Big Horn County, as required by agency mandates.
10. Peer-reviewed science, and/or those data meeting the 'credible data' agency specifications, shall be used in the management of disease spread between native and domestic species, with consultation and coordination of local government.
11. Encourage federal agencies to recognize management directives coming out of the Governor's executive order and not exceed the management recommendations in the executive orders.

5.3 FISHERIES

History, Custom and Culture

Resource Assessment and Legal Framework

Fisheries support the recreation and tourism industries in Big Horn County. The combination of healthy fisheries and public access throughout the County's reservoirs, lakes, and rivers provide diverse fishing opportunities that attract recreators locally and internationally. Fishing within the county varies from fly fishing trout species to sport fishing the reservoirs. Bighorn Lake is an important fishery in the County. The Big Horn Lake fisheries include sauger (*Sander canadensis*), walleye (*Sander vitreus*), crappie (*Pomoxis* spp.), channel catfish (*Ictalurus punctatus*) and smallmouth bass (*Micropterus dolomieu*). While walleye is much more common in the Montana portion of the reservoir, sauger and channel catfish are very common in the southern portions of Big Horn Lake. The Big Horn Mountain Lakes surveys have shown that brook

trout (*Salvelinus fontinalis*), rainbow trout (*Oncorhynchus mykiss*), golden trout (*Oncorhynchus aguabonita*), and Yellowstone cutthroat trout (*Oncorhynchus clarkii*) are all commonly harvested from Lower Paintrock, Middle Paintrock, and Meadowlark Lakes, and in other streams throughout the County. The South and North Forks of the Shoshone River both support multiple trout species, brown trout (*Salmo trutta*) and cutthroat trout being commonly fished. (WGFD, 2009)

Resource Management Objectives:

A. Fish resources are managed for healthy and biodiverse fisheries that support recreation and tourism.

Priorities:

1. Management plans shall be generated to protect the overall health of all natural resources, not specifically managed for one individual species.
2. Management plans will use independent scientific data, peer-reviewed science, and/or those data meeting the 'credible data' agency specifications to generate plans.
3. Create management objectives based on the carrying capacity of the habitat including all multiple use mandates (livestock grazing, mineral extraction, etc.) on federal lands.
4. Support fisheries habitat monitoring efforts and refine available fisheries habitat data.

5.4 PREDATOR CONTROL & LIVESTOCK PREDATION

History, Custom, and Culture

Predatory wildlife is important to the ecology of an ecosystem. However, predators have negative impacts on livestock operations, developing communities, and other agriculture operations. For these reasons, it is important to properly manage predators to ensure safe communities and stock, and healthy functioning ecosystems.

During the settlement of the western states, depredation was an issue across livestock operations. Predators were controlled on an individual basis until the early 1900s, when stockgrowers began asking for government assistance. By the 1960s, with the release of the Leopold Report, the importance of proper management of predators became known (deCalesta, n.d.). The common public mindset began to shift to the control of predators threatening stock operations and communities while allowing natural predator populations to exist (deCalesta, n.d.).

Resource Assessment and Legal Framework

The Animal and Plant Health Inspection Service (APHIS) is located within the Department of Agriculture and provides a Wildlife Damage Program and a Pests and Diseases Program. The Wildlife Damage Program researches and develops wildlife damage management methods and provides resources to the public (APHIS, n.d.). The Wyoming State Legislature established predator control statutes in Title 11, Chapter 6. The statutes provide for general provisions, district boards, and the Wyoming State Animal Damage Management Board. The district for the County is the Big Horn County Predator Management District. Big Horn County also maintains an appointed Predator Management Board (Big Horn County, n.d.-a).

Within the County, the Big Horn County Predator Control Board directly administers the program employing a predator control agent, also known as a government trapper. Wildlife population management through sportsman hunting and trapping also occurs throughout the County. Predator control within the County affects the economic stability of the livestock industry and the sport hunting/fishing industry. Predator control has been used to protect the health and safety of the public by reducing human-wildlife conflict and the spread of diseases commonly carried by predators. The predators in Big Horn County and the surrounding area, as listed under Wyoming Statute 23-1-101, include coyote, jackrabbit, porcupine, raccoon, red fox, skunk, wolves (outside the wolf trophy game management area) and stray cats. It is important to recognize that changes in wildlife population dynamics and management in surrounding areas

(i.e., Montana to the north or Yellowstone to the west), are likely to influence wildlife populations and behavior in Big Horn County.

Resource Management Objective:

A. Predator populations are managed to maintain healthy ecological levels, while still prioritizing reducing the occurrence of livestock depredation and the health and welfare of citizens of Big Horn County.

Priorities:

1. Support selective predator control as a valid means of increasing the productivity of lands within the County and as a valid method of attaining sustainability of the wildlife and domestic livestock populations.
2. Predator control measures are supported on all lands within the County.
3. Support recognized proactive efforts such as aerial hunting, snares, and leg traps to control predator populations.
4. The County opposes restrictions to current predator control methods.
5. Predator species such as grizzly bears and wolves shall be deterred from migrating or re-locating to areas that impact the health, safety, and welfare of the people.
6. When addressing a decline in sensitive species, predator control shall be employed prior to placing any restrictions on resource-based industries like livestock grazing. Only when predation is determined to not be the cause of decline shall restrictions on the resource industries be considered prior to predator management.
7. Federal agencies should coordinate with the County in the determination of any impact of management of predator species when related to the management of ESA listed species or the use of APHIS funds, as required by federal agency mandates. This includes impacts on the economy, culture, custom and safety of the residents of the County.
8. Pursuant to State statute, the County will establish and implement a cooperative plan for predator control incorporating coordination with APHIS and county resources where available.
9. Support predator control as an effective method for protecting ESA listed species and game bird populations to include, but not limited to, sage-grouse, chukars, quail, Hungarian partridges, pheasants, turkeys, ducks, geese, doves, and swans.
10. Support predator control as a valid method of increasing the productivity of the public lands upon which the economy of the County is dependent. Productivity includes higher survivability of the offspring of wildlife and livestock.

5.5 WILD HORSE, BURROS AND ESTRAY LIVESTOCK

History, Custom, and Culture

The Wild-Free Roaming Horses and Burros Act (WFRHBA) was passed by Congress in 1971 and declared wild horses and burros to be “living symbols of the historic and pioneer spirit of the West” (16 U.S.C. § 1331). The law requires the BLM and USFS to manage and protect herds in their jurisdiction in areas where wild horses and burros were found roaming in 1971. Under WFRHBA, “wild free-roaming horses and burros” on BLM land are under the Secretary of the Interior’s jurisdiction for the purpose of management. (16 U.S.C. § 1333(a)). The act requires that the Secretary and BLM must inventory and determine appropriate management levels (AMLs) of wild horses and burros, determine if overpopulation exists, and “shall immediately remove excess animals from the range so as to achieve AMLs” (16 U.S.C. §§ 1333(b) (1) and (2) and 43 C.F.R. § 4720.1).

Under WFRHBA, BLM is required to maintain wild horse and burro population levels “in a manner that is designed to achieve and maintain a thriving natural ecological balance” and to establish appropriate management levels for the herd, considering the relationships with other uses of the public, and adjacent

private lands (16 U.S.C. § 1333(a); 43 C.F.R. § 4710.3-1). The WFRHBA was specifically amended, then, to require "immediate" removal of excess horses. 16 U.S.C. § 1333(b)(2).

Once the inventory occurs and the AML has been set, if an overpopulation of wild horses exists, the BLM "shall immediately remove excess animals from the [public] range so as to achieve appropriate management levels (AMLs)." *See* 16 U.S.C. § 1333(b) (1) and (2) and 43 C.F.R. § 4720.1 ("Upon examination of current information and a determination by the authorized officer that an excess of wild horses … exists, the authorized officer shall remove the excess animals immediately…"). "Excess animals" are defined as those that must be removed in order to preserve and maintain a thriving natural ecological balance and to preserve the "multiple use relationships" in an area. *See* 16 U.S.C. § 1332 (f). As stated in another section of the WFRHBA, "[A]ll excess animals" must be removed by the BLM "so as to restore a thriving ecological balance to the range, and to protect the range from deterioration associated with overpopulation" to preserve and maintain the "multiple use relationship in that area." *See* 16 U.S.C. § 1333 (b)(2). When a determination is made that there is an "excess," action is immediately required because the "endangered and rapidly deteriorating range cannot wait." *Blake v. Babbitt,* 837 F. Supp. 458, 459 (D. D.C. 1993).

According to the Tenth Circuit Court, the BLM must make two determinations before the BLM's duty to remove excess animals is triggered. *Wyoming v. United States Department of the Interior,* 839 F.3d 938 (10th Cir. 2016). The first determination is that an overpopulation exists on a given area of the public lands. *Id.* at 944. This is shown when an area exceeds its AMLs as discussed above. The second determination is that "action is necessary to remove excess animals." *Id.* If a determination has not been made by the agency that an action is necessary, then the agency does not have a duty to remove those excess horses. *Id.*
Wild horses, as they are now perceived, are not native to America's rangelands; they are feral animals. Their vulnerability to predators is limited and their population growth rate is high. BLM estimates the growth rate of the wild horse population to be 20 percent annually.

Although there is no federal statute requiring private landowners to allow wild horses to graze on their private lands, private landowners cannot remove the horses; the BLM must be notified of any trespass horses. The WFRHBA mandates that the BLM, once notified, must "immediately" remove trespass wild horses from state and private land.

The BLM designates both Herd Areas (HAs) and Herd Management Areas (HMAs). Herd areas are areas in which "wild" horses and burros were found in 1971 and these are the only areas that BLM may manage horses by law. Herd management areas are the areas selected within each HA that were evaluated by BLM to have adequate food, water, cover, and space to sustain healthy and diverse "wild" horse and burro populations over the long term and were calculated using GIS. (National Horse & Burro Rangeland Management Coalition, 2015)

Wild horses have been problematic for federal land grazing permittees since the passage of the WFRHBA. In recent years, the BLM has been unsuccessful in completing gathers to reduce the numbers of wild horses on rangelands. Many HMAs are significantly over AML, causing harm to rangelands. HMAs are not fenced, allowing horses to cause degradation on private and state lands.

There are no wild horse areas on USFS lands in Wyoming.

Resource Assessment and Legal Framework

McCullough Peaks Herd Management Area

The Cody Field Office manages the McCullough Peaks HMA, located east of Cody and north of U.S. Highway 14/16/20. The HMA encompasses 109,814 acres of land, including the McCullough Peaks Wilderness Study Area. The McCullough Peaks HMA has an Appropriate Management Level (AML) range of 70 to 140 wild horses. At the time of this report, the population is estimated to be 153 horses. Fertility

treatment was initiated in 2009 and continued with field darting since 2001. A gather was initiated in 2013 with plans to gather and remove horses down to approximately 100 adult animals using non-helicopter techniques. No information is available regarding the success of this gather, which was approved through 2018 if horses remained above AML.

Fifteenmile Herd Management Area

The Fifteenmile HMA is located in the southwest corner of the county straddling Fifteenmile Creek. The HMA is about 30 miles northwest of Worland and covers over 81,000 acres. Horses roam well outside of the boundary, coming within 15-20 miles of Worland. The horses on the HMA are supported by a single well and seasonal precipitation, this stresses wildlife populations. While the HMA overlaps five winter sheep grazing allotments there is minimal overlap with livestock as the allotments have only been grazed four times between 1984 and 2016. The HMA was the site of the first federal wild horse gather in 1938. Periodic gathers have been made between 1984 and 2009 removing 1,207 horses.

On August 16, 2019 the BLM released two decision records approving two management actions on the HMA. The first is to update the 1985 Fifteenmile Wild Horse Herd Management Area Plan. The updated plan adjusts the AML to 100-230 horses; the previous AML was 70-160 horses. The decision also approves a gather of horses to return numbers to the lower end of the AML. Priority will first be given to removing horses outside the boundary of the HMA on private and state lands, then reducing numbers within the HMA. The gather is scheduled to take place in October 2019 and anticipates removing over 700 horses.

Pryor Mountain Herd Management Area

The Pryor Mountain Wild Horse Range HMA is located on the Wyoming/Montana border with approximately 6,230 acres in Big Horn County of the 40,458-acre HMA. Horses roam outside of the area. The HMA is on BLM and NPS lands on the Wyoming site; the HMA extends onto USFS lands in Montana. The current AML range is 90-1020 horses. Since 1971, the BLM has removed nearly 450 horses from the HMA.

The most recent gather was in 2015 and removed 18 horses.

Herd Areas

Two herd areas (HA) are located in Big Horn County that are no longer managed for wild horses or burros. The North Shoshone HA was closed because all animals were claimed as private property. The Foster Gulch/Dry Creek HA does not have water available for horses.

Estray

"Estray" means any animal found running at large upon public or private lands, fenced or unfenced, in Wyoming whose owner is unknown, whose owner cannot be found, or that is branded with two or more disputed brands for which neither party holds a bill of sale. An estray includes any animal for which there is no sufficient proof of ownership found upon inspection (W.S. 11-24-101 through 11-24-115).

Resource Management Objective:

A. Wild horses within the County shall be managed for a viable, healthy herd resulting in the thriving natural ecological balance (including the standards and guidelines for rangeland health) and multiple-uses as required by the Act.

Priorities:

1. Any equine animal released from private individuals, tribes, or neighboring lands onto public lands after 1971 shall be considered as estray and be removed.
2. Proactively manage horses within the HMAs at AML as identified in the current Resource Management Plan (U. S. Interior 1996):

3. Support the gathering and removal of all horses to the minimum defined AML to decrease gather frequency and minimize resource damage.
4. The rights of the allotment holder shall be considered equal to that of wild horses as per multiple use mandates.
5. Support and encourage the immediate removal of wild horses from private lands when notified of their presence as defined through the WFRHB Act and Wyoming estray laws. Immediate removal shall be conducted in such a manner so that the horses will not return to private lands nor be placed within County boundaries as long as the BLM is out of compliance with AML.
6. Support and encourage the immediate removal of all wild, stray and feral horses within Big Horn County that are found outside the McCullough Peaks, Pryor Mountain, and Fifteenmile HMAs in accordance with the Act.
7. The County opposes any proposed enlargement or expansion of the current HMA boundaries and any additional new HMAs or HAs.
8. Complete an inventory of wild horses at least every three years.
9. Support the continued use of long-term fertility control such as spaying of mares but only as a last resort to other viable solutions, and if the herd numbers are still within AML.
10. The County encourages the creation of public education programs through the extension service to inform the public at large about the need to maintain healthy ecosystems and the differences between livestock, wild horse, and wildlife needs and impacts.
11. Rulemaking shall be pursued to give the BLM, and those who adopt wild horses, additional options for the disposal of wild horses to allow BLM to meet their existing statutory requirements.
12. Modifications of HMA boundaries would be allowed only for the purpose of reducing resource conflicts and adverse effects on private lands and should be considered only if there is no net increase in boundary size or AML numbers.
13. Any reduction in HMA size shall be completed with proportional reduction in AML.
14. Develop and implement habitat management and/or monitoring plans to specifically determine impacts of wild horses on range, riparian, water, wildlife, and other resources.
15. All monitoring plans shall accurately identify the causal factors in resource changes (e.g., separate wild horse, livestock, and wildlife impacts) and if monitoring shows any adverse impacts, take action to manage the activity based on the specific results in the monitoring.
16. Once excess horses are removed from areas where livestock grazing permittees have taken reductions in AUMS, livestock grazing reductions shall be reinstated as soon as resources recover.

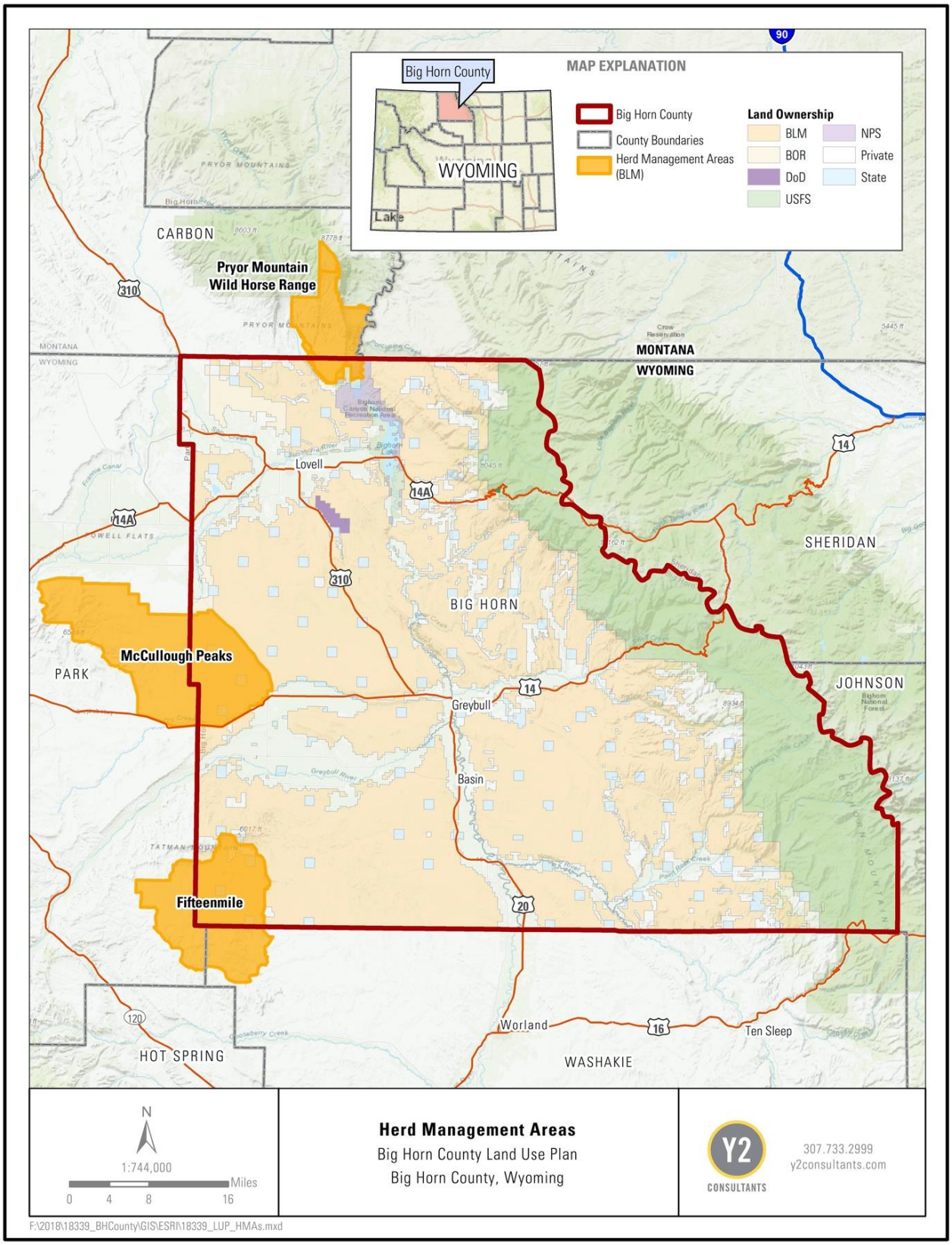


Figure 21. Herd Management Areas within Big Horn County.

CHAPTER 6: ECONOMICS & SOCIETY

6.1 TOURISM AND RECREATION ON PUBLIC LANDS

History, Custom, and Culture

Tourism and recreation in Big Horn County is a smaller, but increasingly more significant contributor to the custom, culture, and economy of the area, especially with the rising popularity of snowmobiles and off-highway vehicles (OHVs). People from metropolitan areas are traveling to experience the peace, solitude and quiet of majestic mountains and colorful high desert vistas offered by public lands in the County.

The Big Horn Canyon National Recreation Area attracts over 250,000 visitors annually; approximately 44% of the visitors are allocated to Wyoming (NPS, 2017). Big Horn County is also home to the Bighorn National Forest, including the Cloud Peak Wilderness Area; Red Gulch Dinosaur Track site, with dinosaur tracks dating back 167 million years; Medicine Lodge State Park Archaeological Site, long known for its Indian petroglyphs and pictographs offering thousands of years of Native American history; and Sheep Mountain, a unique mountain range in the middle of Big Horn valley, offering an anticline with an arch of over 1000 feet.

Resource Assessment and Legal Framework

Big Horn County's landscape is a recreational haven. Amenities such as a bounty of wildlife, beautiful pines, grass prairies, and wildflowers offer year-round outdoor recreational opportunities, which is essential in the lives of County residents. Recreation, both motorized and non-motorized, is a critical economic drawing point for the County. It attracts visitors who come to view wildlife, fish, hunt, cross country ski, snowmobile, hike, camp, and generally enjoy the opportunities that an open access motorized forest and range system provides. In 2017, visitors spent over $30 million while visiting Big Horn County (Dean Runyan Associates, 2018a).

The USFS has struggled with dispersed camping and compliance issues since 2006. The Bighorn Mountain Coalition (BHMC) Dispersed Camping Taskforce has received extensive public comment regarding the need to address dispersed camping and its effects on forest resources (McKee, 2019). The BHMC submitted recommendations to the BHNF, of which an extension of the dates that require a 14-day camping limit has been enacted (USFS, n.d.-b). Many campers have been unable to find spots and some are concerned about the visual impacts of trailers and ground disturbance (A. Johnson, personal communication, December 4, 2018). To many residents of Big Horn County and other neighboring counties, camping in undeveloped areas is the preferred location within the Big Horn National Forest (PB Communications & Strategic Solutions, 2016).

Resource Management Objective:

A. Recreational resources are managed to promote access and availability to the public for both tourism and recreational uses, while maintaining benefit to the County's economy across important industries including agriculture, mineral development, and tourism.

Priorities:

1. Promote responsible tourism through signage that explains the historical significance of areas, sites and roads.
2. Support and encourage a year-round multiple use management approach to be used on federal lands as a means of continuing and enhancing recreation opportunities within the County, so long as there is no negative impact to the County's mineral and agricultural industries.
3. Land use fees and/or fee increases, or the creation of new fees for the use of federal lands within the County by any agency without County coordination and approval are not supported.

4. Support improved accessibility, maintenance, and development of motorized and non-motorized trails to facilitate recreation and access to natural resources for residents and visitors, reflecting the no net loss of our open roads system.
5. Recreational access shall not discriminate in favor of one mode of recreation to the exclusion of others.
6. Recreational activities recognized and supported by state and federal agencies shall include family-oriented activities and facilities that are accessible to the general public and not limited to special interest groups.
7. Support off-road (cross country) access for snowmobiling, game retrieval, cultural site visitation, other recreational or tourism interests, and other lawful motorized OHV uses.
8. Federal agencies shall identify areas heavily used for camping and in consultation with the County, allow temporary campsite closures to support vegetation and soil restoration.
9. Develop a funding mechanism for OHVs for improved enforcement and emergency response efforts. Partnership with the State of Wyoming and other agencies may be considered.
10. Special recreation permit renewals and proposals by federal agencies shall be coordinated with the County, as required by federal agency mandates. Big Horn County shall be notified and given an opportunity to participate as a cooperating agency for special recreation permit approvals and renewals.
11. Work with federal agencies to maintain commitments made to support tourism and recreation in the county including, but not limited to, the Bighorn Canyon National Recreation Area Booming Tourism industry commitment and the Medicine Mountain/ Medicine Wheel Historic Preservation Plan and amendments.

