

**LOWER NORTH PLATTE WATERSHED
STANDARDS AND GUIDELINES ASSESSMENT**

**Rawlins Field Office
2013 Field Season**



High Desert District - Rawlins Field Office, Wyoming

Document for Agency, Permittee and Interested Public Review

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2014 Standards and Guidelines Assessment

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I have reviewed the Standards and Guidelines Assessment for the Lower North Platte Watershed. I concur with the evaluation procedures and with the conclusions and recommendations of the review team with respect to each of the six Rangeland Standards. Based on this report, a determination will be prepared and transmitted to the appropriate parties.

Dennis Carpenter
Dennis Carpenter, Field Manager

JAN 16 2015
Date

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The Bureau of Land Management (BLM), Rawlins Field Office (RFO), would like to thank the Saratoga-Encampment-Rawlins Conservation District (SERCD) for their long-term commitment to resource enhancement and partnering with the BLM in management, monitoring, and project development. The BLM would also like to thank the Wyoming Game and Fish Department (WGFD) for their long-term collaboration with the BLM in fisheries and wildlife management, riparian monitoring, as well as mule deer, antelope and other needed research. In addition, there are other individuals, permittees, groups, and agencies that the RFO works with or have provided funding in the support of management, monitoring, or improvements that the RFO wishes to thank for their assistance in improving BLM administered lands.

INTRODUCTION

The original watershed assessment for the Lower North Platte Watershed area within the RFO was completed 10 years ago (2004). This document is available for review online at: http://www.blm.gov/wy/st/en/field_offices/Rawlins/range/standards03.html .

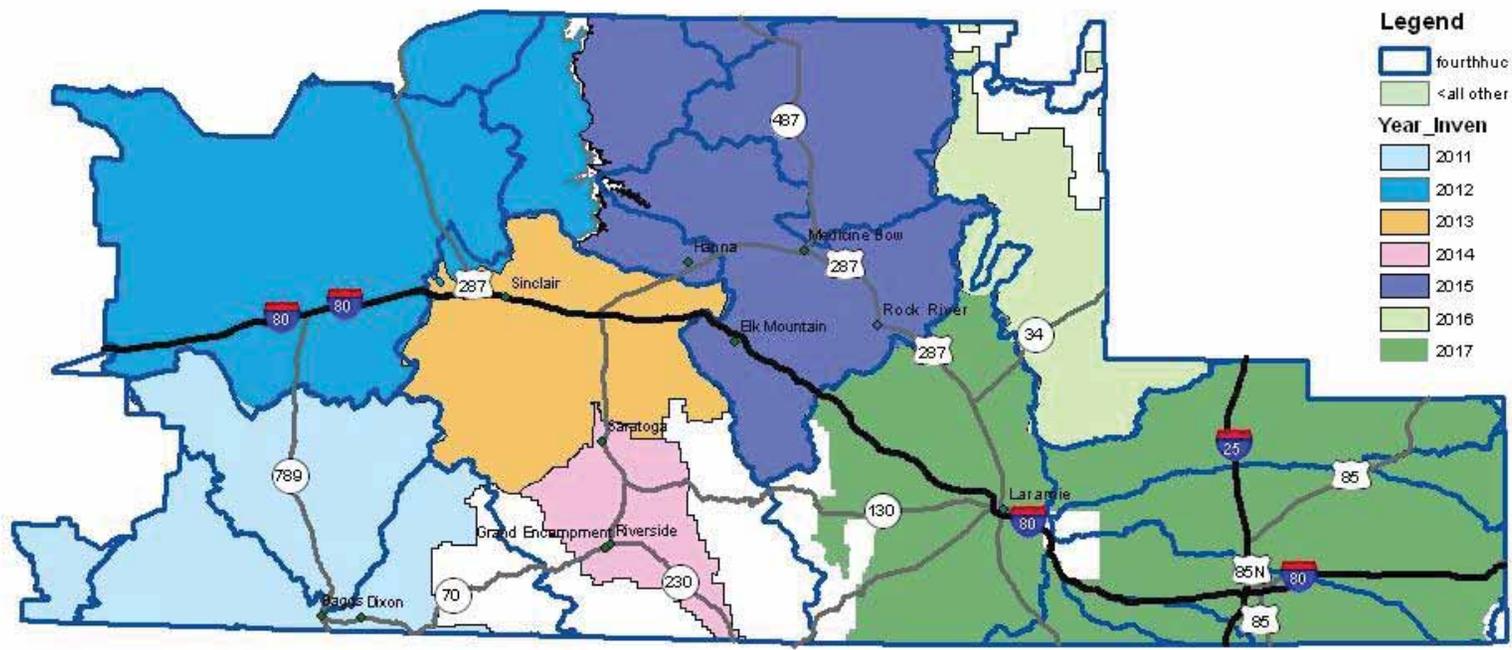
Paper copies of the assessment are available for review at the RFO. It will be referenced, and portions briefly summarized, in this document.

The RFO consists of 3.5 million acres of public lands; therefore, a watershed level assessment process encourages a more efficient approach than an allotment level assessment. This approach, rather than an allotment based approach, enables the RFO to manage landscapes holistically while meeting the BLM's multiple use mandate. In addition, there are a number of other benefits to this type of approach. First, every region within the RFO gets reviewed every 10 years, so the BLM can evaluate what was accomplished, what still needs to be completed, and what new issues have arisen that need to be addressed. Second, the larger and more important issues needing to be addressed are focused upon, providing more time to take corrective actions and monitor results. Third, the landscape scale approach incorporates all disciplines, from watersheds to herd management areas to grazing allotments, as well as the variable mixture of disciplines related to BLM partners. Fourth, it provides a priority for planning BLM future workloads and monitoring in order for the BLM to secure funding, as well as providing BLM partners a look at BLM's path ahead, and accountability to the public. This is the third watershed assessment out of seven evaluation areas that the RFO has been divided into, with the initial report having been completed in 2004 and the current one in 2014. There were approximately 68 vegetation transects, and over 180 photo-points retaken; these are available for review at the RFO. In addition, there are monitoring transects and photo-points (81 transects and over 1,000 photo-points) initiated by the Power Company of Wyoming (PCW). This monitoring effort by PCW is part of their permitting process for the largest wind development in North America, which will eventually consist of 1,000 wind turbines just south of Rawlins, Wyoming.

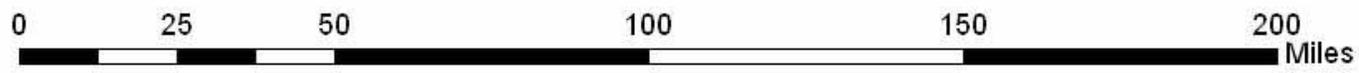
BACKGROUND

As stated above, the RFO has been divided into seven watershed units, which will be assessed every 10 years, with the Lower North Platte being the third watershed report completed in each 10 year cycle (Map #1). The analysis area considered in this document includes a portion of the Lower Platte from Jack Creek to the southeast side of Seminoe Reservoir. The analysis area occupies 838,508 acres within the Rawlins Field Office in Carbon County of south-central Wyoming. Land ownership consists of 43 percent Federal lands, 52 percent private lands, and 5 percent State lands. Federal ownership includes 359,298 acres administered by the Bureau of Land Management, and 765 acres of withdrawn lands administered by the Bureau of Reclamation (Map #2). There are 49 allotments permitted for grazing use on public lands in the watershed analysis area. The last assessment had 52 allotments, two of which were moved to the Upper Platte Watershed for 2015, and the Lake Creek allotment, which was combined with the Buck Springs Draw. Grazing use is primarily cattle, with a few permits that still retain sheep Animal Unit Months (AUMs). This watershed contains the North Platte River Special Recreation Management Area. There are small areas of oil and gas development including Hatfield Dome, and a few wells near Walcott, Wyoming. There are 49 allotments currently permitted for grazing

Map 1 Watershed Assessment Area By Year

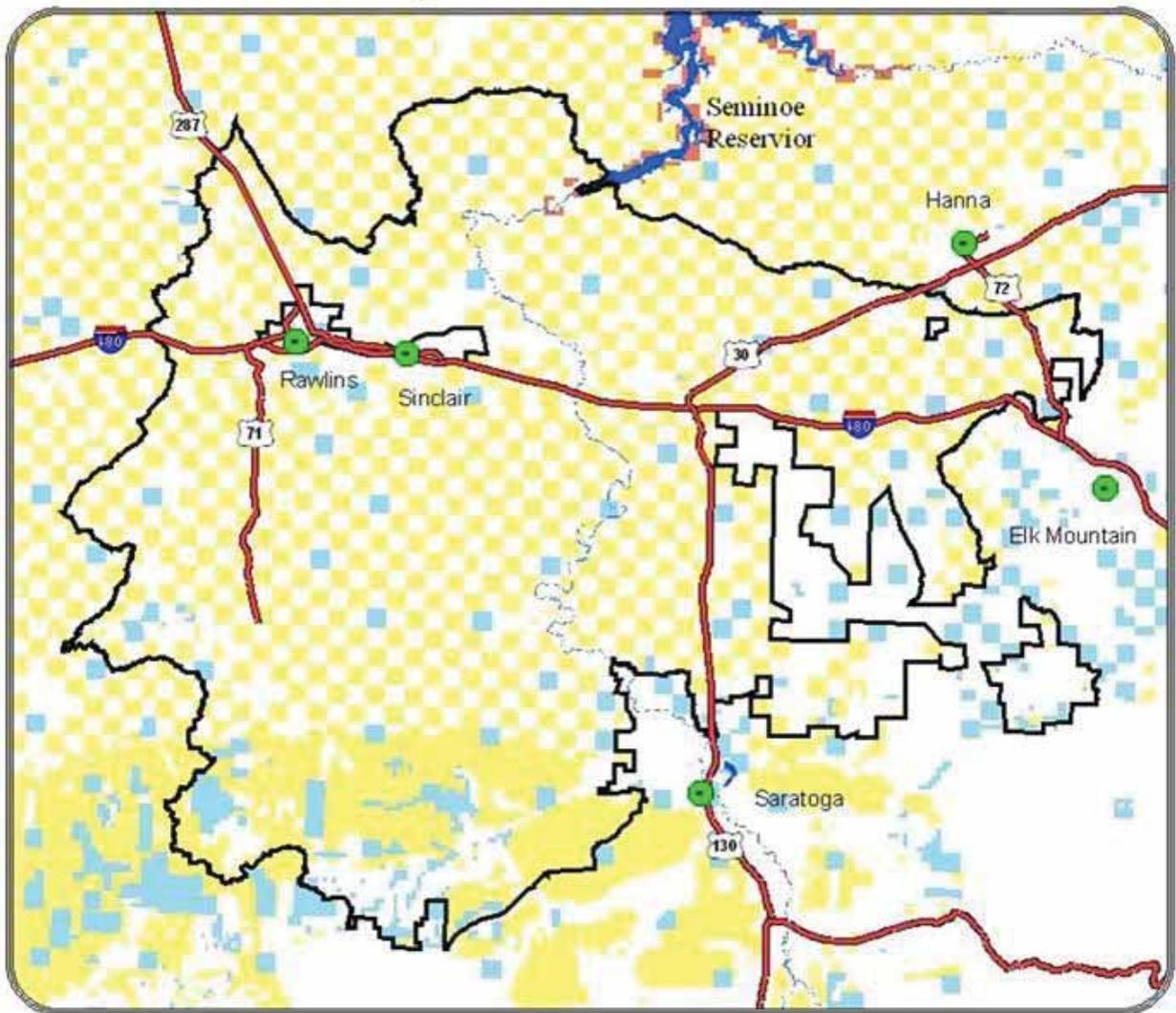


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No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by the BLM.

Map 2 Land Ownership in 2013 Assessment Area



use, with actual grazing use being split between cattle (99.6 percent) and horses (0.4 percent). While some permits still have sheep AUMs, no permittees currently graze sheep within the watershed area (Map #3 and Exhibit A).

The 1996 rangeland reform process modified the grazing regulations to address the fundamentals of rangeland health. In August 1997, the *Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for the Public Lands Administered by the Bureau of Land Management in the State of Wyoming* were approved by the Wyoming BLM State Director. The objectives of the rangeland health regulations are to “promote healthy sustainable rangeland ecosystems; to accelerate restoration and improvement of public rangelands to Properly Functioning Conditions... and to provide for the sustainability of the western livestock industry and communities that are dependent upon productive, healthy public rangelands.” The fundamentals of rangeland health combine the basic precepts of physical function and biological health with elements of law relating to water quality and plant and animal populations and communities. Initially the standards focused on livestock grazing on BLM-administered lands, but the standards have been updated and now apply to all uses and resources.

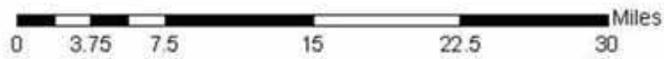
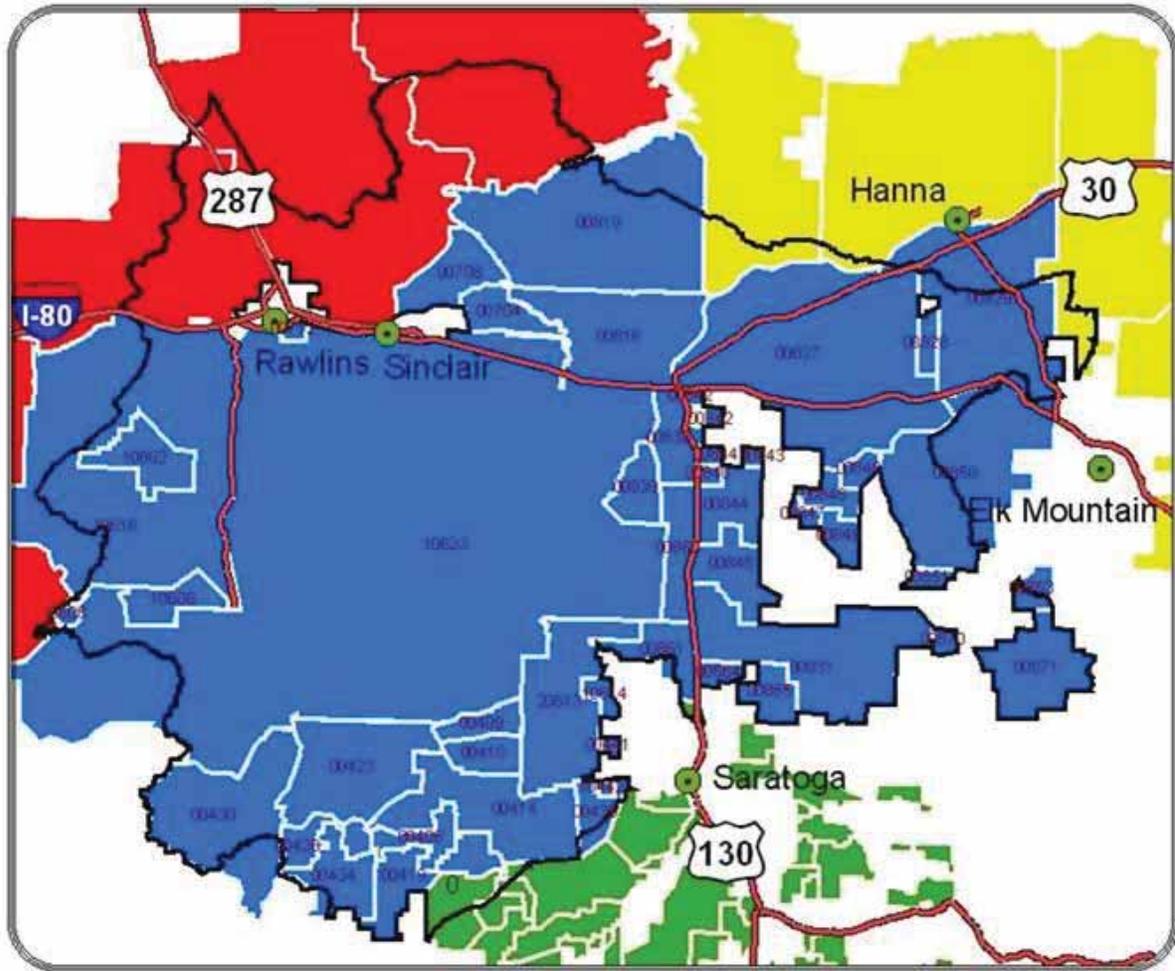
In January 2001, Instruction Memorandum (IM) No. 2001-079, Guidance for Conducting Watershed-Based Land Health Assessments, was sent to Field Offices from the Director of the BLM. This IM transmitted the 4180 Manual Section and 4180-1 Rangeland Health Standards Handbook and provides guidance for conducting assessments and evaluations for ascertaining rangeland health on a watershed basis. Under Policy/Action it states: "The Field Offices are to consider all assessment requirements for the watershed being assessed and select methods which will provide information needed to fulfill those requirements. When a field office invests its resources in an assessment, the end product should substantially meet all assessment needs to avoid conducting multiple assessments for multiple needs. For example, a well-planned, watershed-based assessment can provide the information needed for allotment evaluations, Biological Assessments for Section 7 Endangered Species Act consultation, and developing habitat management plans, Water Quality Improvement Plans for Total Maximum Daily Loads on impaired waters, and watershed restoration actions."

The standards are the basis for assessing and monitoring rangeland conditions and trend. The assessments evaluate the standards and are conducted by an interdisciplinary team with participation from permittees and other interested parties. Assessments are only conducted on BLM-administered public lands; however, interpretation of watershed health and water quality may reflect on all land ownerships within the area of analysis. The six standards are as follows:

Standard 1- Watershed: Within the potential of the ecological site (soil type, landform, climate, and geology), soils are stable and allow for water infiltration to provide for optimal plant growth and minimal surface runoff.

The standard is considered met if upland soil cover generally exceeds 30 percent and obvious signs of soil erosion are not apparent, and stream channels are stable and improving morphologically.

Map 3 Allotments in Assessment Area



Standard 2 – Riparian/Wetland: Riparian and wetland vegetation have structural, age, and species diversity characteristic of the state of channel succession and is resilient and capable of recovering from natural and human disturbance in order to provide forage and cover, capture sediment, dissipate energy, and provide for ground water recharge.

The standard is considered met if riparian/wetland habitat is rated in Proper Functioning Condition (PFC) and existing management will lead to maintaining or improving resource conditions.

Standard 3 – Upland Vegetation: Upland vegetation on each ecological site consists of plant communities appropriate to the site, which are resilient, diverse, and able to recover from natural and human disturbance.

The standard is considered met if plant communities are sustaining themselves under existing conditions and management.

Standard 4 – Wildlife/Threatened and Endangered Species Habitat, Fisheries Habitat, Weeds: Rangelands are capable of sustaining viable populations and a diversity of native plant and animal species appropriate to the habitat. Habitats that support or could support threatened species, endangered species, species of special concern, or sensitive species will be maintained or enhanced.

The standard is considered met if habitat needed to support wildlife and fishery species is being sustained under existing conditions and management. Existing populations or new locations with weeds are being treated in a timely manner.

Standard 5 – Water Quality: Water quality meets State standards.

The standard is considered unknown unless information provided by the State of Wyoming determines the status of a water body as impaired (not meeting) or is meeting its beneficial uses.

Standard 6 – Air Quality: Air quality meets State standards.

The standard is considered met or impaired based on information provided by the State of Wyoming.

If an assessment shows that a standard(s) are not being met, factors contributing to the non-attainment are identified and management recommendations developed so the standard may be attained. If livestock are contributing to the non-attainment of a standard, as soon as practical, but no later than the start of the next grazing season, management practices will be implemented to ensure that progress is being made toward attainment of the standard(s). Rangeland standards establish a threshold; however, the desired resource condition will usually be at a higher level than the threshold.

The framework for this report will be a discussion of each rangeland standard in the order outlined above. The discussion for each standard will follow the six-step process for ecosystem analysis at the watershed scale. The six steps are: 1) Characterization of the watershed, 2) Identification of issues and key questions, 3) Description of current conditions, 4) Description of reference conditions, 5) Synthesis and interpretation of information, and 6) Recommendations. Core topics are discussed under the appropriate standard, with erosion processes, hydrology, and stream channels under Standard 1; vegetation split into wetland/riparian or upland under Standards 2 and 3; species and habitats under Standard 4; and water and air quality under Standards 5 and 6. Human uses are discussed under each Standard where appropriate. Standard 1 – Watershed has been split into two descriptions according to the different hydrologic units, while Standards 2 through 6 are each described as one unit for the entire Lower North Platte report area (Maps #4 and #5) .

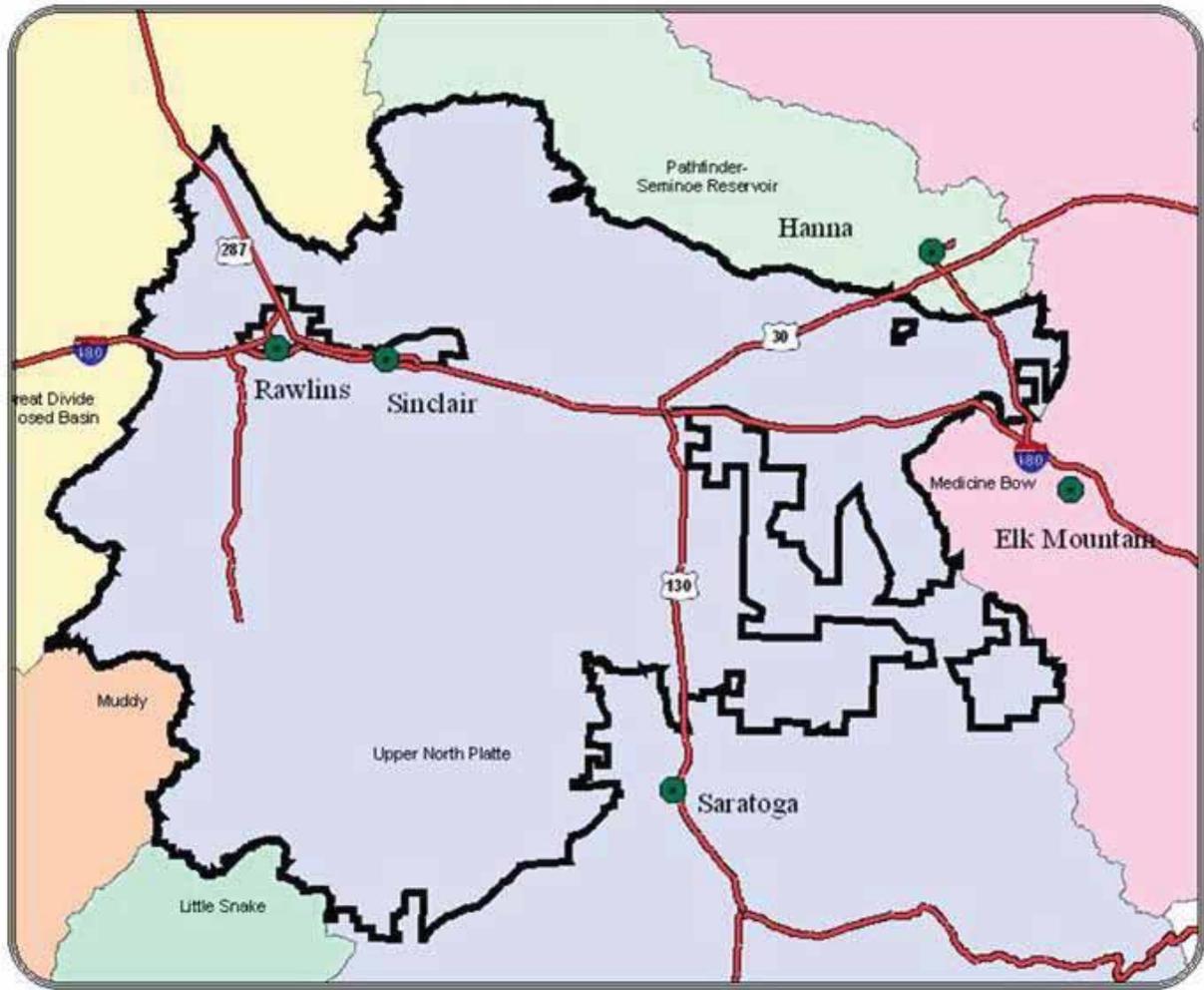
MANAGEMENT CHANGES BETWEEN 2004 AND 2013

Chokecherry and Sierra Madre Wind Energy Proposed Project (CCSM) - PCW has been engaged in permitting the largest wind development in North America, which will eventually consist of 1000 wind turbines just south of Rawlins, Wyoming. The proposed wind project area would be located predominantly within the Lower North Platte watershed, with a small percentage of the proposed wind project area being located in the Upper Colorado River watershed. The majority of private lands in the proposed project area are owned by The Overland Trail Cattle Company LLC (TOTCO). This is a unique project in many ways, including the fact that both PCW and TOTCO are subsidiaries of The Anschutz Corporation. (The Chokecherry and Sierra Madre Wind Energy Project (CCSM Project ROD [BLM 2012a]) signed by the Bureau of Land Management's (BLM's) Acting Director on September 28, 2012, and approved by the Secretary of the Interior on October 9, 2012. The CCSM Project ROD (BLM 2012a) was based on the project-level final environmental impact statement (FEIS) prepared by the BLM for the Chokecherry and Sierra Madre Wind Energy Project (CCSM Project FEIS [BLM 2012b]). The CCSM Project ROD (BLM 2012a) determined that wind energy development is appropriate within the 219,707-acre conceptual area of development described in detail and referred to as the Application Area (or 2012 ROD boundary) (Map 1-1) in the CCSM Project FEIS (BLM 2012b).

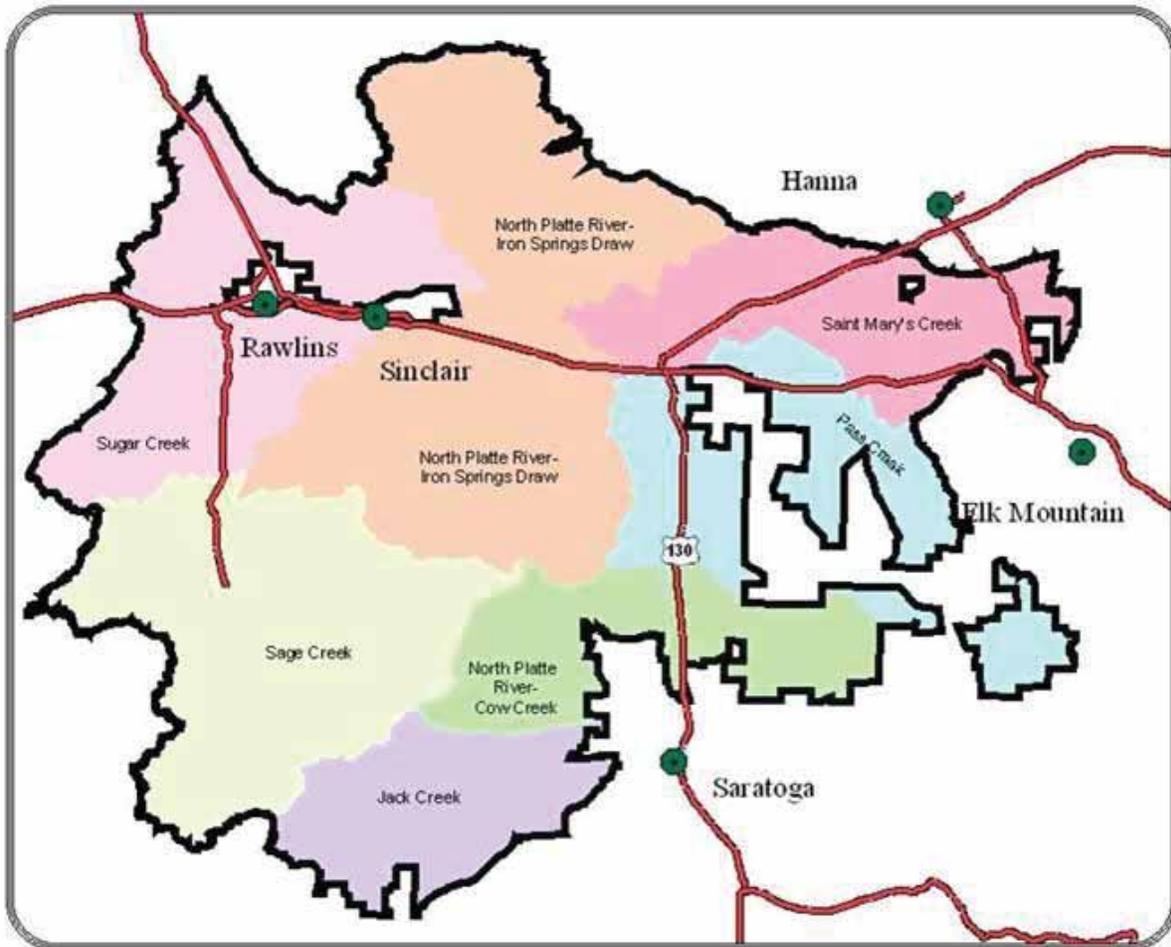
Wyoming Landscape Conservation Initiative (WLCI) – In 2007 the WLCI was implemented following initial discussions between Wyoming BLM, the U.S. Fish and Wildlife Service (FWS), and WGFD. The WLCI is a long-term science-based effort to assess and enhance aquatic and terrestrial habitats at a landscape scale in southwest Wyoming, while facilitating responsible development through local collaboration and partnerships. Within this watershed, the WLCI has funded projects for weed control, specifically in the Sage Creek watershed.

Rawlins Resource Management Plan (RMP) – December 24, 2008 the Record of Decision (ROD) was signed by the BLM for implementing a new land use plan for the 3.5 million acres of public lands within the RFO. It replaced the previous RMP approved in 1990 and added several new management areas, including creation of the North Platte River Special Recreation Management Area (SRMA), and the Upper Muddy Creek Watershed/Grizzly Wildlife Habitat Management Area (WHMA). A portion of the Upper Muddy Creek Watershed is controlled by TOTCO, specifically the upper headwaters of McKinney Creek, Eagle Creek, and Stoney Creek,

Map 4
Fourth Order Watersheds in Assessment Area



Map 5 Fifth Order Watersheds in Assessment Area



as well as a small portion of Little Muddy Creek. These creeks were analyzed in the Upper Colorado River Watershed (2001 and 2011).

Antler Collection Regulation (WGFD Chapter 61) – This policy was established in 2009 by the WGFD, which made it illegal for people to collect shed antlers west of the Continental Divide from January 1 through April 30 to reduce stress and harassment to big game on crucial winter ranges when the animals may be weakest. Since many people collect antlers using Off-Highway Vehicles (OHVs), a side benefit should be reduced off-road driving during wet periods in the late winter and early spring when it is more likely to create ruts and increase soil erosion.

Greater Sage-Grouse Management Policy – This policy evolved based upon on-going research over the last 20 years, and more recently due to Wyoming State implementation of a core area strategy and the FWS 2010 “Warranted, But Precluded” status for the species. The Sage-Grouse Habitat Assessment Framework issued in 2010 is being used, in addition to Wyoming policies that address energy development, livestock grazing, vegetation treatments, water developments, and other actions that can potentially affect the species. In 2011, the State of Wyoming released Executive Order (EO) 2011-005 outlining protections for Greater Sage-Grouse under a core habitat area concept. The BLM subsequently released IM WY-2012-019 providing further guidance to BLM Wyoming (BLM WY) Field Offices (FOs) regarding management considerations for Greater Sage-Grouse habitats, including the core area concept for proposed activities.

The Platte Valley Habitat Partnership (PVHP) – The PVHP was formed in May 2012 is a result of the Platte Valley Mule Deer Initiative (PVMDEI) that WGFD implemented in July 2011. The PVHP was developed to establish effective partnerships in order to maintain and improve mule deer habitat throughout the Platte Valley. The PVHP is comprised of private landowners, concerned citizens, hunters, outfitters, members of the Saratoga- Encampment-Rawlins Conservation District (SERCD), and staff members from WGFD, BLM, University of Wyoming Extension, U.S. Forest Service (USFS) and Non-Governmental Organizations (NGOs).

One of the outcomes of the PVHP includes a comprehensive habitat management plan, which was designed to be implemented collaboratively between all of the interested stakeholders. This “source” document provides an explanation of the PVHP’s collaborative process, mule deer ecology, objectives and desired habitat conditions of the Platte Valley, indirect benefits to society by improving the mule deer herd, and details regarding project funding and implementation.

CLIMATE BETWEEN 2004 AND 2013

The following discussion of climate from 2004 to 2013 is based on National Weather Service (NWS) data for Rawlins, Saratoga, Elk Mountain, Medicine Bow, and Seminoe Dam, as well as BLM rain gauges spread throughout the watershed. Although the BLM rain gauges are not as accurate as information from the NWS, general annual trends in precipitation are representative of local conditions.

The long-term average annual precipitation for Rawlins is 9.1 inches, 9.7 inches for Saratoga, 10.4 inches for Medicine Bow, 12.5 inches for Elk Mountain, and 12.7 inches for Seminoe Dam.

The BLM rain gauges in much of the area fall within the 7 to 9-inch Natural Resources Conservation Service (NRCS) ecological site descriptions (ESD), with sites in the southern portion of the watershed typically within a 10 to 14-inch ESD area. Figure 1 shows the annual precipitation amounts for the Elk Mountain and Rawlins NWS Stations. Figure 2 shows annual precipitation amounts at Bolton (located about 14 miles northwest of Saratoga), Colorado Interstate Gas (located about 9 miles east of Rawlins), and Lower Sage Creek (located about 20 miles west of Saratoga and 22 miles south of Rawlins), which are BLM precipitation gauge sites. The BLM precipitation gauges are not as accurate as the NWS, however, annual trends of precipitation above or below the long-term average are representative of local conditions. At middle to higher elevations, wind-blown snow deposition occurs on north to east facing slopes increasing effective moisture levels.

During this ten year evaluation period, there were record setting years, with 2009 being one of the wettest years on record, and 2012 being the driest year on record for most locations across Wyoming.

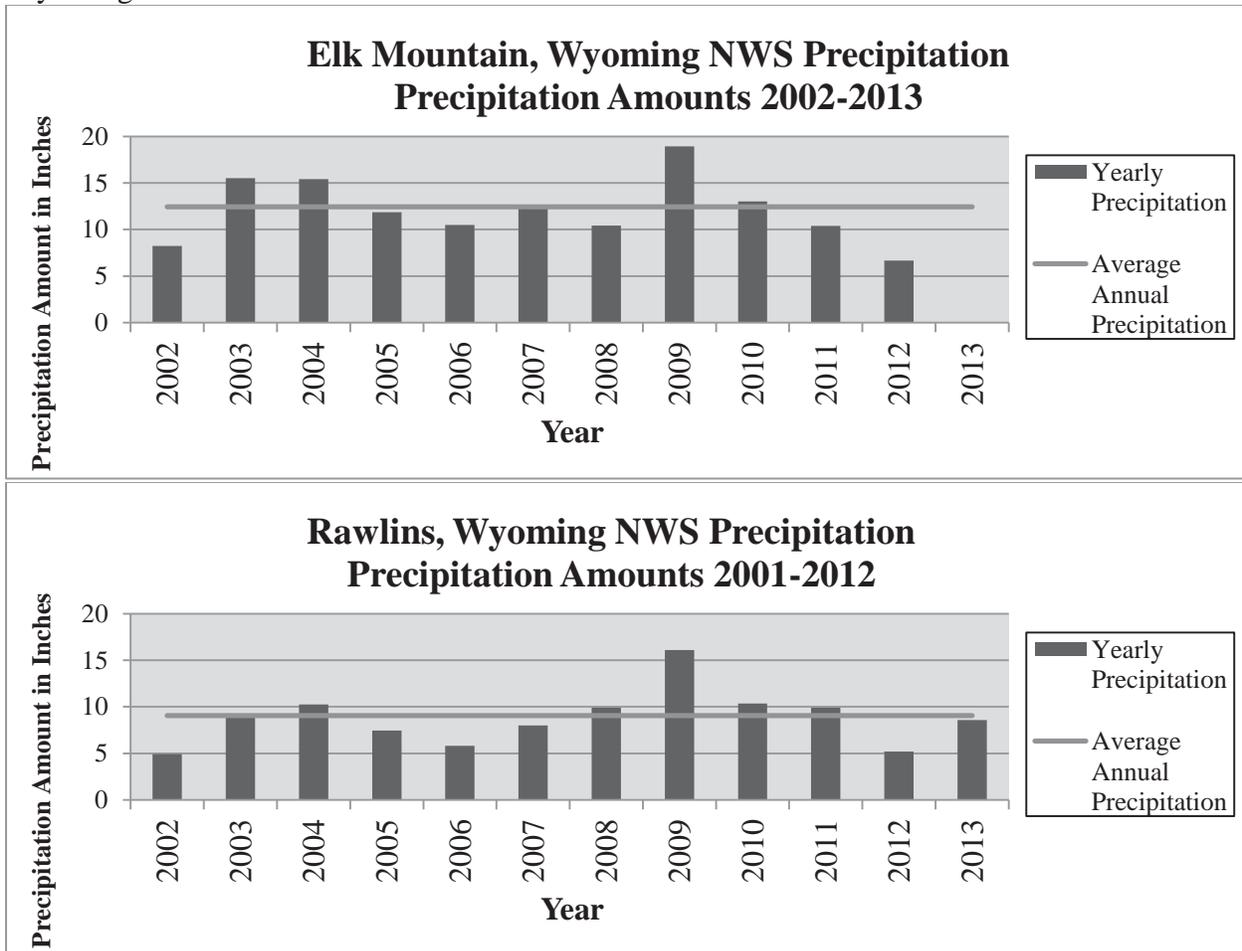


Figure 1: Recorded Precipitation at Elk Mountain and Rawlins, Wyoming (National Weather Service)

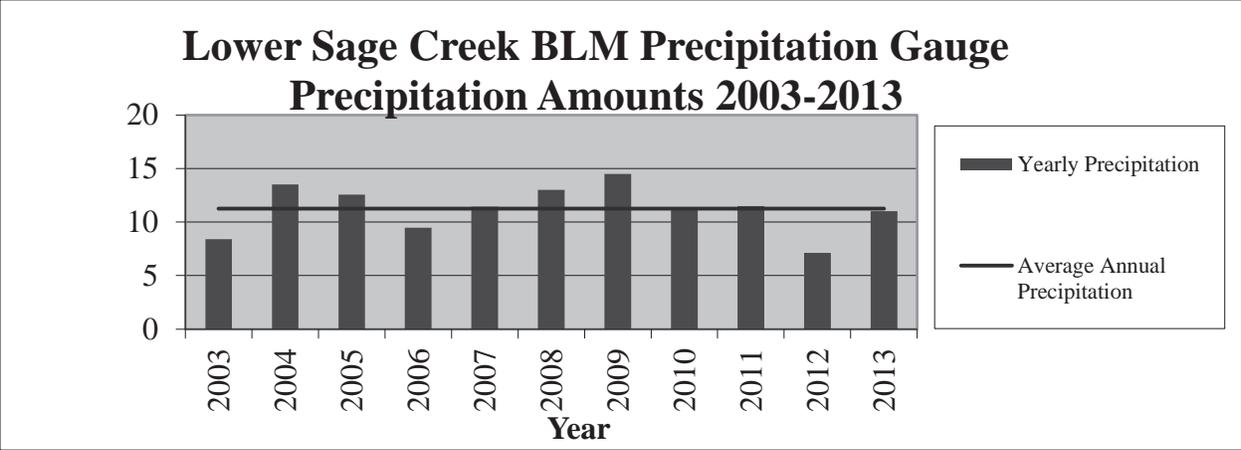
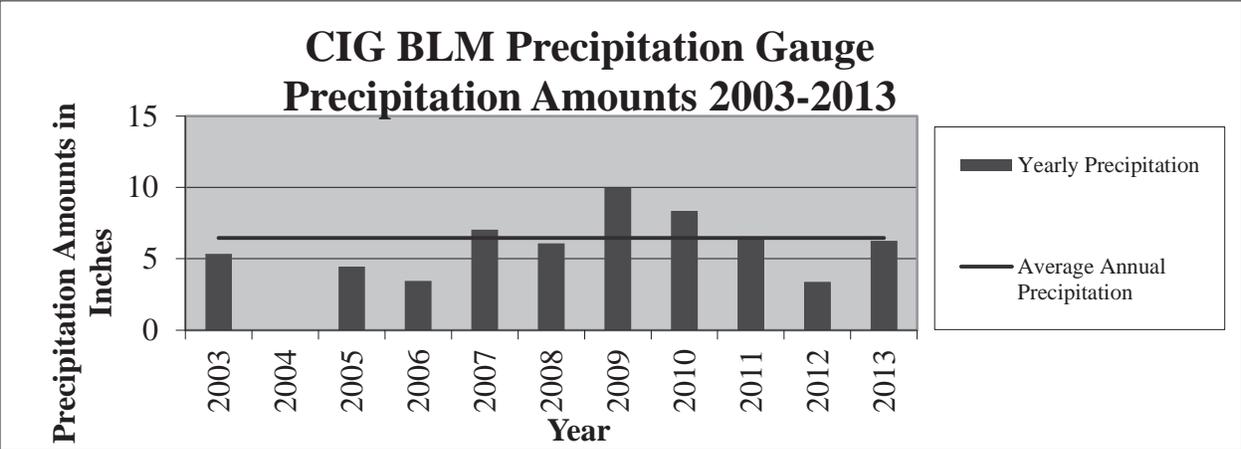
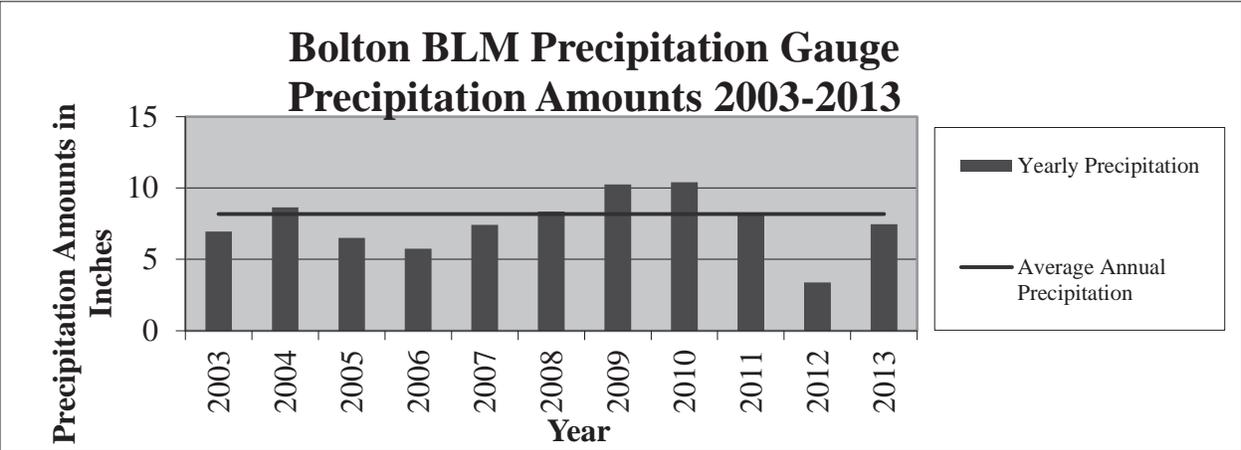


Figure 2: Recorded Precipitation at Selected Bureau of Land Management Precipitation Gauges (BLM)

Annual vegetation production is directly related to the amount of precipitation in the area; particularly during the primary growing season (generally precipitation in this area occurs between March and June, depending upon location and elevation). The University of Wyoming has been collecting herbaceous production as it relates to precipitation, as well as shrub density, since 1987. Since the mid-1990s the RFO has assisted in this data collection effort within the Coad Mountain Grazing Allotment. Figure 3 shows an example of the relationship between precipitation and production in the allotment, from 2005 through 2013. Forage production for both the treated and untreated plots in 2005, 2007, 2009, and 2010 were above average, reflecting above average precipitation. For the treated plot, 2011 was also above average for production and precipitation while the untreated plot had lower than normal production. The lower spring precipitation may have potentially been a limiting factor in the untreated plot in 2011. Forage production in 2006, 2008, 2012, and 2013 was below average for both sets of plots, which mirrored the lower precipitation. This chart, as well as the 27 year study initiated by the University of Wyoming, documents the direct relationship between precipitation and vegetative production, especially as it relates to spring moisture.

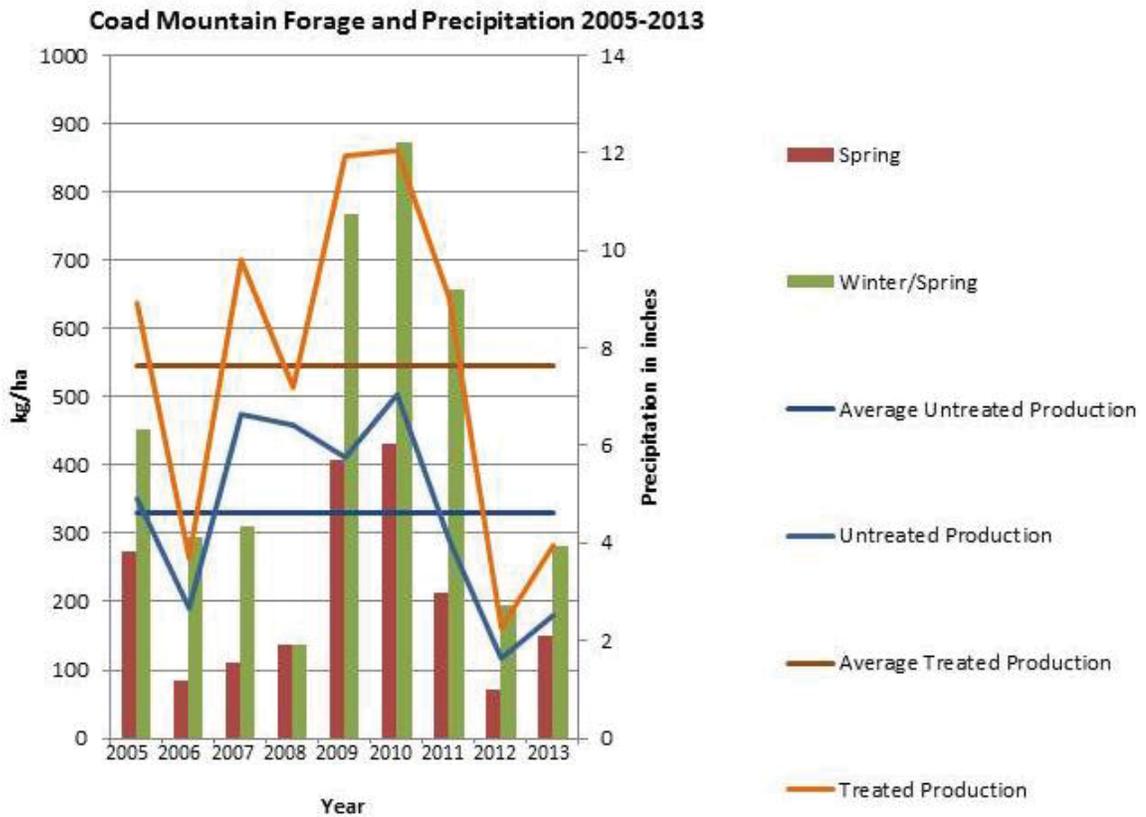


Figure 3- Forage Production and Precipitation in the Coad Mountain Allotment

STANDARD 1 – WATERSHED

Within the potential of the ecological site (soil type, landform, climate, and geology), soils are stable and allow for water infiltration to provide for optimal plant growth and minimal surface runoff.

The analysis area contains portions of the North Platte River Basin within the RFO boundary (Maps #4 and #5). Table #1 depicts the 4th Order Hydrologic Unit Codes (HUCs) and acreages.

Table # 1 –Sub-Area Acreage Included in the Analysis Area

Sub-Area Name	Area (acres)	10th Level HUC
Sage Creek	160,700	1018000209
Sugar Creek	122,688	1018000213
Iron Springs Draw-North Platte River	216,215	1018000210
Jack Creek	60,225	1018000208
Cow Creek Pass-North Platte River	104,286	1018000206
Pass Creek	139,389	1018000211
Saint Mary's Creek	93,088	1018000212

Sage Creek Watershed, and Sugar Creek and Iron Springs Draw

1) Characterization:

This area of analysis includes the Sage Creek, Sugar Creek, and Iron Springs Draw sub-areas. For simplicity, the Sugar Creek and Iron Springs areas will be included with the Sage Creek watershed as they are very similar. The watershed varies in precipitation from an average of less than 8 inches at the lower elevations to greater than 16 inches near the Continental Divide. Soils are formed from alternating shale and fine grained sandstones, which tend to be easily erodible. Due to lower precipitation, geology, and slow soil development, saline and alkaline soils are common at the lower elevations. Snowmelt or thunderstorms can produce moderate to high runoff with medium to high erosion rates, especially in areas of the unstable Niobrara Formation. Sheet and rill erosion, occurring on soils derived from marine shales, contributes sediment to Sage Creek and its tributaries resulting in high levels of suspended sediment and colloidal clays (SERCD, 2002). The U.S. Department of Agriculture – Soil Conservation Service (USDA-SCS) estimated natural erosion rates for 95 percent of the watershed at between ½ and 1 acre-feet per square mile per year. Sources of the sediment include sheet and gully erosion, and provide approximately 190 acre-feet of sediment to the mouth of Sage Creek (USDA-SCS, 1980).

Topography is flat to gently rolling landscape for the most part, becoming moderately steep to steep close to the rims and Miller Hill. Sage Creek originates along the Continental Divide at an elevation of 8,400 feet and drops 1,800 feet to an elevation of 6,600 feet at its confluence with the North Platte River. Gradient adjustments (in the form of incised channels) due to the change in elevation and channel instability are prevalent throughout the watershed. Sage Creek has been modified both recently and historically through manmade gradient control structures, dams, and diversions. Flow regimes within the watershed are primarily ephemeral in nature. Perennial

streams in the watershed, with the exception of the North Platte River, are limited to higher elevations and include the main channel of Sage Creek, Beaver Creek, and Pine Grove Creek.

Due to influences from geology, flow regimes, livestock use, water diversions, etc., stream types vary greatly across the watershed, and many channels are in the process of succession in order to reach a quasi-equilibrium state. Stream types present in the watershed include: B, C, E, F, and G. Dominant bed material in the watershed consists of gravel, sand, silt, and clay. For more information on stream types please see Rosgen, 1996.

Principal human uses in this watershed continue to be livestock grazing, recreation, and limited mineral development. Livestock use is primarily cattle, both cow/calf and yearling operations. Seasons of use for livestock vary by allotment. Winter use is somewhat dependent upon annual climate conditions. Recreation levels tend to be primarily related to hunting during the fall months (September through October).

2) Issues and Key Questions:

The issues and key questions that were discussed in 2004 are still relevant in 2014. Issues involved livestock grazing, erosion, woody plants, and water control. Within the Sage Creek watershed, naturally occurring erosion and in-channel bank erosion are the greatest contributors of sediment. Stream discharge and suspended sediment transport responded rapidly to convective storms and spring runoff events (Ellison *et al*, 2006).

Will development of the largest proposed wind project in the United States affect watershed conditions in the future?

3) Current Conditions:

This portion of the watershed has multiple browse transects, vegetation treatment transects, channel cross-sections, and photo-points (as well as 3X3 historical range photos that date back to the 1960s). These studies and associated photos were repeated, and when combined with personal observations from staff that have worked in this area for over 15 years, show an upward trend for the watershed values. Management actions over this timeframe have included range improvements and vegetative treatments, which have greatly contributed to these improvements.

On the Pine Grove/Bolten Grazing Allotment several monitoring locations have been established since the early 1990s and include 3X3 transects, greenline transects, vegetation treatment transects, photo-points, and Holistic Resource Management Transects, as well as five cross-sections used to measure conditions on Sage Creek. Channel morphology has improved throughout the watershed as a result of implementing range improvements and properly managing livestock grazing. As evidenced by the cross-sections which were redone in 2013, as well as trend photo-points, many of these streams have improved considerably, particularly channel narrowing. Banks are becoming more stable with perennial, deep-rooted vegetation. As these channels narrow, the active floodplain width will continue to expand, including both lateral expansion on gravel-bottomed streams and within incised banks of silt/clay-bottomed streams. Cross-section 4 (Figure 4) shows one example of a long-term trend of channel morphology along

Sage Creek where grazing management was changed to rotational grazing in the late 1990s (Standard 1, page 1).

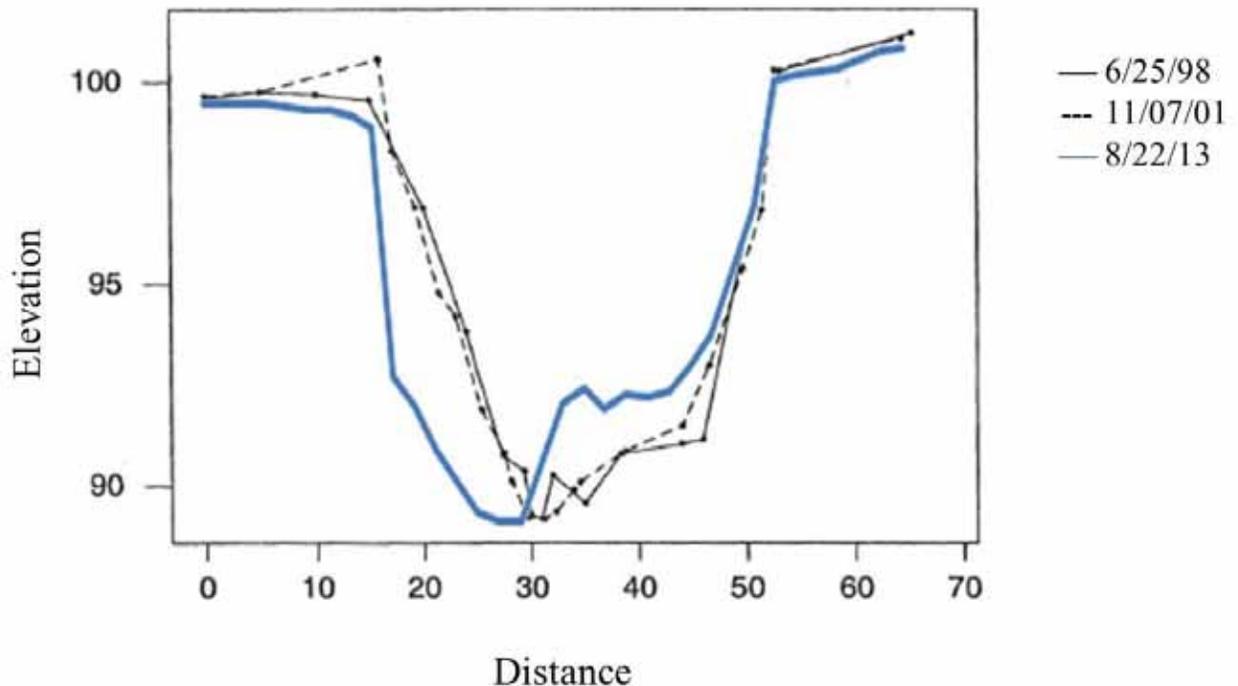


Figure 4. Channel cross-section of Sage Creek just upstream from the Bolten Bridge

Many of these streams did not have a dominant woody plant community to stabilize these areas during the last assessment (Standard #1, Page 2), but many are now dominated by stabilizing willow communities. Although, drought has been a factor, these areas have responded extremely well to improved management practices. One of the main areas identified as having erosional concerns was the location where U.S. Highway 71 crosses Sage Creek, as many people have damaged the area by mud bogging (Standard #1, Page 3). As part of U.S. Highway 71 reconstruction, gravel was placed on the road and a fence was constructed around the riparian area in order to ensure that Sage Creek would no longer be negatively affected by recreational misuse.

In addition, this allotment had 10,483 acres treated with tebuthiuron in the early 2000s. These treatments were designed to diversify vegetation communities, while improving ground cover. As a result of these treatments, bare ground, which originally averaged 24 percent, improved to less than 15 percent. Herbaceous production has increased tremendously for both forbs and grasses, for example, in the Miller Hill tebuthiuron treated area the increase has been 250 percent.

Vegetative cover and litter in uplands vary with the types of soils, slope, aspect, elevation, and precipitation. Research conducted in Wyoming indicated that upland plant communities often can be maintained with ground cover above 30 percent, while sediment yields increased dramatically when cover declined to less than 30 percent (Linse, Smith, and Trlica, 1992). The Sage Creek watershed is dominated by naturally highly erosive soils, which contribute sedimentation directly into the Platte River. Vegetative filtering has been improved immensely in the watershed, as well as the development of manmade sediment traps. Unfortunately, although this erosion is natural, reducing it further would require significant monetary investments. All of these plant communities (both productive and less productive) have improved over the past ten years in both plant cover and litter.

Most stream channels are stable, with good vegetative cover (in most cases herbaceous and woody species), and/or rock for armoring.

The “Interpreting Indicators of Rangeland Health” (Technical Reference 1734-6, Version 4 – 2005) evaluates 17 indicators, with “pedestalling” and “plant community composition” being the principle factors rising in some areas above the “None to Slight” category, and only in the “Slight to Moderate” category in the less naturally erosive soils. Pedestals are evidence of past grazing practices that have led to the loss of soils in open areas between shrubs; however, active pedestalling was not observed, and historic pedestals are rounded over and healing. Plant community composition continues to recover with improved management practices, which should eventually benefit desirable bunchgrasses as opposed to rhizomatous wheatgrass and less palatable grasses. As previously stated, much of this watershed is naturally erosive and displays erosional features in response to precipitation events in the forms of gullies and sheet and rill soil movement.

4) Reference Conditions:

Please refer to the current conditions discussed in the 2004 watershed report. It stated that information from photo-points, channel cross-sections, transects, and personal observations showed that the trend for watershed values was upwards. At the time of the 2004 report, almost all of the allotments in the watershed had implemented changes to livestock management activities during the previous 5 to 10 years. Vegetation treatments were also being implemented, and were improving upland herbaceous cover and species composition, as well as livestock distribution of use. These factors have cumulatively led to more stable and improving conditions, but with expectations for further improvement.

5) Synthesis and Interpretation:

The account described in the 2004 watershed report is similar to what can be observed today in terms of landscape and vegetation. For the majority of the area, current species composition and levels of plant cover appear to be in good condition and continuing to improve. In areas of higher elevation and with more perennial waters, use is limited by weather, providing grazing use during late spring, summer, and fall. Head-cuts and gullies are more pronounced in areas with greater relief and differences in gradient, such as lower Sage, Little Sage, and Miller creeks.

The principal changes observed today in this watershed are still very limited and include roads, water developments, and fences related to the existing land uses. Road improvements are probably the most recent visible changes that can be seen in this area.