6.2 LAW ENFORCEMENT

History, Custom, and Culture

Law enforcement is critically important to the citizens of Big Horn County. The Wyoming Livestock Board partners with the Big Horn County Sheriff's Department to aid in cases that transcend county and state boundaries. In general, cases regarding livestock theft are prosecuted through the county attorney's office.

Resource Assessment and Legal Framework

Law enforcement in Big Horn County includes actions on both public and private lands. Public lands within Big Horn County are subject to law enforcement coordination when issues related to natural resource management and public lands arise, such as livestock theft or search and rescue operations. State law enforcement officials operating in Big Horn County include Wyoming Highway Patrol, Wyoming Department of Agriculture, Wyoming Livestock Investigation Bureau, Wyoming Game and Fish Department, and State Park Rangers. As the use of public lands has increased, so has the need for law enforcement and coordination of federal law enforcement agents with the County Sheriff.

Resource Management Objective:

A. Public lands are managed for orderly use and management in coordination with the County Sheriff's office.

Priorities:

1. All federal and state law enforcement actions within the County should be coordinated through the County Sheriff 's Office.
2. Promote federal agency recognition of the County Sheriff as the primary law enforcement official in the County.

3. The County Sheriff's Office shall be notified immediately when there is a life-threatening situation, criminal act, project structure failure, resource contamination, natural phenomenon (landslide, flood and fire), and/or cultural resource site disturbance on public lands.

6.3 CULTURAL, HISTORICAL, GEOLOGICAL, & PALEONTOLOGICAL RESOURCES

History, Custom, and Culture

Many significant cultural, paleontological, and archeological sites have been identified within Big Horn County. The Archaeological Resources Protection Act (ARPA) of 1979 provides regulations on the management of historic sites on public land. State and federal officials have limited resources, not allowing them to identify and designate every site within the County.

Resource Assessment and Legal Framework

Big Horn County offers a unique expression of human occupation which can be divided into two categories: prehistoric and historic. Included in the prehistoric resources are game and Indian trails, individual tepee rings, petroglyphs, camp and chipping sites and game traps. One example is that of the Bridger Trail, which crosses the County. The Bridger Trail has historic implications regarding the westward migration of people during the nineteenth century and displays the significance of the County's water resources to transportation.

Historic and Archeological Resources

There are two acts that primarily protect historic and archeological resources. The National Historic Preservation Act (NHPA) was passed in 1966 and it authorized the Secretary of Interior to maintain and expand a National Register of Historic Places (NRHP). This act established policy for the protection and preservation of sites (e.g., districts, buildings, structures, and objects) that are placed on the National Register of Historic Places. Under NHPA, federal agencies are required to evaluate the effects of actions on any designated 'historic properties' and follow the regulations set by the Advisory Council on Historic Preservation (ACHP) (36 C.F.R. 800). (National Preservation Institute, 2020).

In order for listing in the NRHP, a property or site must usually be at least 50 years old and have historic significance within one or more of the four criteria for evaluation. The criteria relate to a property's association with important events, people, design or construction, or information potential. The NRHP criteria recognize these values embodied in buildings, structures, districts, sites, and objects. The four criteria are as follows:

- That are associated with events that have made a significant contribution to the broad patterns of our history; or
- That are associated with the lives of persons significant in our past; or
- That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- That have yielded or may be likely to yield, information important in prehistory or history. (Wyoming SHPO, n.d.)

Traditional Cultural Property (TCP) are included in the NRHP and are properties eligible for inclusion based on associations with the cultural practices, traditional, beliefs, lifeways, arts, crafts, or social institutions of a living community. TCPs are rooted in a traditional community's history and are important in maintaining the continuing cultural identity of the community. (NPS, 2012).

The Secretary of the Interior has the ultimate decision-making authority when deciding whether a site is listed in the National Register, however, local governments, including counties can significantly influence the process. Local governments certified by the State Historic Preservation Officer (SHPO) are entitled to prepare a report stating whether a site nominated in its jurisdiction is eligible in its opinion for listing in the National Historic Register. See NHPA Section 101(c). Currently Johnson County does not have a Historic Preservation Commission to maintain the status of a certified local government.

Perhaps most influential on federal actions, Section 106 of the NHPA grants legal status to historic preservation in federal planning, decision making, and project execution. Section 106 applies when two thresholds are met: 1) there is a federal or federally licensed action, including grants, licenses, and permits; and 2) that action has the potential to affect properties listed in or eligible for listing in the National Register of Historic Places.

Section 106 requires all federal agencies to take into account the effects of their actions on historic properties. The responsible federal agency must consult with appropriate state and local officials, Indian tribes, applicants for federal assistance, and members of the public and consider their views and concerns about historic preservation issues when making final project decisions.

Effects are resolved by mutual agreement, usually among the affected state's SHPO or the Tribal Historic Preservation Officer (THPO), the federal agency, and any other involved parties. The ACHP may participate in controversial or precedent-setting situations.

In 2014 the act was amended, and the codified law was moved from Title 16 to Title 54 and retitled the Historic Preservation Act. However, the substance of the act remained the same, so the listing criteria for placement of sites in the National Historic Register and the requirements under Section 106 still remain.

Historic sites add to the evidence of Big Horn County's long and significant history. They include cemeteries, stage station sites, ghost towns, and rock quarrying sites. Big Horn County's traditional lifestyle has centered on agricultural pursuits and resource-based industries for generations. Preservation of the remaining historic sites is important to maintain and preserve the cultures of historic and present Big Horn County. Historic preservation of property enhances economic values and provides the basis for heritage tourism.

Historic sites on the National Historic Register in Big Horn County include (note that sites may be on private land and not accessible to the public):

- Bad Pass Trail
- Basin Republican-Rustler Printing Building
- Bear Creek Ranch Medicine Wheel
- Big Horn Academy Historic District (Cowley High School and Cowley Gymnasium/Community Hall)
- Black Mountain Archeological District
- Bridger Immigrant Road - Dry Creek Crossing
- Carey Block (also known as Hurst Block; First State Bank; Greybull Hotel)
- EGE Bridge Over Shell Creek
- EPJ County Line Bridge
- EJZ Bridge Over Shoshone River
- Hanson Site
- Hyart Theater
- Lower Shell School House

- M L Ranch (also known as Mason-Lovell Ranch)
- Medicine Lodge Creek Site
- Medicine Wheel
- Paint Rock Canyon Archeological Landscape District
- Rairden Bridge
- U.S. Post Office – Basin Main
- U.S. Post Office – Greybull Main

Resource Management Objective:

A. Cultural, historical, geological, and paleontological resources are preserved and protected for current and future public education and enjoyment. Cultural, historical, geological, and paleontological resources are identified and protected due to its importance or significance rather than its age. Economic and cultural impacts are considered when managing said resources.

Priorities:

1. Cooperate with state and federal authorities in identifying significant cultural resources in the County, make such sites known, and evaluate the significance of proposed land use actions and their impact on cultural resources. It is the County's intent to evaluate the economic and cultural impacts associated with cultural resource identification and protection and weigh one against the other in a cost/benefit context based on the County's unique custom and culture.
2. Support making significant local cultural resources available for research and education, and strongly urge the protection of those cultural resources. However, the County does not support unrealistic buffer zones around historical and cultural resources. Buffer zones shall be determined on a case-by-case basis and shall not exceed one-quarter mile in width in most circumstances.
3. Discourage recognition of additional sites or structures on public land that have not played a significant part in creating the cultural, prehistoric, and historic fabric of the community.

6.4 SOCIOECONOMIC AND ECONOMIC VIABILITY

History, Custom, and Culture

Big Horn County is nearly 80% federally owned land with over 1.5 million acres of land under federal control. One of the main drivers of the Big Horn County economy is agriculture. Stream water has been used for irrigation since the late 1890s. Since European settlement of the valley, cattle ranchers were the primary residents of what is now present-day Big Horn County. Today's cattle ranchers are heavily reliant upon term grazing permits for public lands in order to maintain healthy and productive stock. The livestock industry accounts for a substantial portion of southern Big Horn County's agricultural income, is the oldest continuing industry in the County, and is still the single largest user of public land.

Mineral and materials mining is another long-standing sector of the Big Horn County economy. Big Horn County has one of the nation's largest deposits of bentonite, producing over 1 million tons annually.

Resource Assessment and Legal Framework

Revenue

In 2015, the mining sector in Big Horn County produced 1.5 million barrels of crude oil and 1.5 million cubic feet (mcf) of natural gas, 1.8 million tons of bentonite, and 84,422 tons of sand and gravel. Mining production in the county had an assessed valuation of $88.3 million dollars in 2016, representing 41% of the total assessed valuation for the county (Big Horn County Commissioners, 2017) In 2016, the mineral industry generated approximately $6.3 million in property tax revenue based on the county mill levy (Big Horn County Commissioners, 2017).

The gross revenue for the agricultural industry in the county in 2015 was $88.7 million with 42% from cash receipts for livestock, 45% from cash receipts for crops, 11% from miscellaneous sources, and 1% from government payments (Big Horn County Commissioners, 2017).

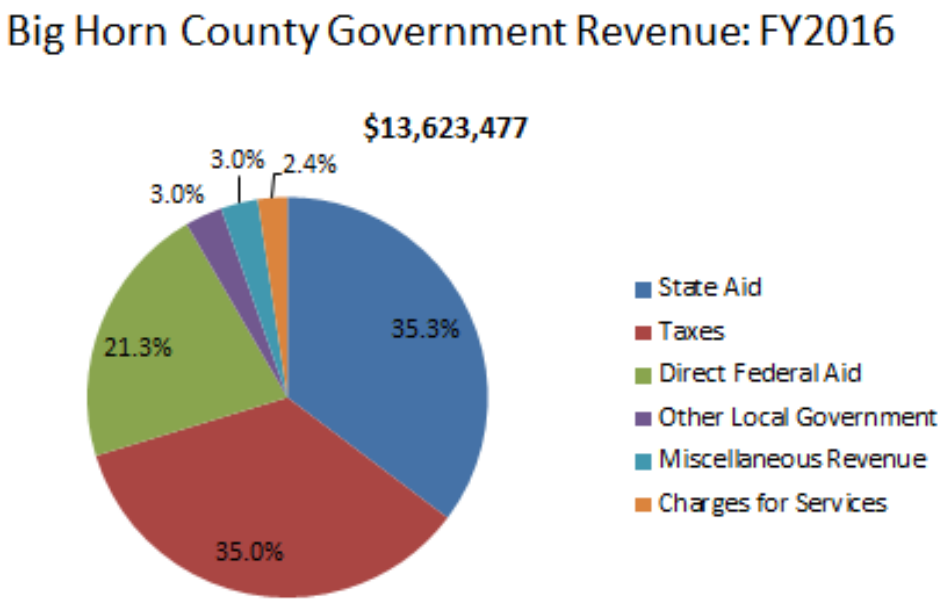


Figure 22. Big Horn County Government Revenue: FY 2016. (Wyoming Department of Audit).

According to the Wyoming Department of Audit, total revenue for Big Horn County was $13.6 million in FY2016 (Big Horn County Commissioners, 2017), with the largest sources being state aid, including the County's share of the 4% sales and use tax revenue (35%); taxes, included property taxes and any optional sales tax revenue (35%); and direct federal aid, including PILT payments (21%). These three sources represented 92% of the total county government revenue in FY2016. Compared to all counties in Wyoming, Big Horn County had a higher proportion of revenue from state aid (35% vs. 24%), substantially lower proportion of revenue from taxes than other counties in the state (35% vs. 52%), and a higher proportion of funding from direct federal aid relative to all counties in the state (21% vs. 6%) (Dean Runyan Associates, 2018a).

The total assessed valuation for Big Horn County in 2016 was $215.1 million. Forty-one percent (41%) of the total valuation was from mineral production. Following mineral production was residential property (28%), utilities (9%), agricultural property (7%), commercial property (7%) and industrial property (7%). The county's per capita assessed valuation ($17,943) was one-half of Wyoming's per capita assessed valuation ($35,688).

Dean Runyan Associates (2018b) estimates that visitors spent $30.8 million while in Big Horn County in 2017, generating $5 million in earnings. Direct travel spending has increased by 2.8% since 2007 from $18.5 million to $24.3 million in 2017. Of that $24.3 million, over half ($13.3 million) was spent by visitors staying in campgrounds. In 2017, the commodities visitors spent the most on were food services ($6.5 million); arts, entertainment, and recreation ($5.1 million); retail sales ($4 million). (Dean Runyan Associates, 2018b).

Sensitivity to Recessions

The reliance of the Big Horn County economy on oil and natural gas extraction, mining, and agriculture has caused recessions matching the United States national recessions. The low demand and prices in 2009 led to decreases in earnings of the oil and natural gas extraction sector of the economy, as well as mining and mineral extraction. The sensitivity of the Big Horn County economy to recessions is reflected in the unemployment rate and turbulent industry earnings.

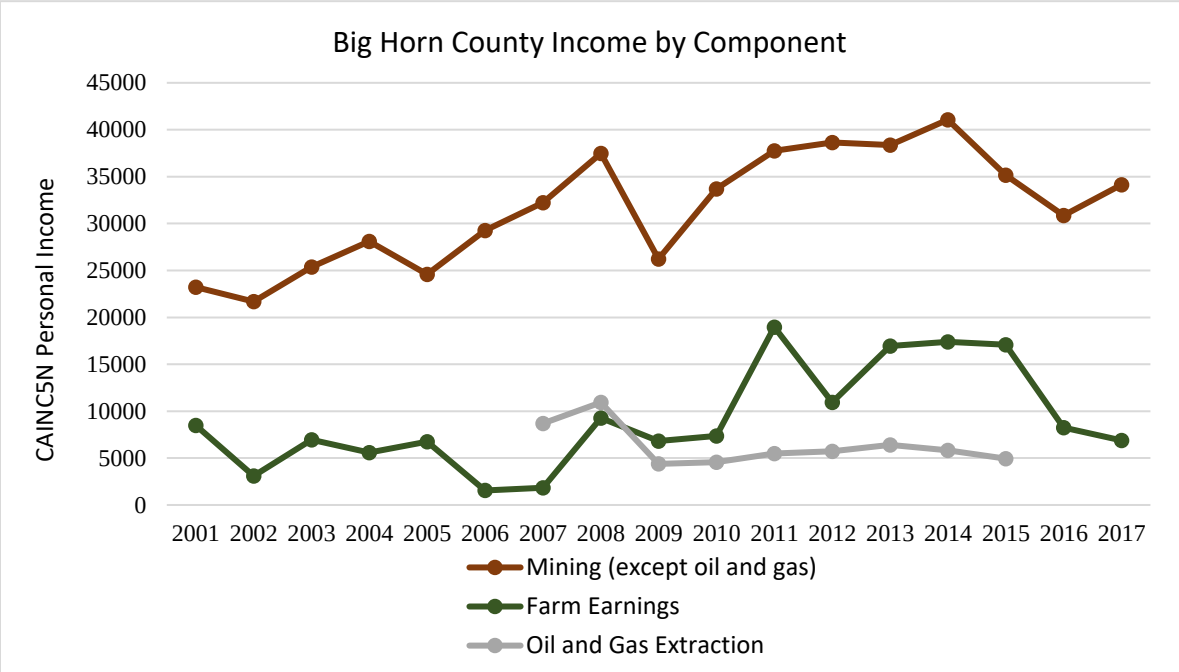


Figure 23. Big Horn County Annual Earnings by Industry. (Data- U.S. Bureau of Economic Analysis).

The 2009 recession caused a national unemployment rate of just over 11% and an unemployment rate of 6.4% in the state of Wyoming. While the Big Horn County unemployment spiked to 8.5%, the unemployment rate has been decreasing rapidly with a small spike again in 2016 (Bureau of Economic Analysis, 2019).

Earnings by Industry

Government employment has remained the highest paying employment sector from 2001-2017. (Bureau of Economic Analysis, 2019) Earnings in the mining, quarrying, and natural gas and oil extraction sector are historically volatile due to the nexus with the national economy and recessions.

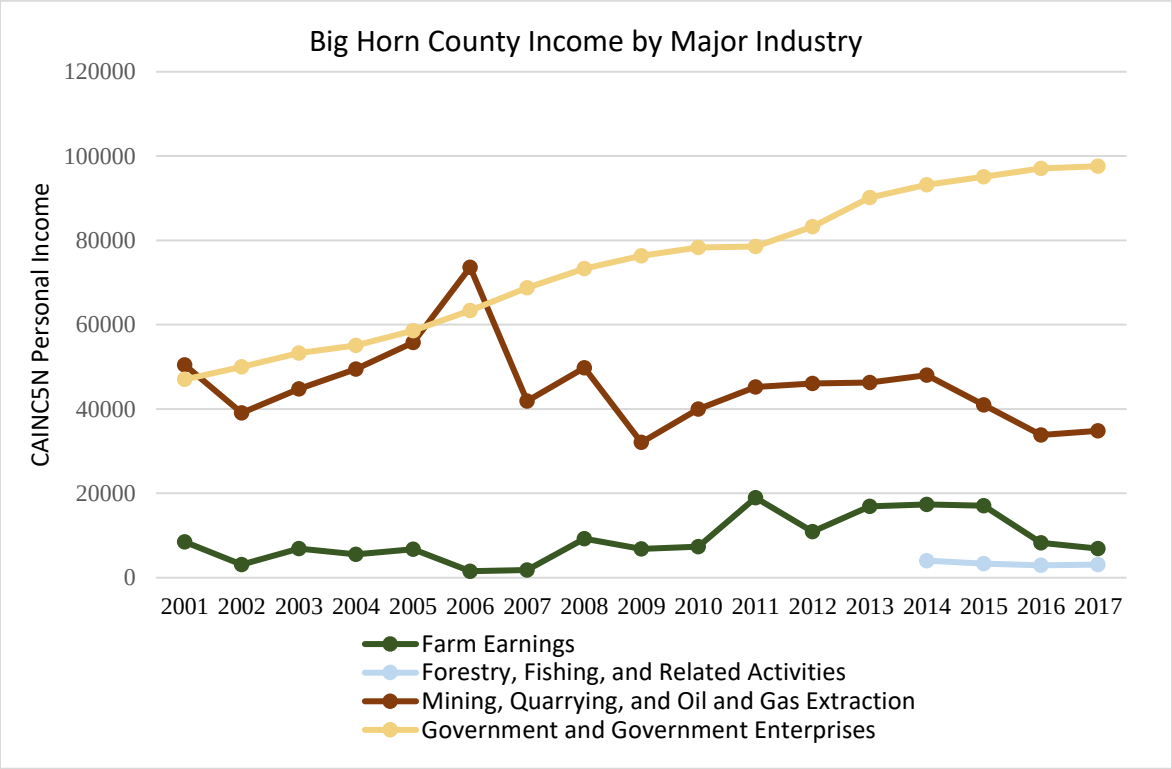


Figure 24. Big Horn County Annual Earnings by Major Industry. (Data- U.S. Bureau of Economic Analysis).

Employment

Big Horn County's economy is highly reliant upon the abundant natural resources in the county. The economy is driven mostly by oil and gas extraction, mining, quarrying, agriculture, fishing, hunting, and forestry. According to 2015 data, fossil fuels and other mining operations comprised approximately 17% of total private employment and timber comprised another 0.48%. Agriculture comprised 11.43% of total employment in 2016 continuing the trend of Big Horn County being the largest agriculture and mining producing county in Wyoming; 26.4% of total private employment is in the commodity sector (Economic Profile System, 2018). The proportion of total employment in agriculture for Big Horn County was nearly 8 times the national percentage (11 % vs. 1.4%) indicating that agriculture was an area of specialization within the county's economy. The county's agriculture industry ranked 2th out of 23 sectors in the county's economy (Big Horn County Commissioners, 2017). The employment rate in the County has fluctuated yearly but remained relatively constant since 2001. The Wyoming unemployment rate also decreased from 6.4% to 4.2%. Big Horn County had the largest percentage of total jobs in the government (23.4%) in 2016 (Gaudin, n.d.).

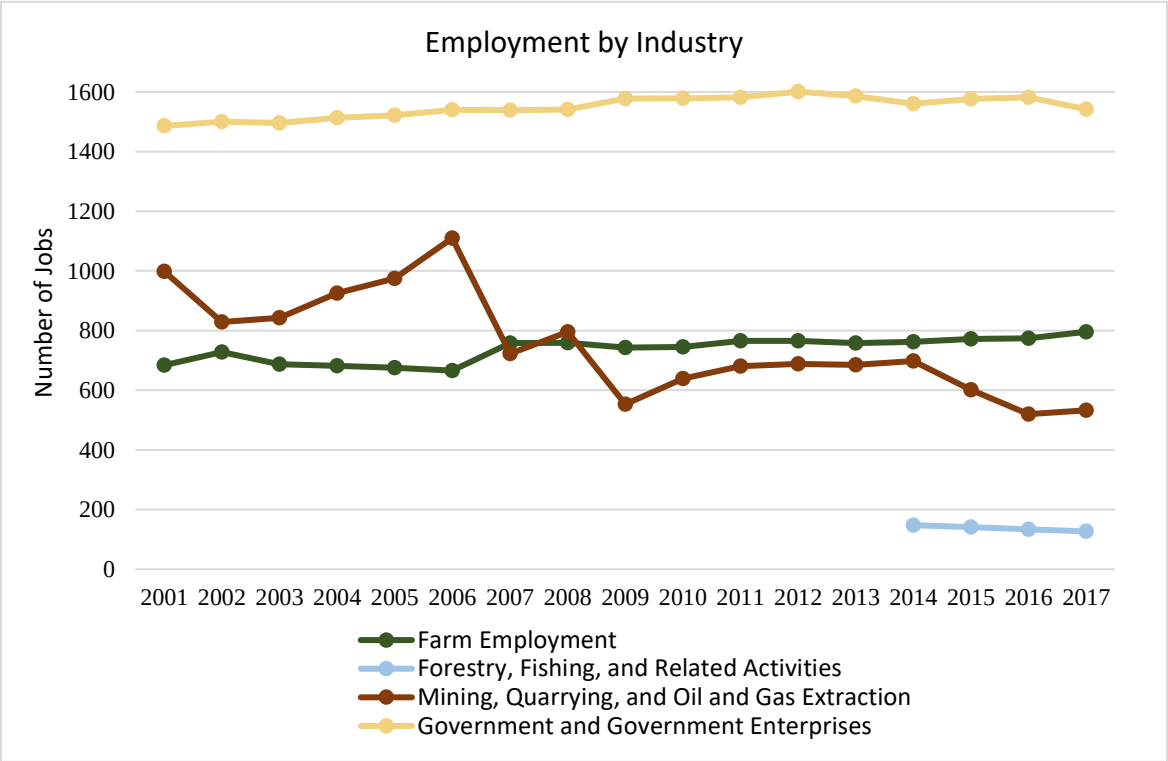


Figure 25. Big Horn County Full-Time and Part-Time Employment by Industry. (Data-US Bureau of Economic Analysis).