Management changes relating to livestock grazing include: pasture grazing systems to manipulate duration and season of use in order to provide some growing season rest in each pasture and the development of upland water sources to improve livestock distribution. Since commencement of the cooperative effort to improve the Sage Creek watershed that was coordinated by the Saratoga Encampment Rawlins Conservation District (SERCD), most allotments now have some type of pasture management system. These management plans have resulted in both improved cover and site stability. Species, such as basin wildrye, have expanded in the valley bottoms, adding litter and cover that help hold sediment from adjacent uplands. Along wetter draws, willows have expanded greatly (Standard #1, Page 4) to improve channel stability. Areas with historical impacts, still observable today, are old sheep bed-grounds along trail routes, adjacent to water sources, and on ridge tops. Plant cover and species composition were negatively affected by the trampling and soil compaction, with site recovery still occurring.

Absent from the 2004 report, was any mention of a watershed enhancement project on Little Sage Creek, just below Little Sage Creek Reservoir, in which five gabions were installed in the late 1960s in order to stabilize the stream channel. Most of these structures are still functioning (Standard #1 Page 5). Original photos are not available; however, vegetation along the channel in this portion of the stream reach is very good, and appears to be vertically stable, with minor amounts of lateral movement. Key plant species include grasses, Baltic rush, coyote and yellow willow, and forbs,

Current management systems are being modified as needed to improve plant vigor and vegetative cover by ensuring at least a partial resting period during the growing season. New water developments are used to improve livestock distribution and to create more reliable water sources in order to get through periods of drought.

6) Recommendations:

Due to the existing diversity and amount of vegetative cover in the uplands, declining levels of bare ground, the existing conditions of most of the intermittent and ephemeral channels (Standard #1, Page 6), the management responsibilities of most of the permittees, and the small amount of management issues that need to be resolved, it has been determined that the Sage Creek Basin watershed continues to meet Standard #1. The following recommendations would expand upon the success already achieved, and help meet desired resource conditions in the future.

- Continue to implement or manage using Best Management Practices (BMPs) for livestock grazing. This primarily means controlling the season, duration, and distribution of livestock use in order to meet desired resource objectives for both riparian and upland habitats. Specific dates or times must be decided upon on a case-by-case basis. Methods to achieve this include, but are not limited to, herding, pasture fencing, water developments, and vegetation treatments.

- Identify and correct problems with improved roads, which affect local hydrology and soils erosion. Two-track roads are too numerous to deal with as a whole; however, problem areas should be identified and fixed, or the road(s) should be closed and reclaimed. Support the WGFD in implementing a seasonal closure for antler collecting in the watershed to reduce spring road damage.
- Monitor the construction and operation of the proposed CCSM wind project to ensure BMPs are adhered to during the life span of the project, as well as effective in maintaining improvements to the Sage Creek watershed.
- Implement vegetation treatments where needed to restore plant communities to diverse species, age classes, and cover types. Promote composition of communities to maximize herbaceous cover and litter; and therefore, minimize surface runoff and soil erosion.
- Expand public education to explain its role in public land management, particularly in regards to impacts resulting from roads and off-highway vehicular activities.

Lower Platte from Jack Creek to the southeast portion of Seminole Reservoir (excluding Sage, Sugar Creek, and Iron Springs Draw)

1) Characterization:

This portion of the Lower North Platte River Watershed includes the Jack Creek, Cow Creek, and Pass Creek drainages, which have perennial headwaters derived from the Sierra Madre and Medicine Bow Mountains. These drainages are similar in nature, and are primarily in a 10 to 14-inch precipitation zone, with headwater areas receiving higher amounts. Soils are derived predominantly from inter-bedded sandstone and shale, with fair amounts of gravel at lower elevations and more rock at higher elevations, leading to higher rates of water infiltration and a reduced potential for erosion in locations having more gravel and/or rock. There are short sections of perennial and intermittent stream segments at higher elevations, turning into ephemeral drainages at lower elevations. Stream flows are highest from May to June, when they usually reach the North Platte River, although much of the stream flow is diverted at the lower elevations to hay meadows on private lands.

Stream channels are generally stable with rocks and perennial vegetative cover, including willows, waterbirch, cottonwood, aspen, and other shrubs. There has been no annual flow monitoring of any of the streams in this area. There has been extensive development of irrigated hay meadows at the lower elevations. Approximately 25 percent of the watershed consists of BLM-administered public lands, most of which are located in the uplands, or higher elevation areas. Due to the influences of geology, flow regimes, livestock use, water diversions, etc., stream types vary greatly across the watershed as a whole, and many channels are in the process of successional changes in order to reach a quasi-equilibrium state. Stream types present in the watershed include: B, C, E, F, and G. Dominant bed material in the watershed consists of gravel, sand, silt, and clay. For more information on stream types please see Rosgen, 1996.

Principal human practices in this watershed consist of livestock grazing, hay production, and recreation. Livestock use is primarily cattle, employing both cow/calf and yearling operations. Seasons of use are primarily winter and spring at lower elevations, and summer and fall at higher elevations. Hay production includes both alfalfa and grass hay, with ground preparation and fertilization in the spring, summer irrigation, and cutting and baling hay in the late summer and fall. Recreation primarily entails hunting, fishing, and camping. The Platte River receives a large percentage of recreational use related to fishing, boating, and other water activities. In addition, hunting is also prevalent during the fall (September through October).

The North Platte River originates in North Park, Colorado, flows north into Casper, Wyoming, and then south/southeast into Nebraska. Major tributaries in Wyoming include the Encampment, Medicine Bow, Sweetwater, and Laramie Rivers. All water within the North Platte drainage in Wyoming is allocated for beneficial use (under U.S. Supreme Court decree), much of which is irrigation. A large portion of the North Platte is a class 2ab water body. The North Platte River receives a large percentage of recreational use related to fishing, boating, and other water activities. There are also current and historical grazing impacts occurring on the river.

2) Issues and Key Questions:

1. Livestock Grazing: (please refer to issues identified for Sage Creek)

2. Woody Plants: (please refer to issues identified for Sage Creek)

3. Erosion: Erosion from roads is primarily in upland locations and along unimproved roads. Due to extensive private land developments, there are good improved roads receiving regular maintenance from Carbon County. Off-road activities on public lands is somewhat curtailed in areas with limited access to public lands, and at higher elevations the presence of more gravel and rock in the soils helps to reduce the potential for upland erosion. However, there are still spot locations where soil conditions, steep terrain, climate, and public land access all contribute to unimproved roads or other areas becoming rutted, deeper ruts being developed, or multiple roads/ruts being created side-by-side and sediment being moved downslope and/or into waterways. Another factor may be the popularity of collecting antlers in the late winter/spring months when soils are wet and soft, as this watershed is not closed to antler collection from January 1 until April 30, as is the case for the adjacent watershed to the west. The key questions are: How can erosion from two-track roads or off-road activities best be addressed? Since seasonal closures for antler collection have been somewhat effective in reducing watershed impacts from vehicles during the late winter/early spring months on the other side of the Continental Divide, can the State of Wyoming consider a similar policy for the North Platte River watershed? What educational and management tools should be employed to reduce erosional impacts from recreation and other users of public lands?

3) Current Conditions:

Information is available from transects, photo-points, channel cross-sections, and personal observations, which show that the trends for watershed values are upward. Specific management

actions being implemented, along with range improvements and vegetative treatments, at least indirectly, should also relate to an improvement in resource conditions for most areas.

One of the best data sets is from the Platte River Grazing Allotment, which was one of the earliest allotments with an Allotment Management Plan (AMP), established in 1968. It had photo-points taken in 1968 and 2013, and pace frequency transects established in 1977 and re-read in 2013. The Platte River Grazing Allotment permits cow-calf pairs, primarily for spring grazing in pastures 1, 3, and 4, with winter grazing in pasture 2 along the North Platte River. The cattle summer in the Sulphur Springs Grazing Allotment at higher elevations in the Upper Muddy Creek watershed. Historic grazing likely was of longer duration and without any pasture fencing. Using an average for eight transect locations in all four of the current pastures, the bare ground decreased from an average of 36 percent (range of 20-51) in 1977 to an average of 14 percent (range of 9-23) in 2013. The majority of transect locations would be considered shallow acting, due to the presence of mat forbs, bluebunch wheatgrass, threadleaf sedge, and black sagebrush, and the overall height of sagebrush. Drought has definitely affected at least the shrubs in this area; with die off observed after 2001 and again in 2012, particularly on wind-swept ridges where a large amount of black sagebrush is now either dead or decadent. In these locations the dead shrubs still help catch snow and provide good new seedling establishment areas that are at least partially protected from grazing until the sagebrush stems decay. It is more difficult to observe changes in the photo-points; however, the height and presence of shrubs, some higher and some lower, are the most visible changes.

Transect data from other allotments is more recent, with trend data relating to two prescribed burns in the Middlewood Hill Grazing Allotment, which is located on the western border of the watershed to Pennock Mountain Wildlife Habitat Management Area (WHMA) on the eastern border. Both areas that were treated with the prescribed burns are within 15 to 19-inch precipitation zones, and have mountain big sagebrush and Idaho fescue as the dominant species. The Middlewood Hill prescribed burn was divided into two watersheds, a burned and control watershed, with five transects being established in each of the watersheds. In the control watershed average bare ground was 2 percent, plant cover was 82 percent, litter was 15 percent, and pebble/rock was 1 percent. In the prescribed burn watershed, where a contiguous area of 730 acres was burned in the fall of 2005, bare ground rose from 2 percent before prescribed burns to 8 percent in 2014, shrub cover decreased from 37 percent to 2 percent, total vegetation cover decreased from 93 percent to 71 percent, and litter increased from 5 percent to 20 percent (Standard # 1, Page 7). This burn has not recovered as quickly as most burns in this area, possibly due to the burn prescription dictated by the study.

In the Pennock Mountain WHMA, which was burned in the spring of 2004 with a mosaic pattern across 3,600 acres of BLM, USFS, and WGFD lands, the following changes were observed: bare ground decreased from 3 percent before the prescribed burn to 1 percent in 2014, shrub cover decreased from 57 percent to 21 percent, total plant cover decreased from 88 percent to 79 percent, and litter increased from 7 percent to 16 percent. The prescribed burn area in Middlewood Hill was initially rested for two growing seasons, and since then has been grazed, while the Pennock Mountain WHMA strictly receives wildlife usage, primarily by elk in the winter and spring. Vegetative cover and litter on uplands vary with the soils, slope, aspect, elevation and precipitation. Research conducted in Wyoming indicated that upland plant

communities often can be maintained with ground cover above 30 percent, while sediment yield increased dramatically when cover declined to less than 30 percent (Linse, Smith and Trlica, 1992). Ground cover ranges from around 70 percent to nearly 100 percent on big sagebrush plant communities, the most common vegetation community in this watershed. At higher elevations, plant cover is usually higher due to increased moisture and density of plants. Trend data show increased plant cover and litter, or good recovery following prescribed burns, which occur primarily as grasses fill in the spaces between shrubs. In general, the overall ground cover appears good to very good at higher elevations, but still can be improved at lower elevations with the use of BMPs.

Stream channels are generally stable, with good vegetative cover and/or rock for armoring, with good width-to-depth ratios, particularly on stream reaches not affected by de-watering for irrigation. In some areas, channel width to depth ratios are still decreasing, such as Rattlesnake Creek, which is located above irrigation diversions. Plantings of willows and other shrubs, such as waterbirch, currant, dogwood, and honeysuckle, have also occurred along these streams, in conjunction with changes in livestock management. In another example on Pass Creek, which is located below irrigation diversions, the width-to-depth ratios are still decreasing, but are happening at a much slower rate and are likely to be less stable during high flow events, since more stable species, such as sedges and willows, do not persist in the drier environment of streams that are de-watered (Standard #1, Page 8). In recent drought years, very little water was observed at the U.S. Highway 230 bridge over Pass Creek, and only for a very short period of the season. In-channel bank sloughing along the outer corners of streams is still a primary source of sedimentation, with Pass Creek previously identified as a problem area in the 2004 report. Changes in livestock management, such as of shorter duration of use, later season of use (fall), and the creation of a riparian pasture, which is currently being rested from grazing while providing water via a small water gap, have helped to improve the bank vegetation and stability along Pass Creek. Beavers are mostly just found in, and adjacent to, the Medicine Bow National Forest, and contribute to stream stability and sediment storage, but are controlled through trapping further downstream where they may potentially create problems to irrigation systems.

The “Interpreting Indicators of Rangeland Health” (Technical Reference 1734-6, Version 4 – 2005) evaluates 17 indicators, with “pedestalling” and “plant community composition” being the principle factors, rising in some areas above the “None to Slight” category, and then only in the “Slight to Moderate” category. Pedestals are evidence of past grazing practices that have led to the loss of soils in open areas between shrubs; however, active pedestalling was not observed, and historic pedestals are rounded over and already well healed. Plant community composition was rated differently due to lower amounts of desirable bunchgrasses being observed as compared to larger amounts of more grazing resistant species, such as rhizomatous wheatgrass and little bluegrass. Improved livestock grazing practices, including shorter grazing periods, rest during a portion of the growing season, upland water developments, and herding, all help to improve the vigor and production of desirable bunchgrasses, which should continue to recover. In locations with pedestals there would have been soil losses from these sites; however, much of the terrain is flat to gently sloping so that soil movement does not occur very rapidly. Observed gullies are also generally well vegetated and recovering, with no rills in the majority of the landscapes (they are mostly limited to areas along roads). Flow patterns and litter movements on

steeper slopes and less vegetated sites will sometimes be rated as “Slight to Moderate”, but this is due more to topography and soils than to impacts from livestock grazing.

4) Reference Conditions:

Please refer to the current and reference conditions described in the 2004 watershed report.

5) Synthesis and Interpretation:

The descriptions for Sage Creek generally documents impacts and conditions from developments similar to this watershed, except there is more blocked private lands with irrigated hay meadows. Vegetation and ground cover are the primary factors that reduce water and wind erosion on the uplands. Erosion can result in the loss of topsoil and a reduction in site productivity on the uplands, as well as horizontal adjustments to stream channels. The primary influences upon these factors that may influence watershed functions, are livestock grazing and roads/off-highway vehicle activities, and to a lesser extent, vegetation treatments and wildfire suppression.

Best Management Practices (BMPs) for livestock grazing that have been implemented for this watershed include: pasture grazing systems to control duration of use, deferment of grazing in riparian pastures to late summer or fall when possible, protection of seep water sources with enclosures, and development of upland water sources to reduce dependence upon streams. These practices have been continued, or in many cases, given time in order to achieve their potential results. Recent droughts in 2006, 2008, 2012, and 2013, have also resulted in the BLM and permittees developing more reliable water sources, such as wells, spring developments, and pipelines, with less reliance on reservoirs. Monitoring has shown improvements in bank cover and stability, which have led to surface stream width reductions (at base flows), particularly for Rattlesnake Creek and Pass Creek. Vegetative bank cover has increased significantly; and therefore, reduced the vulnerability of unprotected bank areas to in-channel erosion. Bank building and expansion of riparian habitats (due to the narrowing of stream channels), have resulted in increased late seasonal flows for all perennial streams (Standard #1, Page 9). In most cases there are adequate pastures for rotational grazing, the key is to control the duration and season of use along streams where improvements are still needed.

Resolving issues with two-track roads and off-road vehicle use will likely only occur as a result of the development of a transportation plan, a defined road system, and funding to address erosional problems associated with the plan. This will require input and support from the public land users, and education and enforcement to implement and have successful results. Areas with more private lands and isolated parcels of public lands may be easier to implement travel management with the assistance of the adjacent private landowners, many of which already restrict or do not allow public access across their private lands. It would also benefit soils and watershed values to work with the WGFD to extend the antler collection seasonal restrictions to the North Platte River watershed. Antler collection has become a more popular activity over the last 20 years, but it can have negative impacts to both animals and lands. Restricting antler collecting until after the snowmelt has occurred and soils have dried at the lower elevations would reduce soil rutting, new road creation, and soil erosion caused by these activities. There is

also a need to upgrade problem spots in existing roads with culverts, wing-ditching, waterbars, and improved stream crossings.

Vegetative treatments continue to be needed to decrease fuel loads and provide a mosaic of plant cover to protect soils and watershed functions, particularly at higher elevations in denser shrubland and woodland habitats. Mountain pine beetle, along with old age and other tree diseases, have greatly increased dead fuel loads in woodland areas, which may be harvested or burned. Stands with good access, or located on gentle slopes, are more likely to be harvested, leading to the potential for more roads and the need for proper engineering and locations. These accessible stands will provide an opportunity to apply controlled treatments rather than resulting in wildfires. Temporary roads would be constructed and used to access these stands; however, they would be reclaimed within a short time period of the project being completed. In steeper terrain, wildfire would be more likely due to the inaccessibility of these areas. Whether fire will be allowed to provide its natural function by removing debris and restarting natural vegetative succession will remain to be seen. The greater amount of private lands at the lower elevations precludes the use of prescribed burns or natural ignitions.

Increased use of chemical and mechanical treatments may be required due to the large amount of identified core habitat for Greater Sage-Grouse in this watershed. However, dense, tall stands of big sagebrush, that have been shown to be the desired nesting habitat of Greater Sage-Grouse, are not as common as in the adjacent watersheds. The rapid return of shrubs following the Pennock Mountain prescribed burn may result in more spring treatments being approved, for smaller units, in Greater Sage-Grouse habitat. Monitoring data from both the Pennock Mountain and Middlewood Hill prescribed burns showed a rapid return of plant cover and litter, with very small amounts of bare ground within just a few years, so that soil erosion from these sites is minimal. In comparison, water infiltration, soil moisture, and nutrient cycling all appear to have been maintained or improved.

Drought conditions in this watershed have resulted in less vegetative production and litter for some years; along with reduced shrub cover in some of the lower elevation areas, such as along the North Platte River. Long-term effects of droughts on plant cover appear to be very scattered in occurrence, and should not affect soil stability and watershed function in a negative manner. Dead and decadent sagebrush assists in trapping snowfall, reducing wind effects at the ground level, and holding soils together with root systems, in conjunction with other living vegetation still present at the site. There is the need for long-term sustained monitoring of watersheds to document and learn what changes occur as a result of droughts and other natural climatic effects. The planting of willows, waterbirch, and other shrubs along Rattlesnake Creek and Pass Creek helps to improve bank stability and plant cover, and in the long-term it will improve watershed function.

6) Recommendations:

Due to the existing diversity and amount of vegetative cover in the uplands, existing and improving trends in stream vegetation and channel morphology, and the small number of remaining management issues, it has been determined that the Lower Platte River watershed,

within the report area, is meeting Standard #1. The following recommendations would expand upon the success already achieved and help to meet desired resource conditions in the future.

Continue to implement and manage livestock grazing through the use of BMPs. This primarily means controlling the season, duration, and distribution of livestock use in order to meet desired resource objectives for both riparian and upland habitats. Specific dates or times must be decided upon on a case-by-case basis. Methods to achieve this include, but are not limited to, herding, pasture fencing, water developments, and vegetation treatments.

Support transportation planning to manage and reduce the impacts of roads and off-road activities on watersheds and soils. Identify and correct any problems with two-track roads, to consist of either identifying and correcting erosional areas or closing and reclaiming the roads. Support the WGFD in implementing a seasonal closure for antler collecting in the watershed to reduce spring road damages.

Implement vegetation treatments to restore plant communities through species diversity, age classes, and cover types. Promote composition of communities to maximize herbaceous cover and litter; and therefore, minimize surface runoff and soil erosion, and promote reliable, late-season stream flows.

Continue vegetative plantings as needed, and support the reintroduction of beavers into suitable habitats whenever possible.

Expand public education about its role in public land management, particularly in regards to impacts from road and off-highway vehicular activities.

STANDARD 2 - RIPARIAN/WETLANDS

Riparian and wetland vegetation have structural, age, and species diversity characteristic of the state of channel success and is resilient and capable of recovering from natural and human disturbance in order to provide forage and cover, capture sediment, dissipate energy, and provide for ground water recharge.

1) Characterization:

Riparian/wetland habitat consists of a variety of plant communities, including riparian grasslands, willow-waterbirch riparian shrublands, and cottonwood and aspen galleries. Riparian grasslands are the most common type of community, and, along with the willow-waterbirch riparian shrubland, comprise most of the riparian/wetland habitats in the smaller drainages within the Lower North Platte watershed. The North Platte River consists predominantly of willow shrublands and/or cottonwood galleries habitats. These habitat types are critical in supplying water, forage, and habitat for wildlife and fisheries, livestock grazing, irrigation, and recreational usage. Riparian/wetland habitats make up less than one-half percent of the total landscape, and approximately 20 percent are located on public lands administered by the BLM. As a result, the RFO works with its partners on a landscape level to improve these habitats, as they benefit both public and private interests and values.

The primary method used to evaluate this standard is a qualitative assessment procedure called Proper Functioning Condition (PFC). The process evaluates physical functioning of riparian/wetland areas through consideration of hydrology, vegetation, and soil/landform attributes. PFC assessments are used, along with other existing information, such as photo-points, stream cross-sections, Habitat Quality Index (HQI; Bins 1979), grazing use, other relevant history, and other habitat or population assessments, to evaluate this rangeland health standard. It is important to note that the PFC assessment provides information on whether an area is physically functioning in a manner that allows maintenance or recovery of the system (TR 1737-15, 1998). However, PFC is not the desired or future condition (e.g. fish habitat, vertical structure for song birds or specific forage species) it is just a functionality threshold.

It is important to understand that livestock management of riparian/wetland habitats has only been developed since the mid-1980s. Rangeland management evolved during the early to mid-1900s with an original focus on uplands, primarily looking at stocking rates, range readiness, and proper utilizations rates on upland species. Allotment Management Plans (AMPs) developed by the BLM prior to 1980 did not recognize or discuss riparian values or management practices. Although this has changed, restoring the species and structural diversity within these communities will take considerable time.

2) Issues and Key Questions:

The issues and key questions from the 2004 Standards and Guidelines (S&G) Report are still valid today. This includes use by livestock and wildlife, noxious and invasive weeds, hummocks, vertical instability, and roads. This area has been in an official drought status for several years since 2004 and has had several years of extremely low precipitation. How have these drier conditions impacted many of the riparian/wetland areas in the S&G reporting area over the long-term?

Livestock use of riparian habitats has been, and continues to be, an important factor in regards to riparian conditions within the assessment area.

Noxious and invasive weeds along creeks, reservoirs, hay meadows, and especially the North Platte River, are important factors relating to riparian conditions within the assessment area. How will the spread of these weeds be addressed, especially in complex land ownership patterns? How will the proposed CCSM wind project development's usage of BMPs affect the spread of weeds during construction and operational activities. (The weeds issue will be also be addressed in Standard 4)

Historic livestock grazing practices included trailing large numbers of livestock, much longer durations of use, trapping beavers and removing them from the system, and the lack of upland water sources, all contributed to the decline of riparian conditions. Current livestock grazing activities are negatively impacting the establishment and/or production of woody riparian plant species, such as willows, dogwood, waterbirch, and cottonwood in some portions of the watershed. The movement of animals through riparian areas can affect the functionality of these areas by increasing the amount of bare ground, usually observed in the form of trails and

crossings. Increased numbers or a greater duration of use will cause more impacts as a result of bank shearing and trampling, resulting in more bare ground. Increased bare ground will reduce the ability of the system to function properly during high flow events. In many cases BMPs have been implemented, which reduce the duration of use and/or change the season of use for livestock grazing. Continued refinement of these livestock management including shortened duration of use as well as fencing where necessary will address current livestock grazing use concerns.

Bank instability caused by historic practices including livestock grazing as well as tie-hacking throughout the watershed has increased sediment loading to the main stem of the North Platte River. Tie-hacking was common in the North Platte watershed in the spring to float timbers for the Transcontinental Railroad. In several reaches of the river, the sediment carrying capacity of the river is insufficient to transport the increased sediment loads downstream. Excess suspended particles are being deposited throughout the North Platte drainage system and are altering channel dimensions and sediment transport dynamics. Width to depth ratios are increasing, and large islands and large point bars are forming. When flood events occur, reaches that have good channel to floodplain connectivity are flooding more often; areas that do not have good channel to floodplain connectivity are exhibiting greater in-channel erosion. This increased in-channel erosion is exacerbating an increase in sediment loading. Refinement of grazing practices by the BLM will improve bank stability, but some reaches of the North Platte River within the area of discussion have become unstable and will require river restoration projects for them to reach a state of quasi-equilibrium. Much of the main stem of the North Platte River is privately owned; and therefore, the potential for the BLM to implement river restoration projects on the main stem of the North Platte River is limited. However, there are efforts by private landowners, Trout Unlimited, WGFD, and other entities to restore reaches of the North Platte River and remedy the problems caused by historical grazing practices and increased sediment loading.

There are certain areas within the watershed where hummocks occur adjacent to riparian areas. Many of the hummocks are influenced by the soil types involved, and in some cases the long historical duration of livestock use that occurred within the area. Will implementation of BMPs address these at risk areas?

Vertical instability is a problem in some areas. Some of these headcuts have been stabilized within the watershed (especially in Sage Creek); however, there are still areas that need to be addressed or maintained. Manmade structures, such as reservoirs, also have instability problems due to naturally fine sediments and a lack of pipes on older projects. In addition, many of these reservoirs have reached the end of their lifespan and have become silted in and are no longer achieving the original goal of reducing sediment. Cutting of reservoir spillways, or around or through dikes, are ongoing problems affecting the functionality of these projects. What is the practical solution to address these instability issues?

Other factors affecting riparian conditions are roads and their associated impacts to these areas. Roads that are directly adjacent to riparian systems will, in many cases, channel sediments directly into creeks and reservoirs. In addition, improper sizing or placement of culverts can cause increased soils erosion to enter directly into riparian systems. If the amount of sediment is high enough, it can reduce vegetation, functionality, water quality, and change the channel

dynamics. Roads can also disrupt surface and subsurface flows, which can effectively alter the type of riparian system from the upstream side of the road to the downstream side. Can road related concerns be addressed through the use of culverts, improved crossings, re-routing, water bars, and roadside pits, or are there additional solutions that can be implemented?

Will the development of the largest proposed wind project in the United States affect riparian conditions in the future?

3) Current Conditions

Lotic areas that were not meeting PFC in the 2004 report, and were livestock related, but are now meeting the Standard:

Cottonwood Draw Grazing Allotment -

While not mentioned in the 2004 S&G Report, riparian zones in the Cottonwood Draw Grazing Allotment (00409) were ranked as Functioning-at-Risk with no apparent trend. The 2013 assessment ranked these same riparian zones as Properly Functioning. This allotment was acquired by TA Ranches in 2008 and management was changed to a rotational system in conjunction with the Middlewood Hill Grazing Allotment. In this instance, riparian conditions are improving through livestock grazing management changes.

Sage Creek Grazing Allotment-

Two riparian areas, Fish Creek and Sage Creek, are located within the Sage Creek Grazing Allotment. The Sage Creek Grazing Allotment did not meet this standard primarily due to the Non-Functional rating at the headcut along Fish Creek, which is within the Upper Colorado River Watershed. In addition, Sage Creek, which is within the Lower North Platte River Watershed, was rated at numerous other locations as Functioning-At-Risk with a downward trend. Since TOTCO began managing the grazing allotment in 2004, livestock management has improved significantly through the use of an intensive rotation that had previously been lacking. All riparian areas within the grazing allotment have shown great improvements, with Fish Creek being rated as PFC in the Upper Colorado River Watershed assessment for 2011, and Sage Creek has shown substantial improvements as well for the 2013 assessment (Standard #2, Page 1 and 2). Both herbaceous and woody vegetation have responded remarkably well within the grazing allotment due to livestock management changes implemented by TOTCO.

Lotic areas that are not meeting PFC, and are livestock related:

Middlewood Hill Grazing Allotment-

Overall trend within riparian areas located in the Middlewood Hill Allotment are positive with indications that riparian areas are expanding in some areas. A prescribed burn was conducted in the Beaver Pastures in 2005 in order to reintroduce fires into the landscape. This, along with livestock management practices, seems to be improving riparian conditions in the Lower and Middle Beaver Pastures. (Standard #2, Page 3). Riparian zones of concern were re-evaluated in 2014. Areas reevaluated included Sane (Chicken) Creek and Beaver (Loco) Creek in the Upper Beaver Creek Pasture; a tributary to Trapper Creek in the Upper Trapper Creek Pasture; Desert Pasture Creek in the Desert Pasture; and Sage Creek in the Weaning Pasture. The tributary to

Trapper Creek and the Desert Pasture Creek are currently meeting standards, indicating that livestock management changes have been helpful. Sage Creek did not meet standards primarily due to head cuts and heavy silt loads within the system (not livestock related). Sane and Beaver Creek in the Upper Beaver Creek Pasture did not meet riparian standards. It is notable that the remaining riparian areas not meeting standards due to livestock are within one pasture of an allotment with eight pastures. To address these areas and to further improve rangeland health throughout the allotment, livestock use no longer occurs during the same season in each pasture, rather season of use within individual pastures changes from year to year. Proposed management actions within the Upper Beaver Pasture include the development of additional livestock water sources, re-locating a pasture fence which seems to be encouraging livestock concentration along Beaver Creek and altering existing exclosures so that they better withstand damage from snow loads. In addition to livestock, Sane and Beaver Creek have been impacted by weirs installed to study water flows beginning forty years ago. Currently no studies are using these weirs, and there are no current plans to remove the structures. Impacts from the weirs, primarily on Beaver Creek which is on state land, include restriction to the flood plain and a potential head cut if the weir breaks.

Sixteen Mile Grazing Allotment-

The principle drainages in the Sixteen Mile Grazing Allotment are Little Sage/Emigrant Creeks and Separation Creek, which previously were in Functioning-at-Risk condition with unknown trend. Since 2004, the implementation of pasture fencing and rotation of cattle grazing has reduced the duration of use along both of stream segments listed above, with Emigrant Creek and Separation Creek in the upper Separation Creek pasture now rated at Functioning-at-Risk condition with an upward trend. The ID team would still like to see improvement in channel width and desirable species, such as sedges and willows. Continuation of existing management, which controls the duration and season of summer cattle grazing, will result in desired improvement in stream health, as already achieved on most other stream segments in this watershed. One example of this is the restoration of willows and other vegetation along the banks of Little Sage Creek, which has expanded as can be witnessed from the photo comparisons between 2005 and 2014.

Wolfe Grazing Allotment-

The Wolfe Grazing Allotment includes a small 1,800-foot reach of Pass Creek, which flows through the northwestern most corner of the allotment. This section of Pass Creek failed the PFC evaluation for the 2004 S&G Report, as it is the only available livestock watering source within the grazing allotment. The reach had little existing riparian vegetation and large amounts of sediment deposits were being deposited into Pass Creek. Changes in management practices within the Wolfe Grazing Allotment over the last ten years have included the construction of a 1,300-foot riparian pasture fence, livestock water gap, and multiple willow plantings. The fence and water gap were both constructed in 2008, and willow cuttings were planted in 2008, 2009, and 2010. This portion of Pass Creek is influenced by up-stream irrigation activities, and stream flows through the Wolfe Grazing Allotment are intermittent for most years with the creek only flowing during the spring and fall months. During the 2013 PFC re-assessment, the reach of Pass Creek that had previously failed for the 2003 report was upgraded to Functioning-at-Risk with an upward trend. The re-assessment documented reduced impacts to existing stream banks, which

have shown extensive re-vegetation. Permanent photo points were established July 2010 along this reach of the creek in order to document reach trends within the Wolfe Grazing Allotment.

Lentic areas that were not meeting PFC in the 2004 report, and were livestock related, but are now meeting the Standard:

Dana Meadows South Grazing Allotment-

Percy Spring is one of the few perennial water sources within this allotment. In the early 1900s the spring was originally developed and piped to the Percy Corral. When riparian conditions became a priority for the BLM, this spring was identified for protection. In the late 1990s the permittee attempted to fence cattle out of the spring with electric fence, but this effort proved to be unsuccessful. Cattle tore down the fence due to the desirability of both the forage and limited water sources within the allotment. When Percy Spring was assessed for the 2004 S&G Report it was identified as failing the riparian standard. Improved grazing management, shorter durational livestock use, as well as additional water developments have resulted in Percy Spring meeting the riparian standard for the latest assessment (Standard #2, Page 4).

Platte River Grazing Allotment -

The spring at Second Cottonwood Draw was fenced with a gravity pipeline, which was connected to a tire trough, located approximately 100 yards downslope and to the east, with an overflow back to the same draw (Standard #2, Page 5). Discussions with the permittee have resulted in a total cleaning out of the pastures following the four to six week spring grazing season, with no residual grazing during the hot season in late June, July, and August. The two areas that did not meet PFC in 2003 are now meeting PFC.

Sixteen Mile Grazing Allotment-

Since 2004, along with fencing infrastructure, several springs and seeps have been developed and protected, in order to improve riparian habitats within the Sixteen Mile Grazing Allotment. These projects include Garza Spring East, Upper Separation Seep #1, Doolittle Spring #1 and #2, Lower Separation Seep #1, Rams Canyon Spring Developments, Aspen Draw Seep, Upper Harshman Draw Spring, Lower Scotty Canyon Spring, 16 Mile Spring, Separation Peak Spring #1 and #2, Tank Battery Spring, and Garza Spring Development (Standard #2, Page 8). Of these spring and seep developments, approximately half are on public lands and the other half are on deeded or state lands. Overall, the protection of water sources at these spring and seep sites has provided for improved riparian health and vigor, and improved water quality, with all sites on public land now rated in Proper Functioning Condition.

Lentic areas that are not meeting PFC, and are livestock related:

Pass Creek Ridge Grazing Allotment-

The 2004 S&G Report identified a number of failing riparian areas within the Pass Creek Ridge Grazing Allotment. The riparian health failures were attributed to impacts from season-long livestock (cattle) grazing. Changes in management practices over the last ten years have included the protection of riparian areas (i.e. livestock enclosure fences) and the development of off-site livestock water sources surrounding the following lentic riparian areas: Martinez Springs, West Danna Ridge Seep, and Hidden Springs Seep (Standard #2, Page 6). A one mile riparian pasture

fence was also constructed along County Road 400, Rattlesnake Pass Road, in order to rest a one mile reach of Rattlesnake Creek that was rated as Functioning-at-Risk with a downward trend (Standard #2, Page 7). The Rattlesnake Creek Riparian Pasture fence was constructed in the spring of 2005, and following two seasons of rest, the pasture was control burned during the spring of 2007. A control burn was implemented to reduce the encroachment of upland species (sagebrush) into the riparian flood plain and to release riparian vegetation obligates that were still growing along the creek banks. The entire reach of Rattlesnake Creek, located within the Pass Creek Grazing Allotment, also received multiple willow sprig plantings in 2005, 2006, 2007, 2008, and 2009. The 2013 riparian health re-evaluation rated all of the previously failing riparian areas as PFC, except for Martinez Springs, which is now rated asr Functioning-at-Risk with an upward trend. Existing management would be continued, which should continue improvement in riparian habitat, and should reach PFC for Martinez Springs. Established monitoring within the allotment includes: multiple riparian trend photo points along Rattlesnake Creek, trend photo points at each developed/protected seep/spring site, multiple wildlife browse transects, multiple sage-grouse lek count sites, and one Rattlesnake Creek “green-line” transect and channel cross-section.

4) Reference Conditions:

Please refer to the current and reference conditions described in the 2004 S&G Report. In addition, please note that at that time the Sage Creek Grazing Allotment failed PFC for the Upper Colorado River Watershed, as well as for the Sage Creek Watershed.

5) Synthesis and Interpretation:

In addition to adjusting duration and season of use by livestock in riparian areas, the development of additional water sources have helped to greatly improve riparian areas. Upland water developments, such as spring developments, reservoirs, and pipelines reduce the dependence of livestock on riparian habitats and result in a better distribution of the animals throughout the pasture. Specifically, spring developments protect water sources, improve water quality and flows, and provide greater flexibility in grazing rotations. In some instances, pastures with riparian habitats are either used early in the year or deferred for late summer or fall use.

Vegetation treatments, prescribed burning, and herbicide applications, also help to improve the distribution of both livestock and wildlife, while diversifying upland shrub communities and age classes. These treatments also increase water recharge into overall riparian systems, resulting in higher and longer duration of flows. In some cases, springs may begin to flow that had not prior to treatment. To date, the use of treatments within the assessment area has been fairly limited, occurring only along Bridger Pass, Little Sage Creek, Smith and Hugus Draw, and on Miller Hill.

Fencing has been used to reduce grazing duration in riparian habitats within most allotments. For the most part, there are few exclosures (besides spring/seep developments) within the Lower North Platte River basin. Managing livestock use across the watershed through the strategic placement of fences and other improvements has resulted in decreased grazing duration in

riparian communities overall without the need for exclusion, complete rest, or decreasing Animal Unit Months (AUMs).

The principle negative impacts on the condition of riparian-wetland habitats, as they relate to livestock usage, occur during long duration of use (from two months up to all summer long) and hot-season use (primarily late June through early September). Historic (long-term) livestock use in this manner has led to many of these areas being dominated by upland grass species, such as Kentucky bluegrass, redtop, and mat muhly, that are adapted to drier riparian zones, and increase because of heavier grazing. Consequently, upland forbs and grass species resistant to grazing increased along stream channels. These species may endure overgrazing but provide very little stability to riparian areas. They have shallow root systems that are not capable of stabilizing soils in riparian areas especially during periods of high flow events. With only upland species protecting stream banks, bank sloughing, bare ground, and vertical cutting were commonly observed. Platts *et al.* (1987) states that the highest rating for stream bank alteration is when less than 25 percent of the stream bank is false, broken down, or eroding. In places where BMPs for livestock grazing have been implemented, riparian herbaceous communities have responded quickly. Early successional plants, such as spike-sedge, brookgrass, and creeping potentilla respond by initially increasing along the banks as cover and then encroaching into the stream channel. Later sedges, rushes and desired grasses begin to expand and eventually dominate the riparian communities. Shortening the duration of use, frequency of use, and adjusting the timing of use have resulted in vigorous, productive and, most importantly, stable vegetative communities.

Examples of two grazing allotments where more intensive management practices have been implemented are described below:

Bolten/Pine Grove Grazing Allotment –

As described in the 2004 S&G Report, TOTCO has greatly improved livestock grazing management since 1997, when they obtained the deeded lands linked to the Bolten and Pine Grove Grazing Allotments. These allotments were eventually combined into a single allotment (Bolten/Pine Grove Grazing Allotment) to reflect these consistent management approaches. Due to TOTCO's improved management efforts they were granted a 25 percent increase in carrying capacity. This allotment continues to improve in both riparian and upland areas. Lower Sage Creek has become dominated by willows, as well as most intermittent drainages in the upper elevations (Standard #2, Page 9 and 10). Beavers have moved back into the area and now influence Lower Sage Creek all the way downstream to the Bolten Headquarters (Standard #2, Page 11). The proposed development of the CCSM Wind Energy Project has demonstrated a commitment by the proponent to maintain riparian health, as well as to minimize impacts from development on riparian areas.

Sage Creek Grazing Allotment -

Since the last assessment in 2003, TOTCO has also obtained the deeded lands linked to the Sage Creek Grazing Allotment. Livestock grazing management activities has been changed to short durational use, as well as project developments including, fencing, possible vegetation treatments, reservoir repair, and the development of 3 springs. These allotment efforts, as well as

the cooperative effort led by the SERCD, have resulted in the delisting of Sage Creek from the State of Wyoming's 303d list of impaired streams.

6) Recommendations:

There have been tremendous improvements in riparian/wetland conditions within the assessment area over the last 10 years; however, there are still some specific areas requiring attention. Allotments containing riparian/wetland habitats not meeting this standard have been described previously and include: Wolfe, Pass Creek Ridge, Platte River, Middlewood Hill, and Sixteen Mile. For riparian systems along streams and creeks (lotic ecosystems) only those portions of the streams and creeks having riparian areas on BLM administered lands were included. The non-riparian lengths and portions of streams and creeks not located on BLM administered lands were not assessed. For lentic ecosystems, the total amount of acres of water bodies and wetland features were calculated. For example, a lake with a portion of the shore line delineated as a wetland was assessed for the entire portion of the lake that could exhibit open water or wetland characteristics.

Many of the lentic and lotic ecosystems not meeting the standard have been, or are in the process of, being addressed in management plans or as range improvement projects. Continued progress in the grazing management of livestock will ensure further improvements of all riparian areas within the watershed. Although there are areas where a desired future condition has yet to be reached for woody species dominance and composition, these areas still meet the minimum standards for rangeland health. Other than the specific allotments listed above, the remainder of the allotments within this assessment area are meeting Standard #2 – Riparian/Wetland.

Specific recommendations are:

Continue to implement or manage livestock management practices through the use of BMPs. This primarily means controlling the season, duration, and distribution of livestock use to meet the desired resource objectives for riparian habitats. Specific dates and timing must be determined on a case-by-case basis. Methods to achieve this include, but are not limited to, herding, additional fencing, water developments, and vegetation treatments. Address trespass livestock problems as needed.

Continue existing projects to protect riparian habitats and provide off-site water sources for livestock.

Monitor the construction and operation of the proposed CCSM Wind Energy Project to ensure BMPs are adhered to during the life span of the project, as well as effective in maintaining improvements to the Sage Creek watershed.

Identify and correct impacts from improved roads, including the effects of water flows and erosion on riparian systems. Two-tracks that are negatively impacting riparian areas should be identified and addressed.

Plantings may be undertaken as needed within the watershed. Species diversity and vertical structure of wetland and riparian communities can be easily enhanced through vegetative plantings. When just a few individuals are planted, they establish exceedingly well.

Continue to expand the beneficial practices that improve riparian conditions and maximize public involvement and education regarding resource issues.

STANDARD 3 – UPLANDS

Upland vegetation on each ecological site consists of plant communities appropriate to the site, which are resilient, diverse, and able to recover from natural and human disturbance.

1) Characterization:

The descriptions of plant communities, common species, and locations, are still accurate as they were portrayed in the 2004 S&G Report, with one small exception, mountain big sagebrush was described as ranging in height from 10 to 30 inches, with canopy cover reaching 50 to 60 percent. Through the use of black-lighting much of the taller sagebrush growing on side-slopes and mid-to-higher elevations, which was believed to be basin big sagebrush, is actually mountain big sagebrush. Therefore, heights of this sub-species may reach up to six feet with a canopy cover that can reach up to 80 percent. This method of distinguishing between sub-species based on their luminescence has also defined the elevation transition from Wyoming big sagebrush to mountain big sagebrush as occurring between 6,800 and 7,200 feet.

2) Issues and Key Questions:

Although much of the discussion in the 2004 S&G Report is still valid and should be reviewed, some factors have changed over the past 10 years that have led to new and valid questions. For livestock grazing, the need to manage for new species of concern, such as the pygmy rabbit raises the question as to what types of livestock grazing BMPs would adequately provide habitat for the pygmy rabbit? In terms of species of heightened concern, such as Greater Sage-Grouse, what types of livestock management would provide for the expansion of large perennial bunchgrasses, for example Indian ricegrass, bottlebrush squirreltail, and bluebunch wheatgrass, without strictly increasing the little bluegrass and thickspike wheatgrass, which is already there, in order to improve the visual security of nesting habitats for Greater Sage-Grouse? In terms of the recent droughts in 2006 and 2012, how can the BLM and permittees improve their planning actions and/or adapting to these conditions in order to improve both resources and operational management activities during and after these climatic events?

In terms of vegetation treatments, the creation of core area habitat for Greater Sage-Grouse has had the side effect of reducing the potential to implement prescribed burns as a treatment method to improve aspen health and to address shrub decadence in mountain big sagebrush and mountain shrub habitats, which are important for mule deer. The question then arises as to how do biologists and range managers work within the guidelines of this policy while still being able to use prescribed burns in the ecosystem? Due to the Greater Sage-Grouse issue, and the slow

recovery time of mountain big sagebrush at lower elevations, the BLM has increased the use of tebuthiuron to “thin” big sagebrush stands. Will the use of this chemical have the desired effects and is it an adequate replacement to prescribed burns?

In terms of wildlife, the increase of the Baggs elk herd from 2,000 in 1980 to approximately 10,000 today, raises the question as to what is the proper size of the elk herd? How many elk will the forage support reliably, while ensuring livestock and other wildlife have adequate forage? Establishing a reasonable number of elk would dissuade elk from attempting to cross Interstate 80 and/or entering the City of Rawlins. In addition, with adequate forage elk would be less likely to forage on lichen during the rough winters and dying as a result.

Mule deer are a species of concern for being below population objectives and having habitat health concerns. What habitat management objectives or other steps, such as reducing competition with elk, need to be implemented in order to improve mule deer populations and their habitats?

In terms of energy developments, particularly the proposed CCSM Wind Energy Project, what will be the reclamation strategy for shale soils and other sensitive environments regarding plant growth and recovery after disturbances? In this area, as well as in Greater Sage-Grouse core areas, where native forb seed sources are still completely inadequate, should the BLM relax its guidelines as to the use of native plants and include desirable legumes in the reclamation seed mixtures that would benefit any sensitive species? In low reclamation soils, what level of reclamation will be acceptable if restoration of the native plant community is not achievable?

3) Current Conditions:

The one trend observed at almost all monitoring transects across the watershed shows the inverse of the bare ground trend described under Standard One, is that litter and plant cover have increased substantially over the past 20 to 40 years. And more recent trend transects show levels of litter and plant cover that compare with current levels observed in allotments with long-term trend transects.

On a more specific level, the Platte River Grazing Allotment is an historic AMP allotment with fairly consistent long-term livestock usage, which has been intensively managed for a longer time period than most other allotments. Vegetation trends are based on pace frequency transects, which were originally established in the late 1970s and re-read in 2013. The eight transects are located in a 10 to 14-inch precipitation zone, in a mixture of sandy to loamy soils, which tend to be on the shallow acting side (Standard #3, Page 1). The latter comment is based on the short stature of sagebrush and the species composition, which includes bluebunch wheatgrass, threadleaf sedge, black sagebrush, and mat forbs, such as goldenweed and Hooker’ sandwort. Litter and plant cover have increased from an average of 63 percent to 86 percent. Species composition consists mostly of native species, and in terms of change over time, has been relatively stable and with a mixture of results. For instance, trends in sagebrush cover were down on two sites, up on two sites, and with small changes on the other four sites. The major effects that were personally observed have been the die-back after drought years and on average, moderate browsing by wildlife. Principle grass species include bluebunch and rhizomatous

wheatgrass, needle-and-thread, threadleaf sedge, little bluegrass, prairie Junegrass, and Indian ricegrass. All species have shown small changes, both upward and downward, but few substantial changes in composition.

While most allotments in this watershed do not have any long-term trend data, the Pine Grove/Bolten Grazing Allotment has extensive monitoring. There were several 3 by 3 monitoring sites established in the 1960s, as well as a fairly significant upland and riparian monitoring effort implemented in the early 1990s. More recently, with the proposed development of the CCSM wind project, 81 transects have been established in order to characterize ecological sites within the proposed areas, as well as over one-thousand photo points. This monitoring effort, along with historic data, should establish a baseline for the proposed wind project. Historic monitoring information shows litter and perennial plant cover are up substantially, even in challenging ecological sites, such as saline dominated sites. Improved plant health and vigor are also noticeable in these saline sites (Standard #3, Page 2). Historic monitoring in these saline sites averaged less than 5% grasses, very limited forbs, and 8% saltbush with very high bare ground values. Within a timeframe of twelve years at the Bridge monitoring site bare ground improved from 68 percent to 49 percent. Plant spacing also improved significantly over this timeframe as well (from 3.2 inches to 2.1 inches distance to nearest perennial plant). In another monitoring location dominated by upland sedges, bare ground was reduced from 60 percent to less than 30 percent and continues to improve. Forbs continue to be very limited in most saline sites, while grasses and shrubs (primarily Gardner's saltbush) continue to increase.

Winter foraging of shrubs by antelope and mule deer is not as severe in this watershed as compared to other areas, such as Baggs and Muddy Creek in the Upper Colorado River Watershed or the Baggot Rocks area in the upper North Platte River Watershed. There are big sagebrush stands south of Interstate 80, and on both sides of the Saratoga Highway, that receive moderate to heavy browsing, but there are not a lot of dead sagebrush plants in these areas as compared to other watersheds. Most of the big sagebrush receives light to moderate browsing and appears to be in good condition. Stands of mountain mahogany along the North Platte River and bitterbrush on the slopes of Pennock Mountain also receive moderate levels of browsing and appear to have good vigor and forage production.

The effects of drought were primarily observed in spot locations, where die-back was observed in black sagebrush and mat forbs, such as Hookers' sandwort and goldenweed. In the case of black sagebrush, it occurs on more shallow, wind-swept soils and appeared much more affected by the 2012 drought, as compared to big sagebrush stands in adjacent swales, with deeper soils and snow accumulation. In terms of diseases, aspen stands in Upper Sage Creek Basin and Jack Creek appear much healthier than what was reported ten years ago. They seem to have mostly recovered from leaf blight, which was observed in the 1980s and 1990s, with most dead trees having already fallen or ready to do so, and good regeneration, which is 10 to 20 feet tall. Evidence of bleeding rust is mostly absent, and browse use of new sprouts is on the light side.

Limber pine within Sage Creek Basin was affected by beetle kill and showed a corresponding die-off similar to what has been observed in the Medicine Bow National Forest (Standard #3, Page 3). Although all trees were not killed, many that were encroaching on native sagebrush communities were killed by the beetles.

Vegetation treatments within the watershed over the past have totaled 14,913 acres, divided into prescribed fires (4,380 acres), tebuthiuron applications (10,483 acres), and mechanical cutting of aspen (less than 50 acres). Treatments have primarily occurred in mountain big sagebrush communities, and to a lesser extent in mountain shrub plant communities and aspen woodlands. Some results of past treatments of mountain big sagebrush communities, are as follows.

The 2004 Pennock Mountain prescribed fire area has recovered to 21 percent shrub cover for one transect, is dominated by 17 percent bitterbrush, 3 percent mountain big sagebrush, and 1 percent snowberry. However, the percentage of shrubs and diversity of the community are very close to pre-treatment quantities, 57 percent as compared to 53 percent, with slightly more big sagebrush than bitterbrush, and with more young than mature plants. Looking at the changes in herbaceous species, total plant hits in aerial cover are now 124 with 39 percent multiple (vertical structure) hits, as compared to 126 total and 33 percent multiple hits prior to the prescribed fire (Standard #3, Page 4 and 5). Idaho fescue is still the dominant bunch grass; however, it declined from 27 percent down to 20 percent, while bluebunch wheatgrass, little bluegrass, and needle grasses increased.

The 2005 Middlewood Hill prescribed fire area has only recovered with a 2 percent shrub cover (5 transects averaged), and is dominated by mountain big sagebrush with a little snowberry. The amount of all shrub types as observed in belt transects is still much lower than before the treatment, 21 percent as compared to 46 percent, and diversity has shown little change with mountain big sagebrush being the dominant shrub, 88 percent now versus 91 percent before, along with a small amount of snowberry, Douglas' rabbitbrush, and black sagebrush. Changes in herbaceous cover have been as follows: total plant hits in aerial cover are now at 99 with 25 percent multiple hits as compared to 178 total plant hits and 57 percent multiple hits before the prescribed fire. Species composition changed from 46 percent to 74 percent grasses and from 17 percent to 24 percent forbs. However, Idaho fescue, which was the dominant grass species pre-treatment, decreased from 47 to 12 hits on average, while there were increases in rhizomatous wheatgrass (11 to 32 hits) and bluegrass (16 to 22 hits). Dominant forbs, such as lupine and buckwheat also decreased, although total forb diversity increased.

The Rattlesnake Creek prescribed fire was conducted in the spring of 2007, and affected approximately 50 acres of basin big sagebrush in the floodplains adjacent to the creek (Standard #3, Page 6). A good mosaic of treated versus untreated big sagebrush habitat was achieved. The site is now dominated by herbaceous species, primarily wheatgrass and bluegrass, along with lesser amounts of basin wildrye, Baltic rush, aster, locoweed, yarrow, dandelion, and thistle. Basin big sagebrush is slowly returning, which is normal for this species and the site on which it occurs.

There have not been any large scale wildfires within the assessment area. However, in the Chokecherry area of the Bolten/Pine Grove Grazing Allotment, there was a small wildfire. The Iron Draw Fire, which burned 163 acres during mid-August of 2010. Native vegetation response to the fire was immediate with basin wild rye, rabbitbrush, lupine, and native grasses re-vegetating the area by 2011 (Standard #3, Page 7). Since 2011, bare ground has been reduced and litter has increased, as well as native plant density.

Tebuthiuron treatments have resulted in increased herbaceous cover and forage production. For the Miller Hill project (2002), a comparison of grass and forb production in 2009 showed a difference of 855 pounds per acre on untreated sites versus 2,142 pounds per acre on treated sites. In the Chokecherry area there were almost 7,000 acres treated with tebuthiuron in the early 2000s (Standard 3, page 8). Herbaceous vegetative response within the Chokecherry area has been similar to Miller Hill. While no production studies were done to quantify herbaceous production, transects documented 41-44 percent grasses when compared to untreated areas which averaged 18-25 percent grasses.

4) Reference Conditions:

Please refer to the current conditions discussed in the 2004 S&G Report.

5) Synthesis and Interpretation:

The general context of discussion from the 2004 S&G Report is still mostly valid and will not be repeated here. Grazing and browsing by livestock and wildlife continue to have the most direct effects on vegetation; however, droughts, vegetation treatments, and recreational use are also significant factors. Monitoring for livestock use and associated trends are positive, there are still many questions relating to the rate of change, understanding how to affect changes in desirable bunchgrasses, and gaining more knowledge of site characteristics and how they affect changes in species composition. Soil mapping for much of Carbon County is nearly completed, but revamping and expansion of ecological site descriptions is just beginning and will take several years to complete. With the onset of the proposed CCSM Wind Energy Project, NRCS ecological sites are being fine-tuned and unique sites developed in order to adequately address these areas. Additional data is also needed to support the management of the elk and mule deer herds, which have changed in opposite directions, the first being well above population objectives and the second being below them. A factor affecting all of the monitoring data being collected, is the need to incorporate the effects of climate changes into the interpretations of both the data collected and land management prescriptions. In general, vegetation trends are good, from the changes being observed due to livestock management, to vegetation treatments that diversify shrublands, to maintaining or enhancing habitats for wildlife and fisheries.

Of all the resource users, livestock grazing continues to have the greatest impacts upon vegetation; however, much has been changed with regards to grazing practices and range improvements to enhance vegetation vigor and composition. This has primarily occurred by adjusting the duration and season of use by livestock to provide time during each growing season for plant growth, root expansion, and energy replenishment. Levels of livestock grazing use during the assessment period have fluctuated between 46 percent and 75 percent of the total permitted use levels of approximately 45,875 AUMs (see Figure 4). Permittees, in general, have become more conservative in their stocking rates, particularly in response to drought years and the need to provide for plant vigor and recovery, and to better understand the value of leaving forage and litter for soil improvements. Over time there has also been a reduction in the smaller sized ranch operations, probably relating to the economics as to what amount of livestock it takes for a ranching family to survive. As a result more of the operations currently in business consist

of medium to large sized ranches. There is still a lot of work and refining of current management practices that needs to be completed in the future, but the 2013-14 monitoring showed vast improvements as compared to 20 to 40 years ago. Whether analyzing reductions in the amount of bare ground or the inverse of litter and plant cover, the numbers have improved and are now under 30 percent for bare ground in sagebrush communities and around 50 percent in saltbush steppe communities. These numbers are likely to decrease with long-term monitoring being needed in order to establish a natural range that incorporates climate effects. Since the majority of grazing is done by cattle, trends for desired bunchgrasses are important to follow. Evaluation of sagebrush sites showed desirable bunchgrasses (primarily needle-and-thread grass, Indian ricegrass, bottlebrush squirreltail, bluebunch wheatgrass) increasing in many areas, and thickspike/western wheatgrass did decline on some sites. But in other locations, wheatgrass increased, as did little bluegrass in many areas. Is it possible that little bluegrass is more prolific than other grasses in response to wet years, or will young little bluegrass give way to the bigger grasses? Most livestock producers are working with the BLM and following good rotations, so at this point, the most important task for the RFO to complete is accurate monitoring and feedback to these permittees, which will allow them to make small corrections and let them know what is happening. This must also incorporate the needs of sensitive species, such as the Greater Sage-Grouse or fisheries in riparian habitats in order to further refine management changes already being implemented.

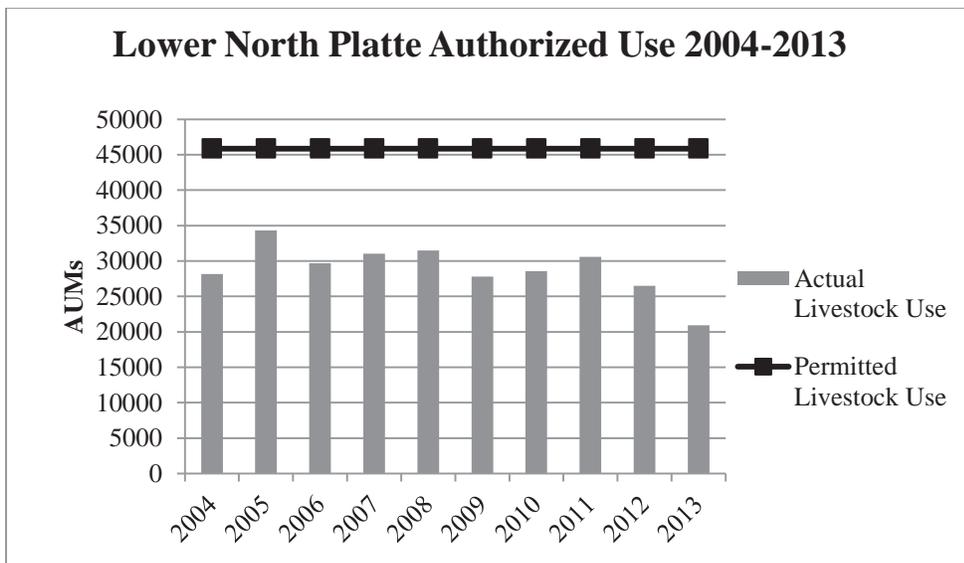


Figure 4: Livestock Use in the Lower North Platte Watershed Allotments

Wildlife management relates to vegetation directly in terms of forage and habitat use by big game, which in this area consists of elk, mule deer, and antelope, and indirectly in terms of management implications upon vegetation, such as the Greater Sage-Grouse core area habitat policy. The principle concerns raised in the 2004 S&G Report and still present currently are the maturity, lack of diversity, and decadence in the dominant big sagebrush plant communities of the North Platte River Valley. In some areas, droughts may help by increasing the mortality rate of shrubs and providing an opening for new plants to establish themselves in. During recent monitoring for this assessment, many new young plants were observed following the wet years of 2010 and 2011, including sagebrush, grasses, and forbs. Browse use appears highest in the

antelope winter range on both sides of Interstate 80 in the Walcott area, adjacent to Pass Creek, and north of Saratoga. Although these are areas we will continue to monitor, there does not appear to be the extremely high amount of use that can be observed in other watersheds, nor are there large amounts of dead sagebrush, so trends for these plant communities appear to be stable. Mountain mahogany stands along the North Platte River and bitterbrush in the Pennock Mountain WHMA also appear stable, with moderate levels of browsing. However, in areas with high browse usage and rotational livestock management practices that are promoting more herbaceous plant vigor and cover, can the current levels of sagebrush in this portion of the winter range be maintained? These and other questions, along with the need for additional monitoring data, will be important to the Platte River Partnership, a group established by the WGFD to address concerns over mule deer, of which BLM is a member. Sheep type fences, along with other barriers to big game movements, such as highways, may also be affecting browsing levels of vegetation, particularly for antelope. This issue is just beginning to be addressed in the North Platte River Valley, but may be an important factor in some areas, for maintaining or improving vegetation conditions and trends of big sagebrush plant communities.