Total employment in the county decreased slightly from 2010 through 2017 shrinking from 5,255 and 6.7% unemployment rate in 2010 to 5,173 employed and a 4.1% unemployment rate. The decrease in unemployment rate is due to a decrease in the overall labor force (Gaudin, n.d.).

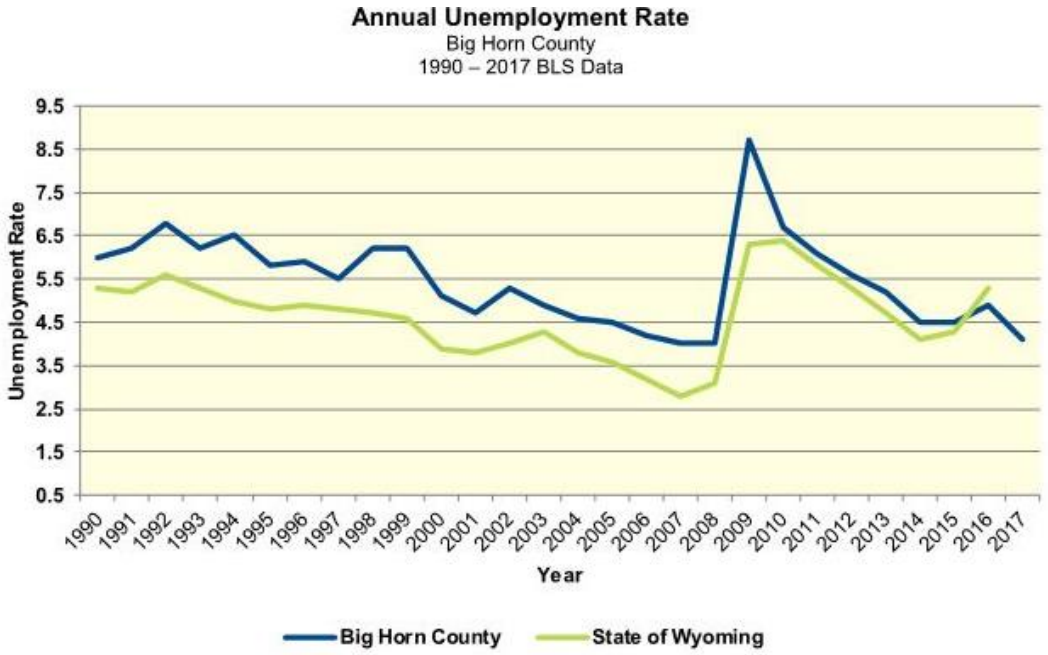


Figure 26. Annual Unemployment. (Gaudin, n.d.)

Population Growth

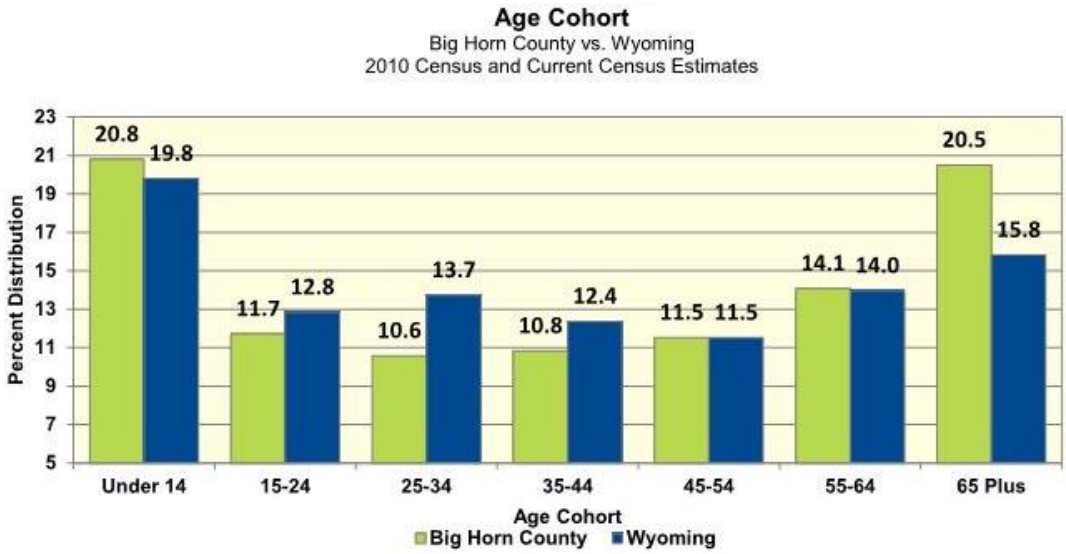


Figure 27. 2010 Age Distribution. (Gaudin, n.d.)

Big Horn County experienced limited population growth between 2010 and 2017, increasing from 11,668 residents in 2010 to 11,906 in 2017 (+2.0%) as compared to the State of Wyoming increase of 2.8%. The number of people between the ages of 25 and 35 increased by 7.3% but nearly 40% of the population in Big Horn County are dependents - either below the age of 14 or 65+ (Gaudin, n.d.).

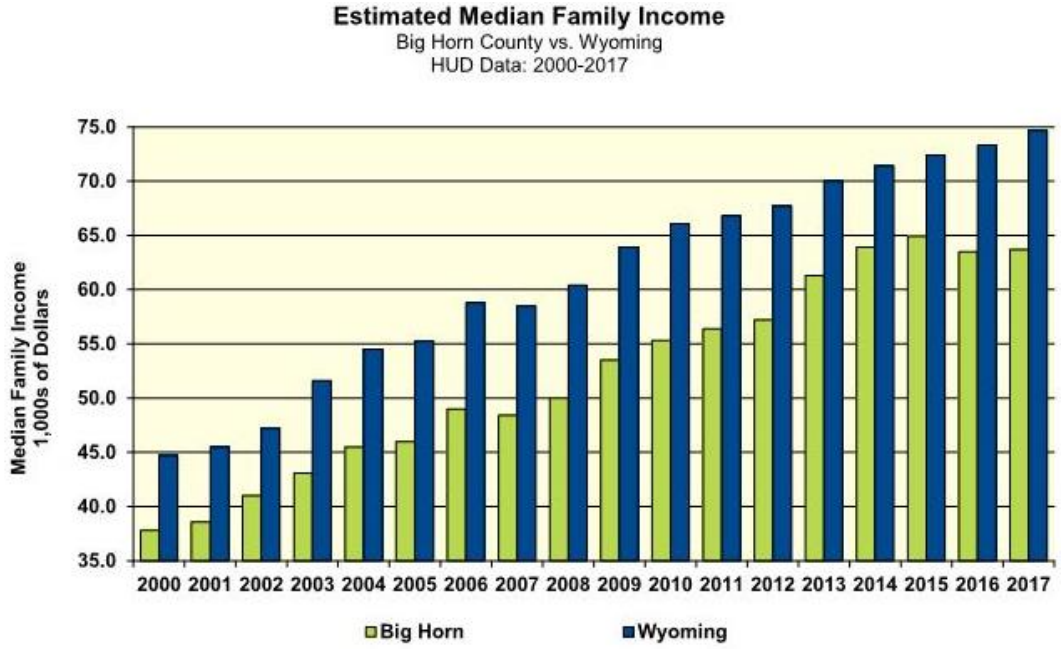


Figure 28. Estimated Median Family Income. (Gaudin, n.d.)

The median family income for Big Horn County was $59,511 compared to the Wyoming average of $73,654 according to the 2016 census data averages (Gaudin, n.d.). 13% of households in Big Horn County reported incomes of less than $15,000 compared to 9.5% of households in Wyoming.

The real per capita income for Big Horn County in 2016 was $35,815, 35% lower than the statewide average of $55,116. (Big Horn County Commissioners, 2017). The average earnings per job in the County was 24% lower than the state average with Big Horn County earnings per job averaging $39,749 in 2016 and Wyoming earnings per job averaging $52,490 (Big Horn County Commissioners, 2017).

NEPA

NEPA can play a crucial role in the economic and socioeconomic well-being of a community. NEPA applies to "every major Federal action significantly affecting the quality of the human environment" (42 U.S.C. § 4332(1)(C)). The courts have interpreted this to generally mean that every time the federal government makes a decision for almost any action that may have an environmental impact, NEPA compliance is required. Some courts have even required agencies to follow NEPA when the agency spends a small amount of money on a project or program that they are not the lead agency. *See e.g. Citizens Alert Regarding the Environment v. United States Environmental Protection Agency*, 259 F.Supp.2d 9, 20 (D.D.C. 2003). On July 16, 2020 the Trump Administration and the Council on Environmental Quality announced major regulation reforms to NEPA, including new rules trying to clarify what is a "major federal action." The new regulations clearly demarcate that only actions that include major federal involvement and are major in scale are those actions that require NEPA. This means that those projects that the government has a minor role are not included. This also means that minor actions (such as allowing certain range improvements on a grazing allotment) are not included. *See* 85 F.R. 43304 (July 16, 2020). As of the finalization of this plan the rule is being challenged by several states and organizations.

NEPA requires that agencies undertake an environmental analysis to determine whether a federal action has the potential to cause significant environmental effects. If a proposed major federal action is determined to significantly affect the quality of the human environment, federal agencies are required to prepare an Environmental Impact Statement (EIS). The regulatory requirements for an EIS are more detailed and rigorous than the requirements for an Environmental Assessment (EA). NEPA does not mandate particular results or substantive outcomes. Instead, NEPA's purpose is to "provide for informed decision making and foster excellent action." 40 C.F.R. § 1500.1(a). Thus, NEPA ultimately does not require a specific result, but should be utilized to ensure that federal agencies "conduct environmental reviews in a coordinated, consistent, predictable, and timely manner, and to reduce unnecessary burdens and delay." *Id.* at (b). Therefore, for an agency to be NEPA compliant, they need to make timely and coordinated decisions that are based on informed decision-making.

One of the greatest economic harms for a local community is the typical several year delay of an important project due to NEPA. Since 2010 the average EIS completion time was approximately 4.5 years and averaged more than 600 pages. Even more disturbing, over a quarter of the EISs during that time span took more than 6 years to complete (Executive Office Council on Environmental Quality, 2010). CEQ regulations now require that EAs not exceed 75 pages and one year to complete, unless a senior agency official of the lead agency approves a longer period in writing and establishes a new time and page limit. 40 C.F.R. § 1501.5, 1501.10. Similarly, CEQ regulations now require that EISs not exceed 150 pages (300 for proposals of unusual scope or complexity) and two years to complete, unless a senior agency official of the lead agency approves a longer period in writing and establishes a new time and page limit.. 40 C.F.R. § 1502.7.

In order to increase efficiency in the NEPA process, agencies are supposed to include cooperating agencies at the earliest time practicable to participate. Additionally, agencies are supposed to eliminate duplication of efforts by cooperating with local governments and form (1) join planning processes; (2) joint environmental research and studies; (3) joint public hearings; (4) joint environmental assessments. 40 C.F.R. § 1506.2(b). Further, agencies, unless specifically prohibited by law, allow local governments to be joint lead agencies in certain NEPA decisions and cooperate in fulfilling local government requirements that may not conflict with federal law. *Id.* at (c).

Resource Management Objectives:

A. Federal agencies should consider the County's socioeconomic and economic viability in all federal decisions. The socioeconomic and economic viability of the County should be protected and enhanced.

B. Agencies follow the timing and page limit requirements set forth in the 2020 CEQ NEPA regulations.

C. The County is included early in the scoping process whenever an agency action or decision may impact the economic or socioeconomic viability of the County.

Priorities:

1. Require consultation and coordination with the County at the earliest time possible for any proposed action, change of existing activities, newly permitted activities, or changes in regulations that may affect the economic basis of the County.
2. Support consultation and coordination with the County to determine the full scope of potential social and economic effects of activities proposed on public lands, including impacts to circulating dollars when access and use of federal land is proposed.
3. Support continued access to natural resources development/use on federal lands to maintain economically viable communities in our County.
4. Support "no net loss" in the County economic base due to federal agency decisions. Include County in all discussions regarding mitigation if necessary, to protect the economic base of the County.
5. Support the analysis of social and economic factors at the lowest possible level, such as on a County-wide basis in addition to consideration on a state-wide or national scale.
6. Promote the economic and socioeconomic growth of the County and consultation and coordination between federal agencies and the County regarding any issues and activities on public land that affect or influence the economic and socioeconomic viability of the County.
7. Support the implementation and maintenance of commitments made to support tourism and recreation in the county including the Bighorn Canyon National Recreation Area Booming Tourism industry commitment and the Medicine Mountain/ Medicine Wheel Historic Preservation Plan and amendments.
8. Support the implementation of deadlines, page limitations and cooperation with local governments as set forth in 2020 CEQ regulations.

CHAPTER 7: AGRICULUTRE

7.1 AGRICULTURAL PRODUCTION

History, Custom, and Culture

Agricultural lands contribute to the County's landscape and scenic beauty, provide wildlife habitat, and provide recreational opportunities for residents and visitors alike for hunting, fishing, snowmobiling and other tourism-related activities. Agriculture is an invaluable source of employment, affordable food, raw materials, and open space to the County. Agriculture also provides numerous opportunities for environmental stewardship to benefit local ecosystems and serves as key component of the County's sustainable economy.

Resource Assessment and Legal Framework

Agriculture is an important component of Big Horn County's economy. In 2012, 83% of the private land in Big Horn County was devoted to agriculture. The agriculture industry is ranked second as a defining Industry for the County, just below mining (Big Horn County Commissioners, 2017; US Department of Agriculture, n.d.). The 2017 Big Horn County Socioeconomic Profile ranked the County 7th in the state for total value of agriculture products and 3rd for value of crops. Big Horn County is the top producer of dry edible beans in the state, ranks second in the state for barley and sugar beet production and 4th for corn for grain. The county ranks 15th in cattle and calves, 9th in sheep and lambs, and 3rd in the state for bees (Big Horn County Commissioners, 2017; US Department of Agriculture, n.d.). The assessed valuation of agricultural land was $15,975,669 in Big Horn County in 2016. The 2017 market value for livestock products was $27,377,000 and for crop products was $39,022,000 (Department of Administration & Information Economic Analysis Division, 2017). In 2017 there were 303,000 acres of farmland in the County. Agriculture is a major source of revenue and employment for Big Horn County.

The climate of the Big Horn Basin provides for a short growing season that is often dry and cold. Irrigated agriculture relies on the distribution of water from rivers and reservoirs through canals and pipelines. Some or all of these may reside on or pass through federal and state lands where permitting issues are triggered for maintenance and expansion. According to the US Census of Agriculture Big Horn County had 108,707 acres of irrigated land, of which 78,283 acres were in irrigated crops (United States Department of Agriculture National Agricultural Statistics Service et al., 2014). This makes the retention and proper management of water rights a priority for the citizens of the Big Horn County.

The basis for these policy statements in this NRMP is to carry out the state mandate to protect agriculture.

"To protect agriculture as a vital part of the economy of Wyoming, the rights of farmers and ranchers to engage in farm or ranch operations shall be forever guaranteed in this state." (W.S. 11-44-104(a))

Resource Management Objectives:

A. Agricultural production is maintained as a viable and major component of the economy, custom, and culture of the County.
B. Federal actions affecting agriculture are made in consultation with the County.

Priorities:

1. Support development of all plans and policies that directly or indirectly affect agriculture with the intent of increasing the stability and expansion of the industry as well as encouraging innovative techniques that improve the efficiency of crop production.
2. Support and assist agencies in quickly processing permits on federal lands for the construction, maintenance, or expansion of irrigation distribution systems to private lands, and allowing maintenance where those rights already exist through a range improvement agreement.

3. Federal agency actions shall be consistent with Right to Farm laws, to the extent applicable. Right to Farm laws shall be taken into account when coordinating on federal and state land use decisions.
4. Support production agriculture and the conscientious use of natural resources to sustain agricultural enterprises.
5. Any agricultural property damage or crop loss caused by an escaped prescribed burn, fire suppression efforts, or damage caused by government agency action, resulting in economic loss in Big Horn County shall be considered justification for economic compensation and restoration by the responsible agency to the property owner at current market values.
6. Wildlife and federal lands managers, including but not limited to the BLM, USFS, USFWS, Army Corps of Engineers, BOR, DOD, NPS, and WGFD, are expected to coordinate with private property owners to minimize impacts to private property.
7. Support streamlining the application process for range improvements. Proposed range improvements should be approved in six months or less.
8. The individual that files for an improvement/development permit shall be allowed to manage the resource and the permit shall be in their name if it is approved.
9. Promote the creation of watershed BMPs by federal agencies to mitigate water pollution from heavy erosion and sedimentation from public lands, and to work with local conservation districts in accomplishing these BMPs.

7.2 LIVESTOCK AND GRAZING

History, Custom, and Culture

The vegetation in Big Horn County evolved under tens of thousands of years of grazing and periodic fire. Grazing in the region began to shape the modern vegetation we see today around 18,000 years ago in the Pleistocene. Based on fossil specimens excavated in the Big Horn Basin these grazers included ancient muskox, antelope, Pleistocene big horn sheep, ancient bison, camels, horses as well as mammoths. Additionally, there were predators such as wolves, American cheetahs, American lions, wolverines, short-faced bears, and eventually humans who used fire to suppress overgrazing (Martin & Gilbert, 1978; US National Park Service, 2015b).

Eventually these species were replaced by the wildlife we know today. Wildlife, wildfire and early humans continued to shape the vegetation of the basin. In the late 1600's to mid-1700's Native Americans obtained the horse and began to be pasture managers as well as wildlife managers, manipulating the vegetation and animal populations. With the opening of the Montana gold fields the Bozeman Trail became the primary route to these fields. With the ongoing conflicts with the Sioux the trail quickly became known as the Bloody Bozeman.

In 1864, Jim Bridger pioneered an alternative route, the Bridger Trail, through the Big Horn Basin and what became Big Horn County. While only used as an emigrant trail for one year, it is estimated that a quarter of the Virginia City, Montana population passed through on the trail that year. These emigrant trails were known to have a significant impact on the vegetation along the trail, often with impacts extending for several miles as people sought forage for their teams and the stock they took with them, further changing the vegetation. In the 1880's and 1890's this trail served as a freight line from Casper into the Basin and up to Billings (Lowe & Wyoming State Historic Preservation Office, 2014).

The Big Horn Basin essentially remained a pass-through area until 1879 when Henry Lovell trailed two herds of cattle, numbering in the thousands, into the area that is now Lovell and began ranching. Partnering with Anthony Mason, Lovell established three ranch headquarters in the basin and at one time ran over 25,000 head of cattle from Thermopolis to Montana. In 1892 this operation was broken up and sold off to form several smaller operations in the basin, some of which still exist. Settlement continued with others moving into the area creating smaller operations in the late 1890's and early 1900's (US National Park

Service, 2015a). Today, most operations in the county are less than 2,000 ac supporting a little over 25,000 head of beef cows and over 15,000 sheep (United States Department of Agriculture National Agricultural Statistics Service et al., 2014).

Ranchers are often the volunteer firemen and the search and rescue team members as called upon by the County Sheriff; they volunteer at schools, hospitals, and other public services.

Permitted grazing on public lands is a critical piece of livestock operations in Big Horn County. The intermingled BLM, USFS, and private lands allow ranching to continue in the County. The low percentage of private lands in the County means that access to public lands is critical to the continued ability to maintain the ranching community and the viability of the County.

Livestock grazing has been a major industry in Big Horn County since early settlement. It continues to be a vital part of the custom and culture of the County as well as a critical economic driver. The most efficient operations use a combination of private and federal lands, planned so that livestock can be rotated and raised entirely within the County or Big Horn Basin. Historically, these ranchers grazed animals on open ranges and mountains on federal and state lands during summer months and moved the stock to private lands during the winter months where livestock can be fed hay from the irrigated pastures. This system made it possible for the livestock to stay within the basin until sold. Such operations are the most efficient, sustainable and economically productive method for producing livestock.

The contribution of the ranching industry to the County goes beyond the critical economic livestock sales. Studies in similar counties have shown that ranchers tend to spend the majority of their dollars in the county they reside in on fuel, food, supplies, and equipment (Economic and Cultural Report on the Grand Staircase, by Gil Miller, 2014).

Bureau of Land Management

The Taylor Grazing Act of 1934 (43 U.S.C. 315) established the Grazing Service, which eventually became known as the BLM, through local grazing advisory boards, who created an adjudication process to determine where, when, and what type of livestock grazing could occur on public rangelands. To receive an allotment through this process, the stockman had to have (1) "commensurate base property" on which he could graze his livestock when they were not using the federal lands, (2) have an economically viable livestock operation and (3) be members of the local community and support the local stability of the community.

There are 185 BLM grazing allotments in Bighorn County. Within these allotments there are 1,150,345 acres of BLM land and 121,936 acres of private land; as well as smaller quantities of BOR, DOD, USFS, NPS, and State land.

BLM Range Improvements

According to BLM regulations, all range improvements on BLM lands must be authorized by the agency. There are two options for authorization: a Cooperative Range Improvement Agreement or a Range Improvement Permit. The Cooperative Range Improvement Agreement identifies how the costs of labor, materials, and maintenance are divided between the agency and the permittee Range Improvement Funds can be used for labor, materials, and final survey and design of projects to improve rangelands. The Range Improvement Permit requires the permittee or lessee to provide full funding for construction and maintenance of the improvement. NEPA analysis is not required for normal repair and maintenance of range improvements that are listed on a term grazing permit; permission of the authorized officer is also not required. However, for reconstruction of a range improvement or construction of new improvements, NEPA analysis and a decision by the authorized officer is required. Range improvements such as water developments benefit wildlife in addition to livestock.

United States Forest Service

Within Big Horn County there are 37 USFS grazing allotments encompassing 316,352 acres in Big Horn County; 1,662 of those acres are private land.