Vegetation treatments have not been as much a factor in the North Platte River watershed compared to other areas, due to more private lands and agricultural development, lower composition of dense shrub communities, and greater support of forestry use on Elk Mountain and other smaller timber stands adjacent to the National Forest. The newly funded BLM and State of Wyoming forestry positions, along with the re-opening of the sawmill at Saratoga, are likely to restore forestry practices as an active vegetation management tool, which has not been utilized during the past 10 to 20 years. Although the emphasis of these positions is to remove commercial timber killed by the recent mountain pine beetle epidemic, there are also provisions for improving forest health, including aspen woodlands, which often occur adjacent to conifer forests or as an early successional component of them. This should help to improve aspen health, particularly if it becomes more difficult to use prescribed fires as a management tool. New standards for mechanical treatments are starting to develop similar, and occasionally better, results than with prescribed fires.

The overall health of aspen stands appear much improved, as compared to the previous assessment when there were still the effects of leaf blight and bleeding rust present. The newly regenerated aspen are much healthier, as can be observed through a comparison of photographs taken in 1984 and 2014 from the Middlewood Hill area, with the height of young trees showing that neither livestock grazing nor elk browsing is having any significant effects.

Although chemical treatments are also not common in this watershed, the conversion from chemicals that killed all of the sagebrush to one that kills varying amounts of sagebrush provides more options to the BLM when managing shrub plant communities. The use of tebuthiuron has seen more use recently due to concerns with Greater Sage-Grouse habitat and the ability to “thin” big sagebrush rather than kill a large amount of it. Tebuthiuron has also proven to be more beneficial in terms of easier application and a wider “window” for treatment than prescribed burning, and annual species like alyssum do not increase as much in low elevation mountain big sagebrush treatments. Treatments in dense mountain big sagebrush have occurred in limited areas on Chokecherry and some limited basin big sagebrush areas within this watershed. Recovery to pre-treatment levels has been averaging about 30 years at higher elevations with

deeper soils as opposed to 50 to 60 years at lower elevations with lower precipitation and more moderate soil depths.

Only a few prescribed fires have been implemented, with varying results in shrub and herbaceous recovery. Spring burns recover faster and have a reduced loss of desirable plant species, such as Idaho fescue. There has also been minimal increase in cheatgrass, with good native perennial plant species recovering at all burn locations. These projects are all about ten years old, and show good herbaceous plant recovery, in terms of plant cover, diversity, and vertical structure, although the fall prescribed burn at Middlewood Hill has been slower to recover.

Greater Sage-Grouse research shows nesting hens seek out more dense big sagebrush than previously reported, which, between birds moving to higher elevations and sagebrush canopy and height selection, indicates most hens are nesting in mountain big sagebrush plant communities. This along with other factors will need to be considered in planning future vegetation treatments, along with following any new policies regarding Greater Sage-Grouse. However, the tall, dense mountain big sagebrush found in other watersheds is not very common in the Platte River Valley, as it is primarily found adjacent to the National Forest at high elevations. This raises the question, are Greater Sage-Grouse nesting under other vegetation cover types, and if so, under what species and locations in the North Platte River watershed? The current and potential future status of this species will require more intensive monitoring of livestock grazing to ensure residual and yearly growth are adequate for nesting habitat used by Greater Sage-Grouse.

As stated earlier, the proposed CCSM Wind Energy Project would be the largest wind project in terms of power generation in the United States, and would eventually consist of up to 1,000 large turbines located in the checkerboard land ownership pattern south of Rawlins. Whether development consists of a large wind project, oil or natural gas development or even coal mining reclamation of disturbed areas becomes a concern.

From a vegetation perspective, there are a number of questions which can only be answered as development occurs. For instance, in the shale, saltbush, and cushion plant sites that are common in this watershed, how successful will reclamation be, what species can be re-established, and under what timeframes? Since most forbs are not commercially available for reseeding, will reclaimed sites be mostly comprised of grasses and shrubs, with minimal forb components? Will invasive plant species become more of an issue? What role will changes in climate have in how reclamation is completed or how successful it is?

Off-road travel impacts to vegetation are primarily based on personal observations of increased numbers of two-track roads, multiple roads adjacent to each other on steep slopes, and riparian meadows or stream banks that have been degraded as a result of people driving in areas they should not be driving in. These observations are increasing in some areas, probably as a result of more people using off-highway vehicles when recreating or travelling through these areas. In areas with steeper slopes or private lands that potentially prohibit access into these areas, there appear to be fewer of these observations. The WGFD "Walk In" program works with private landowners and has been very helpful in promoting people walking into areas and reducing

vehicle impacts. The other factor which may be helping in reducing off-road vehicle impacts to vegetation has been the expanded use of utility terrain vehicles (UTVs) that appear to have a less impacts than four-wheel drive pickups, four-wheelers, or motorcycles. The RFO is scheduled to develop and implement a travel management plan that should help address current problem areas, but a specific timeframe has not been established. People using public lands will need to be supportive of a travel management plan for it to be successful, and it will take a lot of time, public meetings, education, signage, and enforcement in order to implement such a plan. For two-track roads that will be kept open, there is a great need for water-barring to reduce erosion, as well as reclamation costs for roads that are eventually closed. As more people choose to recreate on BLM-administered public lands, this issue may come to dwarf all the other issues discussed above.

6) Recommendations:

Due to the diversity, vigor, productivity, high native species composition, current trends documented or observed in plant communities, current livestock management, current wildlife populations and wild horse numbers, and management responsibilities shared and demonstrated by the various agencies, industry, and agricultural businesses in this watershed, it is determined that the upland vegetation in the Lower North Platte River Watershed is meeting Standard #3 – Upland Plant Health. The following recommendations would expand upon the success already achieved and help to meet desired future resource conditions.

Continue to manage livestock grazing through the use of BMPs. This primarily relates to manipulating the season, duration, and distribution of livestock use to meet desired resource objectives for riparian/wetland habitats. Specific dates and timing of use must be determined on a case-by-case basis for the plant communities involved, method(s) of treatment, specific plant community objectives, or other pertinent factors.

Continue to implement vegetation treatments in order to restore plant communities with diverse species, age classes, and cover types, with an emphasis on spring prescribed fires, mosaic patterns, and smaller treatments, particularly in Greater Sage-Grouse core habitat. Explore more use of mechanical cuttings, summarize effects of past treatments and what was learned, and work more closely with the High Desert District (HDD) and WGFD to continue to use prescribed fires to improve aspen health as needed. Continue to monitor aspen health as it relates to past impacts from leaf blight and bleeding rust, and potential future impacts from climate changes. Climate changes may also affect other plant species and should be incorporated into all monitoring when possible. Due to the sensitivity of projects in Greater Sage-Grouse core habitat, it is extremely important to coordinate vegetation treatments between the BLM, SERCD, and WGFD in these areas. Ensure that adequate monitoring of the long-term effects of vegetation treatments is occurring and information learned is being disseminated to all parties.

Monitor the construction and operation of the proposed CCSM Wind Project to ensure BMPs are adhered to during the life span of the project, as well as effective in maintaining improvements to the Sage Creek watershed.

Continue to work closely with WGFD and SERCD to monitor effects of wildlife on vegetation, response of vegetation to treatments and changes in wildlife populations or management practices, and to promote healthy vegetation in crucial winter ranges and across the entire watershed.

Continue to identify and address impacts from two-track roads and off-road vehicle use, which affects water flows and/or soil erosion. Incorporate watershed and soils management into any current and future RFO Travel Management Plans.

Expand education to address the public's role in public land management, particularly regarding impacts from roads and off-highway vehicular activities. Work closely with other partners in this area, including the WGFD in regards to promoting a seasonal closure for antler collecting, and the potential long-term benefits to upland vegetation health.

STANDARD 4 – Wildlife/Threatened and Endangered Species/Fisheries Habitat and Weeds

Rangelands are capable of sustaining viable populations and a diversity of native plant and animal species appropriate to the habitat. Habitats that support or could support threatened species, endangered species, species of special concern, or sensitive species will be maintained or enhanced.

Wildlife/Threatened and Endangered Species

1) Characterization

The plant communities/habitat types that occur within the Lower Platte Watershed have been described under the Characterization section of Standard 2 (Wetland/Riparian Health) and Standard 3 (Upland Plant Health). These habitat types vary greatly in their ability to support wildlife, depending on species composition, age classes, single-species dominance, horizontal and vertical structure, type abundance, mosaic mix with other habitats, and proximity to features, such as migration corridors and winter concentration areas. Over 374 species of wildlife, including birds, mammals, reptiles, and amphibians, are known or expected to occur within the Rawlins Field Office (RFO). In general, aquatic habitats support the greatest diversity of species (up to 165) and are the least common types of habitat, comprising about one percent of the landscape. Aspen woodlands are next in terms of supporting the greatest diversity of species, followed by big sagebrush, conifer, mountain shrub, and juniper woodland habitat types. Big sagebrush and sagebrush/mixed grass are the most common plant communities in this watershed. Habitats with the lowest diversity of plants, cover, and structure, such as sand dunes, badlands, and rock outcroppings, correspondingly support the lowest number of wildlife species (USDI-BLM, 2004).

The RFO Resource Management Plan (RMP) management objectives for wildlife species are to provide habitat quality (food, cover, space, and water) adequate to support a natural diversity of wildlife and fisheries, including big game, upland game, waterfowl, non-game species, game

fish, sensitive, threatened, and endangered species, species of special management interest in Wyoming, as well as to assist in meeting goals of recovery plans. The RMP has an objective to maintain or improve vegetation conditions and/or avoid long-term disturbances in high priority standard habitat sites and fisheries areas. In addition, there is an objective to also maintain or improve overall ecological quality, thus providing good wildlife habitat, within the constraints of multiple-use management in moderate and low priority standard habitat sites (USDI-BLM 2008). Although the RMP gives direction to manage the higher priority habitats first, there are circumstances when managing moderate and low priority habitats will take priority. Management of all three of these habitat types in order to obtain a diversity of vegetative species, cover, age classes, and structure is essential to maintain healthy wildlife populations and their associated habitat types.

The most commonly observed wildlife is big game, particularly antelope and mule deer in open areas, and elk in shrub and woodland habitat. Raptors are also very abundant and include golden and bald eagles; ferruginous, red-tailed, and Swainson's hawks; burrowing owls; and other hawks, harriers, and owls. Commonly observed mammals are coyotes, red foxes, badgers, cottontail and jackrabbits, prairie dogs, ground squirrels, voles, and mice. Shorebirds and waterfowl include great-blue herons, avocets, stilts, phalaropes, sandpipers, coots, Canada geese, white pelicans, and other various ducks (primarily dabblers). Songbirds vary by habitat type, with sparrows, meadowlarks, and horned larks most often seen in sagebrush and saltbush areas, and warblers, swallows, and flycatcher species observed in riparian habitats. Greater Sage-Grouse are an important species of interest, due to concerns with the species over its entire range. Horned lizards and prairie rattlesnakes are the most common reptiles, while tiger salamanders and northern leopard frogs are the most abundant amphibian species.

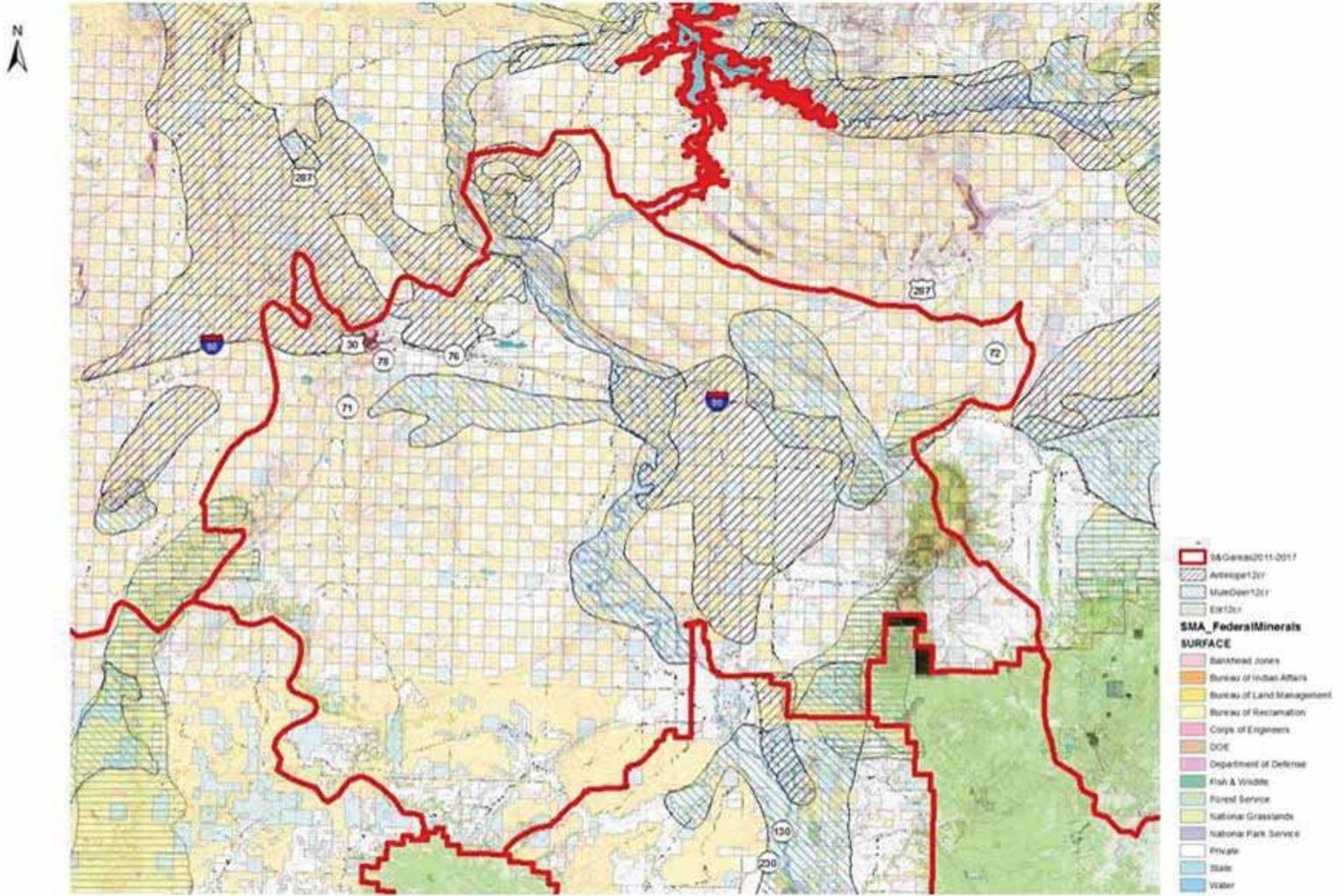
Species of Interest or Concern:

There are numerous species of special interest and or concern that inhabit the watershed area, or use portions of the watershed for migration, transitional zones, and/or other corridors. There are three antelope herds, two elk herds, and one mule deer herds – all managed by the Wyoming Game and Fish Department (WGFD) - that are primarily located within this watershed. In addition, other species of special interest and or concern within this watershed include threatened, endangered, candidate and proposed species (T&E species), BLM-State Sensitive Species, and raptors. Accounts of these are described in the following paragraphs. Crucial winter range for big game species is shown on Map #6.

Antelope

Pronghorn antelope (antelope) are the most visible and numerous type of big game species in the Lower North Platte Watershed. Antelope rely heavily on Wyoming big sagebrush habitat, in addition to other 'open' communities, such as saltbush steppe, greasewood, and short grasslands. During the winter, antelope diets consist primarily of Wyoming big sagebrush. However, spring and summer diets include higher amounts of forbs, grasses, and other shrubs. There are three antelope herd units located primarily within the watershed area. These herd unit areas are

Map 6 Crucial Winter Ranges



identified as the: (1) Elk Mountain Herd Unit; (2) Iron Springs Herd Unit; and (3) Medicine Bow Herd Unit. Refer to the 2004 S&G Report for a description of the locations of these antelope herd units and the unique wildlife attributes that each area may contain.

Mule Deer

Mule deer are the second most abundant big game species in this watershed. However, mule deer are not evenly distributed across the landscape. They prefer areas with cover and higher precipitation, and forbs, which tend to occur close to the mountains, rims, and along stream drainages and lakes. Mule deer select forbs and grasses when they are green and more nutritious, shifting primarily to shrubs in the fall and winter. Compared to antelope, mule deer prefer a mixture of sagebrush and other shrubs during the winter. There is one mule deer herd unit located primarily within the watershed area. This herd unit area is identified as the Platte Valley Herd Unit. Refer to the 2004 S&G Report for a description of this mule deer herd unit and its unique wildlife attributes.

Elk

Elk are the third most common of the big game wildlife species in this watershed. Elk normally prefer staying close to cover, so are most often associated with conifer and aspen woodlands or tall shrublands. These are found on and near the Medicine Bow and Sierra Madre Mountains. They prefer grasses and have a high diet overlap with cattle, but will include more forbs in their spring diets and more shrubs in their winter diets. There are two elk herd units located primarily within the watershed area. These herd unit areas are identified as the: (1) Sierra Madre Herd Unit; and (2) Snowy Range Herd Unit. Refer to the 2004 S&G Report for a description of the locations of these elk herd units and the unique wildlife attributes that each area may contain.

Raptors

There are several raptor species or their nests that have been observed within the watershed area. Raptors that have known nests within the area include bald eagles, ferruginous hawks, golden eagles, Swainson's hawks, northern goshawks, great-horned owls, Cooper's hawks, prairie falcons, red-tailed hawks, burrowing owls, and kestrels. Although nests have not been identified for the northern harrier, long-eared owl, short-eared owl, and sharp-shinned hawk, these species have the potential to nest within the watershed. The bald eagle, ferruginous hawk, burrowing owl, and northern goshawk have been identified as BLM-State Sensitive Species USDI, BLM 2010). Refer to the 2004 S&G Report for a description of these raptor species and the unique wildlife habitats within which each species breeds and nests.

Threatened, Endangered, Proposed, and Candidate Species:

There are four threatened, endangered, proposed, and candidate species (T&E species) that occur, or have the potential to occur, within the watershed, and six species – the North Platte River species – that do not physically occur within this watershed, but may be affected by

actions that occur within the watershed. These include the black-footed ferret, Canada lynx, North Platte River species (least tern, pallid sturgeon, piping plover, whooping crane, Eskimo curlew, and western prairie fringed orchid), Ute ladies' tresses, and Greater Sage-Grouse. T&E species that are located within the RFO, but that do not occur, or do not have the potential to occur and/or are not affected by actions within this watershed include the blowout penstemon, Colorado butterfly plant, Colorado River species (bonytail chub, Colorado pike-minnow, humpback chub, and razorback sucker), Preble's meadow jumping mouse, Wyoming toad, and yellow-billed cuckoo.

Black-footed Ferret

The black-footed ferret is considered endangered and is the rarest and most endangered mammal in North America and receives full protection under the Endangered Species Act of 1973 (ESA). The USFWS has designated the Black-footed Ferret as an experimental non-essential population throughout Wyoming. This species lives in prairie dog towns and relies on prairie dogs for both food and shelter. The original range of the black-footed ferret corresponded closely with the prairie dog, extending over the Great Plains area from southern Canada to the west-Texas plains and from east of the 100th Meridian to Utah and Arizona (USDI-BLM 2002).

Canada Lynx

The current status of the Canada lynx is threatened. Lynx occur in the boreal, sub-boreal, and western montane-forests of North America. Snowshoe hares are their primary food source, comprising 35 to 97 percent of their diet throughout their range. Other prey species include red squirrels, ground squirrels, mice, voles, porcupines, beavers, and ungulates as carrion or occasionally as prey. Lynx prefer to move through continuous forests and use ridges, saddles, and riparian areas to move from preferred habitats. Lynx have been known to cross large rivers and lakes and have been documented in a variety of habitats, such as shrub-steppe, juniper, and ponderosa pine (USDI-FWS, 1999a).

Greater Sage-Grouse

Greater Sage-Grouse (grouse), a candidate species, are common inhabitants within this watershed. Grouse populations have exhibited long-term declines throughout North America, with a 33% decline over the past 30 to 40 years. No one causal factor has been identified for these declines. Wyoming supports the largest populations of grouse, more than all the other states combined; however, there are population declines occurring in Wyoming as well. Grouse are a sagebrush obligate species and each aspect of their life cycle requires slightly different elements within the sagebrush communities. Grass height and cover play an important role in the nesting success of grouse. Early brood rearing habitats consist of relatively open stands of sagebrush or narrow, shrub-free stringers of meadows in draws or other areas with somewhat more soil moisture. Sagebrush, sometimes dense, often has invaded the latter habitats, thus making them less desirable or unsuited for brood habitat (Klebenow, D.A. 1972). During the summer months, grouse move to more mesic sites seeking succulent forbs. Movements to winter ranges are slow and meandering and occur from late August to December. During the winter months, grouse feed almost exclusively on sagebrush leaves (USDI-BLM 2002).

Some winter habitat has been identified for parts of this watershed. Specific project related areas were flown for winter habitat within this watershed; therefore, there is always the possibility that additional winter habitat areas for Greater Sage-Grouse could be identified in other areas of the watershed unit. Winter habitat must be assessed during very specific time periods and under specific winter conditions.

North Platte River Species: Least Tern, Pallid Sturgeon, Piping Plover, Whooping Crane, Eskimo Curlew, and Western Prairie Fringed Orchid

The North Platte River species include the endangered Eskimo curlew, interior least tern, pallid sturgeon, whooping crane; and the threatened piping plover and Western prairie fringed orchid. These species are downstream residents of the Platte River, and the whooping crane is a migrant along the central Platte River in Nebraska. The bald eagle is also a downstream winter resident of the Platte River (FWS March 2004).

Ute Ladies' Tresses

Ute ladies' tresses are considered a threatened species under the ESA of 1973. This plant is a perennial, terrestrial orchid, which blooms from late July through August; however, depending on location and climatic conditions, orchids may bloom in early July or still be in flower as late as early October. This orchid is endemic to moist soils in mesic or wet meadows near springs, lakes, seeps, and riparian areas within the 100-year flood plain of perennial streams ranging from 4,300-7,000 feet in elevation. It colonizes early successional riparian habitats, such as point bars, sand bars, and low lying gravelly, sandy, or cobbly edges, persisting in those areas where the hydrology provides continual dampness in the root zone through the growing season (USDI-BLM 2002).

BLM State Sensitive Species:

Many wildlife and plant species are experiencing population declines. The BLM developed a sensitive species list to better manage species and their habitats (USDI-BLM, 2010). There are 24 BLM-state sensitive species that have the potential to occur within this watershed. These species include six mammals, fourteen birds, and four plants. The BLM state sensitive fish, reptiles, and amphibians that may occur within this watershed are discussed in the Fisheries section. The BLM state sensitive mammals that have the potential to occur in this watershed, or that may migrate and/or travel through the watershed area include the long-eared myotis, fringed myotis, Townsend's big-eared bat, white-tailed prairie dog, Wyoming pocket gopher, and swift fox. The BLM state sensitive birds that have the potential to use this area include the white-faced ibis, trumpeter swan, northern goshawk, bald eagle, ferruginous hawk, peregrine falcon, long-billed curlew, burrowing owl, mountain plover, sage thrasher, loggerhead shrike, Brewer's sparrow, sage sparrow, and Baird's sparrow. The BLM state sensitive plants that may occur in this watershed include the Nelson's milkvetch, cedar rim thistle, Gibbens' beardtongue, and persistent sepal yellowcress. A description of the habitat type that each species is associated with is shown in Table 3.

Table 3: BLM State Sensitive Species That May Occur In The Watershed

<i>Mammals</i>		
Common Name	Scientific Name	Habitat Types
Long-eared myotis	<i>Myotis evotis</i>	Conifer and deciduous forests, caves and mines
Fringed myotis	<i>Myotis thysanodes</i>	Conifer forest, woodland, caves and mines
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	Forests, basin-prairie shrub, caves and mines
White-tailed prairie dog	<i>Cynomys leucurus</i>	Basin-prairie shrub, grasslands
Wyoming pocket gopher	<i>Thomomys clusius</i>	Meadows with loose soil
Swift fox	<i>Vulpes velox</i>	Grasslands
<i>Birds</i>		
Common Name	Scientific Name	Habitat Types
White-faced ibis	<i>Plegadis chihi</i>	Marshes, wet meadows
Trumpeter Swan	<i>Cygnus buccinator</i>	Lakes, ponds, rivers
Northern goshawk	<i>Accipiter gentilis</i>	Conifer and deciduous forests
Bald Eagle	<i>Haliaeetus Leucocephalus</i>	Large rivers and open water bodies with mature trees for nesting
Ferruginous hawk	<i>Buteo regalis</i>	Basin-prairie shrub, grassland, rock outcrops
Peregrine falcon	<i>Falco peregrinus</i>	Tall cliffs
Long-billed curlew	<i>Numenius americanus</i>	Grasslands, plains, foothills, wet meadows
Burrowing owl	<i>Athene cucularia</i>	Grasslands, basin-prairie shrub
Mountain plover	<i>Charadrius Montanus</i>	Short-grass prairie, shrub-steppe, prairie dog towns
Sage thrasher	<i>Oreoscoptes montanus</i>	Basin-prairie shrub, mountain-foothill shrub
Loggerhead shrike	<i>Lanius ludovicianus</i>	Basin-prairie shrub, mountain-foothill shrub
Brewer's sparrow	<i>Spizella breweri</i>	Basin-prairie shrub
Sage sparrow	<i>Amphispiza billineata</i>	Basin-prairie shrub, mountain-foothill shrub
Baird's sparrow	<i>Ammodramus bairdii</i>	Grasslands, weedy fields
<i>Plants</i>		
Common Name	Scientific Name	Habitat Types
Nelson's milkvetch	<i>Astragalus nelsonianus</i> – or- <i>Astragalus pectinatus</i> var. <i>platyphyllus</i>	Alkaline clay flats, shale bluffs and gullies, pebbly slopes, and volcanic cinders in sparsely vegetated sagebrush, juniper, cushion plant communities at 5200'-7600'
Cedar rim thistle	<i>Cirsium aridum</i>	Barren, chalky hills, gravelly slopes, & fine textured, sandy-shaley draws at 6,700'-7,200'
Gibbens' beardtongue	<i>Penstemon gibbensii</i>	Sparsely vegetated shale or clay slopes – 5,500' to 7,700'
Persistent sepal yellowcress	<i>Rorippa calycina</i>	Riverbanks & shorelines, sandy soils near high water line

The objective of the sensitive species designation is to ensure that the BLM considers the overall welfare of these species when undertaking actions on public lands, and do not contribute to the need to list the species under the provisions of the ESA. The lack of demographic, distribution, and habitat requirement information compounds the difficulty of taking management actions for many of these species. It is the intent of the sensitive species policy to emphasize the inventory, planning consideration, management implementation, monitoring, and information exchange for the sensitive species on the list in light of the statutory and administrative priorities (USDI-BLM 2002).

2) Issues and Key Questions

There are several issues and key questions that have been identified for wildlife species. The major issues concerning wildlife species include the overall health of the ecosystem, including both the quality and quantity of diverse habitat types that species depend upon throughout their life cycles; the availability of these habitat types for wildlife species; and existing or potential disturbances to these habitat types. Priority wildlife habitats include riparian grassland, willow-waterbirch riparian, aspen and cottonwood woodlands, and wet forested meadow areas, in addition to open aquatic, sagebrush-grass communities, mountain shrub, saltbush steppe, conifer forest, and rockland areas (USDI-BLM 1990). Habitat diversity includes vegetation cover types and age distribution, as well as the need for disturbance, such as fire, disease, and/or climatic change. Factors that affect the availability of these habitat types for wildlife include livestock

management, development of private lands, and inter- and intra-species competition for available forage and associated diet overlap. Up to this point in time, the existing and potential disturbances to wildlife species include impacts to priority habitats from fencing, water development projects, vegetative treatments, and livestock use, disturbances to individual life cycles from human activities, including recreational activities, OHV use, and noise. However, the CCSM project, slated for development over the next three to five years, raises the question of how will development of the largest proposed wind project in the United States affect wildlife habitat in the future?

The following describes issues and key questions that pertain to specific wildlife and impacts that may occur as a result of various activities.

Species of Interest and Concern

Antelope

Issues that relate to antelope across the watershed include impacts from fences and roads on animal movements; these will be discussed for all herd areas at one time. Issues that affect antelope, which are more specific to particular herd areas (and will be discussed by herd area), include vegetation treatments, livestock management practices relating and type/season of use by livestock, and the development of private lands within checkerboard areas.

Much of the fencing in the assessment area was constructed prior to standards being created to reduce impacts to wildlife. Additionally, many road rights-of-way are bounded by woven wire fences as well. Few adults will jump over fences; the majority of antelope prefer to pass under or through fences. Woven wire fences prevent passage under or through them, forcing antelope to find low spots, such as gully crossings where they can get under the fence. During severe winter conditions, antelope have to expend additional time and energy to get through these types of fences while migrating, which may reduce their chances for survival. They may even get stuck in fences, where they are likely to die. Older fences built to control cattle were constructed with four to six strands of barbed wire, and the bottom strands are lower than the height recommended by BLM fencing standards. Although antelope can often pass through these fences, or find low spots to go underneath them, they still impede migration movements to some degree.

Modifications continue to be made to woven wire fences, in particularly to reduce impacts to antelope migrating between spring/summer/fall and winter ranges. Even though some of these woven wire fences have been modified to BLM fencing standards, more needs to be done. In some cases, installing gates in corners that could be left open during the winter would help a lot. Since not all of this work can be done at once, what locations should have the highest priority to be modified, and what areas should be targeted for future years? How can we accomplish the modification of a significant amount of fence each year to help resolve this issue in a reasonable amount of time?

Livestock management practices primarily relate to water, both in terms of new developments and their management, as well as protection of natural seeps and streams. When new water sources are developed, which are usually for summer cattle use, antelope and other wildlife will use them and become dependent upon them, especially during times of drought. However, if

these water developments are wells, they may only be available during specific times of the year and the wildlife must look for water elsewhere. There have been incidents when antelope have gotten stuck in certain pastures due to woven wire fences and were unable to move to new locations when the water they were using was no longer available. How can these situations be avoided? Are there certain times or locations when water should remain available, either through pumping of water or the development of other sources? In other instances, water developments have been created for wildlife, such as guzzlers or other projects. These are often developed and maintained by individuals working for state or federal agencies, but may not be properly maintained when these individuals retire or relocate. How can these situations be rectified in order to maintain the use of these facilities for the long-term benefit of antelope and other wildlife? Nearly all livestock use is made by cattle, which have a low overlap in diet similarities with antelope. However, cattle can cause significant impacts to riparian habitats that are important to antelope. Through the use of riparian pastures or exclosures, these areas are managed or protected from a livestock perspective, but from a wildlife perspective what is important are the mix of vegetative species and structure that should be promoted, and the type of management necessary to achieve this.

Private land developments are another issue influencing antelope within the assessment area. These developments, primarily subdivisions, are resulting in a net loss of habitat that is important to antelope. Additionally, increased human activities associated with these developments may also result in an effective loss of habitat in these areas. Unfortunately, since these subdivisions are on private land, the RFO has little control on how these small parcels are managed.

Elk Mountain Antelope Herd Unit: Only about one-fourth of this herd unit lies within the watershed boundary with about 65% of that area being in private ownership. In addition to livestock management and fencing (discussed under general heading for antelope), subdivision developments on private lands within this herd unit are slowly removing small portions of usable habitat. In addition, these subdivisions may also restrict movements, as well as increase the amount of noise and disturbances.

Iron Springs Antelope Herd Unit: This herd unit is primarily influenced by fencing and livestock management issues that are discussed under the general heading of antelope. Increased subdivision of private lands in these habitats, especially if these tracts are fenced, could seriously degrade the quality and utility of some winter ranges and migration routes. Development, partitioning, and fencing of these lands could have more deleterious effects on antelope migrations and habitat than some energy developments (WGFD 2013). Vegetation treatments of crucial winter ranges within this herd unit area could have positive or negative impacts, depending upon design and implementation. How can vegetation treatments be designed and implemented to maximize benefits and reduce adverse impacts to antelope?

Medicine Bow Antelope Herd Unit: This herd unit is primarily influenced by fencing, roads and livestock management issues as discussed under the general heading of antelope.

Elk

The major issues affecting elk are fence impacts on animal movements, competition with cattle for forage, potential for disease, reduced health and productivity of forests and shrublands due to the lack of natural fires, mountain pine beetle infestations, and increased human activities. Fencing, competition from cattle, and potential for disease are issues common to both herd units and are discussed together. Topics of concern that are not common to all herd units are discussed under each individual herd unit.

Elk movements are affected by fences much differently than for antelope. Elk, being considerably larger, will generally jump over fences. However, young elk will have to pass under or through fences for a time being and can get stuck behind a fence they cannot get through or get a leg caught while attempting to jump a fence. Woven wire fences constructed for sheep present problems for very young elk, but these fences usually are not over 40 inches high, and can be jumped fairly easily by adult elk. Old style fences built for cattle may be 50 to 55 inches high and present considerable problems for both young and adult elk alike. Elk that summer at higher elevations may not have many fences to pass over until they migrate in the spring and fall to and from their winter range. Fence locations requiring annual maintenance due to big game movements are good indicators of areas where fence modifications should occur to reduce both the cost of maintenance and the impacts to big game species. How can a program be implemented to modify fences where needed in the short-term, and modify all fences to meet BLM standards in the long-term?

Competition for forage between elk and cattle occurs to some degree. The percent of diet overlap is around 80% for these two species. The fact that both elk herds are over herd population objectives would indicate that current levels of livestock use is not affecting elk numbers. In normal years there is available forage for use by both types of animals, but distribution of livestock use will affect where adequate forage is available and where elk have to move in order to find forage. In lower vegetation production years, cattle numbers are usually adjusted either through shorter duration or fewer numbers. Elk numbers are fairly consistent leading to changes in elk distribution over larger areas when forage is limited, Water developments and improved riparian and upland range conditions are also affecting elk distribution and how long they stay in a particular area. Should more attention be given to these changes in elk distribution and use patterns, and how does this reflect back on the management of cattle or other activities in these areas?

Chronic wasting disease (CWD) is common among deer in the eastern half of Wyoming, and has been found in small numbers across the RFO. It has also been found in elk in limited numbers, but has the potential to become a more serious problem. Disease transmission between animals can increase when they become concentrated, such as in wintering areas and on feed grounds. However, the elk in the Platte River Valley tend to stay dispersed across broad areas, even in the winter, which may help reduce the spread of CWD. Are there other factors which could be addressed by BLM, WGF, private landowners, or other partners to reduce the threat of CWD to elk?

Sierra Madre Elk Herd Unit:

The large-scale proposed Chokecherry Sierra Madre wind project may negatively impact this herd unit because this proposed project could directly impact both wintering and migrating elk. Elk, of all of the big game species, have the lowest tolerance for disturbance, and studies show them staying a mile or more away from roads with frequent human activity. The level of disturbance to elk will depend directly on the number of turbines, associated roads and human presence in this area. Winter and transitional ranges may be affected, since in the past most of this area was inaccessible due to the amount of snow that collected in the area.

Coal bed natural gas development on the west side of Atlantic Rim continues to progress. Compressor stations, service roads, and pipelines associated with these developments will increase access and may create additional disturbances to wildlife. The west side of this herd unit, along U.S. Highway 789, is also experiencing the effects of increased natural gas development. The roads associated with these developments increase the amount of human presence in these areas, both by the commercial industry and recreationalists throughout the year. What will the cumulative effects be of the Chokecherry Sierra Madre wind development, coal bed and conventional natural gas resources on elk within this herd unit? What mitigative measures can be implemented up front that will reduce the effects of these developments upon this elk herd?

Snowy Range Elk Herd Unit: This herd unit is primarily influenced by competition with cattle for forage, reduced health and productivity of forests and shrublands due to the lack of natural fires, pine beetle infestations, and increased human activities, which are discussed under the general heading for elk.

Mule Deer

The issues that relate to mule deer include fence impacts on animal movements, livestock management practices, potential for disease, health of shrub and woodland habitats, conventional and coal bed natural gas field activities, and development of private lands. The effects of fences on mule deer are similar to those described for elk. Mule deer will typically jump over fences, with concerns relating to fence height and the spacing of the top two wires. Young deer may have to pass under or through fences, so that woven wire fences raise the greatest concerns. The effects from developments on private lands are similar to those described for antelope.

Livestock management practices that have the greatest effect on mule deer are fencing (already discussed), type of livestock use (cattle versus sheep), and management impacts to mule deer habitat, particularly riparian plant communities. Sheep diets are very similar to mule deer and antelope, so competition for forage can be an important factor. However, there is no active domestic sheep use being made on public lands managed by the BLM within the North Platte River Valley. Use by cattle and mule deer primarily overlap in riparian habitat. Historic spring through fall use of riparian habitats by cattle had degraded the value of these sites for mule deer use, especially the woody plants, which are important as forage and cover. Use of best management practices (BMPs) for cattle has improved many of these areas. Although these types

of BMPs have become more standard, there is still work to be done and time needed for vegetation recovery. What other practices should be implemented to improve mule deer habitats degraded by historic livestock management or other agricultural practices?

Chronic wasting disease (CWD) is common among deer in the eastern half of Wyoming, and has spread to all mule deer herd units in the RFO. Although it has not appeared in high numbers here, it is having a substantial impact on other deer herds. Current low numbers of mule deer may help reduce the spread of the disease. However, disease transmission between animals can increase when they become concentrated, such as in wintering areas. Research is ongoing that may help manage the spread of the disease. Are there factors which could be addressed by BLM, WGFD, private landowners, or other partners to reduce the threat of CWD to and within mule deer populations?

Platte Valley Deer Herd Unit: The mule deer in this unit summer at higher elevations in the Medicine Bow National Forest, but migrate to winter ranges at lower elevations. Therefore, habitat quality of transition and winter ranges are a management consideration. Mature to decadent mountain shrub communities increase inter- and intra-specific competition. Can habitat improvement projects, including the use of prescribed fires be used to improve habitat conditions?

Raptors:

Raptors are primarily affected by the abundance of their prey species, which will fluctuate annually as a result of habitat and climate conditions. The last assessment identified the following factors that influence habitat conditions and availability include impacts that may occur from oil and natural gas development, recreation (falconry practices), subdivision developments, and livestock management (condition of habitats for food base).

Construction of the proposed Chokecherry Sierra Madre wind project could directly impact raptor populations. As presented on their website, the proponent (PCW) is working to develop wind resources in a manner consistent with the conservation of avian and bat species as well (PCW webpage, 2014). A comprehensive, science-based avian and bat monitoring approach – which combines avian radar technology and traditional monitoring methods – is being used to better identify usage and patterns. Results from the monitoring program will allow PCW to identify the most appropriate conservation practices to avoid, minimize and mitigate potential risks to avian and bat species.

Here are the six major elements of PCW's monitoring protocols and the conservation plan development approach.

- Starting in March 2011, an avian radar system has been used across the Overland Trail Ranch to monitor avian and bat activity and habitat use patterns. Avian radar systems collect detailed avian and bat use data 24 hours per day and can map activity across 80 square miles. Radar data identifies high use areas and enables PCW to site the wind project in a manner that will reduce impacts to avian and bat species. Five to six locations are surveyed with the radar each year to provide precise data in the wind development areas.

- Long-watch raptor use surveys are being conducted at locations across the ranch. Avian use data is being used to validate radar survey results and to document avian use in areas that are not surveyed directly by the radar system. Each site is surveyed 4 to 8 hours per survey day.
- Avian point count surveys have been conducted at 15 locations across the ranch to document migratory and resident use.
- Breeding and resident bird grid surveys have been conducted at 16 locations throughout the wind development areas to map the relative abundance and density of bird activities during non-migratory periods.
- Raptor nest surveys have been completed for all areas within 5 miles of wind development areas (an area of nearly 1,000 square miles or 640,000 acres). Helicopter surveys were used to survey suitable eagle nesting habitat and to survey known nests for other large raptor species. Follow-up ground monitoring was used to document nest success, identify nest condition, and to locate additional raptor nests that could not be identified during helicopter surveys.
- Prey base evaluations have been and are being conducted to evaluate areas containing prey densities sufficient for eagle and large raptor foraging activities.

Finally, an Eagle Conservation Plan (ECP) and a Bird and Bat Conservation Strategy (BBCS) are being developed to identify measures that will be taken to avoid, minimize and mitigate impacts to all avian and bat species. Data collected as part of the above surveys will be used to identify the measures that will be taken to conserve avian and bat species.

What other impacts are affecting raptors and what types of mitigation can be implemented to reduce and/or eliminate these impacts?

Threatened and Endangered (T&E) Species:

The issues are closely associated with the health and diversity of habitat types. In general, a healthy ecosystem lends itself to the survivability and vigor of T&E and BLM State Sensitive species.

Approximately 77 Greater Sage-Grouse leks and associated nesting habitat occurs within this watershed. Upland drought reduces the amount and height of vegetative cover, which may lead to lower nesting success and chick survival for the following year. Drought also affects the production of understory forbs, which may have negative impacts on early brood-rearing, specifically from April through June, which is a critical time period. Water sources placed in the uplands may increase cattle use in areas that sage-grouse use for nesting. This may affect sage-grouse nesting success and the survival rate of chicks by further reducing herbaceous cover. Livestock use on some riparian habitats has led to degradation of species, vigor, and cover that is important to late season brood-rearing by sage-grouse. What levels and seasons of use by livestock in upland and riparian habitats are appropriate in conjunction with the needs of sage-grouse and other wildlife? Habitat loss from subdivision activities continues (WGFD 2003e). This is primarily the case for existing towns and cities where habitat loss is expanding by Rawlins and Saratoga. Besides the existing Carbon County land use plan, are there other measures which could help to reduce further habitat loss and fragmentation? Large scale sagebrush treatments may result in negative impacts if located in nesting habitat, but smaller scale sagebrush habitat conversions (less than 200 acres in size) may actually have beneficial

impacts to nesting sage-grouse. Fences constructed next to strutting grounds may also result in negative impacts to sage-grouse by becoming perches for raptors or obstructions to fly into. What are the cumulative impacts to Greater Sage-Grouse as a result of authorizing actions, including livestock management and associated projects (water development, fences, habitat treatments), and recreation activities? What educational programs can BLM become involved in to reduce and/or eliminate impacts to sage-grouse within or adjacent to private parcels?

The only issue related to black-footed ferrets would be indirect as a result of potential impacts to white-tailed prairie dog towns (the major food source and habitat for black-footed ferret) that may occur as a result of recreational activities and development. In general, livestock management should not impact potential black-footed ferret habitat. Where are impacts to white-tailed prairie dog towns occurring? What effects has plague had on prairie dog populations?

There should not be any management issues with the Canada lynx since this species only use the riparian habitats between ranges during dispersal and it would be unlikely that this species would be traveling through the watershed, although this may occur. There should not be any impacts to this species as a result of implementing actions within the watershed.

North Platte River T&E species utilize habitats located along the North Platte River in Nebraska. Factors which may affect these species relate to water depletions in the North Platte River system as a result of implementing proposed projects. A proposed project that may result in water depletion, including evaporative losses, triggers a “may affect” situation and requires a Biological Assessment be prepared. Formal consultation with the U.S. Fish and Wildlife Service is required. How many projects within this watershed have been determined to cause water depletions to the North Platte River system and have these depletions had any effect on local populations of T&E species?

Ute ladies’ tresses is a plant that is located in riparian habitats. This plant is listed as a threatened species and may be impacted by livestock grazing, but grazing may not cause irreversible impacts to the species. It is considered a “take” only if the entire plant, roots and all, are removed, and grazing does not do this. What locations are most likely to support this plant in order that an inventory can be conducted to determine if it even exists in this watershed? If populations are found then further steps to analyze current and future management practices would occur.

BLM State Sensitive Species:

There are six mammals, fourteen birds, two amphibians, and four plants that have been identified as BLM state sensitive species and may occur, or have the potential to occur, within this watershed area. The main key issues include the lack of information concerning exact locations of most of these species and the effects that authorized actions may have on these species. There are numerous questions concerning these species - for example, what affects do vegetation treatments (prescribed fires, chemical treatments), grazing management, natural gas development, recreational activities, private land development, and roads have on these species? What effects do management practices have on other sensitive species located within the

watershed? How much information should be obtained concerning specific species before land management actions are implemented?

The main issue related to bald eagles in this watershed will be if/when the proposed Chokecherry Sierra Madre Wind project is constructed. As stated earlier in the raptor section, construction of this wind development could have direct impacts on bald eagle populations. Please see the earlier discussion regarding ongoing monitoring as well as the planned Eagle Conservation Plan.

Another issue related to bald eagles centers around the health of riparian vegetation, specifically the health and vigor of cottonwood trees along the North Platte River system. Livestock may affect tree health and vigor along the river system if there is excessive rubbing and browsing that can damage young trees. Lack of high flow events may reduce the regeneration of young cottonwood trees. What areas of public lands are being used by bald eagles; is there nesting activity; and if so, how successful is it? What types of impacts are attributable to cattle and what actions can be implemented to reduce and/or eliminate them?

The Western boreal toad may occur in riparian habitats within the Sierra Madre and Medicine Bow mountain ecosystems. Projects that occur in riparian habitats above 7,500 feet should be assessed for boreal toads. If the toad is found, what protection measures, if required, will be implemented to protect the species?

3) Current Conditions:

The following describes the current conditions of wildlife populations and their respective habitats for those species that inhabit the watershed, or have the potential to use habitats within the watershed.

Species of Interest or Concern:

Antelope

Elk Mountain Antelope Herd Unit: The population objective for this herd is set at 5,000 antelope, with the current population estimated at approximately 2,600. This herd unit is comprised predominantly of either private or land-locked public land. Hunter access to these lands is limited, particularly east of Elk Mountain, where most pronghorn in this unit are found during hunting season. Private lands open to hunters receive a large amount of hunting pressure. Much of the herd unit's sagebrush ecosystem remains intact. However, increased agricultural, energy and residential development does threaten the sagebrush habitat in this area. (WGFD 2013). Browse use is primarily in the light to moderate use levels on winter ranges, with heavier use in spot areas during more severe winters. However, there does not appear to be the severe use as compared to conditions observed on other winter ranges. There has been some sagebrush die-off following droughts in 2001 of Wyoming big sagebrush, and in 2012 of both Wyoming big sagebrush and black sagebrush. These areas tend to be spot locations and not widespread, and help to release younger sagebrush. Following wet years in 2010 and 2011, there were large numbers of seedling sagebrush and other native species, which had become established.

Iron Springs Antelope Herd Unit: The population objective for this herd is set at 12,000 antelope. The 2013 post hunt estimate for the herd showed approximately 8,300 antelope. Construction of the proposed Chokecherry and Sierra Madre wind developments, could have significant impacts on important habitats in large portions of Areas 56 and 108, as well as the north portion of Area 52. Construction of several large, trans-continental powerlines would cross important winter habitats at the north edge of Area 56. (WGFD 2013) Access remains an issue in this herd unit, particularly in the checkerboard in association the Chokecherry, Sierra Madre project. Fences continue to pose barriers to pronghorn movements throughout much of the herd unit, increasing mortality during tough winters. Continuing the fence conversion efforts of TOTCO and other permittees within this watershed will improve pronghorn movements. Small acreages of crucial winter range have been lost to subdivision of deeded lands, primarily in the southern portion of the herd and along Interstate 80.. Severe drought conditions in 2012, with almost no precipitation throughout the spring and summer, were followed by three severe late winter blizzards in April 2013. Losses appeared to be above normal during the 2012-13 winter. The 2013 summer was also exceptionally dry, reducing browse availability for the 2013-14 winter. Although long-term trends are not available in most locations, eight transects in the Platte River Grazing Allotment, established in 1977 and re-read in 2013, showed similar sagebrush composition and cover, with current browse utilization at light to moderate levels. Future construction of the proposed Chokecherry Sierra Madre wind project and the associated infrastructure road network, could have significant impacts on important habitats in large portions of Hunt Areas 56 and 108, as well as the north portion of Area 52. Construction of several large, trans-continental power lines would cross important winter habitats at the northern edge of Hunt Area 56. Small acreages of crucial winter range have been lost through subdivision of deeded lands, primarily in the southern portion of the herd unit, and along Interstate 80 (WGFD 2013).

Medicine Bow Antelope Herd Unit: This herd unit has a population objective of 60,000 antelope and a current population estimated at 24,941. In addition to the previously stated concerns to this herd unit of fencing affecting pronghorn movements as well as road influences on movements as well, the WGFD has documented Epizootic Hemorrhagic Disease (EHD) throughout the herd unit, and in certain hunt areas has observed drastic reductions in populations. In addition, large scale wind developments and coal mining within this herd unit may be negatively impacting habitat and productivity (WGFD 2013). Habitat conditions, resulting from consecutive years of drought conditions, may also be a factor in the lack of population growth (WGFD 2003c).

Elk

Sierra Madre Elk Herd Unit: The herd has been above population objective since the mid-1990s, with a post-season population of 11,000 animals. The population objective was reviewed and raised from 4,100 to 5,000 in 2013 (WGFD 2013). Increasing the number of elk licenses, general licenses to hunt any elk, and lengthening the hunting season are all being used to increase elk harvest by hunters to reduce the existing elk population. Despite increasing pressures from the Atlantic Rim natural gas field, the Sierra Madre herd continues to be productive and has not shown negative impacts from the increase in gas and oil activities within the herd unit. The large-scale proposed Chokecherry Sierra Madre wind project

may negatively impact the herd because this proposed project could directly impact both wintering and migrating elk. Another landscape wide impact to the herd unit is the progression of beetle kill through the Sierra Madre Mountain Range. Currently trees have begun to fall at increasing rates, which may lead to disruption in traditional movement patterns or the ability of hunters to access the forest (WGFD 2013). However, increased forest openings should increase herbaceous production and stimulate early successional species, such as aspen, and shrubs like buckbrush, buffaloberry, elderberry, Scoulers' willow, and bearberry honeysuckle, which would benefit elk. Improvements in livestock management through the adoption of BMPs have improved range conditions benefitting elk. All of these factors are reflected in both the productivity of this herd and their expansion into areas further away from the forest.

Snowy Range Elk Herd Unit: The population objective for this herd is set at 6,000 elk. The population was expected to number 6,686 elk following the 2013 hunting season. An estimated calf:cow ratio of 40:100 and excellent bull:cow ratios have been documented in the herd. Elk numbers appear to be declining towards the management objective, but climatic conditions have created concerns over habitat quality and livestock conflicts within this herd unit, especially on seasonal ranges off the Medicine Bow National Forest. Due to these factors, the herd will be managed, for a time, to reduce the herd size even further, mainly through a reduction in the number of cows in the population.

Mule Deer

Platte Valley Mule Deer Herd Unit: This herd has a population objective of 20,000, with an estimated current population of 8,672 deer. In June 2013, WGFD and the Platte Valley Habitat Partnership finalized their Mule Deer Habitat Management Plan. This multi-stakeholder partnership was tasked with identifying mule deer habitat improvement needs for the herd unit and collectively developing projects to address those needs. Because this herd has not shown much improvement in population size, it is believed that habitat conditions and predation are a major factor affecting this herd.

A number of extensive browse utilization studies were established within the Lower North Platte area in the mid and late 1970s. Two studies located within the Pass Creek Ridge Grazing Allotment depict the following trends:

Study Name: RP01 established June 30, 1976

Browse Utilization Percentages by Year:	1976 = 21.2%
	1990 = 44.7%
	2008 = 26.4%

Study Name: RP03 established May 15, 1978

Browse Utilization Percentage by Year:	1978 = 21.98%
	1980 = 27.02%
	1990 = 33.40%
	2008 = 29.96%

Trends for these studies appear to be relatively constant, while showing an increase in browse utilization during the winter of 1990. These transect readings identified mostly mature vegetative age classes among the majority of the vegetative communities in 1990. The first reported accumulation of snow in 1990 was on October 7. The last day of snow reported on the ground was May 9. The day with the greatest snow depth was February 13, with an average snow depth of 10.6 inches over the course of the day. These additional snow loads during the winter of 1990 may have attributed to the higher percentages of browse utilization for the identified browse transects. One new transect established in 2014 within mountain mahogany habitat along the Platte River, north of Pick Bridge, had a moderate hedge class with current light (30%) browse utilization.

Raptors

The raptors previously listed all nest and forage within the watershed. Bald and golden eagles often stay year-round, while other species migrate to warmer climates. The cottonwood habitat along the North Platte River provides extensive nesting, roosting, and feeding areas for bald eagles, which are commonly observed by boaters and fishermen. The rough-legged hawk spends the winter in the watershed and migrates further north to nest. Prey species are common, with their abundance varying year to year due to climate.

The proposed Chokecherry Sierra Madre wind project may negatively impact raptors if it is constructed. Extensive raptor and other bird and bat monitoring has been ongoing for the project area since 2008. Please see the discussion regarding the wind project monitoring and conservation plans in Section 2 under raptors under this Standard.

Other limited monitoring of raptors occur in some areas of the watershed to determine nesting activity and status. In addition, timing stipulations to avoid disturbances during nesting seasons are used on a project specific basis. Most nest sites are found on natural substrates; however, artificial nests are used to mitigate conflicts between human activities and ferruginous hawk and golden eagle nesting locations.

Threatened, Endangered, Proposed, and Candidate Species:

The following paragraphs describe the current status of threatened, endangered, proposed, and candidate species that may occur, or have the potential to occur within this watershed. Species may use portions of the watershed during their entire life cycle or portions of their life cycle.

Black-footed Ferret

There are white-tailed prairie dog towns located within this watershed and many of these towns are active. Although prairie dog towns are located within this watershed, and some have the potential to support black-footed ferrets, no known black-footed ferrets have been identified within the watershed. The entire state of Wyoming has been block-cleared, meaning that no wild populations of ferrets are believed to exist. This designation does allow non-essential, experimental populations to be reintroduced within Wyoming.

Canada Lynx

Although it is highly unlikely that lynx will reside within this watershed, they may travel through the watershed, specifically using riparian habitats. Lynx are very secretive and are difficult to monitor; therefore, numbers of lynx are hard to obtain.

North Platte River Species: Least Tern, Pallid Sturgeon, Piping Plover, Whooping Crane, Eskimo Curlew, and Western Prairie Fringed Orchid

The North Platte River species include the endangered Eskimo curlew, interior least tern, pallid sturgeon, whooping crane, and the threatened piping plover, bald eagle, and Western prairie fringed orchid. Although these species, other than the bald eagle, are not located within the watershed, any proposed projects resulting in water depletions within the North Platte River ecosystem must evaluate impacts to these downstream species.

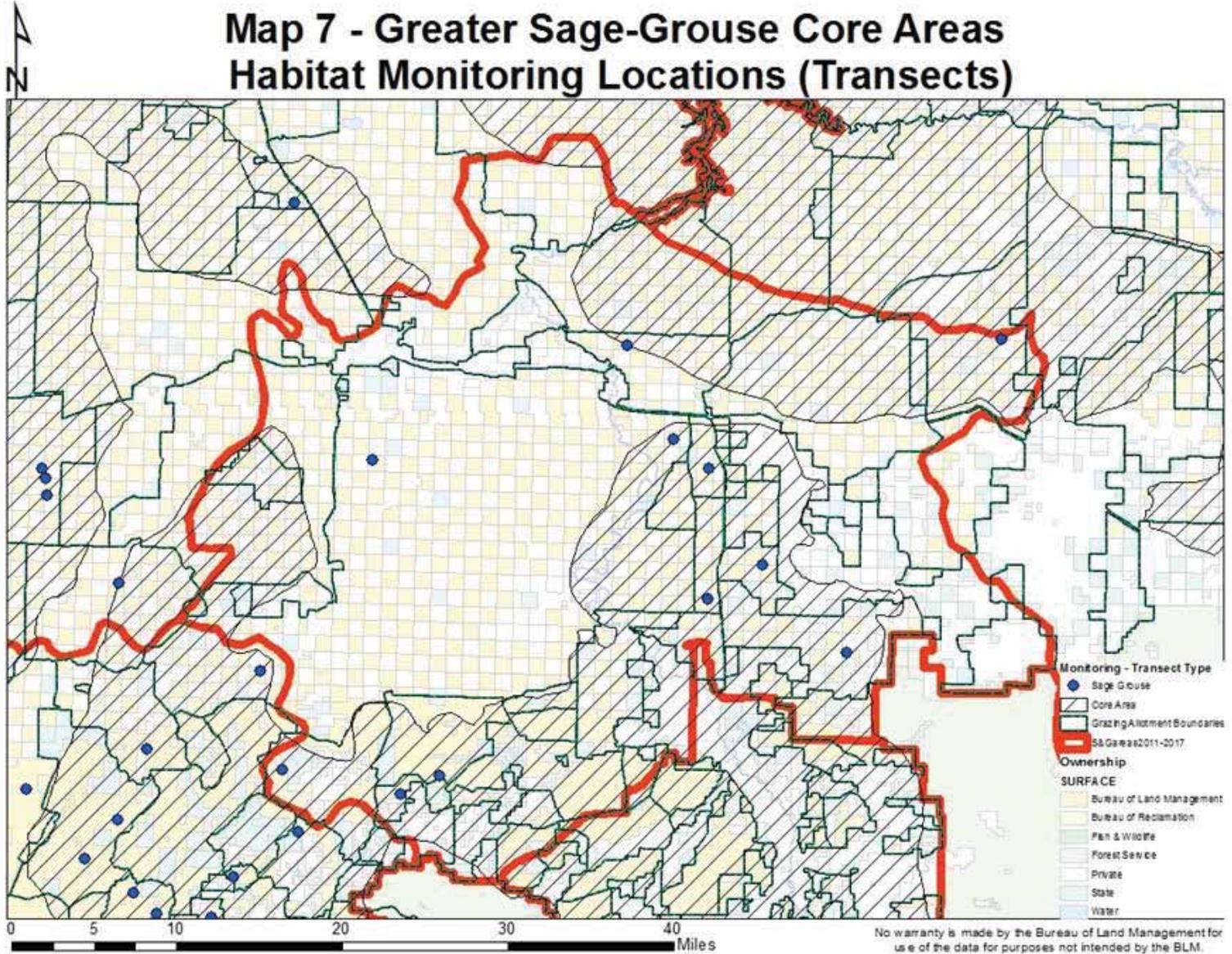
Ute Ladies' Tresses

Although the Ute ladies' tresses has not been identified in this watershed, it has the potential to occur, and the U.S. Fish and Wildlife Service has concluded that it may occur in this area.