USFS Range Improvements

According to USFS regulations, all range improvements on USFS lands must be authorized by the agency. The USFS allows structural improvements (e.g., fencing) and non-structural improvements (e.g., change in management practices). Any requirements for permittee construction or development of range improvements are identified in the term grazing permit. It is a common practice for the USFS to furnish materials and the permittee to provide labor for structural improvements. If significant costs are expected, the permittee may assume responsibility for the improvement (maintenance) but the USFS generally holds title to the improvement. Should the improvement not be adequately maintained, the USFS can take action against the permittee for non-compliance with their grazing permit. Range Betterment Funds are available for planning and building rangeland improvements.

Resource Assessment and Legal Framework

With the federal agencies managing the majority of the rangeland in the county, ranchers must rely on obtaining federal grazing term permits. A large part of the vegetation in the county is lower producing saltbush and sagebrush areas, while many of the forested areas are highly productive but with limited forage available due to dead and downed timber. Low-productivity rangelands makes for a narrow profit margin. When agencies make a management decision without considering the economic impact on a rancher or a group of ranchers they can be impacted along with the local community. When federal agencies reduce permitted livestock numbers for any operator, their entire operation is impacted, especially economically. Any reduction in livestock on federal lands directly affects the economy and culture of Big Horn County.

Reduction in livestock numbers on federal and state lands can be a result of natural factors, including wildfire and drought. The primary factors in determining livestock grazing capacity on public land is the quality and availability of the resources. Proper grazing management is an important tool for management of the resources, and can be used to mitigate invasive species impacts, wildfire impact, and can improve rangeland health.

Livestock grazing, irrigated farming and other intensive agriculture are integral to this community's ability to remain viable with a diverse and sustainable economy. Ranching and agricultural operations maintain open space and large landscapes to support multiple uses.

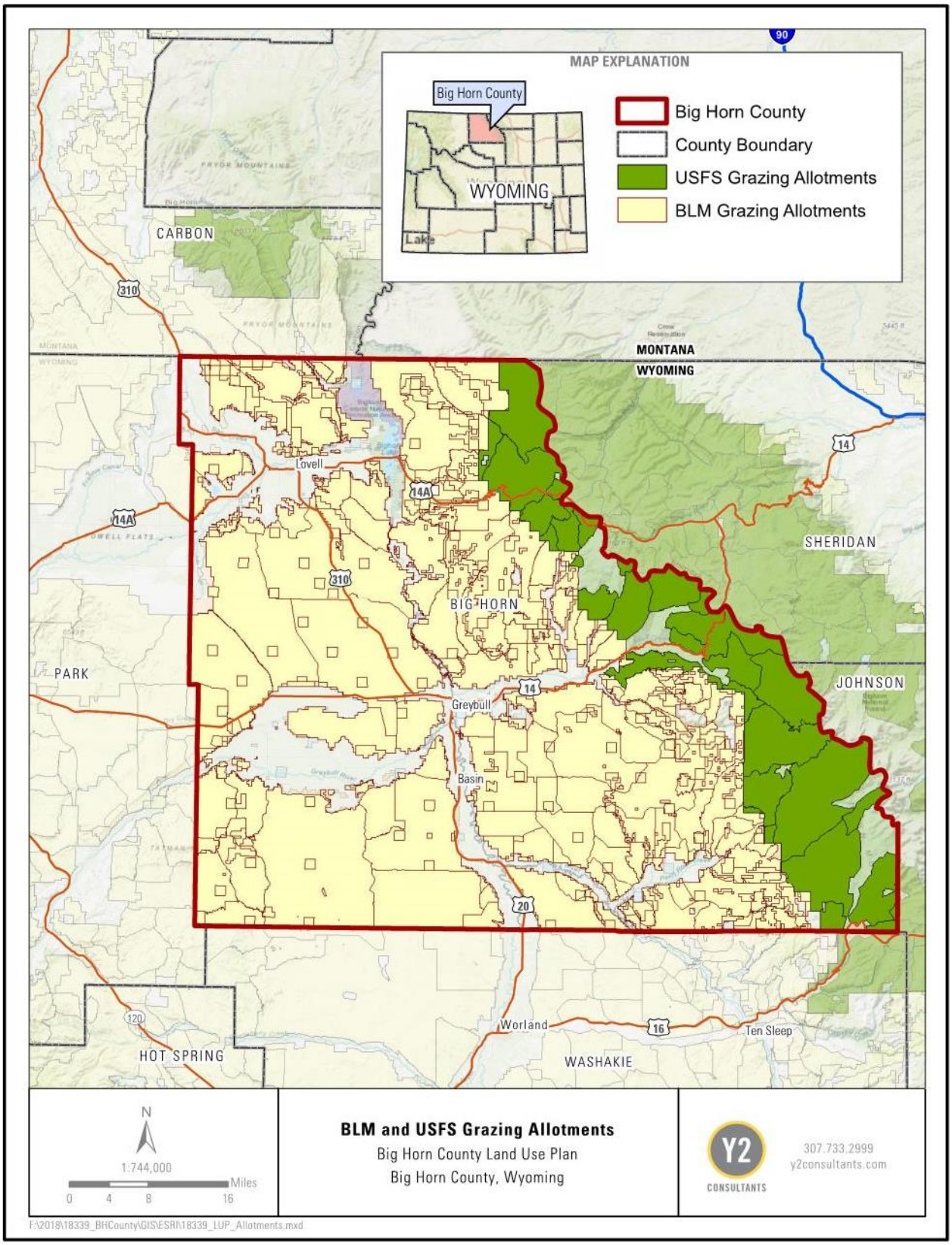


Figure 29. BLM and USFS grazing allotments within Big Horn County.

Resource Management Objective:

A. Livestock grazing is maintained as a viable major component of the economy, custom, and culture of the County.

Priorities:

1. Federal lands within Big Horn County shall continue to be managed for multiple-use and sustained yields, which includes continued grazing as intended by Congress in the passage of the Taylor Grazing Act, FLPMA, MUSY, and NFMA.
2. Livestock grazing management decisions shall be made based on the best available scientific information that is applicable to the rangeland resources in Big Horn County. The scientific information used will be consistent with standards of the Data Quality Act.
3. Federal, state and local livestock managers shall use BMPs making grazing management decisions.
4. Livestock grazing management plans must incorporate standards and objectives that maintain the health, safety, and general welfare of the County's agricultural interests culturally and economically.
5. Work in coordination with Conservation Districts to develop and employ best management practices for the purpose of improving rangeland health so that suspended AUM's can be returned to active status.
6. Work in coordination with Conservation Districts to develop management practices that adhere to the 2005 Forest Plan and its instruction that the Forest Service strive to maintain or exceed the currently allocation of 113,000 AUMs.
7. The concepts of grass banks and allotment retirements are not supported.
8. Existing grass banks shall be phased out and retired grazing allotments shall be returned to part of the actively managed grazing system.
9. Support management plans generated for the overall health of all natural resources. Plans specifically managing for one species are not supported.
10. Support livestock grazing on all federally owned and operated lands as an integral part of habitat management.
11. Support opening of Conservation Reserve Program lands for grazing and haying in times of drought or economic need.
12. Site-specific reviews conducted with the permittee shall be used to determine the appropriate grazing suspension period post-fire.
13. Full site-specific economic and resource analysis of suspending grazing for allotment closures must be completed within one-year of closure.
14. Support the Farm Service Agency (FSA) expanding their policy for emergency grazing on CRP lands to accommodate "other emergencies" beyond drought and fire as allowed by statute.
15. When a grazing allotment is in non-use, it shall be made readily available for other permittees to utilize. If there is a resource concern on that allotment, the grazing plan shall acknowledge the concern and utilize the livestock as a tool to help in recovery if feasible. If the allotment is in non-use and the range is in good condition, the grazing plan must fully utilize all adjudicated grazing AUMs.
16. Support creation of adaptive grazing management plans that allow permittees to respond to changes in resource conditions. These plans shall include focused monitoring, triggers and responses, and alternative management plans.
17. The reduction of domestic livestock grazing AUMs to provide additional forage for another species or strictly for conservation purposes is not supported.
18. AUMs on federal lands shall not be reduced unless a documented resource condition indicates a need for temporary reduction to improve condition. Any reduction shall include a plan to reinstate AUMs when the resource condition has been addressed.

19. Timely processing of fully processing all term grazing permit renewals is a priority of the citizens of the County.
20. Development of the term permit renewal process must consider actions proposed by the permittee.
21. Support the use of site-specific soils and range ecological site data to create appropriate objectives for livestock and wildlife.
22. All federal and state land management agencies shall use the most current Ecological Site Descriptions developed by the NRCS.
23. Drill-seeding can be one of the most effective methods of rangeland restoration or improvement and shall be utilized wherever appropriate. Native seed mixes consistent with the Ecological Site Description and free of noxious weeds and invasive species are encouraged for all reclamation efforts and must be beneficial to both livestock and wildlife and developed collaboratively with the permittee.
24. In post-fire situations and on sites that have been converted to a new 'stable state', i.e., annual grasslands, non-native seeding species are encouraged so long as they are the best ecological match for the site and purpose of the seeding.
25. Agencies shall collaboratively develop and implement rangeland monitoring programs using the template created by the Public Lands Council, Wyoming Department of Agriculture or other accepted entity for all allotments. Agreements should include the use of currently accepted, scientifically based monitoring methods and monitoring return intervals utilizing properly trained rangeland personnel with an understanding of rangeland and its management to ensure proper collection and analysis of data.
26. Support the review and incorporation of data collected by a permittee, qualified team, or third-party for use in management decisions.
27. Support consultation, cooperation, and collaborative efforts to ensure that overall rangeland health is being maintained through monitoring and implementation of well-designed livestock grazing management plans on all public land allotments.
28. Federal agencies shall use range improvement and noxious weed control funds on grazing allotments in a timely manner.
29. Encourage development of additional rangeland improvements when the opportunity arises.
30. Grazing rest prescriptions related to either wildfires or prescribed burns will be determined on a site-specific basis. In the event that grazing on federal lands is temporarily suspended due to fire, recommence grazing on the basis of monitoring and site-specific rangeland health determinations rather than solely on fixed timelines. Return livestock grazing to pre-fire levels when post-fire monitoring data shows established objectives have been met or have been achieved to an extent allowed by the site potential. Require the use of credible data as previously defined to make these determinations. Initial post-fire monitoring data should be collected within two growing seasons of the fire.
31. Consider a BMP of resting not more than two growing seasons post fire.
32. Big Horn County supports improving rangeland health to accomplish the 2005 Forest Plan statements and goals.
33. Big Horn County supports the use of wildlife friendly fence when management objectives allow for its use.

7.3 NOXIOUS WEEDS AND INVASIVE SPECIES

History, Custom, and Culture

Big Horn County has traditionally practiced weed and pest control as a means to increase the productivity of the various lands within the County and as a means of promoting the health, safety, and general welfare of the residents of the County. In order to do so, a fundamental goal of weed and pest management has been to hold each of the various property owners in the County responsible for the control of the weeds and pests on their land; and just as importantly, to be responsible for the spread of weeds and pests from their property onto neighboring property.

Big Horn County, by and through the Big Horn County Weed and Pest District, has cooperative agreements and memorandums of understandings with various State and Federal agencies. Various programs are being directed to weed and pest management; including, but not limited to the National Undesirable Plant Management Act (7 USC § 2814).

The Weed and Pest Board is the weed and pest control authority for the County and is funded by a property tax mill levy which enables consistency and balanced long-term funding. The tax basis of the County fluctuates with mineral evaluation; and therefore, the funding for the Weed and Pest District reflects the health and production of minerals. PILT payments provide a partial remuneration of obligations to the Weed and Pest District, either directly or indirectly.

Resource Assessment and Legal Framework

We often think of species in these categories as plants, and most are. However, invasive species can be plants, animals, diseases, or insects. Invasive species and pest management is defined as the ability to control species and pests that interfere with management objectives. An invasive species can be a native or non-native species that is occurring where it is not wanted, in unwanted numbers that may result in negative economic impacts. The term Noxious Weed is a legal term indicating that by law the species must be controlled. Failure to comply with the Noxious Weed laws may result in legal action. Ongoing programs to identify locations of all noxious weeds and pests and initiate management and/or eradication efforts will continue. All State agencies are required to control noxious weeds and pests on State managed lands and state law provides for cooperation with the federal agencies in controlling noxious weeds and pests on all federally managed lands. Current control tactics include but are not limited to: education (plant identification, life cycles, mapping infestations, etc.); prevention (cleaning equipment, buying quality seed, rangeland management, early control, etc.); mechanical & physical controls (burning, mowing, cultivation, rotating land uses, establishment of desirable competitive plants, etc.); biological (grazing, parasites, pathogens, etc.); chemical (herbicides, weed oils, plant growth regulators, etc.); law enforcement (remedial requirements, hearings, etc.); training (commercial applicator training and certification, etc.); rodent control (minimize disease threats and control losses); and Board of County Commissioners actions (emergency declarations, budgeting, public meetings, etc.) (Wyoming Weed and Pest Council, n.d.). Cooperative agreements and legal actions, if warranted, may be utilized to assure protection of vital land resources from noxious weed and pest occupation or invasion.

The Wyoming Weed and Pest Act of 1973, as enacted by the legislature of Wyoming, establishes the guidelines for creating Weed and Pest Control Districts and the regulations which govern the districts. Within the Act, the composition of districts is defined at W.S. § 11-5-103:

> *"All land within the boundaries of Wyoming including all Federal, State, private and municipally owned lands, is hereby included in the weed and pest districts within the County in which the land is located,"*

The act also specifically defines which weeds and pests are designated as weeds and pests in W.S. § 11-5-102. The Weed and Pest Act of 1973 in W.S. § 11-5-109 also spells out enforcement provisions which could result in heavy fines if persons are convicted.

> *"A landowner who is responsible for an infestation and fails or refuses to perform the remedial requirements for the control of the weed or pest [...] may be fined. [...] Any person accused under this act is entitled to a trial by jury." (W.S. §11-5-109e)*

Funding for a long-term strategy implementing weed and pest control tactics has been lacking. Various State and federal agencies support weed and pest management by utilizing funds from discretionary or general fund sources. This only secures short-term funding for specific weed and pest infestations that generally last no more than one season. In recent years drought conditions have led State and Federal agencies to focus funds on fighting and protecting against wildfires rather than weed and pest management.

Big Horn County is working to suppress and eradicate all federally-designated, State of Wyoming designated, and Big Horn County declared weeds and pests. Additionally, the County is pursuing efforts to educate the public about invasive species and pests that are a threat to Big Horn County (Big Horn County, n.d.-b).

The current federal noxious weeds list is maintained on the USDA Plants Database (NRCS, 2019).

Big Horn County Declared Noxious Weed List W.S. 11-5-102(a)(viii)

- baby's breath (*Gypsophila paniculata* L.)
- common crupina (*Crupina vulgaris* Cass.)
- (woolly) distaff thistle (*Carthamus lanatus* L.)
- field dodder (*Cuscuta pentagona* Engelm.)
- goatsrue (*Galega officinalis* L.)
- gorse (*Ulex europaeus* L.)
- Iberian starthistle (*Centaurea iberica* Trev. ex Spreng.)
- Italian thistle (*Carduus pycnocephalus* L.)
- Japanese knotweed (*Fallopia japonica*)
- meadow knapweed (*Centaurea pratensis* Thuill.)
- orange hawkweed (*Hieracium aurantiacum* L.)
- poison hemlock (*Conium maculatum* L.)
- puncturevine (*Tribulus terrestris* L.)
- purple starthistle (*Centaurea calcitrapa* L.)
- redstem filaree (*Erodium cicutarium* (L.) L'Her. ex Ait.)
- rush skeletonweed (*Chondrilla juncea* L.)
- scentless chamomile (*Matricaria perforata* Merat.)
- scotch broom (*Cytisus scoparius* (L.) Link)
- squarrose knapweed (*Centaurea virgata* Lam. ssp. *squarrosa* (Willd.) Gugler)
- Swainsonpea (*Sphaerophysa salsula* (Pallas) DC.)
- sulfur cinquefoil (*Potentilla recta* L.)
- Syrian beancaper (*Zygophyllum fabago* L.)
- tansy ragwort (*Senecio jacobaea* L.)
- teasel (*Dipsacus fullonum* L.)
- yellow hawkweed (*Hieracium fendleri* Sch. Bip.)
- Venice mallow (*Hibiscus trionum* L.)
- viper's bugloss (*Echium vulgare* L.)

While not listed as a noxious species in the state due to its widespread distribution, cheatgrass (*Bromus tectorum*) and other annual bromes lumped under this common name are a serious threat in the county. This annual grass has reduced the productivity of native range plants and accelerated fire cycles within the county. While widespread control of the species is impossible all efforts should be made to minimize its potential to take new footholds.

In addition to these plants, aquatic plants like hydrilla (*Hydrilla verticillata*), Eurasian watermilfoil (*Myriopyllum spicatum*), curly pondweed (*Potamogeton crispus*) and didymo (rock snot) are of concern. While most people think of invasive species as plants, a number of animal species are also of concern such

as aquatic invasive species like zebra and quagga mussels, New Zealand mudsnail, Asian carp and rusty crawfish. Almost all of these species can have a negative impact on irrigation structures if they become established. White pine blister rust, pine borers, and spruce bud worms can also be problem invaders in the forested regions of the county. A number of agricultural pests exist that can negatively impact the farming regions of the county.

Resource Management Objective:

A. Noxious and invasive species are managed, in coordination with the County, in a sustainable and effective manner that uses credible data addressing biology and ecology of the pest and system.

Priorities:

1. Support and encourage control efforts to be focused on the control of all federally listed, State of Wyoming designated, and Big Horn County declared weeds and pests.
2. The County expects coordination with other local, state, and federal agencies to allow Weed and Pest Control District road access across state and federal lands to access infestations on public and private lands, as is required for the suppression of invasive species and pests.
3. Support and encourage cooperative efforts with state, federal, and private landowners/managers to enhance cooperative weed and pest management efforts countywide as required by agency mandates; coordinated with, and primarily managed by, the Big Horn County Weed and Pest Control District.
4. Big Horn County relies upon the Big Horn County Weed and Pest Control District to make use of cooperative agreements, NEPA, the Wyoming Weed and Pest Act of 1973, and broad-based legal precedent to assure recognition of local conditions and circumstances in the decision-making process, and to keep the County and the public informed of these efforts.
5. All property owners/managers, including state, federal, private, and tribal property owners/managers within the County, shall be responsible for controlling invasive species and pests on their property to minimize movement onto adjacent lands to the extent required by federal law and the Wyoming Weed and Pest Act.
6. Evaluate prescribed burns as a means of controlling weed species and revitalizing rangeland vegetation in order to support and expand multiple use.
7. Encourage prescribed grazing to control invasive, noxious, and nuisance plant species. State and federal land managers shall provide flexibility to and work with permittees to achieve this as a control method.
8. Support cheatgrass control research. The County recognizes the spread of cheatgrass on public lands as one of the most severe present-day threats to grassland and sagebrush ecosystems, wildlife population health, and livestock grazing.
9. Weed management plans are required to identify funding sources and control of noxious weeds as a full interagency collaborative effort.
10. Support and encourage development of a policy regarding adequate notice to all parties responsible for noxious weed control in the area.
11. Any habitat enhancement projects that do not have a defined and funded weed control and monitoring plan for the anticipated life of the enhancement are not supported.
12. Support the federal agencies' development of an environmental analysis to expand weed control options.
13. Encourage implementation of federal and local Weed Management Plans, including mapping of all noxious weed populations.
14. Support federal monitoring efforts to accurately identify the extent of noxious weed infestations, and the identification of dispersal mechanisms where possible.
15. Support the prevention and management of aquatic nuisance species (i.e., zebra mussels, quagga mussels) and other invasive species on all waters within Big Horn County.

16. Support education programs for public and private land users regarding all possible vectors of weed spread.
17. Support preparation and compliance with a plan including ensuring adequate funding to control noxious weeds on federal lands.
18. Develop a good neighbor program that allows safe reporting of infestations on state, federal and private lands.
19. Support the use of aerial devices (i.e., drones, fixed wing, helicopters and other aircraft) for weed monitoring and control where feasible.
20. Support herbicide use in wilderness areas.

REFERENCES

ACOE. (n.d.). *Regulatory*. Retrieved June 10, 2020, from https://www.iwr.usace.army.mil/Missions/Value-to-the-Nation/Regulatory/

American Energy Independence. (2017). *Solar Energy and Energy Independence*. American Energy Independence. http://www.americanenergyindependence.com/solarenergy.aspx

APHIS. (n.d.). *USDA APHIS | Wildlife Services*. Retrieved September 18, 2019, from https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/SA_Program_Overview

ASWM. (n.d.-a). *Law & Policy*. Associate of State Wetland Managers. Retrieved March 10, 2020, from https://www.aswm.org/wetlands-law

ASWM. (n.d.-b). *Wetland Programs*. Associate of State Wetland Managers. Retrieved March 10, 2020, from https://www.aswm.org/wetland-programs

BHNF. (2013). *Bighorn National Forest Revised Land and Resource Management Plan*. https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5414812.pdf

Big Horn County. (n.d.-a). *Big Horn County Website: Appointed Boards*. Retrieved September 18, 2019, from https://www.bighorncountywy.gov/departments/commissioners/appointed-boards

Big Horn County. (n.d.-b). *Big Horn County—Weed & Pest*. Retrieved March 15, 2019, from https://www.bighorncountywy.gov/departments/weed-pest

Big Horn County. (n.d.-c). *Flood Damage Prevention*. Retrieved December 16, 2019, from https://www.bighorncountywy.gov/departments/land-planning/flood-damage-prevention

Big Horn County Commissioners. (2017). *Big Horn County Economic Profile*. https://www.bighorncountywy.gov/images/downloads/BigHornProfile_Final.pdf

Big Horn County LUP. (n.d.). Retrieved September 19, 2019, from https://www.bighorncountywy.gov/images/downloads/land-planning/land-use-plan/3.6%20Infrastructure.pdf

Bighorn Basin Local Governemnt Cooperating Agencies. (2011, August 20). *Bighorn Basin Resource Management Plan and EIS- Volume 2 of 4*. http://ecosystemrg.com/bhb/110820%20Volume%20II%20Appendices.pdf

Blackstone, Jr., D. L., & Huntoon, P. W. (1984). *Tectonic Structures Responsible for Anisotropic Transmissivities in the Paleozoic Aquifers Southern Bighorn Basin, Wyoming* (84-02.pdf; pp. 1–74). http://library.wrds.uwyo.edu/wrp/84-02/84-02.pdf

BLM. (2010). *BLM Wyoming Sensitive Species Policy and List*. https://www.blm.gov/download/file/fid/20067

BLM. (2013). *Areas of Critical Environmental Concern Evaluation Report: Big Horn Basin Resource Management Plan Revision Project* (p. 121). https://eplanning.blm.gov/epl-front-office/projects/lup/9506/44731/48235/ACEC__Report.pdf

BLM. (2016a, September 11). *Programs: Planning and NEPA: Planning 101: Special Planning Designations: Areas of Critical Environmental Concern* [Text]. https://www.blm.gov/programs/planning-and-nepa/planning-101/special-planning-designations/acec

BLM. (2016b, September 30). *Programs: National Conservation Lands: About: Wilderness* [Text]. https://www.blm.gov/programs/national-conservation-lands/wilderness

BLM. (2016c, October 2). *Programs: Natural Resources: Wetlands and Riparian: Riparian Health* [Text]. https://www.blm.gov/programs/natural-resources/wetlands-and-riparian/riparian-health

BLM. (2019). *Alkali Creek Reservoir Project*. https://eplanning.blm.gov/eplanning-ui/project/69700/510

BRS Engineering and Donnell & Allred, Inc. (2003). *Wyoming State Water Plan—Wind/Bighorn River Basin Plan*. http://waterplan.state.wy.us/plan/bighorn/techmemos/conserv.html

Budd-Falen, K. (2018). *Local Government Participation in Federal Agency Decision Making*.

Burea of Reclamation. (2018, August 5). *The Bureau of Reclamation- A Very Brief History* [Government]. Reclamation History. https://www.usbr.gov/history/borhist.html

Bureau of Economic Analysis. (2019, January 31). *Personal Income by Major Component and Earnings by NAICS Industry*. Apps.Bea.Gov. https://apps.bea.gov/iTable/iTable.cfm?ReqID=70&step=1#reqid=70&step=30&isuri=1&7022=11&7023=7&7033=-1&7024=naics&7025=4&7026=08045&7027=-1&7001=711&7028=-1&7031=08000&7040=-1&7083=levels&7029=33&7090=70

Bureau of Land Management. (n.d.). *Red Gulch Dinosaur Tracksite* [Text]. Retrieved September 16, 2019, from https://www.blm.gov/visit/red-gulch

Bureau of Land Management. (2012a). *1283 Data Administration and Management Handbook*. https://www.blm.gov/sites/blm.gov/files/uploads/mediacenter_blmpolicymanual1283.pdf

Bureau of Land Management. (2012b). *A Desk Guide to Cooperating Agency Relationships and Coordination with Intergovernmental Partners*. Bureau of Land Management Division of Decision Support, Planning and NEPA. https://www.ntc.blm.gov/krc/uploads/623/BLM_DeskGuide_CA_Relationships_2012.pdf

Bureau of Land Management. (2015). *Environmental Assessment DOI-BLM-MT-C030-2014-189-EA*. https://www.blm.gov/sites/blm.gov/files/MT-DAKs%20NDFO_July2015_LeaseSaleEA_DRAFT_9Feb2015.pdf

Bureau of Land Management. (2016a, August 15). *About: History of BLM: National Timeline* [Text]. https://www.blm.gov/about/history/timeline

Bureau of Land Management. (2016b, October 21). *Programs: Natural Resources: Wetlands and Riparian: Riparian Health: Wyoming* [Text]. https://www.blm.gov/programs/natural-resources/wetlands-and-riparian/riparian-health/wyoming

Bureau of Land Management. (2017a, June 21). *Programs: National Conservation Lands: Wyoming: Alkali Creek WSA* [Text]. https://www.blm.gov/programs-national-conservation-lands-wyoming-alkali-creek-wsa

Bureau of Land Management. (2017b, June 22). *Programs: National Conservation Lands: Wyoming: Bighorn Tack-On WSA* [Text]. https://www.blm.gov/Programs/National-Conservation-Lands/Wyoming/Bighorn-Tack-On%20WSA

Bureau of Land Management. (2017c, July 6). *Programs: National Conservation Lands: Wyoming: Bobcat Draw Badlands WSA* [Text]. https://www.blm.gov/Programs-National-Conservation-Lands-Wyoming-Bobcat-Draw-Badlands-WSA

Bureau of Land Management. (2017d, July 7). *Programs: National Conservation Lands: Wyoming: Medicine Lodge WSA* [Text]. https://www.blm.gov/Programs-National-Conservation-Lands-Wyoming-Medicine-Lodge-WSA

Bureau of Land Management. (2017e, July 13). *Programs: National Conservation Lands: Wyoming: Pryor Mountain WSA* [Text]. https://www.blm.gov/Programs/National-Conservation-Lands/Wyoming/Pryor-Mountain/WSA

Bureau of Land Management. (2017f, July 13). *Programs: National Conservation Lands: Wyoming: Red Butte WSA* [Text]. https://www.blm.gov/Programs/National-Conservation-Lands/Wyoming/Red-Butte/WSA

Bureau of Land Management. (2017g, July 14). *Programs: National Conservation Lands: Wyoming: Sheep Mountain WSA* [Text]. https://www.blm.gov/Programs/National-Conservation-Lands/Wyoming/Sheep-Mountain-WSA

Bureau of Land Management. (2017h, July 14). *Programs: National Conservation Lands: Wyoming: Trapper Creek WSA* [Text]. https://www.blm.gov/Programs/National-Conservation-Lands/Wyoming/Trapper-Creek-WSA

Bureau of Reclamation—About Us. (2019, January 30). Bureau of Reclamation. https://www.usbr.gov/main/about/

Colorado Natural Heritage Program. (2001). *Survey of Critical Biological Resources, Garfield County, Colorado, Volume 1*. http://www.cnhp.colostate.edu/download/documents/2001/1_Garfield_Co_full_report.pdf

Colorado Parks & Wildlife—Lynx. (n.d.). Retrieved February 28, 2019, from https://cpw.state.co.us/learn/Pages/SOC-Lynx.aspx

Colorado Parks and Wildlife. (2015). *Colorado's 2015 State Wildlife Action Plan*. 865.

Commission of the European Communities. (1986). *Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES): EC Annual Report*. Office for Official Publications of the European Communities.

Conservation Districts. (n.d.). Retrieved September 26, 2019, from http://www.conservewy.com/DISTRICTS.html

Dean Runyan Associates. (2018a). *Wyoming Travel Impacts: 2004-2017, Prepared for Wyoming Office of Tourism, Cheyenne, Wyoming*.

Dean Runyan Associates. (2018b). *Wyoming Travel Impacts: 2004-2017, Prepared for Wyoming Office of Tourism, Cheyenne, Wyoming*.

deCalesta, D. S. (n.d.). *Predator Control: History and Policies*. Oregon State University Extenstion Service.

Department of Administration & Information Economic Analysis Division. (2017). *Wyoming County Profiles: Big Horn County*. http://eadiv.state.wy.us/Wy_facts/Big_Horn2017.pdf

Economic Profile System. (2018). *Summary Profile- North West Region Selected Geographies: Big Horn County, WY; Hot Springs County, WY; Park County, WY; Teton County, WY; Washakie County, WY*. eadiv.state.wy.us/wef/Summary_NW.pdf

EPA, O. (2014, April 11). *Process of Reviewing the National Ambient Air Quality Standards* [Policies and Guidance]. US EPA. https://www.epa.gov/criteria-air-pollutants/process-reviewing-national-ambient-air-quality-standards

EPA, R. 08. (2014, February 25). *Delegations of Authority for NSPS and NESHAP Standards to States and Tribes in Region 8* [Announcements and Schedules]. US EPA. https://www.epa.gov/region8/delegations-authority-nsps-and-neshap-standards-states-and-tribes-region-8

Executive Office Council on Environmental Quality. (2010). *Fact Sheet: CEQ Report on Environmental Impact Statement Timelines (2010—2018)*. 1.

Executive Order 13352. (2017, July 31). FedCenter. https://www.fedcenter.gov/Bookmarks/index.cfm?id=57

Federal Land Ownership: Overview and Data. (2018, March 22). https://www.everycrsreport.com/reports/R42346.html#_Toc476565242

Federal Land Policy and Management Act, Pub. L. No. 94–579 (1976).

FEMA. (n.d.-a). *Community Assistance Program—State Support Services Element*. Retrieved December 16, 2019, from https://www.fema.gov/community-assistance-program-state-support-services-element

FEMA. (n.d.-b). *FEMA's National Flood Hazard Layer (NFHL) Viewer*. Retrieved December 16, 2019, from https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd

FEMA. (n.d.-c). *Risk Map Progress—Mapping Information Platform Studies Tracker*. ArcGIS. Retrieved February 15, 2019, from http://www.arcgis.com/home/webmap/viewer.html?webmap=6331cc6b45734c4eabfde6102d5fc0b1&extent=-148.9197,13.1588,-46.0876,55.5312

FEMA. (n.d.-d). *Risk Mapping, Assessment and Planning (Risk MAP)*. Retrieved December 16, 2019, from https://www.fema.gov/risk-mapping-assessment-and-planning-risk-map

Forest Service: Rocky Mountain Region. (2005). *Bighorn National Forest Revised Land and Resource Management Plan* (p. 1:1-4:7).

Gaudin, R. M. (n.d.). *Wyoming Profile – Volume I*. 846.

Global Energy Institute. (2013, February 1). *Benefits of Keystone XL*. Global Energy Institute. https://www.globalenergyinstitute.org/benefits-keystone-xl

Grant, K. (2011). *Medicine Wheel Historic Preservation Plan Addendum*.

Hein, R. (2014, November 8). *Big Horn County, WY*. WyoHistory.Org. https://www.wyohistory.org/encyclopedia/big-horn-county-wyoming

History-SBHCD. (n.d.). South Big Horn Conservation District. Retrieved September 26, 2019, from http://www.sbhcd.org/history.html

Hoover, K. (2019). The Federal Land Management Agencies. *CRS Report IF I 0585*, 2.

Johnson, A. (2018, December 4). *File Code 2300- Dispersed Camping* [Memo].

Libra, R., Doremus, D., & Goodwin, C. (1981). *Volume II-A: Occurence and Characteristics of Ground Water in the Bighorn Basin, Wyoming* (p. 156).

Lowe, J. A., & Wyoming State Historic Preservation Office. (2014, November 18). *The Bridger Trail: A Safer Route to Montana Gold*. WyoHistory.Org. https://www.wyohistory.org/encyclopedia/bridger-trail

Martin, L. D., & Gilbert, B. M. (1978). *Excavations at Natural Trap Cave*. 11.

McKee, D. (2019). *Dispersed Camping Brief*.

Medicine Wheel Ranger District, & USFS. (1996). *Historic Preservation Plan for Medicine Wheel national Historic Landmark and Vicinity*.

Multiple-Use Sustained-Yield Act of 1960 As amended through December 31, 1996, Pub. L. No. 104–333, 10 (1960).

MWH Americas, Short Elliot Hendrickson, & Harvey Economics. (2010). *Wind-Bighorn Basin Plan Update* (pp. 1–189). http://waterplan.state.wy.us/plan/bighorn/2010/finalrept/finalrept.pdf

National Conference of State Legislatures. (2019, February 1). *State Renewable Portfolio Standards and Goals*. National Conference of State Legislatures. http://www.ncsl.org/research/energy/renewable-portfolio-standards.aspx

National Horse & Burro Rangeland Management Coalition. (2015). *Terms and Definitions*. National Horse and Burro Rangeland Management Coalition. http://www.wildhorserange.org/terms-and-definitions.html

National Park Service. (2019, March 14). *Bighorn Canyon* [Government]. https://www.nps.gov/bica/index.htm

National Wild and Scenic Rivers System. (n.d.). *About the WSR Act*. Retrieved September 17, 2019, from https://www.rivers.gov/wsr-act.php

National Environmental Policy Act 1969, Pub. L. No. 91–190 (1969).

NPS. (n.d.). *National Park Service History: National Park System Timeline*. History E-Library. Retrieved November 13, 2018, from https://www.nps.gov/parkhistory/hisnps/npshistory/timeline_annotated.htm

NPS. (2012). *National Register of Historic Places—Traditional Cultural Properties (TCPs) A Quick Guide for Preserving National American Cultural Resources*.

NPS. (2017). *2016 National Park Visitor Spending Effects: Economic Contributions to Local Communities, States, and the Nation*. 48.

NPS. (2018, September 11). *Transportation Planning—Transportation* [Government]. National Park Service Department of the Interior. https://www.nps.gov/subjects/transportation/planning.htm

NRCS. (n.d.-a). *Conservation Reserve Program (CRP) | NRCS Wyoming*. Retrieved December 19, 2019, from https://www.nrcs.usda.gov/wps/portal/nrcs/detail/wy/programs/?cid=nrcs142p2_026724

NRCS. (n.d.-b). *Continuous CRP Riparian Buffer, Stream Restoration Program*.

NRCS. (n.d.-c). *Soil Surveys by State | NRCS Soils*. Retrieved December 16, 2019, from https://www.nrcs.usda.gov/wps/portal/nrcs/surveylist/soils/survey/state/?stateId=WY

NRCS. (n.d.-d). *Web Soil Survey*. Retrieved February 25, 2019, from https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

NRCS. (2018, March 17). *Soil Health | NRCS Soils*. https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/

NRCS. (2019, August). *Welcome to the PLANTS Database | USDA PLANTS*. https://plants.sc.egov.usda.gov/java/

Office of Federal Lands Highway. (2018, July). *Office of Federal Lands Highway- About*. US Department of Transportation Federal Highway Administration. https://flh.fhwa.dot.gov/about/

Office of Management and Budget. (2004). *Memorandum: Issuance of OMB's "final Information Quality Bulletin for Peer Review."* https://www.cio.noaa.gov/services_programs/pdfs/OMB_Peer_Review_Bulletin_m05-03.pdf

PB Communications & Strategic Solutions. (2016). *Public Discussion on Dispersed Camping in the Bighorn Mountains prepared for the Big Horn Mountain Coalition*.

Plafcan, M., Cassidy, E. W., & Smalley, M. L. (1993). *Water Resources of Big Horn County, Wyoming*. 148.

Scott, R. (2018). *Changes loom for Wyo. Oil and gas guidelines*. Gillette News Record. https://www.gillettenewsrecord.com/news/wyoming/article_a3abc84f-bcb1-5404-ac36-00908b073714.html

Species Profile for North American wolverine (Gulo gulo luscus). (n.d.). Retrieved February 28, 2019, from https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=A0FA

Star-Tribune, C. P. F. the. (n.d.). *Male and female wolverines documented in the Wind River Range for first time in more than 100 years*. Casper Star-Tribune Online. Retrieved March 19, 2019, from https://trib.com/lifestyles/recreation/male-and-female-wolverines-documented-in-the-wind-river-range/article_2e2cf7e2-a347-5fc0-a0e1-8b731be02514.html

State of Wyoming. (2018). *State of Wyoming Depatment of Revenue, 2018 Revenue Report* (p. 88) [Revenue]. State of Wyoming. https://0ebaeb71-a-84cef9ff-s-sites.googlegroups.com/a/wyo.gov/wy-dor/2018AnnualReport.pdf?attachauth=ANoY7cr09sYnQR4dgfxO-gg1W7s8NqbvlSyX3OhsxLxOSMAleIqBqeCFPTPslPl05IusKrOBd5-ZLcuw8wU7sve5-UBeMkbYqATw2OLOSNVoFZu5XJajz_xQkFtgsqnOW35yoWXrjG-7b1oAVEkO5IHBcSGPXa4Oxs5U4LYXfr20jSbiFxp8JDeonm4PNCkwCneAbsefEuaCNyP0EcUYVsAZDd8FekzLdw%3D%3D&attredirects=0

United States Department of Agriculture National Agricultural Statistics Service, Vilsack, T., & Clark, C. Z. F. (2014). *2012 Census of Agriculture* (Wyoming State and County Data). https://www.nass.usda.gov/Publications/AgCensus/2012/Full_Report/Volume_1,_Chapter_2_County_Level/Wyoming/wyv1.pdf

University of Wyoming. (n.d.). *Wyoming Floods*. Retrieved December 16, 2019, from http://wyofloods.wrds.uwyo.edu/

US Department of Agriculture. (n.d.). *2012 Census of AG-Big Horn County*. Retrieved February 7, 2019, from https://www.nass.usda.gov/Publications/AgCensus/2012/Online_Resources/County_Profiles/Wyoming/cp56003.pdf

US Department of the Interior. (2015, May 31). *Land and Water Conservation Fund* [Government]. U.S. Department of the Interior. https://www.doi.gov/lwcf

U.S. Fish and Wildlife Service. (n.d.-a). *Species Profile for Gray wolf (Canis lupus)*. Retrieved March 20, 2019, from https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=A00D#lifeHistory

U.S. Fish and Wildlife Service. (n.d.-b). *Threatened and Endangered Species by County*. Retrieved March 19, 2019, from https://ecos.fws.gov/ecp0/reports/species-by-current-range-county?fips=56003

U.S. Fish and Wildlife Service. (2017). *Canada Lynx 5-Year Review: Summary and Evaluation*. https://ecos.fws.gov/docs/five_year_review/doc5667.pdf

U.S. Forest Service. (n.d.-a). *Bighorn National Forest—Cloud Peak Wilderness*. Retrieved November 19, 2019, from https://www.fs.usda.gov/recarea/bighorn/recarea/?recid=80618

U.S. Forest Service. (n.d.-b). *Bighorn National Forest—Medicine Wheel / Medicine Mountain National Historic Landmark*. Retrieved September 2, 2020, from https://www.fs.usda.gov/detail/bighorn/home/?cid=fseprd521531

US Forest Service. (1982, September 30). *National Forest System Land and Resource Management Planning 1982 Rule*. https://www.fs.fed.us/emc/nfma/includes/nfmareg.html

U.S. Forest Service. (2010). Appendix C. In *Bighorn National Forest Revised Land and Resource Management Plan*. https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5166503.pdf

US Forest Service. (2013). *FSH 1909.12—Proccess Supporting Land Managment Planning*. https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5409879.pdf

U.S. Forest Service. (2017). Chapter 2670—Threatened, endangered, and sensitive plants and animals. In *FSM 2600—Wildlife, fish, and sensitive plant habitat management*. https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd553653.docx

US Forest Service. (2019, September 13). *USDA Forest Service Bighorn National Forest* [Government]. US Forest Service. https://www.fs.usda.gov/bighorn/

US National Park Service. (2015a, February 24). *Henry Lovell—Bighorn Canyon National Recreation Area*. https://www.nps.gov/bica/learn/historyculture/henry-lovell.htm

US National Park Service. (2015b, February 24). *Natural Trap Cave—Bighorn Canyon National Recreation Area*. https://www.nps.gov/bica/learn/nature/natural-trap-cave.htm

USDA Forest Service. (2001). *Final Environmental Impact Statement for the Northern Great Plains Management Plan Revision*. https://www.fs.usda.gov/detail/mbr/landmanagement/planning/?cid=fsbdev3_025111

USDA: Soil Science Division Staff. (2017). *Soil Survey Manual (SSM)*. https://www.nrcs.usda.gov/wps/portal/nrcs/detail//?cid=nrcs142p2_054262

USFS. (n.d.-a). *Bighorn National Forest—Home*. Retrieved September 16, 2019, from https://www.fs.usda.gov/bighorn/

USFS. (n.d.-b). *Bighorn National Forest—News & Events: Changes to Bighorn National Forest camping regulations.* Retrieved September 1, 2020, from https://www.fs.usda.gov/detail/bighorn/news-events/?cid=FSEPRD778027

USFS. (n.d.-c). *Bighorn National Forest—Special Places*. Retrieved September 17, 2019, from https://www.fs.usda.gov/detail/bighorn/specialplaces/?cid=stelprd3812567

USFS. (n.d.-d). *Grand Mesa Uncompahgre and Gunnison National Forests—Special Places*. Retrieved June 29, 2020, from https://www.fs.usda.gov/detail/gmug/specialplaces/?cid=stelprdb5181324

USFWS. (n.d.-a). *Endangered Species | Laws & Policies | Endangered Species Act*. Retrieved April 24, 2020, from https://www.fws.gov/endangered/laws-policies/

USFWS. (n.d.-b). *Refuge List by State*. Retrieved March 19, 2019, from https://www.fws.gov/refuges/profiles/ByState.cfm?state=WY

USFWS. (n.d.-c). *USFWS-WSFR State Wildlife Grant Program*. Retrieved March 12, 2019, from https://wsfrprograms.fws.gov/subpages/grantprograms/swg/swg.htm

USFWS. (1973). *Endangered Species Act of 1973*. https://www.fws.gov/laws/lawsdigest/esact.html

USFWS. (2018a). *2018 Annual Report of Lands Data Tables*.

USFWS. (2018b, March 16). *Endangered Species | What We Do | Listing and Critical Habitat | Critical Habitat | FAQ*. https://www.fws.gov/endangered/what-we-do/critical-habitats-faq.html

USFWS. (2018c, March 22). *About: Mission | National Wildlife Refuge System*. https://www.fws.gov/refuges/about/mission.html

WACD. (n.d.). *About WACD*. Retrieved September 26, 2019, from http://www.conservewy.com/ABOUT.html

Watson, M., & Supervisor, W. (2016). *Wyoming Oil and Gas Conservation New Rules*. 22.

WDEQ. (n.d.-a). *Groundwater Pollution Control (GPC) Program | Wyoming Water Quality*. Retrieved December 16, 2019, from http://deq.wyoming.gov/wqd/gpc/

WDEQ. (n.d.-b). *Recreation Designated Uses Web Map: ArcGIS Viewer*. Retrieved December 16, 2019, from https://gis.deq.wyoming.gov/maps/recreation/

WDEQ. (n.d.-c). *Surface Water Quality Standards*. Retrieved December 16, 2019, from http://deq.wyoming.gov/wqd/surface-water-quality-standards-2/

WDEQ. (n.d.-d). *Water Quality Assessment | Water Quality*. Retrieved December 16, 2019, from http://deq.wyoming.gov/wqd/water-quality-assessment/

WDEQ. (n.d.-e). *Why are Riparian Areas Important?* Retrieved December 19, 2019, from http://deq.wyoming.gov/wqd/non-point-source/resources/why-are-riparian-areas-important/

WDEQ. (2013). *Wyoming Surface Water Classification List*.

WDEQ. (2018a). *Water Quality Rules and Regulations Chapter 1: Wyoming Surface Water Quality Standards*.

WDEQ. (2018b). *Wyoming Department of Environmental Quality Air Quality Division Standards and Regulations- Chapter 2: Ambient Standards*. WY Department of Environmental Quality.

WGFD. (n.d.-a). *Wyoming Game and Fish Department—About the Department*. Retrieved March 27, 2019, from https://wgfd.wyo.gov/About-Us/About-the-Department

WGFD. (n.d.-b). *Wyoming Game and Fish Department—Game and Fish Commission*. Retrieved March 27, 2019, from https://wgfd.wyo.gov/about-us/game-and-fish-commission

WGFD. (n.d.-c). *Wyoming Game and Fish Department—Riparian Information*. Retrieved December 19, 2019, from https://wgfd.wyo.gov/Habitat/Habitat-Information/Riparian-Information

WGFD. (2009). *Big Horn Basin Angler News*.