BLM State Sensitive Species:

All of the BLM state sensitive species have the potential to occur within this watershed. There are known ferruginous hawk and bald eagle nests, and burrowing owls have been observed with some nesting habitat being identified. Northern leopard frogs can be observed along streams and in seeps and bogs. Greater Sage-Grouse leks are monitored throughout the watershed by WGFD and BLM wildlife biologists from March through mid-May each year to determine activity status of each lek. Twelve nesting habitat transects were established using the protocol outlined in the 2010 Sage-Grouse Habitat Assessment Framework. These were all in core area habitat, or what was originally designated as core area, prior to the proposed Chokecherry Sierra Madre wind project (Map 7). Of these transects, nine were found to be meeting and three were found to be marginal in meeting the needs of nesting sage-grouse. Transect criteria includes sagebrush cover and height, understory grass height, and forb cover, diversity, and abundance. Transects considered marginal occurred at lower elevations and were lacking in forb diversity and production, which is likely related to lower precipitation levels rather than livestock management. The higher elevation sites are dominated by mountain big sagebrush, which often has a higher canopy cover than recommended in the 2010 protocol; however, sage-grouse research from the adjacent AREIS documented nesting sage-grouse as preferring higher canopy cover with a mean of 39 percent (Kiorl, 2012). Greater Sage-Grouse populations are declining across the West and in Wyoming; however, there are multiple factors causing this decline. Less is known of other BLM state sensitive species; however, habitats for these species are present, and inventorying or monitoring should occur to determine abundance and habitat use in the future.

Map 7 - Greater Sage-Grouse Core Areas Habitat Monitoring Locations (Transects)



4) Reference Conditions:

There are several historical accounts that have described wildlife species that were present within the watershed area during different eras. The following are descriptions that were recorded by individuals or groups that traversed or lived in the watershed. Immediately following are historical descriptions of the area that were compiled by Robert D. Dorn. These excerpts include descriptions of the landscape and some of the wildlife that were present:

Laramie Plains, Medicine Bow Mountains, Elk Mountain Area

William H Ashley, a St. Louis fur trader, entered the Laramie Plains in March of 1825. As he proceeded north and west around the Medicine Bow Mountains he commented that, "I was delighted with the variegated scenery presented by the valleys and mountains, which were enlivened by innumerable herds of buffalo, antelope, and mountain sheep grazing on them, and what added no small degree of interest to the whole scene, were the many small streams issuing from the mountains, bordered with a thin growth of small willows and richly stocked with beaver." (Dorn 1986)

The U.S. Geological Survey under F. V. Hayden entered the area in October of 1870. "On the plains antelope are still present but the buffalo have disappeared. Their old trails and skulls 'are fast passing away.' Elk, mule deer, white-tailed deer, bighorn sheep, wolves, and smaller animals 'are still quite abundant, especially in the valleys of the small streams' in the mountains" (Dorn 1986).

Fort Steele, Rawlins, Sage Creek Area

John C. Fremont, army topographer, visited the area in August of 1843. "Buffalo were common in the vicinity. Toward the west there was 'nothing to be seen but artemisia bushes.' The hunters brought in a bighorn sheep from the Atlantic Rim area" (Dorn 1986).

F. V. Hayden visited the area for geological explorations in September of 1868. "This vast barren sage plain stretches for westward [from Pass Creek] to Bitter Creek." In October 1870, Hayden passed through the area again with the U. S. Geological Survey. "The North Platte bottom had scattered narrowleaf cottonwoods but they were not abundant except near the mouth of Sage Creek . . . Beaver had cut large cottonwood trees near Fort Steele. These animals were abundant as they were not of much value at the time" (Dorn 1986).

5) Synthesis and Interpretation:

From the accounts above, detectable changes in wildlife are the disappearance of the buffalo, bighorn sheep, and wolves within this watershed. Livestock impacts, although still present, have been reduced, and range conditions for upland and riparian habitats are improving in most areas (USDI-BLM 2002 and current report). Antelope, elk, and mule deer are generally thriving, and

Wyoming has the largest population of Greater Sage-Grouse in the nation. Development in Wyoming has not occurred at the rate that it has in other states; thereby, reducing the amount of habitat loss and fragmentation. Native plant species are still the dominant species; weeds, although present in some areas, have not taken over large areas of the range. Impacts from off-highway vehicle use, and the loss of, or modification to, habitats from developments on private lands in the checkerboard areas continue to increase (USDI-BLM 2002). The lack of natural fires has led to a predominance of mature to decadent shrubs in some areas. Following is an analysis of specific habitat conditions within the watershed and the effects these may have on wildlife species.

Species of Interest or Concern

Antelope

The presence of antelope in Wyoming was noted by all of the early explorers and settlers that moved to or across the state. Antelope are still the most visible and abundant big game species in this area, due to open expanses of a sagebrush dominated landscape. The health of Wyoming big sagebrush communities that antelope depend upon is generally good. High cover and density of shrubs that limit understory species is only observed at higher elevations and precipitation zones. In this assessment area, the crucial winter ranges do not receive enough concentrated animal use to show repeated high utilization rates resulting in plant mortality. Partial die-back and plant mortality of sagebrush has been observed in limited areas following severe droughts, but there are young plants present and new plants are being established following wet years. There appears to be a good mix of winter, summer, and transitional habitats to support existing populations and objective levels of antelope. The area along and north of Interstate 80, east of the North Platte River, shows higher utilization rates within winter range areas. This is due to the increased use of the area where Interstate 80 has cut off historic migration corridors to winter ranges for antelope. Antelope, being the smallest of the big game species, is probably more susceptible to die-offs during severe winters. However, their reproductive capacity also allows them to respond more quickly after such events to re-populate their habitat.

The presence of many miles of woven wire fencing and its effects in hindering or altering antelope movements is the most important issue needing to be addressed. Research conducted in the early 1980s of the Red Desert antelope herd unit showed that woven wire fences were a significant impediment to antelope movements during severe winter weather. Modifications to fence corners and other key locations should continue to be part of the annual goals and accomplishments for the Rawlins Field Office, in order to address this issue. Within this watershed, there have been 15.25 of fence converted to BLM standards over the last ten years. The Overland Trail and Cattle Company has committed to converting all of their fences, starting with six miles having been completed in 2014 (Standard 4, page 1). However, much of this watershed is privately owned, which will increase the need for coordination and cooperation between all partners in order to complete these fence conversions.

Private lands that are developed into home sites could result in impacts, at an incremental rate, to antelope habitat and movements within checkerboard areas. The Carbon County Comprehensive Land Use Plan, amended April 3, 2012, encourages development adjacent to existing towns and

highways to help maintain open range, reduce habitat fragmentation, and improve county services. In addition, informing people about potential impacts on wildlife resulting from these actions may help to address these impacts. While on a broader scale, the exchange of lands to maintain wildlife habitat should be pursued.

Livestock management affects antelope in a number of ways in addition to fencing. Sheep compete with antelope for forage; however, there is no active sheep use occurring within this watershed. Water developments can also affect antelope. The creation of new water sources has allowed antelope to expand into areas that formerly did not have reliable water sources. On summer ranges this is a benefit, but increasing seasonal use on winter ranges may have negative effects on vegetative resources. In these latter areas, the use of controllable facilities, such as wells, is preferred in order to discourage year-round use of winter ranges by antelope. Due to droughts and/or a lack of runoff into existing reservoirs, has caused the use of water wells to become more common in order to develop reliable water sources. The impacts from livestock water being turned off when wildlife use is still needed should be addressed on a case by case basis. This may vary depending on the climatic conditions experienced each year, the availability of other water sources, and whether animals can move to water sources in other pastures or allotments.

The Wyoming big sagebrush habitat that antelope depend upon as their principle habitat and forage source is stable and long-lived. While plant succession in this community type is relatively slow, it is occurring and changing over time. For antelope, Greater Sage-Grouse, and other sagebrush obligate species, it is important to maintain healthy stands of big sagebrush, with a diverse mixture of grasses, forbs, and shrubs. The use of prescribed fires, mechanical and chemical treatments, and their respective effects in this type of plant community are currently being studied in this watershed to try and answer some of the questions and improve future management practices.

Elk

Prior to the arrival of pioneers, elk were common plains inhabitants, but probably competed with bison for forage and space. At this time, elk are doing well across Wyoming and the watershed is following a similar trend. All two herd units have current populations that are near or exceed population objectives. This would indicate that elk are thriving, have good reproductive rates, survival rates, and have the habitat to support them. In general, there are no significant problems with any winter or summer ranges that elk utilize. Drier conditions than average may have lowered calf survival rates. Although diet overlap is high between elk and cattle, there appears to be enough forage to provide for the needs of both at current levels of use. As BMPs for cattle continue to be implemented or improved, forage production and availability for elk should be increased. The practice of leaving pasture fence gates open when they are not in use should also be promoted. In many cases this simple practice could help wildlife passage, especially during severe weather conditions.

In addition to fences and livestock management, elk herds are affected by the increasing age and decadence of shrub and woodland communities, especially in crucial winter ranges. The loss of aspen habitat for cover and forage, especially forage later in the summer when it has dried up in

other areas, has negative impacts on elk. However, the recent western pine beetle epidemic, which has resulted in the death of larger pine and spruce trees, has created openings in the forest canopies and stimulated aspen and other understory growth. There are also increased efforts to harvest dead timber, thin young re-generation, and implement other practices that will improve aspen health and forage production that would benefit elk and other wildlife. Water developments, improved livestock management, and vegetative treatments could all help improve the habitat for and distribution of elk in this watershed.

Mule Deer

Mule deer were historically common in this watershed, and are still common today. Trends in mule deer populations may be highly affected by conditions of transitional ranges and crucial winter ranges. Poor fawn production and die-offs during severe winter weather are climate related factors that cannot be altered, but habitat and forage for mule deer are factors that can be manipulated by land managers. The descriptions for Standards 2 and 3 indicate where improvements could occur, primarily for riparian habitats and shrub and woodland communities on and adjacent to the mountains. The dominance of mature to decadent mountain shrub communities is also affecting mule deer. The use of vegetative treatments or natural fires to promote a diverse mixture of species, age classes, and structure would also benefit mule deer populations. Riparian habitats are primarily influenced by cattle grazing. Use of BMPs would improve shrub and herbaceous species important to mule deer.

Development of private lands continues to slowly reduce the available winter range available to mule deer. Fences also impose barriers to mule deer in transition areas, especially during severe weather and also to fawns during the spring and early summer months.

The Platte Valley Habitat Partnership (PVHP) formed in May 2012 is a result of the Platte Valley Mule Deer Initiative (PVMDI) that WGFD implemented in July 2011. The PVHP was developed to establish effective partnerships in order to maintain and improve mule deer habitat throughout the Platte Valley. The PVHP is comprised of private landowners, concerned citizens, hunters, outfitters, members of Saratoga-Encampment-Rawlins Conservation District (SERCD), and the staffs of the WGFD, BLM, University of Wyoming Extension, U.S. Forest Service (USFS), and Non-Government Organizations (NGOs).

One of the outcomes of the Partnership includes a comprehensive habitat management plan designed to be implemented collaboratively between all interested stakeholders. This “source” document provides an explanation of the PVHP’s collaborative process, mule deer ecology, objectives and desired habitat conditions of the Platte Valley, indirect benefits to society by improving the mule deer herd, and details regarding project funding and implementation. The attributes and considerations of mule deer habitat in the Platte Valley are discussed by season. Mule deer fawn production and survival is paramount to mule deer population stability and recovery. Efforts to improve habitat on summer and fall ranges are especially important to ensure maximum fawn production and survival is attained. This Plan outlines the work that has been, will be, and is planned to be completed to improve habitat conditions for mule deer in the Platte Valley. Proposed habitat improvement projects in some portions of the Platte Valley will require

extra planning and consideration in sage-grouse core and lynx analysis areas. Habitat improvement projects have been on-going in the Platte Valley and these projects will be considered when designing new projects. Habitat improvement focus areas for mule deer have been delineated but do not preclude beneficial project development for mule deer anywhere in the Platte Valley. To best plan future projects, the PVHP identified important vegetation and habitat attributes, including desired conditions, specific to enhancing mule deer habitat and they are:

1. Shrub Nutritive Quality

- a. Improve digestibility and protein content of browse
- b. Increase young age class of preferred browse species

2. Vegetation Production and Utilization

- a. Increase herbaceous production
- b. Increase shrub production
- c. Adequate size/scale of treatment to minimize impact of grazing ungulates

3. Species Diversity

- a. Increase diversity of plant types, ages, and sizes preferred by mule deer
- b. Increase desired forb cover/diversity
- c. Establish diverse shrub size, age, species, and density within that community type
- d. Increase native shrub and herbaceous cover in beetle kill and lodgepole stands
- e. Decrease/minimize invasive species

4. Species Density

- a. Increase density of species preferred by mule deer

5. Aspen Regeneration

- a. Create more young age class aspen stands
- b. Increase aspen density
- c. Increase aspen acreage
- d. Maintain healthy aspen stands

6. Riparian Habitat

- a. Improve stream health
- b. Increase stream stability
- c. Improve watershed hydrology

7. Animal Barriers and Disturbance

- a. Increase wildlife-friendly fences
- b. Decrease motorized disturbance

The Wyoming Game and Fish Commission (WGFC) committed \$500,000 as seed money for the future funding of PVHP projects. These monies will require matching funds and will be tied to the identified desired conditions agreed upon by the PVHP. PVHP planning documents and project development and implementation will be changed as necessary to accommodate changing conditions, new information, opportunities, and issues.

A mule deer collaring study has been ongoing within this area and is providing information on deer movement, habitat use as well as animal body condition (Standard 4, page 2). Will the proposed Chokecherry Sierra Madre wind project affect these deer that depend on the habitat within the wind project area (Standard 4, page 3)?

Raptors

As discussed previously, construction of the proposed Chokecherry Sierra Madre wind project could directly impact raptor populations. With extensive monitoring and planned mitigation for the wind turbines and their placement, what will be the specific effects on raptor populations if/when wind development occurs.

Raptors are primarily affected by climate (indirect effects on prey species) and human activities around nesting and perching areas. Ferruginous hawks, and to a lesser extent golden eagles, will sometimes nest on or near man-made structures such as windmills, and old corrals and buildings; or in areas with high amounts of activity. Artificial nests are used to draw the birds away from these sites so that human activities do not force the abandonment of active nest sites. These artificial nests have also been documented as being more productive in terms of the number of birds fledged per nest as compared to natural sites. There are currently 101 artificial nest sites, with about 60% being actively used. The BLM has a timing stipulation for raptors attached to any proposed project that is located within $\frac{3}{4}$ mile to one mile (depending on each species) from any nest, which prohibits surface disturbing and other activities from occurring between February 1 and July 31. In addition, the Bald and Golden Eagle Protection Act, 16 U.S.C. 668, prohibits knowingly taking, or taking with wanton disregard for the consequences of an activity, any bald or golden eagles or their body parts, nests, or eggs, which includes collection, molestation, disturbance, or killing. The ferruginous hawk, northern goshawk, peregrine falcon, and burrowing owl are BLM state sensitive species that are found or have the potential to occur within this watershed.

Threatened, Endangered, Proposed, and Candidate Species:

The threatened, endangered, candidate, and proposed species that have the potential to occur within this watershed include the Greater Sage-Grouse (candidate), Canada lynx, Ute ladies' tresses (threatened), and black-footed ferret (endangered). The North Platte River species (least tern, pallid sturgeon, piping plover, whooping crane, Eskimo curlew, and Western prairie fringed orchid) are not physically located within this watershed; however, water depletions that occur within the North Platte River system, and within this watershed, may have impacts on these downriver species. The BLM wildlife biologists complete informal and/or formal conferencing and/or consultation with the U.S. Fish and Wildlife Service for all proposed projects that may contain habitat, or the species themselves, to avoid adverse impacts to threatened, endangered, candidate, and proposed species.

Threatened Species

The Canada lynx may travel through the watershed and use woodland and adjacent riparian habitats. The closest known lynx populations occur in the Colorado Rocky Mountains to the south and in the Wind River Mountains to the northwest. In general, there should not be any impacts to Canada lynx as a result of authorizing actions on BLM-administered lands.

Ute ladies' tresses have not been specifically identified within this watershed. The only known locations within the State of Wyoming are in Converse, Goshen, Laramie, and Niobrara counties at elevations between 5,000 and 6,000 feet. However, since the plant has been located in adjacent states, the U.S. Fish and Wildlife Service believes it may occur in more locations within Wyoming. Site specific field investigations occur for all projects; therefore, Ute ladies' tresses will be surveyed for on any project that may be located within or near riparian habitats.

Endangered Species

The state of Wyoming has been block-cleared for black-footed ferret. This designation means that no wild black-footed ferret populations are expected to exist within the state. With this designation, non-essential, experimental populations can be reintroduced into appropriate habitat. Since ferrets inhabit prairie dog towns, these sites are identified and delineated over broad areas or on a site specific project basis. All proposed projects have a field site investigation completed prior to any disturbance to determine if suitable habitat for the ferret exists. In general, there should not be any impacts to the black-footed ferret as a result of authorizing actions on BLM-administered lands

Candidate Species

The Greater Sage-Grouse is commonly found throughout the watershed area. Although Wyoming has a healthy but declining population of this species, there are opportunities to improve both upland and riparian habitats used by these birds. In many areas, existing sage-grouse habitats exhibit reduced species diversity, forb abundance, and lack sufficient residual cover for high nesting success. Greater Sage-Grouse habitat recommendations developed for Wyoming, which are based on research conducted within Wyoming, can be used for assessments to determine current conditions and where the need exists for vegetative treatments. Vegetation treatments have been limited in size and occurrence within this watershed, and have occurred primarily in mountain big sagebrush and mixed mountain shrub habitat. The site at Middlewood Hill is recovering slowly with respect to shrub cover; however, the site at Pennock Mountain is recovering very rapidly. Spring controlled burn projects typically recover more quickly than fall projects, usually resulting in a more mosaic treatment, and should be promoted where and when possible. Reclamation efforts should also receive more attention in terms of how they are completed, so that benefits to sage-grouse can be maximized. In particular, the use of more forbs, including succulent species, should be developed for use in seed mixtures; however, most native forb species are not commercially available.

Summer and fall brood-rearing habitat is especially dependent on riparian habitats, which is most influenced by livestock management practices. Stream segments in degraded condition may not provide a reliable water source or high quality habitat for sage-grouse. As stream segments improve in bank stability and deep-rooted plant cover, there is usually increased composition of

grasses, sedges, rush, and woody species, and lower amounts of succulent forbs, including clover and dandelion.

Implementation of livestock grazing BMPs improves both riparian and upland plant communities, which would in most cases improve habitat for Greater Sage-Grouse. Creating new water sources for wildlife, and operating livestock water sources for wildlife when livestock are not present, are two other methods of improving habitat use by sage-grouse. Because of increased habitat availability, the dispersion of sage-grouse throughout an area may reduce losses due to predation. All water troughs (including existing projects) are having escape ramps installed during construction to reduce mortality to wildlife, including sage-grouse. Water developments and exclosures have assisted in dispersal of livestock use and reducing livestock concentrations in riparian habitats. Fences, which pose a threat to low flying sage-grouse, are being identified. As these fences are identified, markers are being installed to increase visibility, so that sage-grouse collisions are reduced or eliminated.

Another tool the BLM uses is a timing stipulation attached to any proposed project that is located within two miles of a lek, which prohibits surface disturbing and other activities from occurring between March 1 and June 30 for the protection of strutting and nesting Greater Sage-Grouse. Projects are prohibited within ¼ mile of an identified active lek; and proposed projects should be moved as far away from an active lek as possible. The timing stipulation reduces impacts to breeding and strutting sage-grouse; however, the two mile buffer has been debated by wildlife biologists. Recent research conducted within Wyoming indicates that only 40% of the hens nest within this two mile buffer. Suitable nesting habitat may be selected as far away as 20 miles from the lek. Because of this, suitable nesting habitat should be mapped in association with leks, in order to allow management of all nesting habitat available to the hens, not just within two miles of lek locations. The BLM has a winter Greater Sage-Grouse timing stipulation as well that prohibits surface disturbing and other activities from occurring between November 15 and April 30 for the protection of winter concentration areas.

Will the proposed Chokecherry and Sierra Madre Wind development affect movements of Greater Sage-grouse and habitat use? Pre-construction collaring studies conducted by CCSM will provide the baseline information for the birds (Standard 4, page 4).

BLM State Sensitive Species:

Protection measures for BLM State Sensitive Species, other than those required for raptor, mountain plover, neotropical migratory birds, and Greater Sage-Grouse, have not been identified in the RFO area. The Migratory Bird Treaty Act, 16 U.S.C. 703, enacted in 1918, prohibits the taking of any migratory birds, their parts, nests, or eggs except as permitted by regulations and does not require intent to be proven. This Act and its amendments protect the white-faced ibis, long-billed curlew, sage thrasher, loggerhead shrike, Brewer's sparrow, sage sparrow, and Baird's sparrow from actual nest destruction and/or the bird itself. Habitat loss and/or degradation are more difficult to measure and mitigate for these species. The long-eared myotis, fringed myotis, spotted bat, and Townsend's big-eared bat usually inhabit caves, rocky outcrops, and abandoned buildings. Again, habitat loss and/or degradation are more difficult to measure and mitigate for these species. Wildlife biologists monitor white-tailed prairie dog towns for

potential black-footed ferret habitat and protect these habitats by moving projects outside of the towns. There are occasions when a project may be constructed within a white-tailed prairie dog town. Generally, project proponents are encouraged to move the projects outside of existing white-tailed prairie dog towns, not only for the protection of the prairie dogs themselves, but for the protection of other species, such as the mountain plover and burrowing owl, that depend on the prairie dog town ecosystem. The swift fox may travel through the watershed and should not be impacted by proposed projects that occur as a result of implementing BLM-authorized actions. A field site investigation is completed for all proposed projects and BLM State Sensitive plant species are monitored at that time, and/or their likelihood of occurring should be noted in the event that additional field site investigations are required.

6) Recommendations:

Habitats needed to support healthy wildlife populations, including for listed or proposed threatened and endangered, and candidate species are generally in acceptable condition. This does not mean that there are not problems or concerns about wildlife habitat. The discussion under Standard #2 – Wetland/Riparian Health and Standard #3 – Upland Plant Health outlines the current conditions and recommendations for improving management of these resources. Although an area may meet a standard, it still may not be at our “desired or future” condition. On the other hand, our composition of native species is good, with some weed problems at this time. Due to the existing good condition of native vegetation and its ability to support the diverse wildlife populations we currently have, it is determined that the majority of Lower Platte assessment area is meeting Standard #4 with respect to wildlife. The following recommendations address actions to help meet future desired resource conditions.

Implement recommendations described for Standards #2 and #3. Improving the health of riparian/wetland and upland plant communities will help meet the needs of all wildlife, which use this watershed.

Due to the small amount of public lands in this watershed, it is critical to work with and support cooperative management efforts with all parties, including the Platte Valley Habitat Partnership.

Species of Interest or Concern

Antelope, elk, and mule deer

Continue to modify existing woven wire fences and older cattle-type fences to meet BLM standards. This should be accomplished in key locations in the short-term, while working towards the majority of fences in the long-term. Cooperative efforts should be pursued with grazing permittees, private landowners, WGFD, and conservation districts. When possible, relocate or remove fences to reduce impacts on wildlife movements. Encourage livestock permittees to leave gates open through as much of the fall and spring seasons as possible, and/or when the pasture is not being used, in order to help wildlife move between seasonal ranges. Documentation of locations where fences are affecting big game movements should continue.

Management plans should consider other grazers, such as wildlife, when making recommendations and to properly assess impacts. Water developments should benefit as many species as possible, and should consider providing water during the summer, even after livestock have been moved. In winter ranges, water sources should be short-lived (ephemeral) in nature, to not encourage year-round wildlife use. Isolated water sources and associated riparian habitats should be protected and managed to meet the needs of wildlife. Monitoring information, particularly trend data for big game crucial winter range, should be coordinated with the WGFD for use in evaluating and changing herd objective levels.

Continue to implement vegetative treatments in shrub and woodland habitats to improve the diversity of cover, species, age-class, vertical structure, and mosaic mix of plant communities. Management efforts should also emphasize the use of naturally ignited fires to benefit resource values in accordance with preplanned conditions and objectives outlined in the Fire Management Plan, 2011. Monitor the effects for all treatment projects, to document and analyze results and improve future prescriptions to achieve management objectives. Utilize habitat recommendations for Greater Sage-Grouse and other species when available for both assessing and planning habitat treatments. Encourage the development of interagency long-term habitat treatment plans (WGFD 2003b).

Evaluate the need and institute measures when necessary to reduce disturbances to big game species on crucial winter ranges, or other habitat areas when needed. This could involve seasonal closure of roads, seasonal closure of habitats for antler collecting, general off-highway vehicle use, and other activities. Private landowners should be encouraged to leave their lands unfenced, or use fence designs that are compatible with big game movements (WGFD 2003a).

Raptors

As discussed previously, construction of the proposed Chokecherry Sierra Madre wind project could directly impact raptor populations. With extensive monitoring and planned mitigation for the wind turbines and their placement, what will be the specific effects on raptor populations if/when wind development occurs.

The BLM should continue to use seasonal restriction stipulations for breeding and nesting raptors, which prohibit construction and other activities from occurring between February 1 and July 31. In addition, the BLM should continue to use seasonal restriction stipulations for identified raptor winter habitat areas, which prohibit construction and other activities from occurring between November 15 and April 30. Monitoring efforts should continue, in order to determine the activity status of known raptor nests and to identify new nest locations.

Threatened, Endangered, Proposed, and Candidate Species:

Canada Lynx and Ute Ladies' Tresses

The BLM will continue to complete informal and/or formal consultation with the U.S. Fish and Wildlife Service for any proposed project that may be constructed within potential habitat. Identified stipulations will be attached to all projects to avoid adverse impacts to the species.

North Platte River Species: Least Tern, Pallid Sturgeon, Piping Plover, Whooping Crane, Eskimo Curlew, and Western Prairie Fringed Orchid

The BLM will continue to identify any proposed project that may cause depletions within the North Platte River system and initiate formal consultation with the U.S. Fish and Wildlife Service for each proposed project. Projects will not be implemented until after formal consultation has been completed.

Greater Sage-Grouse

The BLM will continue to use the seasonal restriction stipulations for breeding and nesting Greater Sage-Grouse, which prohibit construction and other activities from occurring between March 1 and July 15 and between November 15 and April 30 in winter habitat areas. The WGFD should continue to maintain a later hunting season, as well as a short open season, which should reduce hunter numbers and harvest. This delay reduces the vulnerability of sage-grouse, particularly productive hens, by delaying harvesting until after broods have broken up flocks and moved from the easily hunted riparian habitats into the more difficult open sagebrush areas (WGFD 2003e). Implement (or continue) management and projects to improve Greater Sage-Grouse habitats, including nesting cover, species diversity, and age class structure in upland and riparian habitats (particularly for forbs). Continue monitoring habitat trends and sage-grouse use when possible, before and after projects have been implemented. Continue to mark fences that are identified as posing a collision risk to sage-grouse.

Fisheries

1) Characterization

Regionally or Locally Important Recreational Fisheries:

Recreational fisheries within the analysis area include the Platte River, Jack Creek, Pass Creek, Sage Creek, and several small impoundments, most notably Teton Reservoir, as well as Emigrant Reservoir, Little Sage Creek Reservoir, Rasmussen Lake, and Rim Lake. These fisheries afford the opportunity to catch several species of salmonid fishes, including brown trout, rainbow trout, and brook trout. These fisheries represent a somewhat limited resource in this arid region of Wyoming. However, due to the low amount of public land, public access to waters capable of supporting game fish is very limited. Specifically, the Platte River receives significant use within the analysis area, followed by Teton Reservoir (stocked regularly), and are therefore a priority for the BLM and cooperating agencies.

2) Issues and Key Questions

In the 2004 watershed report, issues identified included vegetation management, beaver habitat, energy development, transportation planning, and invasive species, please reference this document for the discussion of those issues. Three additional issues are now raised, including irrigation practices, water rights, and watersheds with suspended sediments, which are described below.

Irrigation Practices

Irrigation practices include diversion structures, which may act as barriers to fish movement, and the de-watering of streams for hay production on private lands. Although neither diversion structures or diverting water is permitted through the BLM, some diversion structures are located on BLM administered public land, and opportunities may arise to reconstruct them and incorporate design features to improve fish passage. Impacts of barriers to fish passage was discussed in the 2004 report under the issue of roads (transportation planning). This has become a higher priority to address by all the cooperating agencies over the last ten years, with the principle question being, where are all barriers to fish movement located and what is the priority for modification to improve fish passage?