WGFD. (2017a). *Species of Greatest Conservation Need: Wyoming State Wildlife Action Plan*. https://wgfd.wyo.gov/WGFD/media/content/PDF/Habitat/SWAP/SGCN-Introduction.pdf

WGFD. (2017b). *Wyoming State Wildlife Action Plan*. https://drive.google.com/open?id=0B1iN5AyJdrYPa2JMMjh6Q2RseVE

Exec. Order No. 13783- Promoting Energy Independence and Economic Growth, Pub. L. No. Exec. Order No. 13783, 3C.F.R., 16093 (2017). https://www.federalregister.gov/documents/2017/03/31/2017-06576/promoting-energy-independence-and-economic-growth

Wilson, R. K. (2014). *America's Public Lands: From Yellowstone to Smokey Bear and Beyond*. Rowman & Littlefield.

WOGCC. (n.d.-a). *Oil Graph*. Retrieved February 7, 2019, from http://pipeline.wyo.gov/StateOilGraph.cfm?oops=ID42052

WOGCC. (n.d.-b). *State Gas Production Graph*. Retrieved February 7, 2019, from http://pipeline.wyo.gov/StateGasGraph.cfm?oops=ID42052

WWDC. (n.d.). *Wyoming Water Development Commission Dam and Reservoir Planning*. Retrieved December 19, 2019, from http://wwdc.state.wy.us/dam_reservoir/dam_reservoir.html

Wyoming ES | Species | Lynx. (n.d.). Retrieved March 19, 2019, from https://www.fws.gov/wyominges/Species/Lynx.php

Wyoming Game and Fish Department. (n.d.-a). *Wyoming Game and Fish Department—NEWS: Wolves Returned to State Management in Wyoming*. Retrieved March 20, 2019, from https://wgfd.wyo.gov/News/Wolves-Returned-to-State-Management-in-Wyoming

Wyoming Game and Fish Department. (n.d.-b). *Wyoming Game and Fish Studies the Elusive Wolverine*. Retrieved March 19, 2019, from https://wgfd.wyo.gov/About-Us/Wyoming-Wildlife/Wolverines

Wyoming Office of Homeland Security. (n.d.). *Wyoming State Mitigation Plan 2016-2021*. Google Docs. Retrieved December 16, 2019, from https://drive.google.com/file/d/1zuwfOHq_sVsUWzA8c14n_YYV3cuxAoYv/view?usp=embed_facebook

Wyoming SHPO. (n.d.). *Criteria for National Register*. Retrieved April 24, 2020, from https://wyoshpo.wyo.gov/index.php/programs/national-register/criteria-for-national-register

Wyoming Taxpayer Association. (2017). *WTAPropertyTaxationBook17new.pdf*. https://www.wyotax.org/_pdfs/2018/May/WTAPropertyTaxationBook17new.pdf

Wyoming Water Development Office. (2003, April 22). *Wyoming State Water Plan—Wind/Bighorn River Basin Plan: Water Use form Storage*. http://waterplan.state.wy.us/plan/bighorn/techmemos/storuse.html

Wyoming Water Development Office. (2019a). *Wyoming Water Development Commission 2019 Wyoming Irrigation Systems Report*. http://wwdc.state.wy.us/irrsys/2019/raterept.html

Wyoming Water Development Office. (2019b). *Current WWDC Reservoir Projects*. http://wwdc.state.wy.us/dam_reservoir/CurrentWWDCProjects.pdf#page=1&toolbar=1&pagemode=none

Wyoming Weed and Pest Council. (n.d.). *Management Programs – Wyoming Weed & Pest*. Retrieved March 21, 2019, from https://wyoweed.org/noxious-species/management-programs/

Appendix A: Tables

Table 2: Wyoming Tier 1 Species of Conservation Priority. (WGFD, 2017b)

Species	Common Name	Priority Tier
Amphibians		
Anaxyrus baxteri	Wyoming toad	I
Anaxyrus boreas	western toad	I
Birds		
Accipiter gentilis	Northern Goshawk	I
Athene cunicularia	Burrowing Owl	I
Charadrius montanus	Mountain Plover	I
Gavia immer	Common Loon	I
Fish		
Catostomus discobolus	bluehead sucker	I
Catostomus latipinnis	flannelmouth sucker	I
Gila robusta	roundtail chub	I
Nocomis biguttatus	hornyhead chub	I
Rhinichthys osculus thermalis	Kendall Warm Springs dace	I
Mammals		
Lynx canadensis	Canada lynx	I
Mustela nigripes	black-footed ferret	I
Thomomys clusius	Wyoming pocket gopher	I
Reptiles		
Crotalus oreganus concolor	midget faded rattlesnake	I
Mollusks		
Lampsilis cardium	plain pocketbook	I
Fluminicola coloradoensis	Green River pebblesnail	I
	mountainsnails (many species)	I

Table 3: Wyoming Tier 2 Species of Conservation Priority. (WGFD, 2017b)

Species	Common Name	Priority Tier
Amphibians		
Anaxyrus cognatus	Great Plains toad	II
Lithobates pipiens	northern leopard frog	II
Lithobates sylvaticus	wood frog	II
Rana luteiventris	Columbia spotted frog	II
Spea bombifrons	plains spadefoot	II
Spea intermontana	Great Basin spadefoot	II
Birds		
Aechmophorus clarkii	Clark's Grebe	II
Aechmophorus occidentalis	Western Grebe	II
Aegolius funereus	Boreal Owl	II
Ammodramus bairdii	Baird's Sparrow	II
Ammodramus savannarum	Grasshopper Sparrow	II
Aphelocoma woodhouseii	Woodhouse's Scrub-jay	II
Aquila chrysaetos	Golden Eagle	II
Archilochus alexandri	Black-chinned Hummingbird	II
Ardea herodias	Great Blue Heron	II
Artemisiospiza nevadensis	Sagebrush Sparrow	II
Asio flammeus	Short-eared Owl	II
Baeolophus ridgwayi	Juniper Titmouse	II
Bartramia longicauda	Upland Sandpiper	II
Botaurus lentiginosus	American Bittern	II
Bubulcus ibis	Cattle Egret	II
Buteo regalis	Ferruginous Hawk	II
Buteo swainsoni	Swainson's Hawk	II
Calcarius ornatus	Chestnut-collared Longspur	II
Centrocercus urophasianus	Greater Sage Grouse	II
Chlidonias niger	Black Tern	II
Coccyzus americanus	Yellow-billed Cuckoo	II
Coccyzus erythropthalmus	Black-billed Cuckoo	II
Cygnus buccinator	Trumpeter Swan	II
Dolichonyx oryzivorus	Bobolink	II
Egretta thula	Snowy Egret	II
Falco peregrinus	Peregrine Falcon	II
Geothlypis tolmiei	MacGillivray's Warbler	II
Glaucidium gnoma	Northern Pygmy Owl	II
Haliaeetus leucocephalus	Bald Eagle	II

Histrionicus histrionicus	Harlequin Duck	II
Hydroprogne caspia	Caspian Tern	II
Icterus parisorum	Scott's Oriole	II
Lanius ludovicianus	Loggerhead Shrike	II
Leucophaeus pipixcan	Franklin's Gull	II
Leucosticte atrata	Black Rosy-finch	II
Leucosticte australis	Brown-capped Rosy-finch	II
Loxia curvirostra	Red Crossbill	II
Melanerpes erythrocephalus	Red-headed Woodpecker	II
Melanerpes lewis	Lewis's Woodpecker	II
Myiarchus cinerascens	Ash-throated Flycatcher	II
Nucifraga columbiana	Clark's Nutcracker	II
Numenius americanus	Long-billed Curlew	II
Nycticorax nycticorax	Black-crowned Night-Heron	II
Oreoscoptes montanus	Sage Thrasher	II
Oreothlypis virginiae	Virginia's Warbler	II
Pelecanus erythrorhynchos	American White Pelican	II
Picoides arcticus	Black-backed Woodpecker	II
Plegadis chihi	White-faced Ibis	II
Psaltriparus minimus	Bushtit	II
Rhynchophanes mccownii	McCown's Longspur	II
Selasphorus calliope	Calliope Hummingbird	II
Selasphorus rufus	Rufous Hummingbird	II
Setophaga nigrescens	Black-throated Gray Warbler	II
Sitta pygmaea	Pygmy Nuthatch	II
Sphyrapicus thyroideus	Williamson's Sapsucker	II
Spiza americana	Dickcissel	II
Spizella breweri	Brewer's Sparrow	II
Sterna forsteri	Forster's Tern	II
Strix nebulosa	Great Gray Owl	II
Tympanuchus phasianellus columbianus	Columbian Sharp-tailed Grouse	II
Vireo olivaceus	Red-eyed Vireo	II
Vireo vicinior	Gray Vireo	II
Fish		
Chrosomus neogaeus	finescale dace	II
Etheostoma exile	Iowa darter	II
Etheostoma spectabile	orangethroat darter	II
Fundulus kansae	Northern Plains killifish	II
Fundulus sciadicus	plains topminnow	II

Hiodon alosoides	goldeye	II
Hybognathus argyritis	western silvery minnow	II
Hybognathus placitus	plains minnow	II
Lepidomeda copei	northern leatherside chub	II
Lota lota	burbot	II
Macrhybopsis gelida	sturgeon chub	II
Margariscus nachtriebi	northern pearl dace	II
Oncorhynchus clarkii bouvieri	Yellowstone cutthroat trout	II
Oncorhynchus clarkii pleuriticus	Colorado River cutthroat trout	II
Oncorhynchus clarkii spp.	Snake River cutthroat trout	II
Oncorhynchus clarkii utah	Bonneville cutthroat trout	II
Phenacobius mirabilis	suckermouth minnow	II
Sander canadensis	sauger	II
Scaphirhynchus platorynchus	shovelnose sturgeon	II
Mammals		
Alces americanus	moose	II
Antrozous pallidus	pallid bat	II
Brachylagus idahoensis	pygmy rabbit	II
Corynorhinus townsendii	Townsend's big-eared bat	II
Cynomys leucurus	white-tailed prairie dog	II
Cynomys ludovicianus	black-tailed prairie dog	II
Geomys lutescens	Sand Hills pocket gopher	II
Glaucomys sabrinus	northern flying squirrel	II
Gulo gulo	wolverine	II
Lemmiscus curtatus	sagebrush vole	II
Lontra canadensis	northern river otter	II
Microtus richardsoni	water vole	II
Myotis ciliolabrum	western small-footed myotis	II
Myotis lucifugus	little brown myotis	II
Myotis septentrionalis	northern long-eared myotis	II
Myotis thysanodes	fringed myotis	II
Ochotona princeps	American pika	II
Ovis canadensis	bighorn sheep	II
Peromyscus crinitus	canyon deermouse	II
Peromyscus truei	piñon deermouse	II
Reithrodontomys montanus	plains harvest mouse	II
Sorex nanus	dwarf shrew	II
Spilogale putorius	eastern spotted skunk	II
Tamias dorsalis	cliff chipmunk	II

Thomomys idahoensis	Idaho pocket gopher	II
Vulpes velox	swift fox	II
Zapus hudsonius preblei	Preble's meadow jumping mouse	II
Reptiles		
Apalone spinifera spinifera	eastern spiny softshell	II
Charina bottae	northern rubber boa	II
Lampropeltis triangulum multistriata	pale milksnake	II
Pituophis catenifer deserticola	Great Basin gophersnake	II
Urosaurus ornatus wrighti	northern tree lizard	II
Crustaceans		
Branchinecta constricta	constricted fairy shrimp	II
Orconectes neglectus	ringed crayfish	II
Pacifastacus gambelii	pilose crayfish	II
Streptocephalus mackini	Mackin fairy shrimp	II
Mollusks		
Anodonta californiensis	California floater	II
Anodontoides ferussacianus	cylindrical papershell	II
Oreohelix pygmaea	pygmy mountainsnail	II
Oreohelix strigosa cooperi	Cooper's rocky mountainsnail	II
Oreohelix yavapai	yavapai mountainsnail	II
Physa spelunca	cave physa	II
Pyrgulopsis robusta	Jackson Lake springsnail	II
	aquatic snails (many species)	II
	land snails (many species)	II

Table 4: Wyoming Tier 3 Species of Conservation Priority. (WGFD, 2017b)

Species	Common Name	Priority Tier
Amphibians		
Ambystoma mavortium	western tiger salamander	III
Birds		
Anthus rubescens	American Pipit	III
Catherpes mexicanus	Canyon Wren	III
Charadrius nivosus	Snowy Plover	III
Chordeiles minor	Common Nighthawk	III
Empidonax traillii	Willow Flycatcher	III
Falco columbarius	Merlin	III
Falco sparverius	American Kestrel	III
Geothlypis trichas	Common Yellowthroat	III
Passerina caerulea	Blue Grosbeak	III
Polioptila caerulea	Blue-gray Gnatcatcher	III
Progne subis	Purple Martin	III
Psiloscops flammeolus	Flammulated Owl	III
Rallus limicola	Virginia Rail	III
Thryomanes bewickii	Bewick's Wren	III
Fish		
Hybognathus hankinsoni	brassy minnow	III
Luxilus cornutus	common shiner	III
Notropis dorsalis	bigmouth shiner	III
Platygobio gracilis	flathead chub	III
Mammals		
Bassariscus astutus	ringtail	III
Chaetodipus hispidus	hispid pocket mouse	III
Euderma maculatum	spotted bat	III
Lasiurus borealis	eastern red bat	III
Mustela nivalis	least weasel	III
Myotis evotis	long-eared myotis	III
Myotis volans	long-legged myotis	III
Myotis yumanensis	yuma myotis	III
Perognathus fasciatus	olive-backed pocket mouse	III
Perognathus flavescens	plains pocket mouse	III
Perognathus flavus	silky pocket mouse	III
Perognathus mollipilosus	Great Basin pocket mouse	III
Sciurus aberti	Abert's squirrel	III
Sorex haydeni	Hayden's shrew	III

Sorex hoyi	American pygmy shrew	III
Sorex preblei	Preble's shrew	III
Spilogale gracilis	western spotted skunk	III
Tamias amoenus	yellow-pine chipmunk	III
Tamias umbrinus	Uinta chipmunk	III
Xerospermophilus spilosoma	spotted ground squirrel	III
Zapus hudsonius	meadow jumping mouse	III
Crustaceans		
Cambarus diogenes	devil crayfish	III
Orconectes immunis	calico/papershell crayfish	III
Thamnocephalus platyurus	beavertail fairy shrimp	III
	fairy, tadpole, and clam shrimp (many species)	III
Mollusks		
Gyraulus parvus	ash gyro	III
Ferrissia rivularis	creeping ancylid	III
Fossaria dalli	dusky fossaria	III
Discus whitneyi	forest disc	III
Pyganodon grandis	giant floater	III
Planorbella trivolvis	marsh rams-horn	III
Vallonia gracilicosta	multirib vallonia	III
Physa acuta	pewter physa	III
	pill or fingernail clams (many species)	III
Fossaria bulimoides	prairie fossaria	III
Zonitoides arboreus	quick gloss	III
Oreohelix strigosa	Rocky Mountain mountainsnail	III
	stagnicola pond snails (many species)	III
Oreohelix subrudis	subalpine mountainsnail	III
Physa gyrina	tadpole physa	III
Promenetus umbilicatellus	umbilicate sprite	III
Vitrina pellucida	western glass-snail	III

Table 5: BLM's Sensitive Species List for Wyoming. (BLM, 2010)

Species	**Common Name**
Amphibians	
Bufo boreas boreas	Boreal Toad (Northern Rocky Mountain Population)
Rana pipiens	Northern Leopard Frog
Rana luteiventris	Columbia Spotted Frog
Spea intermontana	Great Basin Spadefoot
Birds	
Accipiter gentilis	Northern Goshawk
Ammodramus bairdii	Baird's Sparrow
Amphispiza belli	Sage Sparrow
Athene cunicularia	Burrowing Owl
Buteo regalis	Ferruginous Hawk
Centrocercus urophasianus	Greater Sage-grouse
Charadrius montanus	Mountain Plover
Coccyzus americanus	Yellow-billed Cuckoo
Cygnus buccinator	Trumpeter Swan
Falco peregrinus	Peregrine Falcon
Haliaeetus leucocephalus	Bald Eagle
Lanius ludovicianus	Loggerhead Shrike
Numenius americanus	Long-billed Curlew
Oreoscoptes montanus	Sage Thrasher
Plegadis chichi	White-faced Ibis
Spizella breweri	Brewer's Sparrow
Tympanuchus phasianellus columbianus	Columbian Sharp-tailed Grouse
Fish	
Catostomus discobolus	Bluehead Sucker
Catostomus latipinnis	Flannelmouth Sucker
Lepidomeda copei	Northern Leatherside Chub
Gila robusta	Roundtail Chub
Oncorhynchus clarkii bouvieri	Yellowstone Cutthroat Trout
Oncorhyncus clarkii ssp. (O. c. behnkei)	Fine-spotted Snake River Cutthroat Trout
Oncorhynchus clarkii pleuriticus	Colorado River Cutthroat Trout
Oncorhynchus clarkii Utah	Bonneville Cutthroat Trout
Nocomis biguttatus	Hornyhead Chub
Mammals	
Brachylagus idahoensis	Pygmy Rabbit
Corynorhinus townsendii	Townsend's Big-eared Bat
Cynomys leucurus	White-tailed Prairie Dog
Cynomys ludovicianus	Black-tailed Prairie Dog

Euderma maculatum	Spotted Bat
Myotis evotis	Long-eared Myotis
Myotis thysanodes	Fringed Myotis
Thomomys clusius	Wyoming Pocket Gopher
Thomomys idahoensis	Idaho Pocket Gopher
Vulpes velox	Swift Fox
Zapus hudsonius preblei	Preble's Meadow Jumping Mouse
Reptiles	
Crotalus viridis concolor	Midget Faded Rattlesnake
Plants	
Antennaria arcuata	Meadow Pussytoes
Aquilegia laramiensis	Laramie Columbine
Artemisia porteri	Porter's Sagebrush
Astragalus diversifolius	Meadow Milkvetch
Astragalus gilviflorus var. purpureus	Dubois Milkvetch
Astragalus jejunus var. articulatus	Hyattville Milkvetch
Astragalus proimanthus	Precocious Milkvetch
Astragalus racemosus var. treleasei	Trelease's Milkvetch
Boechera (Arabis) pusilla	Small Rock Cress
Botrychium lineare	Slender Moonwort
Cirsium aridum	Cedar Rim Thistle
Cirsium ownbeyi	Ownbey's Thistle
Cleome multicaulis	Many-stemmed Spider-flower
Cryptantha subcapitata	Owl Creek Miner's Candle
Cymopterus evertii	Evert's Wafer-Parsnip
Cymopterus williamsii	Williams' Wafer-Parsnip
Descurainia torulosa	Wyoming Tansymustard
Elymus simplex var. luxurians	Dune Wildrye
Ericameria discoidea var. winwardii	Winward's narrow leaf goldenweed
Lepidium integrifolium var. integrifolium	Entire-Leaved Peppergrass
Lesquerella arenosa var. argillosa	Sidesaddle Bladderpod
Lesquerella fremontii	Fremont Bladderpod
Lesquerella macrocarpa	Large-fruited Bladderpod
Lesquerella prostrata	Prostrate Bladderpod
Penstemon absarokensis	Absaroka Beardtongue
Penstemon acaulis var. acaulis	Stemless Beardtongue
Penstemon gibbensii	Gibbens' Beardtongue
Phlox pungens	Beaver Rim Phlox
Physaria condensata	Tufted Twinpod
Physaria dornii	Dorn's Twinpod

Physaria saximontana var. saximontana	Rocky Mountain Twinpod
Pinus albicaulis	Whitebark Pine
Pinus flexilis	Limber Pine
Rorippa calycina	Persistent Sepal Yellowcress
Shoshonea pulvinata	Shoshonea
Sphaeromeria simplex	Laramie False Sagebrush
Thelesperma caespitosum	Green River Greenthread
Thelesperma pubescens	Uinta Greenthread
Townsendia microcephala	Cedar Mtn. Easter Daisy
Trifolium barnebyi	Barneby's Clover

Table 6: Management Indicator Species/Focal Species for the Bighorn National Forest. (U.S. Forest Service, 2010)

Species	**Common Name**
Birds	
Sitta canadensis	Red-breasted nuthatch
Spizella breweri	Brewer's sparrow
Fish	
Oncorhynchus mykiss	Rainbow trout
Mammals	
Castor canadensis	Beaver
Cervus elaphus nelsoni	Rocky Mountain elk
Tamiasciurus hudsonicus	Red squirrel

Table 7: Threatened, Endangered, Proposed, Candidate and Forest Service Region 2 Sensitive Species for the Bighorn National Forest. (U.S. Forest Service, 2010)

Species	Common Name	Status
Amphibians		
Lithobates pipiens	Northern leopard frog	Sensitive
Lithobates luteiventris	Columbia spotted frog	Sensitive
Lithobates sylvatica	Wood frog	Sensitive
Birds		
Histrionicus histrionicus	Harlequin duck	Sensitive
Haliaeetus leucocephalus	Bald eagle	Sensitive
Circus cyaneus	Northern harrier	Sensitive
Accipiter gentilis	Northern goshawk	Sensitive
Falco peregrinus anatum	Peregrine falcon	Sensitive
Centrocercus urophasianus	Greater sage grouse	Sensitive
Otus flammeolus	Flammulated owl	Sensitive
Asio flammeus	Short-eared owl	Sensitive
Aegolius funereus	Boreal owl	Sensitive
Melanerpes lewis	Lewis' woodpecker	Sensitive
Picoides tridactylus	Three-toed woodpecker	Sensitive
Contupus cooperi	Olive-sided flycatcher	Sensitive
Lanius ludovicianus	Loggerhead shrike	Sensitive
Spizella breweri	Brewer's sparrow	Sensitive
Amphispiza bellii	Sage sparrow	Sensitive
Ammodramus savannarum	Grasshopper sparrow	Sensitive
Fish		
Oncorhynchus clarki bouvieri	Yellowstone cutthroat trout	Sensitive
Catostomus platyrhynchus	Mountain sucker	Sensitive
Mammals		
Myotis thysanodes	Fringed myotis	Sensitive
Euderma maculatum	Spotted bat	Sensitive
Plecotus townsendii	Townsend's big-eared bat	Sensitive
Microtus richardsoni	Water vole	Sensitive
Martes americana	American marten	Sensitive
Gulo gulo	Wolverine	Sensitive
Lynx canadensis	Canada lynx	Threatened
Ovis canadensis canadensis	Rocky Mountain bighorn sheep	Sensitive
Molluscs		
Oreohelix pygmaea	Pygmy mountainsnail	Sensitive
Oreohelix strigosa cooperi	Cooper's Rocky Mountainsnail	Sensitive

Plants		
Botrychium paradoxum New taxon	Peculiar moonwort	Sensitive
Botrychium ascendens	Upward-lobe moonwort	Sensitive
Cypripedium montanum	Mountain lady's slipper	Sensitive
Cypripedium parviflorum	Yellow lady's slipper	Sensitive
Eriophorum chamissonis	Russet cotton-grass	Sensitive
Festuca hallii	Hall's fescue	Sensitive
Parnassia kotzebuei	Grass-of-parnassus	Sensitive
Penstemon caryi	Cary beardtongue	Sensitive
Physaria didymocarpa var. Lanata	Wooly twinpod	Sensitive
Pyrrocoma clementis var. villosa	Hairy tranquil golden-weed	Sensitive
Rubus arcticus ssp. acaulis	Northern blackberry	Sensitive
Utricularia minor	Lesser bladderpod	Sensitive

Table 8: Regional Forester's Sensitive Animal Species List for the Rocky Mountain Region (Region 2). (U.S. Forest Service, 2017)

Species	**Common Name**
Amphibians	
Anaxyrus boreas boreas	boreal toad
Lithobates blairi	plains leopard frog
Lithobates pipiens	northern leopard frog
Lithobates sylvaticus	wood frog
Rana luteiventris	Columbia spotted frog
Birds	
Accipiter gentilis	Northern Goshawk
Aegolius funereus	Boreal Owl
Ammodramus savannarum	Grasshopper Sparrow
Artemisiospiza nevadensis	Sagebrush Sparrow
Asio flammeus	Short-eared Owl
Athene cunicularia	Burrowing Owl
Botaurus lentiginosus	American Bittern
Buteo regalis	Ferruginous Hawk
Calcarius ornatus	Chestnut-collared Longspur
Centrocercus urophasianus	Greater Sage-Grouse
Charadrius montanus	Mountain Plover
Chlidonias niger	Black Tern
Circus cyaneus	Northern Harrier
Contopus cooperi	Olive-sided Flycatcher
Cygnus buccinator	Trumpeter Swan
Cypseloides niger	Black Swift
Falco peregrinus anatum	Peregrine Falcon
Haliaeetus leucocephalus	Bald Eagle
Histrionicus histrionicus	Harlequin Duck
Lagopus leucura	White-tailed Ptarmigan
Lanius ludovicianus	Loggerhead Shrike
Melanerpes lewis	Lewis's Woodpecker
Numenius americanus	Long-billed Curlew
Peucaea cassinii	Cassin's Sparrow
Picoides arcticus	Black-backed Woodpecker
Progne subis	Purple Martin
Psiloscops flammeolus	Flammulated Owl
Rhynchophanes mccownii	McCown's Longspur
Spizella breweri	Brewer's Sparrow
Tympanuchus cupido	Greater Prairie-Chicken

Tympanuchus phasianellus columbianus	Columbian Sharp-tailed Grouse
Fish	
Catostomus discobolus	bluehead sucker
Catostomus latipinnis	flannelmouth sucker
Catostomus platyrhynchus	mountain sucker
Catostomus plebeius	Rio Grande sucker
Chrosomus eos	northern redbelly dace
Chrosomus erythrogaster	southern redbelly dace
Chrosomus neogaeus	finescale dace
Couesius plumbeus	lake chub
Fundulus sciadicus	Plains topminnow
Gila pandora	Rio Grande chub
Gila robusta	roundtail chub
Hybognathus placitus	plains minnow
Macrhybopsis gelida	sturgeon chub
Margariscus nachtriebi	northern pearl dace
Nocomis biguttatus	hornyhead chub
Oncorhynchus clarkii bouvieri	Yellowstone cutthroat
Oncorhynchus clarkii pleuriticus	Colorado River cutthroat
Oncorhynchus clarkii virginalis	Rio Grande cutthroat
Platygobio gracilis	flathead chub
Insects	
Bombus occidentalis	western bumble bee
Capnia arapahoe	Arapahoe snowfly
Danaus plexippus plexippus	monarch
Hesperia ottoe	Ottoe skipper
Ochrotrichia susanae	Susan’s purse-making caddisfly
Somatochlora hudsonica	Hudsonian emerald
Speyeria idalia	regal fritillary
Speyeria nokomis nokomis	Nokomis fritillary, Great Basin silverspot
Mammals	
Conepatus leuconotus	American hog-nosed skunk
Corynorhinus townsendii	Townsend’s big-eared bat
Cynomys gunnisoni	Gunnison’s prairie dog
Cynomys leucurus	white-tailed prairie dog
Cynomys ludovicianus	black-tailed prairie dog
Euderma maculatum	spotted bat
Gulo gulo	North American wolverine
Lasiurus cinereus	hoary bat
Lontra canadensis	river otter
Martes americana	American marten

Microtus richardsoni	water vole
Myotis thysanodes	fringed myotis
Ovis canadensis canadensis	Rocky Mountain bighorn sheep
Ovis canadensis nelsoni	desert bighorn sheep
Sorex hoyi	pygmy shrew
Thomomys clusius	Wyoming pocket gopher
Vulpes macrotis	kit fox
Vulpes velox	swift fox
Molluscs	
Acroloxus coloradensis	Rocky Mountain capshell
Oreohelix pygmaea	pygmy mountainsnail
Oreohelix strigosa cooperi	Cooper's Rocky Mountainsnail
Reptiles	
Sistrurus catenatus edwardsii	desert massasauga
Storeria occipitomaculata pahasapae	Black Hills redbelly snake

Table 9: Regional Forester's Sensitive Plant Species List for the Rocky Mountain Region. (U.S. Forest Service, 2017)

Species	**Common Name**
Non-Vascular	
Sphagnum angustifolium	sphagnum
Sphagnum balticum	Baltic sphagnum
Ferns & Allies	
Botrychium ascendens	trianglelobe moonwort
Botrychium campestre	Iowa moonwort, prairie moonwort
Botrychium paradoxum	peculiar moonwort
Lycopodium complanatum	groundcedar
Selaginella selaginoides	club spikemoss
Angiosperms - Monocots	
Calochortus flexuosus	winding mariposa lily
Carex alopecoidea	foxtail sedge
Carex diandra	lesser panicled sedge
Carex livida	livid sedge
Cypripedium montanum	mountain lady's slipper
Cypripedium parviflorum	lesser yellow lady's slipper
Eleocharis elliptica	elliptic spikerush, slender spikerush
Epipactis gigantea	stream orchid, giant helleborine
Eriophorum chamissonis	Chamisso's cottongrass
Eriophorum gracile	slender cottongrass
Festuca hallii	plains rough fescue
Galearis rotundifolia	roundleaf orchid
Kobresia simpliciuscula	simple bog sedge
Liparis loeselii	yellow widelip orchid
Malaxis monophyllos var. brachypoda	white adder's-mouth orchid
Platanthera orbiculata	lesser roundleaved orchid
Ptilagrostis porteri	Porter's false needlegrass
Schoenoplectus hallii	Hall's bulrush
Triteleia grandiflora	largeflower triteleia
Angiosperms - Dicots	
Aliciella sedifolia	stonecrop gilia
Aquilegia chrysantha	Rydberg's golden columbine
Aquilegia laramiensis	Laramie columbine
Armeria maritima ssp. sibirica	Siberian sea thrift
Asclepias uncialis	wheel milkweed
Astragalus barrii	Barr's milkvetch
Astragalus iodopetalus	violet milkvetch
Astragalus leptaleus	park milkvetch

Astragalus missouriensis var. humistratus	Missouri milkvetch, Archuleta milkvetch
Astragalus proximus	Aztec milkvetch
Astragalus ripleyi	Ripley's milkvetch
Braya glabella	smooth northern-rockcress
Chenopodium cycloides	sandhill goosefoot
Cuscuta plattensis	prairie dodder, Wyoming dodder
Descurainia torulosa	mountain tansymustard
Draba exunguiculata	clawless draba
Draba grayana	Gray's draba
Draba smithii	Smith's draba
Draba weberi	Weber's draba, Weber’s whitlowgrass
Drosera anglica	English sundew
Drosera rotundifolia	roundleaf sundew
Eriogonum brandegeei	Brandegee's buckwheat
Eriogonum exilifolium	dropleaf buckwheat
Eriogonum visheri	Visher's buckwheat, Dakota buckwheat
Gutierrezia elegans	Lone Mesa snakeweed
Ipomopsis aggregata ssp. weberi	scarlet gilia
Lesquerella fremontii	Fremont's bladderpod
Lesquerella pruinosa	Pagosa Springs bladderpod
Mimulus gemmiparus	Rocky Mountain monkeyflower, budding monkeyflower
Neoparrya lithophila	Bill's neoparrya
Oreoxis humilis	Pike’s Peak alpineparsley
Packera mancosana	Mancos shale packera
Parnassia kotzebuei	Kotzebue's grass of Parnassus
Penstemon absarokensis	Absaroka Range beardtongue
Penstemon caryi	Cary's beardtongue
Penstemon degeneri	Degener's beardtongue
Penstemon harringtonii	Harrington's beardtongue
Physaria didymocarpa var. lanata	common twinpod
Physaria pulvinata	cushion bladderpod
Physaria scrotiformis	west silver bladderpod
Potentilla rupincola	rock cinquefoil, Rocky Mountain cinquefoil
Primula egaliksensis	Greenland primrose
Pyrrocoma carthamoides var. subsquarrosa	largeflower goldenweed
Pyrrocoma clementis var. villosa	tranquil goldenweed
Pyrrocoma integrifolia	many-stemmed goldenweed
Ranunculus grayi	ice cold buttercup
Rubus arcticus ssp. acaulis	dwarf raspberry

Salix arizonica	Arizona willow
Salix barrattiana	Barratt's willow
Salix candida	sageleaf willow, sage willow
Salix myrtillifolia	blueberry willow
Salix serissima	autumn willow
Sanguinaria canadensis	bloodroot
Shoshonea pulvinata	Shoshone carrot
Thalictrum heliophilum	Cathedral Bluff meadow-rue
Townsendia condensata var. anomala	cushion Townsend daisy
Utricularia minor	lesser bladderwort
Viburnum opulus var. americanum	American cranberrybush, mooseberry
Viola selkirkii	Selkirk's violet
Xanthisma coloradoense	Colorado tansyaster
Gymnosperms	
Pinus albicaulis	whitebark pine

Appendix B: Public Comment

Section Title	Received From	Comment Received	Action/Response
	Scott B.	I have attached my suggested changes to the BHC NRMP. A little explanation will probably be helpful. Changes are in red and comments are in blue. The most significant changes are on pages 5, 47, 62, and 102. If you were to only entertain one of my suggestions, I would prioritize the added paragraph on page 5. I have tried to replace "permittee" with "allotment owner" throughout the plan and "federal" and "public" lands with "split estate" lands also throughout the plan. Most of these changes can be found in sections 1.1, 2.1, 2.2, 7.1, and 7.2. These changes are based on the research done by Dr. Angus McIntosh.	Changes incorporated as directed by the Steering Committee.
Section 2.1 Land Use	Keith G.	DOD is located east and south of Lovell. The Powell Air Force Station is located in Park County, I believe it has been transferred to the Northwest College in Powell.	Changes incorporated as directed by the Steering Committee.
Section 2.3 Special Designation	Keith G.	13. Big Horn County desires zero new acres of Wilderness in Big Horn County. (1) Karen Budd Falen September 1, 2001.	Changed
Section 3.2 Energy Resources/Oil and Gas	Keith G.	8. Big Horn County opposes the extreme high rate of deferred oil and gas leases in the County.	Addressed elsewhere in plan.
Section 4.1 Water Use	Keith G.	4. Big Horn County expects Federal Land Management Agencies to implement Watershed BMP Practices to reduce Soil erosion that is threatening to eliminate Bighorn Lake a important NPS entity in Wyoming.	Addressed in policy statements, added to background
Section 4.2 Irrigation	Keith G.	Big Horn County Private land is 369,536, or 18% of surface land in the County. 83% Agriculture 307,122. Of this 64% is range land (195,754acres) and 36% is classified as Irrigated crop land (111,368acres) (Social - Economic Profile of Big horn County, Wyoming June 2017)	Incorporated

Section 4.3 Dams and Reservoirs	Keith G.	The Dam was finished and closed in 1967. It is 70 miles long when full.	Incorporated
Section 4.4 Water Rights	Keith G.	I do not think Big Horn County Farmers support this concept. Water rights cannot be owned separate from Beneficial use on the land! A History of Water Law, Water Rights &Water Development in Wyoming 1868 - 2002 (Craig Cooper) Article VIII—IRRIGATION AND WATER RIGHTS. water is state property. wwdc.state.wy.us/history/Wyoming_Water_Law_History-text.htmlHYPERLINK \l "" Water rights are attached to a point of use, and at the time of adjudication by the State Board of Control they gain the tag of a private property right as defined by the terms of the permit. Water rights may only be transferred, moved, altered in any way by the State Board of Control.	Added clarifying language.
Section 4.7 Rivers and Streams	Keith G.	west' is highlighted under 'Shoshone River' on page 65. "it flows east not west."	Incorporated
Section 5.5 Wild Horses	Keith G.	Big Horn County desires no expansion of current HMA, and no expansion of current herd numbers. and expects BLM to maintain herd numbers as required by law.	Incorporated
Section 2.1 Land Use	Wyoming Game and Fish Department	Numerous land management agencies and their associated acreages were included within this section; however, it appears that a few land ownership categories were not included. The Department owns 7,611 acres of deeded land within Bighorn County across three Wildlife Habitat Management Areas (WHMAS). These WHMAs include Renner WHMA, Medicine Lodge WHMA, and Yellowtail WHMA. Additionally, there is no mention of the lands owned and managed by the Office of State Lands and Investments (OSLI), or state lands. OSLI is a significant landowner/manager within Bighorn County.	Added state land acreages to plan.

Section 2.4 Wildfire	Wyoming Game and Fish Department	Priority 12 on page 37 opposes the use of prescribed fire unless other tools are not available. The Department supports the use of prescribed fire where appropriate. The Department sometimes recommends the use of prescribed fire in conjunction with chemical or mechanical tools to achieve habitat management objectives. There are several instances where prescribed fire is the preferred tool to meet habitat management objectives. This priority also seems to conflict with priority 6, which calls for coordination with other agencies to implement prescribed burning.	Left as is.
Section 2.5 Forest Management	Wyoming Game and Fish Department	Priority 3 infers all roads shall remain open; does this refer to new roads created to access timber sales? The Department supports motorized access on public lands; however, there are several places within Wyoming where road densities are high enough that elk move onto private lands, making them unavailable for harvest and creates challenges with herd management. All elk herds located within the Bighorn National forest are currently exceeding their population management objectives.	Added clarifying language.
Section 3.1 Coal, Mining, & Mineral Resources	Wyoming Game and Fish Department	Priority 1 calls for the streamlining of permitting processes within the County. The Department supports simplifying processes, however, would be concerned if this implied a reduction or removal of analyses focused on assessing potential wildlife impacts.	Outside the scope of this plan.
Section 3.2 Energy Resources/Oil and Gas	Wyoming Game and Fish Department	Similar to Section 3.1, section 3.2 priority 1 calls for further streamlining of the oil and gas permitting process. The Department supports simplifying processes, however, would be concerned if this implied a reduction or removal of analyses focused on assessing potential wildlife impacts.	Outside the scope of this plan.
Section 3.2 Energy Resources/Renewable Energy	Wyoming Game and Fish Department	Within this section the County encourages renewable energy development. The Department suggests the County consider adding a priority that directs renewable energy developments toward previously disturbed sites (previously mined, existing oil and gas well pads, old gravel pits, etc.) whenever/wherever possible to reduce disturbance to wildlife and natural habitats.	Policy statement added.

Section 5.1 Threatened, Endangered, and Sensitive Species	Wyoming Game and Fish Department	Page 73, 3rd paragraph, 4th sentence – "Surveillance consistently recorded use by a few wolverine individuals in the Bighorn Mountains." The Department offers the following in response to this statement: "Wolverine survey efforts in 2016- 2017 did not document any wolverines on the Bighorn National Forest. There have been occasional anecdotal sightings in the past, but nothing verified for the Bighorn NF or Big Horn mountain range at this time."	Incorporated
Section 5.2 Wildlife	Wyoming Game and Fish Department	Consider rewording the first sentence from "thicker cover than mule deer" to "riparian habitats often associated with irrigated lands." Additionally, under Big Game would be a good place to include a map that depicts big game crucial range across the County for reference. The Department suggests including the "Wyoming Mule Deer and Antelope Migration Corridor Protection Executive Order 2020-1" within this section for reference.	Incorporated
Section 5, Greater Sage Grouse	Wyoming Game and Fish Department	There is no mention of the Greater Sage-Grouse Core Area Protection Order 2019-3, or Sage Grouse Executive Order, made within the sage grouse section. The Executive Order applies to all proposed development within sage grouse Core Version 4 with a state or federal permitting nexus. The Sage Grouse Executive Order also applies to development activities in non-core area within two miles of occupied sage-grouse leks. Given the importance of this order to sage grouse management within the state of Wyoming, we suggest that the Sage Grouse Executive Order and a brief summary thereof are included within this section. We also suggest including a map depicting sage grouse Core Area version 4 be included within the sage grouse section for reference.	Incorporated
Section 5.3 Fisheries	Wyoming Game and Fish Department	To clarify, Tillett Rearing Station is the only hatchery facility in Big Horn County. Tensleep and Wigwam are both located within Washakie County.	Addressed

Section 5.4 Predator Control & Livestock Predation	Wyoming Game and Fish Department	This section refers to numerous species as being "predators" within the state. For clarification, "predatory animals" are listed under Wyoming Statute 23-1-101 Definitions of Wildlife as; coyote, jackrabbit, porcupine, raccoon, red fox, skunk, wolves (outside the wolf trophy game management area) and stray cats. Under this same section bobcats are classified as furbearers. Bears (grizzly and black), wolves (inside the wolf trophy game management area), and mountain lions are classified as Trophy Game under the same statute. Eagles are classified as a protected bird under Wyoming statute. Therefore, the methods of take allowed for these different classifications of species differ, and some techniques/methods do not apply to all species listed in this section. This section should be clarified to avoid confusion and to be consistent with state statute and Wyoming Game and Fish Commission regulations.	Addressed
Section 6.2 Law Enforcement	Wyoming Game and Fish Department	Wyoming Game and Fish Department should be added to the list of state law enforcement officials operating in Big Horn County. Priority 1 states the requirement for all state law enforcement actions to coordinate with the County Sherriff ("shall be coordinated"). Although the Department makes every effort to coordinate with other agencies, including the County Sherriff, please cite legal authority for requiring coordination or notification. Suggest changing Priority 1 to "..are encourage to be coordinated through the County Sheriff's office". Priority 3 states the County Sheriff's Office shall be notified immediately when there is a "criminal act" on public lands. It this meant to include every fishing violation and hunting violation? Please cite legal authority for this requirement.	Incorporated as directed by the Steering Committee
Chapter 7: Agriculture	Wyoming Game and Fish Department	The Department suggests that the county consider including a priority within this chapter that recommends agricultural operations utilize wildlife friendly fence wherever possible to facilitate wildlife passage, reduce wildlife mortality, and to prevent fence damage attributed to wildlife crossings.	This plan only refers to actions taken on federal lands. All agencies currently have their own fence standards. A policy statement was added.

	Bighorn National Forest	All Pages - Recommend removing “shall” and “must” throughout the NRMP objective and priority statements as these statements seem to direct rather than encourage cooperation of land management. We recommend selecting a consistent and appropriate set of terms such as “should coordinate” to imply that cooperative land management would occur. These terms are already used in other priority sections of the NRMP.	Reviewed for intent of statements and adjusted accordingly.
Introduction	Bighorn National Forest	Page 3, 1st paragraph, 1st sentence – “agencies are required to identify and analyze the impacts to local economies and community.” We are unfamiliar with a specific analysis requirement for all local economies and communities. Executive Order 12898 directs each federal agency to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. For the Forest Service specifically, per USDA direction from 1995, where Forest Service proposals have the potential to adversely affect minority or low-income populations disproportionately, effects must be considered and disclosed (and mitigated to the degree possible) through NEPA analysis and documentation. If the county is referencing a different authority or requirement, please provide a specific citation.	Citations added.
Introduction	Bighorn National Forest	Page 3, 3rd paragraph, 1st sentence – “every time the federal government spends any amount of money for almost any action, NEPA compliance is required.” Please consider updating this statement to be more in line with CEQ language (e.g., a concise statement of what constitutes a “major federal action” as a threshold for requiring a NEPA process and include a citation).	Revised

Introduction	Bighorn National Forest	Page 4, 1st paragraph, 2nd sentence – "Written comments submitted by a local government not tied to a formally adopted NRMP require less consideration than those tied to an adopted NRMP." Is this tied to a specific law, regulation or policy that speaks to "weighing" comments based on their tie to a formally adopted NRMP?	The laws and regulations governing consistency review and coordination specifically make reference to reviewing state or local government "plans or laws." *See for e.x.* 40 C.F.R. § 1506.2 (To better integrate EIS into state or local planning processes, statements shall discuss any inconsistency of a proposed action with any approved State or local plan and laws. Where an inconsistency exists, the statement should describe the extent to which the agency would reconcile its proposed action with the plan or law). Without having a written plan or law, this process is not required or undertaken, thus, comments that are not tied to a NRMP are not given the same weight because consistency review and coordination are not required when reviewing those comments.
Introduction	Bighorn National Forest	Page 4, 2nd paragraph, last sentence – "Cooperating agency status can be reserved for more significant federal decisions likely to have a larger impact on a community and is not required for every federal action." The CEQ regulations implementing NEPA define a cooperating agency as any agency that has jurisdiction by law or special expertise for proposals covered by NEPA (40 CFR 1501.6). Specific responsibilities are identified (via a memorandum of understanding or other agreement document) for both the lead Federal agency and the cooperating agency, and can include a significant investment of time and resources. Therefore, it would be helpful to define where the county may be interested in pursuing cooperating agency status (i.e., a table of examples in the appendices). Specifically, it would be helpful so that the BNF and District have an idea of how best to engage with the county on issues of concern.	Agreed: One of the main purposes of this NRMP is to inform agencies when the County would likely want to participate as a cooperating agency. In turn, many of the policies adopted in this plan specifically lay out when the county would like to be included as a cooperating agency.

Introduction	Bighorn National Forest	Page 4, 4th paragraph, 2nd sentence – "A NRMP ensures that the federal agency addresses the county's policies for virtually every federal decision without the burden of cooperating agency status." Can you please provide a citation for this authority?	Clarified in the document. However, the preceding and following paragraphs speak for themselves and clearly lay out why adopting a plan ensures that virtually every agency decision must address the County's policies. By adopting a NRMP agencies now have the obligation to review their decisions through the lenses of consistency review and coordination.
Introduction	Bighorn National Forest	Page 4, 6th paragraph, 2nd sentence – "The fact that the USFS is directed to "coordinate" with local governments implies, by its plain meaning, that the USFS must engage in a process that involves more than simply "considering" the plans and policies of local governments; it must attempt to achieve compatibility between USFS plans and local land use plans." Can you please keep a direct interpretation of the code to include only "coordinate" and remove the term "compatibility?" Otherwise this would appear to suggest that a forest plan revision or amendment would be triggered. The county has been closely involved as a cooperator in the prior 2005 forest plan revision and would be included in future forest plan revisions and amendments	Compatibility needs to remain. It is acknowledged that the County was involved as a cooperating agency in 2005 and appreciated that the BNF intends to keep the County involved as a cooperating agency in future plan revisions and amendments. However, as is explained in the commented paragraph, whenever such a plan revision or amendment occurs, there needs to be coordination with this NRMP, which should attempt to achieve compatibility with this NRMP whenever allowed by law and this obligation cannot only be pacified solely by allowing the County to be a cooperating agency.

Credible Data	Bighorn National Forest	Page 8, Priority #1 – "Require the inclusion of quantitative data in land use planning decisions that meets credible data criteria, even if the data were not produced by a federal agency." While an EIS/ROD sometimes requires quantitative data in order to take a "hard look" at the effects of a project, an EA/DN do not have the same requirement for a "hard look" under NEPA/CEQ regulations. The Forest uses quantitative data whenever it is readily available and necessary to meet requirements of project planning and forest plan monitoring requirements; however, collection of additional project-level monitoring data requires additional staffing and resources that often come with a high cost. We encourage the County to identify more specifically what specific quantitative data parameters would assist us in fostering cooperative land management and any solutions suggesting how we can cooperatively fund those monitoring efforts. The Forest currently considers monitoring data from a number of partners and cooperators (i.e., volunteers, WGFD, State Forestry, academic institutions, & WYNDD). We recommend removing the term "require" and stating the following: "land use planning decisions should include consideration of the best available scientific and monitoring data…"	Reworded.
Section 1.1	Bighorn National Forest	Page 10, 3rd paragraph, 4th sentence – Livestock grazing statement regarding the "single largest user of public land". Please add a citation to support this. BLM vs USFS vs NPS differences.	Reworded.

Section 1.1	Bighorn National Forest	Page 10, 1st paragraph, last sentence – Is this a "policy" document issuing authority or is this a "guidance" document for cooperative land management planning?	It is unclear as to what this comment is referring to. However, if the comment is asking the question as to whether this NRMP is a policy document issuing authority or a guidance document for cooperative land management planning, then the answer is that this document serves both purposes. First, this is a policy document with the purpose of laying out the County's policies and goals for the various resources within the County in order to trigger consistency review and coordination with the agencies in the area. Additionally, another purpose for this plan is to set forth guidance and write out expectations as to how the County would like future interactions with the local agencies in the area and hopefully create a culture of cooperation between the government agencies.
Section 2.1 Land Use	Bighorn National Forest	Page 14, 3rd paragraph, 4th and 5th sentences – recommend the term "local" be replaced with "United States citizens" since, under the Organic Act of 1897, forests are managed to include benefits for both local and nonlocal citizens and communities.	Incorporated.
Section 2.1 Land Use	Bighorn National Forest	Page 16, 1st paragraph, need to add Powder River Ranger District in Buffalo, WY since a portion of Big Horn County is within this Ranger District.	Incorporated.
Section 2.1 Land Use	Bighorn National Forest	Page 16, 2nd paragraph, probably should add that the Big Horn Forest Reserve was one of the original Forest Reserves in the 1897 Organic Administration Act	Incorporated.
Section 2.1 Land Use	Bighorn National Forest	Page 16, 4th paragraph, 2nd sentence – recommend replacing "non-timber" with "multiple uses."	Incorporated.

Section 2.2	Bighorn National Forest	Page 19 5th paragraph – give citations for each of the various federal agencies that closed a road without coordination. “This has caused economic harm and impacted citizen and visitor enjoyment” is anecdotal without a reference or citation.	Request is beyond the scope of this document.
Section 2.2	Bighorn National Forest	Page 19, 6th paragraph. “Roadless” does not mean without roads on the Bighorn NF. Consider including the Forest “roadless” map in the document. Any verbiage in the NRMP regarding roadless areas should be consistent with the policies and terminology in the Roadless Rule: https://www.fs.fed.us/emc/nepa/roadless/2001RoadlessRuleFR.pdf	Incorporated.
Section 2.2	Bighorn National Forest	Page 19, 6th paragraph. “Improved” and “maintained” road definitions do not match USFS manual/handbook. We have five maintenance levels for our road system.	Incorporated.
Section 2.2	Bighorn National Forest	Page 19, 7th paragraph. Might want to include the emergency closure order process that is delegated to Forest Supervisors and applies to road and areas.	The referenced order does not appear to be publicly available.
Section 2.2	Bighorn National Forest	Page 22, Item 3. Include a specific list of the roads that included in this category. Need specific data	To be addressed at regular meetings.
Section 2.2	Bighorn National Forest	Page 22. Item 4. Include a map with the “historic stock driveways” that are being referenced. Need specific data.	To be addressed at regular meetings.
Section 2.2	Bighorn National Forest	Page 22 Item 5. Forest Service Trails by policy are not considered roads. They have their own standards. “Public trails shall be considered “public roads and highways” is inconsistent with Forest Service policies and should be removed.	Respectfully disagree with policy interpretation.

Section 2.2	Bighorn National Forest	Page 22, last paragraph. Add a reference to the Medicine Wheel Historic Preservation Plan that the county signed in 1996 that still guides the management in this area on the Forest.	Incorporated.
Section 2.3 Special Designation	Bighorn National Forest	Page 23, first paragraph. Delete “special use permit” and change to “term grazing permit”	Incorporated.
Section 2.3 Special Designation	Bighorn National Forest	Page 23, first paragraph. These stats are Forest-wide and not Big Horn County only. This could confuse the reader without clarification.	Incorporated.
Section 2.3 Special Designation	Bighorn National Forest	Page 23, third paragraph. Could add Medicine Wheel / Medicine Mountain National Historic Landmark, Bucking Mule Falls National Recreation Trail, and Shell Canyon Research Natural Area.	Incorporated.
Section 2.3	Bighorn National Forest	Page 23, 4th paragraph. Incomplete sentence looks like it is missing a reference to a figure.	Incorporated.
Section 2.3 Special Designation	Bighorn National Forest	Page 31, 2nd paragraph. The following should be added: Big Horn County participated with the Bighorn National Forest during the plan revision and continues to participate twice a year on a Steering Committee. The Steering Committee has been recognized by the USFS Regional Forester in April 2019 for creating and maintaining resilient landscapes and as a model for effective collaboration.	Incorporated.
Section 2.3 Special Designation	Bighorn National Forest	Page 31, 5th paragraph change to “Medicine Wheel / Medicine Mountain National Historic Landmark”.	Incorporated.

Section 2.3 Special Designation	Bighorn National Forest	Page 31, 1st through 6th paragraphs – Are their other special designations not listed? For example, Shell Canyon Research Natural Area. Also applicable to map in Figure 5.	Reworded.
Section 2.3 Special Designation	Bighorn National Forest	Page 32, Priority Item 3 – Not sure if there is a National Monument in the county, but there is the Medicine Wheel / Medicine Mountain National Landmark. The county agreed to the 1996 HPP and it is still being followed today as the guiding management document in this area.	Medicine Wheel is addressed throughout the document.
Section 2.3 Special Designation	Bighorn National Forest	Page 32, Priority Item 6 – "Ensure that decisions regarding Wilderness Study Area designation by Congress are expedited to achieve a decision within 2 years from proposal of the designation. Wilderness Study Areas not designated by Congress as "wilderness" shall be promptly returned to "multiple-use sustained yield" status." The Forest is committed to working cooperatively with the county in coordinating any future special designation efforts.	Acknowledged
Section 2.4 Wildfire	Bighorn National Forest	Page 34, Figure 6. Very difficult to determine the colors with the years of the polygons. Consider cross-hatching or other ways to tell the differences. Can a more in-depth fire history be included in Figure 6 to demonstrate fires that severely damaged the watershed? Can you provide a legend that differentiates between severe fires (i.e., crown fires) and ground fires. The forest plan states the following: Objective 1.c. Increase the amount of forests and rangelands restored to or maintained in a healthy condition with reduced risk and damage from fires, insects and diseases, and invasive species. Strategy 7: In accordance with the 2009 fire management policy, allow the natural role of fire to be restored in the ecosystem. We encourage modifying the NRMP to reflect the continued cooperation with the county to implement forest plan objectives, strategies, and desired conditions for healthy forests and rangelands.	The County has different priorities than the Forest, but supports the overall objective of healthy forests.
	Bighorn National Forest	Page 36. Figure 6 is displayed twice. Delete one.	Deleted.

Section 2.5 Forest Management	Bighorn National Forest	Page 37, Item 5. Due to budget and staffing challenges this could delay turn-on if the federal agencies are not able to collect data. Resting one to two growing seasons after a wildland fire is a BMP that could be considered.	Added statement
Section 2.5 Forest Management	Bighorn National Forest	Page 37. All paragraphs – The Forest will continue to coordinate on Fire Management with the county.	Acknowledged
Section 2.5 Forest Management	Bighorn National Forest	Page 37. Priority #12 - "Opposed prescribed burns on federal lands unless other management methods are not available." Is the statement to not use prescribed burns consistent with the rangeland section of the NRMP (i.e., Priority #30, pg. 108)? The Forest Plan includes prescribed burning as a tool to reach desired conditions of forest and rangeland vegetation because the historic range of variability includes a wildfire dependent ecosystem https://www.fs.fed.us/rm/pubs/rmrs_gtr140.pdf. Prescribed burning is a tool used throughout the national forest system to mimic and restore these ecosystem conditions under an existing condition of fire suppression. Prescribed fire provides multiple benefits to wildlife, aspen enhancement, soil conditions which promote healthy forest regeneration, and reduced fuel conditions in WUI areas. The Forest recommends restating that "land management agencies should coordinate proposals with the county on locations of proposed prescribed burn treatment areas before reaching decisions and implementation."	Added prescribed burns to priority 6.
Section 2.5 Forest Management	Bighorn National Forest	Page 38, 3rd paragraph. – "Currently, the main harvesting of forest products within the County is limited to firewood, posts and poles, and Christmas trees." Is this statement accurate when considering the commercial harvest in the Little Bitmore Re-Offer Timber Sale, Porcupine Stewardship, and Quill Stewardship projects as well as the Forest's 10-year Timber Action plan including potential projects in Big Horn County? Recommend removing "limited" and including "commercial timber harvest."	Reworded.
Section 2.5 Forest Management	Bighorn National Forest	Page 39, Priority #6 – "All dead trees shall be promptly harvested." While the Forest realizes the importance of salvaging timber, the forest plan also has minimum requirements for the retention of snags and coarse woody debris to maintain wildlife habitat (Table 1-	The County has different priorities than the Forest, but supports the overall objective of healthy forests.

		4). There are sometimes challenges in locating bidders for salvage sale contracts to remove windthrow. It is recommended that "shall be promptly harvested" be replaced with "should be harvested whenever feasible given the limitations of existing policy, market, resource conditions, and special designations."	
Section 3.1 Coal, Mining, & Mineral Resources	Bighorn National Forest	Page 42, item #6 – "all plans must demonstrate an understanding of the county's plans and policies and resolve any conflicts with the County's plans." Is this statement going to trigger a forest plan revision or amendment to "resolve" conflicts with the county plan? What is the citation for this authority? Forest plans are required to follow the 2012 Planning Rule which may or may not necessarily be consistent with every objective priority listed in this NRMP. We recommend that this paragraph be restated as follows: "all plans must demonstrate an understanding of the county's plans and policies and federal land management agencies should make cooperative efforts to work toward consistency with the County's plans whenever it is appropriate and feasible to do so given current requirements, policies and resource conditions."	This NRMP will not trigger a Forest plan revision. This is a policy setting forth the requirements moving forward so when there is a plan revision or amendment there needs to be consistency review and coordination with this NRMP. The authority for this policy is discussed in the introduction, but some examples of this include NEPA where it states that agencies must review a county's plans or policies and: "discuss any inconsistency of a proposed action with any approved state or local plan and laws (whether or not federally sanctioned). Where an inconsistency exists, the [environmental impact] statement should describe the extent to which the [federal] agency would reconcile its proposed action with the [local government] plan or law." (40 C.F.R. §§ 1506.2, 1506.2(d)). In order to further clarify this policy revisions were made to describe expectations when an agency cannot reconcile an inconsistency.
Section 3.1 Coal, Mining, & Mineral Resources	Bighorn National Forest	Page 42, item #13 – "Encourage mining reclamation to use best management practices (BMPs) instead of requiring restoration to as near the same condition as original. Consider nonnative seeding where beneficial." The Forest recommends including the following statement: "mining reclamation and restoration in special designation areas would be considered on a case by case basis."	Incorporated.

Section 3.2 Energy Resources	Bighorn National Forest	Page 48, Priority #3 – "Encourage pipeline development to be in the most direct path regardless of land ownership, with a preference to placement on federal lands." Recommend adding the following text: "…except where special designation prohibits or limits surface disturbance."	If special designation prohibit or limit surface disturbance, the agency can make that determination and require a different route. This policy is merely describing the preference that pipelines not avoid federal land.
Section 3.3 Air Quality	Bighorn National Forest	Page 51, Priority #3 – "Encourage federal agencies to implement BMPs for forest management to decrease the number of summer wildfires." Prescribed fire is a recognized BMP for reducing fuel loading and decreasing the severity of wildfires. Same holds true for Priority #5.	The County has other priorities for forest management than prescribed fire.
Section 4.3 Dams and Reservoirs	Bighorn National Forest	Page 56, last paragraph. It is difficult to know where the locations are that are listed since they are not on Figure 13 on page 57. Please add the areas listed if appropriate on this figure or create an additional figure.	Maps are available from the Wyoming Water Development Office.
Section 4.3 Dams and Reservoirs	Bighorn National Forest	Page 59. What about Shell Reservoir near Adelaide? Maybe it is less than 500 ac / ft.	Added.
Chapter 4: Water	Bighorn National Forest	Page 60, Priority #1. Could you please elaborate or provide examples of "other water related concerns?" The previously suggested appendix of examples would assist the Forest in coordination of water projects.	The 'any other water related concerns' was meant to be a catch all for if anything else outside of what was listed comes up in the future. Exactly correct, this is purposely broad to include other things that may arise in the future. One example would be changes in use of water from the dam or reservoir or some kind of regulatory restriction like designations of critical habitat. The main goal would be is if there is any kind of water concern that arises, the County should be notified and consulted

Section 4.4 Water Rights	Bighorn National Forest	Page 61 Water Rights Resource Management Objective and Priorities #1 and #2– "Placing water rights in the name of any state or federal agency when the water right is applied for and proved upon by a private individual or corporation, or as the condition of any permit, is not supported." The Resource Management Objective statement is in direct conflict with Priorities 1 and 2 in that these priorities are contrary to Wyoming Water Law.	Not supporting a state or federal agency using their regulatory authority to enact an exaction and acquire a water right is not a violation of Wyoming water law. Wyoming water law allows individuals to apply for water rights.
Section 4.4 Water Rights	Bighorn National Forest	Page 61, Priority #1– "Big Horn County opposes over-reaching federal regulations on Wyoming Waters" is misleading. Recommend changing NRMP to state "Big Horn County supports Wyoming control of Wyoming Water."	Modified.
Section 4.7 Rivers and Streams	Bighorn National Forest	Page 64, 4.7 1st sentence. Maybe add a size category to the statement that there are seven rivers and streams in Big Horn County. There are many streams not listed that are very important. At least consider adding Porcupine Creek.	Incorporated.
Section 4.8 Wetlands and Riparian Areas	Bighorn National Forest	Page 66. Consider adding riparian input from Bighorn NF LRMP (Soil, Water, Riparian, and Wetland 1-26 and Biological Diversity Guideline #9 on Page 1-29). There are standards and guidelines related to water influence zones.	Comment not addressed; location cited in document does not match the topic.
Section 4.8 Wetlands and Riparian Areas	Bighorn National Forest	Page 66 Priority #2 - "Support the use of responsible grazing and vegetation management as a tool to maintain wetlands/riparian areas." Can you please citations for how grazing as a method will maintain wetland and riparian area conditions?	A number of interagency publications define grazing management in riparian areas as well as numerous peer reviewed articles, including TR 1737-20.

Section 5.2 Wildlife	Bighorn National Forest	Page 73, 3rd paragraph, 4th sentence – "Surveillance consistently recorded use by a few wolverine individuals in the Bighorn Mountains." Our wildlife biologist and WGFD states the following in response to this statement: "Wolverine survey efforts in 2016- 2017 did not document any wolverines on the Bighorn National Forest. There have been occasional anecdotal sightings in the past, but nothing verified for the Bighorn NF or Big Horn mountain range at this time."	Incorporated.
Section 5.2 Wildlife	Bighorn National Forest	Page 83. Need to update MIS to Focal Species reflected in our 2016 Administrative Change #4 to the LRMP. Note that the current BNF LRMP still contains "MIS" in chapters with the exception of Chapter 4 Monitoring and Evaluation which uses the term "focal species." "MIS" would be removed throughout the entire LRMP in the next Forest Plan revision and replaced with "focal species" in order to conform to the 2012 Planning Rule.	Addressed.
Section 6.1 Tourism and Recreation	Bighorn National Forest	Page 91, 5th paragraph: This should mention Big Horn County's involvement in the dispersed recreation task force, and that the Forest is working jointly with the task force members to come up with viable solutions.	Incorporated.
Section 6.1 Tourism and Recreation	Bighorn National Forest	Page 92, Item 10. There are many special use permits issued annually that include large weddings, filming permits, commercial buses at Shell Falls VC, etc. Do you really want to be a cooperating agency for each one of these permitted activities that have categorical exemptions? Maybe specify the ones that are most concerning such as new assigned sites for outfitter and guides or whatever are the concerning ones…	The point of notification is to allow the County the opportunity to decide which activities to participate in.
Section 6.2 Law Enforcement	Bighorn National Forest	Page 93 1st paragraph. Recommend using language from existing MOUs between the county sheriff and Bighorn NF law enforcement at least for Bighorn NF.	There is a contract for services between the sheriff and BHNF.
Section 6.4 Socioeconomic and Economic Viability	Bighorn National Forest	Page 94, 6.4, 1st paragraph. "Term grazing permit" is the correct term to be used for Forest Service livestock permits. There are no livestock "leases" on NFS lands	Incorporated.

Section 6.4 Socioeconomic and Economic Viability	Bighorn National Forest	Page 94 last sentence should be updated to the amount from 2019 instead of 2015.	Our data is from 2017 through 2019. We don't have any 2015 data listed.
Section 6.4 Socioeconomic and Economic Viability	Bighorn National Forest	Page 95. Update data to reflect current information from 2019.	Most recent available is used.
	Bighorn National Forest	Page 97. Please add further definition related to "Government and Government related enterprises." Since this document is primarily focused on Federal land management, it could be misconstrued that this category is primarily Federal land management agencies. This category must also include school systems and health care, but it is not clear.	Could not identify location of comment.
Section 7.2 Livestock Grazing	Bighorn National Forest	Page 105. USFS Range Improvement Paragraph. Remove "with credits for improvement…grazing fee" portion of the sentence. The permittee assumes responsibility for the improvement (maintenance) but the USFS holds title to the improvement.	Updated language.
Section 7.2 Livestock Grazing	Bighorn National Forest	Page 105. Last paragraph. Add to the sentence related to grazing leases "and term grazing permits." The USFS does not have grazing leases.	Updated language.
Section 7.2 Livestock Grazing	Bighorn National Forest	Page 106 Item #3. Add a reference to this document or include as an appendix.	Changed language in policy statement.

Section 7.2 Livestock Grazing	Bighorn National Forest	Page 107, Priority #25 - "Agencies shall collaboratively develop and implement rangeland monitoring programs using the template created by the Public Lands Council for all allotments using currently accepted scientifically based monitoring methods and return intervals utilizing properly trained rangeland personnel with an understanding of rangeland and its management to ensure proper collection and analysis of data." The Bighorn NF and permittees have had the opportunity for collaborative monitoring for decades. Several Wyoming Department of Agriculture Rangeland Health Assessment Program projects have occurred on the Bighorn. Long-term (trend) monitoring and annual (allowable use) monitoring locations and protocols are understood by the Forest and the permittees, and can be reviewed and discussed at each annual operating meeting. While the Bighorn NF has never used the PLC template, a variety of other methods are used. Bighorn NF permittees can do their own monitoring, and if the data is collected and submitted per written protocols, it can be included in the allotment record.	Reworded.
Section 7.2 Livestock Grazing	Bighorn National Forest	Page 108, Priority #30 - "Grazing rest prescriptions related to either wildfires or prescribed burns will be determined on a site-specific basis. Post fire grazing will not be limited when unbiased post fire monitoring and evaluation produces relevant, accurate data demonstrating that grazing will not unduly harm the range." Recommend removing or clarifying the intent of "unbiased" in the post-fire monitoring. Specifically, we recommend the addition of the following verbiage to the NRMP: In the event that grazing on federal lands is temporarily suspended due to fire, recommence grazing on the basis of monitoring and site-specific rangeland health determinations rather than solely on fixed timelines. Return livestock grazing to prefire levels when post-fire monitoring data shows established objectives have been met or have been achieved to an extent allowed by the site potential. Require the use of credible data as previously defined to make these determinations	Reworded.
Section 7.2 Livestock Grazing	Bighorn National Forest	Page 109. Figure 27. The Mexican Hill Cattle and Horse Allotment is missing on the NW corner of the Bighorn NF. Please add.	Map was updated with the 2020 USFS dataset to include the Mexican Hill Allotment.

Section 7.2 Livestock Grazing	Bighorn National Forest	Page 109. Figure 27. Please remove the state land section in the NW corner of the Forest. The Forest does not manage this permit.	Map was updated to the 2020 USFS allotment dataset.
Section 7.2 Livestock Grazing	Bighorn National Forest	Page 109. Figure 27. The area depicted south of Hwy 14 is inaccurate. The Southside Cattle and Horse Allotment is on NFS lands and not BLM. The area further south shows the USFS and should be BLM as far as actual permit authorizing agency.	Map was updated to the 2020 USFS allotment dataset.
Appendix	Bighorn National Forest	Page xxiii, Table 7. Consider adding the category for each species so the reader can tell what is endangered, threatened, proposed, sensitive, or candidate species.	Updated.
Appendix	Bighorn National Forest	All Appendices - Validate that the lists in the appendices are the latest for each agency.	Updated.