Water Rights

The water rights regarding Teton Reservoir and its' usefulness as fisheries habitat in the future was raised during recent dry years when a call for water was made by the State of Wyoming. Teton Reservoir (1968) has the junior water right on Little Sage Creek, with more senior water rights held by the State of Wyoming (Pathfinder Reservoir-1904) and TOTCO for irrigation (Lower Sage Creek-1905). In dry climate/runoff years there is not sufficient water to meet the needs of all three water rights. Teton Reservoir is also filling with sediment, which will shorten the timespan it will have to provide deep enough water to support a fishery. The questions that have been raised are what viable alternatives are there to replace Teton Reservoir as a public fishery? Options discussed have included construction of a new smaller reservoir at the artesian well upstream from Teton Reservoir, or gaining public access to Rasmussen Reservoir, a body of water on private and public land six miles to the southeast of Teton. In addition, there have been discussions between the RFO and the WGFD to resurrect the Rawlins Kids Fishing Pond within the Rawlins city limits. There is high use of the fisheries closer to Rawlins and a desire to maintain the recreational opportunity this type of resource provides.

Watersheds with Suspended Sediment

Although the Sage Creek watershed has been removed from the Wyoming State List of Impaired Water Bodies, it still degrades the fisheries habitat in the North Platte River below their confluence following storm runoff events. This is due to the fine clay particles found in the soils within the Sage Creek watershed. The cloudiness of this water reduces visibility, increases water temperatures, and lowers the number and diversity of desirable macro-invertebrates within the North Platte River. These impacts will continue to occur, even with the implementation of BMPs for grazing and energy development due to the natural properties of the soils found in this watershed. However, there are options to reduce the amount of sediment within the creek such as: contour furrowing to reduce runoff, use of non-native vegetation to increase vegetation cover and reducing impacts by cattle.

Will development of the largest proposed wind project in the United States affect fisheries habitat in the future?

3) Current Conditions

There are three locations on the North Platte River where WGFD conducts fish population monitoring, Pick Bridge to Old Sanger, Pass Creek to I-80 Bridge, and from the Sinclair Golf Course to the BLM Dugway Recreation Area. Game fish sampled included brown trout, rainbow trout, walleye, and brook trout (the latter only found at Pick Bridge), with the species listed in abundance the same at all sites and brown trout is the most abundant species. The Pick Bridge site has been sampled in 1992, 1995, 1998, 2003, 2007, and 2013, with estimated fish per mile the second highest in 2013 at 868, with a high of 1,173 in 2007, and the long-term average at 747 fish per mile. In 2013, a total of 646 fish were sampled, marked, and released during three days of sampling, including 457 brown trout, 185 rainbow trout, two brook trout and two walleye. The mean length of brown trout was similar to 2007 sampling. The mean length of rainbow trout was shorter than previous years likely due to the large number of young of the year captured. Brown trout continue to reach Preferred, Memorable, and Trophy size, and more quality rainbow trout were captured than in 2007. The Pass Creek site has been sampled in 1993, 1996, 2000, 2006, and 2011, with estimated fish per mile highest in 2011 at 774, followed by 670 in 1996, and with an average of 533 for all years. Pounds of fish per mile increased from 270 in 2006 to 748 in 2011. Fish sampled in 2011 included 236 brown trout, 187 rainbow trout, and seven walleye. Higher flows in 2010 and 2011 have improved conditions in this river section compared to 2006. Mean lengths and weights of brown trout remained similar to 2006, however, those numbers for rainbow trout increased, with cooler water temperature and good flows in this reach likely accounting for the increases in rainbow trout. Relative weights for all trout were excellent and improved over 2006. Trout were stocked until 1996 in this river section. The Sinclair Golf Course site was sampled in 2000, 2005, and 2010. In 2010 there were 98 brown trout, 98 rainbow trout, and 92 walleye sampled. The estimated number of fish per mile remained at lower levels than those found in 2000 and very close to the 2005 estimates. Water flows have improved in the past two years reducing the problems caused by extreme low flows and high temperatures in late summer. Mean lengths, weights, and condition of trout and walleye are consistent with previous years.

Jack Creek and Sage Creek support brook trout in their upper reaches, while the lower reaches do not support fish, due to de-watering for irrigation and ephemeral flows in the case of Sage Creek. Jack Creek has only been sampled on the Medicine Bow National Forest, where in 2006 there were 54 pounds of fish per mile (50 pounds of fish per mile or more is considered a good recreational fishery). Pass Creek also has brook trout in the upper headwaters, although there are no BLM administered public lands. There is likely movement of fish across BLM administered public lands in the lower reaches below perennial springs, which would most likely include brown and rainbow trout moving up from the North Platte River. However, this area is also affected by de-watering for irrigation on private lands upstream, which at times results in no water present in lower Pass Creek. Teton Reservoir is stocked annually with catchable sized rainbow trout. Emigrant Reservoir is also stocked annually with sub-catchable sized brown and rainbow trout. Based on sampling in 2012, stocking rates are being reduced and switched to catchable sized fish, and will be re-evaluated in 2015. Rim Lake was previously stocked annually

with catchable sized rainbow trout, but it no longer holds adequate water to support a fisheries. Rim Lake was previously fed by water from the City of Rawlins Atlantic Rim storage facility located just to the east, which had leaked since it was constructed in the 1980s. A liner was installed in 2012, which stopped the water loss that supported Rim Lake. Little Sage Creek Reservoir has also been stocked in the past, and may still be stocked if there is adequate water and fish available (Standard 4 – Fisheries, page 1). In addition to fish habitat inventories, PFC assessments also constitute an indirect assessment of fish habitat conditions, since they determine factors affecting riparian and wetland systems. See Standards 2 and 5 for accounts of stream habitat conditions

4) Reference Conditions

Refer to the 2004 watershed assessment.

5) Synthesis and Interpretation

Platte River

The North Platte River is a significant fisheries resource within south-central Wyoming, but with limited public access due to the high amount of private land (Standard 4 – Fisheries, page 2). However, the river in the analysis area is accessible by watercraft, and the WGFD maintains river access at Foote Creek, Pick Bridge, Sanger, at the Rochelle Easement south of I-80, as well as access at Fort Steele State Park and the Dugway Recreation Area (BLM). Number of fish per mile and pounds of fish are at or close to the highest levels recorded, with good levels of large fish and increased levels of young of the year indicating good conditions. Low numbers have been observed in drought years, however, numbers and amount of fish have rebounded following high flow years in 2010-11. During these high flow events, the channel has scoured mud, sand, and cobble onto building banks and bars, which improved habitat for fish reproduction and the macro-invertebrates which they feed upon. Fishing below the confluence with Sage Creek may be impacted following spring runoff or summer thunderstorm events due to the increase in turbidity caused by Sage Creek, which may last for several days. This does not appear to be negatively affecting the long-term condition of this fisheries (communication with McDonald, WGFD). Bank stability is generally good, due to low gradient, rock and vegetation cover, and as evidenced by the low amounts of lateral channel movement following three high flow years between 2010 and 2014 . Livestock grazing along the river is not as much a factor as along smaller streams, although most grazing is rotated to provide rest or recovery from grazing for a portion of the growing season.

Jack Creek

The only portions of Jack Creek on BLM administered public land are short reaches adjacent to the MBNF and eight miles further downstream north of the Jack Creek county road. This stream supports brook trout and is influenced by beaver next to the MBNF and by livestock grazing in both locations. Current grazing management is supporting good riparian and fisheries habitat conditions.

Pass Creek

The Pass Creek drainage also includes Rattlesnake Creek, both of which are influenced primarily by irrigation practices and livestock grazing. The portion of Rattlesnake Creek on BLM-

administered public land includes an irrigation structure, which has been reconstructed by the NRCS and grazing permittee, to improve fish passage. A riparian pasture has been created along this stream reach, which is currently being rested from grazing, to improve riparian and fisheries habitat. There are brook trout on private land a few miles upstream that may repopulate the public land portion of Rattlesnake Creek. The WGFD and BLM are working cooperatively with the upstream permittee to improve ranch management and range conditions. The portions of Pass Creek on BLM-administered public land are highly affected by irrigation, particularly de-watering on dry years. There are seeps and springs on the lower reaches that improve flow rates, and where fish may move up from the North Platte River. The principle management influenced by the BLM is livestock grazing, which has been changed to rotated use to improve vegetation cover and reduce stream width. These lower reaches should be able to support at least seasonal fisheries habitat in the future.

Sage Creek

Sage Creek is a large drainage south of Rawlins, which supports brook trout in the headwaters and downstream to the county road, depending on water conditions and temperatures. The springs at the upper end of this basin form the foundation of the water supply for the City of Rawlins, and their reservoir does support brook trout as well. Downstream there is extensive willow and beaver complexes for at least half the length of Sage Creek, which help support and over winter trout populations. Change in livestock grazing management to a shorter duration, rotated season of use, initiated in the 1990s, has increased willow cover and improved stream habitat to support fisheries.

Teton Reservoir

Teton Reservoir is located approximately 14 miles south of Rawlins on Little Sage Creek, and is stocked annually with catchable sized rainbow and/or brown trout. Constructed in 1968 as part of a watershed improvement project to reduce sediment loading into the North Platte River, this site was later developed for fisheries and as a BLM recreation site. There is an artesian well about one mile upstream from this reservoir, which established its principle water right, but due to the size of the reservoir, the water from the artesian well does not even make up for the evaporative loss. In dry years, the State of Wyoming has put a call on water upstream from Pathfinder Dam, which is in place until May 1 and is also when most snowmelt runoff comes down Little Sage Creek to fill Teton Reservoir. The private landowner on lower Little Sage Creek also has a senior water right to irrigate their hay meadows, which may not leave adequate water to fill Teton Reservoir. This reservoir has also filled up with sediment, which was the original purpose of this project, and will in time not be deep enough to support a fisheries (Standard 4 – Fisheries, page 3). BLM is considering other options to Teton Reservoir to provide both a fisheries and recreational opportunity to the people in Rawlins and other public land users. Little Sage Creek Reservoir, located three miles upstream from Teton Reservoir, also has supported a stocked fisheries, but has filled in with sediment and will only support fish during good water years. Since it will support rapid fish growth, the WGFD will stock this reservoir if water conditions are good and fish are available. Dredging or deepening this reservoir has been discussed in the past to improve the fisheries habitat and overwintering capability.

Rim Lake

Rim Lake is a small playa lake four miles south of Rawlins, which had expanded to approximately 40 surface acres due to water leaking from the City of Rawlins Atlantic Rim storage facility. Since that water source has now been eliminated, the fisheries at Rim Lake can no longer be supported or new water sources would need to be developed. Options for water sources would likely need to be a combination of a ground water well, the spring adjacent to Rim Lake, and possibly seeking the cooperation of private landowners to develop and pipe water from Nine Mile spring to the south. The City of Rawlins has expressed support to help provide water to fill Rim Lake on an occasional basis, but not as it was before due to the leaking water supply. The size of Rim Lake would also need to be reduced and the depth increased to reduce evaporative loss and water temperatures, as well as to increase over winter survivability.

Emigrant Reservoir

Emigrant Reservoir is a small reservoir about 15 miles south and west of Rawlins that has been stocked with catchable rainbow trout when there is adequate water and/or fish available to stock it (Standard 4 – Fisheries, page 4).

In summary, the description for Standard 2, Riparian/Wetland, also applies in most cases to fisheries. Based on results from Standard 2, livestock grazing is the principle factor affecting riparian and wetland systems in the analysis area. Changing the season of use and/or shortening the duration of use are two methods for improving riparian habitat for fish. As streams improve in vegetative condition, water flows improve and temperatures are kept lower. The second factor needing attention is the lack of beaver and the habitat to support them. Beaver also improve water retention and lower temperatures due to their dams and ponds.

Baseline inventory information is lacking for native species of fish and wildlife in portions of the analysis area. Though some broad-scale inventories have been conducted to identify trends in populations of native fishes in Wyoming, site-specific information required for effective land management is presently lacking.

6) Recommendations

The improved management of riparian habitats through the use of grazing BMPs indicates both an upward trend and meeting Standard #4 for fisheries for some of the streams in the assessment area. However, other sites that should support fisheries currently do not, primarily the lower Pass Creek drainage. Standard #4 for fisheries is not being met on streams, which currently fail Standard #2 – Riparian/Wetland. There are also sites that are rated in Proper Functioning Condition, but due to the lack of overhead cover (stream shading) exceed temperature requirements for some fish species and won't support them. However, these sites have not yet been defined. Due to the lack of credible data on the status of native fishes in the watershed, whether Standard #4 is being met for these species is unknown.

Describing the condition of aquatic systems using methods that incorporate the habitat requirements of fishes should be a priority. Completing inventories for native fishes and native amphibians, including boreal toad, should be a high priority for the fisheries program in coming years in order to identify site-specific land management opportunities.

Vegetation Management

In areas not meeting Standard 2, implement allotment management plans that will provide the amount of vegetation necessary to ensure adequate watershed protection under grazing use to perpetuate vegetation, enhance woody plant vigor, and assure soil stability.

Energy Development

Consideration of the viability of aquatic populations will be an important component of effective land use planning for future energy development activities. These considerations should include obtaining baseline inventory information in proposed development areas, considering life history requirements of native species when designing transportation networks, and maintaining the integrity and diversity of stream and wetland habitats. Consider as mitigation the development of new fisheries to replace Rim Lake and Teton Reservoir.

Transportation Planning and Irrigation Structures

Design road crossings and irrigation structure that simulate natural stream processes and would allow for the passage of aquatic organisms and allow access to habitats required by stream fishes. This can be accomplished by using a number of designs including bridges, bottomless culverts, and baffled culverts, as well as newer design of structures to pass fish. Road designs should also consider appropriate energy dissipation in order to limit the concentration of overland flows and resulting sedimentation.

Invasive Species

Invasive species have been identified as a concern for this watershed since the last assessment. In 2010, the WGFD implemented a boat registration and inspection policy for detecting invasive species. Therefore, avoiding the transportation of invasive species to new habitats should be considered a high priority for the Rawlins Field Office as well. As the distribution of invasive species is not fully known, disinfecting equipment and materials that have been used in riparian or wetland environments should be considered standard precautions. All programs should use the chlorine bath maintained by the fisheries crew for disinfecting their equipment and materials before they are used in a new location. Instructional Memorandum No. WY-030-99-007 outlines required disinfection procedures for the Rawlins Field Office.

Weeds

1) Characterization:

Invasive vegetation and noxious weeds are highly competitive and can often out-compete native vegetation, especially on recently disturbed sites (USDI-BLM 2007). Invasive vegetation and noxious weeds degrade or reduce soil productivity, water quality and quantity, native plant

communities, wildlife habitat, wilderness values, recreational opportunities, and livestock forage, and are detrimental to the agriculture and commerce of the U.S. and to public health (National Academy of Sciences 1968, USDI-BLM 2000b). These invasive species can reduce biodiversity, affect threatened and endangered species, change habitats and natural plant/animal associations, and prevent native species from remaining or encroaching upon a site. Weed infestations reduce forage availability for livestock and wildlife. Unlike many areas of the West, the Rawlins Field Office has a comparatively smaller weed problem than other areas in the Rocky Mountain region. The analysis area is relatively noxious weed free, with just small problem areas. Within the analysis area, noxious and invasive species are predominantly found along roadways and other disturbed areas, and perennial waterways associated with recreational use, agriculture, and animal grazing activities. Road building, development, grazing, fire suppression, recreation, and other activities can directly increase weed establishment, introduction, and/or maintain their presence within the ecosystem.

The main noxious species present within the area are perennial pepperweed, Russian knapweed, and leafy spurge. Other noxious species include saltcedar, whitetop, Canada thistle, spotted and diffuse knapweed, marsh sow thistle, Russian olive, and Dalmatian toadflax. There are also several invasive species present which are normally restricted to disturbed areas. These include halogeton, Russian thistle, cheatgrass, and several annual mustards. Most invasive species are not being treated within the RFO.

2) Issues and Key Questions:

The issues and key questions from the 2004 S&G Report are still valid at this time. The area is still seeing an expansion of some noxious and invasive weed species. Current issues in the assessment area are as follows:

- Noxious weeds and invasive species are spreading into undisturbed rangelands from initial sites of introduction along many roadsides, livestock water developments, fishing access points, undeveloped campgrounds, and other disturbed areas.
- Adequate mitigation measures are in place to address weed control on disturbed areas; however, enforcement of existing stipulations is inconsistent.
- Some private landowners adjacent to BLM administered lands, especially in the checkerboard/intermixed land pattern areas, have yet to implement noxious weed management programs; thereby, negating some of the potential effectiveness of treatments on BLM administered lands.
- Recreation is a factor in the establishment and spreading of weeds along the river, and more direct action is needed.
- There are no reasonable measures available to control the spreading of weeds as a result of wildlife movements.
- Budget constraints do not allow for the treatment of all weed infested areas.

Will development of the largest proposed wind project in the United States affect the spread of weeds in this watershed?

3) Current Conditions:

Weed locations are primarily restricted to disturbed areas associated with roads, irrigation, recreational use, and livestock grazing activities, such as water developments. There are many areas where noxious weeds have spread throughout native rangelands. Some of these areas are being treated to contain the weeds where they are currently located in order to prevent their spreading into other areas. One of the goals is to avoid having them spread elsewhere by vehicle, equipment, water, or animal movements. Most Federal, State, and county improved roads are being treated for weeds.

As stated earlier, the principle noxious species found within the analysis area include perennial pepperweed, Russian knapweed, and leafy spurge.

Perennial pepperweed grows up to four feet tall in waste areas, irrigation ditches, hay meadows, wet areas, roadsides, and other higher water table areas (Standard #4 - Weeds, Page 1). It is fairly aggressive and readily expands into undisturbed rangelands and along watercourses. An experimental weed prescribed fire was conducted on Little Sage Creek in the spring and fall of 2003 following herbicide treatments along a limited portion of the drainage. These treatments resulted in the removal of over-story basin big sagebrush and greasewood that had previously limited weed control measures. Following the control of invasive species, both through prescribed fires and herbicide applications, perennial pepperweed was eradicated along this stretch. However, other weed problems continue to persist. Unfortunately, pepperweed occurs south of Rawlins along the remainder of the Little Sage Creek and its tributaries, along the North Platte River throughout the watershed, as well as a few scattered patches in other side drainages. There are also patches along Sugar Creek and around livestock water developments. A portion of the known patches are being treated along Upper Little Sage Creek, which involve approximately 200 acres.

Russian knapweed is a poisonous perennial, and which forms dense colonies. Russian knapweed is found in many places throughout the assessment area. The North Platte River corridor has scattered patches totaling approximately 150 acres, which are spreading slowly, and most are not being treated as of yet. There are nearly 200 acres of Russian knapweed within the Sage Creek/Little Sage Creek drainages that are also expanding, and have received only limited treatments in the Little Sage Creek area. Another area infested is within, and adjacent to, the railroad Right-of-Way (ROW), and associated roads east of the North Platte River. These are not presently being treated and are expanding. Twenty acres here are not meeting the standard. A total of 370 acres are not meeting this standard.

Leafy Spurge is a perennial, up to three feet tall, which grows basically anywhere. It is highly competitive and extremely difficult to manage. Spurge is known to occur along the North Platte River corridor and is not being treated. Wildlife appears to spread the spurge and carrying it up from the river. This is observed along draws and shrub patches in small areas of an acre or less in size. Altogether there are (at this time) an estimated known 100 acres of leafy spurge scattered along the river, which are aggressively growing, most of which are not being treated, and that do not meet this standard.

Other noxious species present in the analysis area are:

Saltcedar and Russian olive are deciduous shrubs/trees introduced from Eurasia as an ornamental. They are difficult and expensive to control. They occur in isolated patches scattered throughout the analysis area, mostly south of Rawlins, and along the North Platte River, and are treated as found. New sites found along Pass Creek during the assessment period have been on BLM administered lands. Sites found along Sage Creek and Little Sage Creek are mixed in with Russian knapweed and other weedy species, with the acres failing this standard included in the acreage already listed for the knapweed. There have been limited treatments of these weedy areas around reservoirs; however, fluctuation of reservoir levels has influenced control measures. Additional acreage of approximately 30 acres are not meeting this standard.

Whitetop (hoary cress) is a deep-rooted perennial up to two feet tall, which reproduces from root segments and seeds. It occurs on alkaline, disturbed soils along roads and the edges of meadows and irrigation ditches, and is highly competitive with other species. It is one of the more difficult invasive species to control, and most patches are not being treated.

Canada thistle occurs in and along riparian habitats, and in some cases along roads where runoff water accumulates. As long as the riparian habitats are being properly managed, Canada thistle is not expanding and occupies the niche between the riparian and upland habitats. Canada thistle occurs basically throughout the assessment area and is being treated along most main roads.

Spotted and diffuse knapweed are annuals or short-lived perennials, up to three feet tall. They grow along roadsides, disturbed areas, and dry rangelands, especially liking bitterbrush/bunchgrass communities on light, well-drained soils. Diffuse knapweed occurs in one known location west of Saratoga and has had manual and some chemical treatments (Standard #4 - Weeds, Page 2). It is being spread by vehicles along roads and wildlife outside the roads. This area encompasses approximately 10 acres. Spotted knapweed has been found in isolated areas along main roads and is being treated as found.

Dalmatian toadflax is a mildly poisonous perennial up to three feet tall, which reproduces by seed and underground root stalks. It is very aggressive, with a deep root system and a waxy leaf, which render it very difficult to eradicate. Once introduced, conditions of the rangeland do little to slow any expansion of the infestation. Dalmatian toadflax occurs in two areas. There are small spot infestations starting along the roads, from vehicles spreading the seed, and into undisturbed rangelands from animals redistributing the seeds. Ten acres fail to meet the standard.

Marsh sow thistle is a relatively new weed identified in this watershed (Standard #4 - Weeds, Page 2). It is a perennial from the United Kingdom and Canada, which spreads rapidly in high water table areas. No treatments have occurred so far and the extent of the infestation is not known. It is currently known to occur along Little Sage Creek, and has been noted in isolated areas along lower Sage Creek, as well as the North Platte River.

The invasive species of concern are halogeton and cheatgrass. Other invasive species include Russian thistle and several annual mustards. Halogeton is widespread along disturbed areas, including roads and other areas where equipment is used. It often provides lush forage along

roads due to its late summer flowering habit and the added moisture from runoff. Halogeton has killed sheep within the RFO and has also been known to kill cattle. Livestock are most affected when stressed or when they have no period of acclimation, as rumen microbes adjust up to 30 percent within 4-5 days. Cheatgrass occurs sporadically throughout the assessment area. Disturbed areas along roads, corrals, and salt blocks are common locations. However, it can also be found on rangelands on well-drained, disturbed soils, particularly on south and west facing slopes. Annual mustards and Russian thistle occur along disturbed roadsides throughout the area. These generally are not large-scale problems, but patchy ones. Most invasive species, including halogeton, are not treated unless they are interfering with the reclamation of disturbed areas, or are a fire hazard around well locations.

Mineral and Pipeline Development and Associated Reclamation

For the mineral development in this area, there are fifteen coal bed methane natural gas wells, two conventional natural gas wells, and thirteen wells associated with oil development. Since the last review of this area, all fifteen of the coal bed methane natural gas wells have been plugged and reclaimed. The reclamation on these wells have not met the criteria for reclamation success as specified in the Rawlins Resource Management Plan, Appendix 36. These wells currently do not have major erosion issues, but still have higher erosion than the surrounding area. The sites also have weed problems. These issues have been addressed, and a plan is being worked on to redo the reclamation on the majority of the federal coal bed methane well sites. The two conventional natural gas wells sites were permitted after the last report was issued for this area. Both of these locations have been reclaimed. The conventional sites have not reached the criteria for reclamation success and the Eight Mile Lake 26-31 has been re-seeded in 2014 to address the vegetation concerns. For the oil development in this area, there were two new wells permitted and drilled since the last time a report was issued for this area. Both of these wells have entered the production/interim reclamation stage. The other thirteen oil development wells in this area are stable and have active chemical weed management on an annual basis.

There were two large inter-state pipelines that crossed this area since the issuance of the last report. These are the Rockies Express Pipeline and the Overland Pipeline. Both pipelines have not met the Rawlins Resource Management Plan's Reclamation Success Criteria in Appendix 36. Portions of these pipelines have large patches of Halogeton, an invasive weed, that are being controlled. The Rockies Express Pipeline is working on a new plan to control the weed infestation on the pipeline in 2015 and the Overland Pipeline reseeded portions of this pipeline in 2014 with an approved plan to reseed it completely within the next two growing seasons.

4) Reference Conditions:

Please refer to the conditions discussed in the 2004 S&G Report.

5) Syntheses and Interpretation:

The highest priorities for treatments are the aggressive noxious weed species, such as the knapweeds, perennial pepperweed, toadflax, saltcedar, and leafy spurge, which are able to spread throughout stable native plant communities. These are promptly treated and monitored where

possible, and are not specifically related to livestock grazing. Weed expansion through construction equipment (not cleaning equipment between moves), and adequate weed control on mostly private lands that could spread to public lands need to be addressed. Where livestock grazing is contributing to the invasion or expansion of weed species, management actions must be adjusted.

A significant portion of the watershed has not been inventoried for weeds, but it is generally assumed that unless there are disturbances or it is in close proximity to the North Platte River, there probably are not any noxious species present. The exceptions are when noxious weeds are already established in an area, and buffer zone inventories around the patches are not complete. In addition, noxious species along the North Platte River are increasing and a cooperative effort for control is needed due to the checkerboard land pattern. As native vegetation is re-established, many of the invasive species will be crowded out. Two species of long-term concern within the assessment area are cheatgrass and halogeton.

6) Recommendations:

Due to the existing good condition of native vegetation, and the weed treatment program currently in place to control and/or eradicate identified weed problem areas, it is determined that the majority of the watershed is meeting Standard #4 with respect to weeds. There are known areas of noxious weeds that are rapidly expanding and are not being treated. These areas affect approximately 1,000 acres. The following recommendations, in addition to following the Rawlins Weed Prevention Plan (BLM, 1999), would expand upon the success already achieved and help to meet desired future resource conditions.

Continue with inventory and treatment efforts to identify and contain, or eradicate, any noxious weeds. Continue to work with ROW/lease holders in their treatments of invasive, noxious species, as well as work with landowners on concurrent treatments of private lands. Enforcement of stipulations on ROWs to control weeds must occur.

Identify all weed species that need to be treated throughout the assessment area. Although some may not be a major focus for treatments, they can be a significant problem within localized areas. In addition, more education on noxious species (including for landowners, recreationists, and equipment operators), and innovative ways to address weed infestations are needed for this watershed. The BLM proposes to request increased funding for ways to address these weed issues, especially along the North Platte River.

STANDARD 5 – WATER QUALITY

Water quality meets state standards.

1) Characterization:

The State of Wyoming determines water quality status, and the BLM works with state agencies to correct identified issues regarding water quality where they occur on the BLM-administered public lands. The North Platte River is mostly designated Class 2AB due to the game fisheries on

the river, and the municipal drinking water sources in the basin and downstream. Water bodies that do not meet their designated beneficial uses are placed on the State 303(d) list for factors identified that contribute to water quality impairment. Sage Creek drains into the North Platte River and was listed for habitat degradation and concerns about sediment contribution to the North Platte River. The classification was based on a study of the North Platte River that concluded that Sage Creek was a major factor effecting turbidity in the North Platte River. Sage Creek received Clean Water Act Section 319 Funding, and has since been removed from the 303(d) list.

2) Issues and Key Questions:

The issues and key questions are similar to those described in the 2004 S&G Report. Non-point source pollution impacts to water quality can result from localized erosion due to surface disturbances and from poorly maintained upland habitats and riparian/wetland systems. An increase in road density and poorly designed and maintained drainage crossings also contribute to non-point source pollution by altering overland flow hydraulics and by removing soil stabilizing vegetation.. Removal of soil stabilizing vegetation causes accelerated wind and water erosion, increases in down gradient sedimentation, and increases in downstream sediment loading to water bodies. In addition, alterations in channel morphology caused by overgrazing can cause channels to downcut, resulting in a drop in the localized groundwater table. A drop in the water table can potentially reduce the extent by which riparian vegetation is being stabilized.

Point source pollution impacts include the potential for spills of hazardous materials along the Interstate 80 corridor and other highway systems, and as a result of industrial, agricultural, and municipal discharges. Municipal sources include the towns of Rawlins, Sinclair, and Saratoga, as well as upstream contributions from Riverside and Encampment. The only potential industrial source is the Sinclair Refinery, which is located in Sinclair, WY. A small portion of the Seminoe Road Coalbed Methane Natural Gas Project is in the analysis area; this project discharges industrial waste water into the Seminoe Reservoir, which has higher than background concentration levels of total dissolved solids.

Will development of the largest proposed wind project in the United States affect water quality in the future?

3) Current Conditions:

There are currently no water bodies listed as impaired by the State of Wyoming within the Lower North Platte Watershed. Indirect indicators of water quality are characterized by upland and riparian monitoring described under Standards 1 and 2. Trends described in Standards 1 and 2, such as reduced amounts of bare ground and improved riparian conditions, also indicate an improved water quality condition since the 2004 S&G Report.

4) Reference Conditions:

Refer to the reference conditions discussed in the 2004 S&G Report.

5) Synthesis and Interpretations:

During construction and operation of the proposed Chokecherry Sierra Madre wind project will best management practices and design of the project ensure that the air quality standard will continue to be met.

Managing livestock and evaluating road designs on a project or allotment basis is the best way to address human impacts, and they can be measured and evaluated on a case-by-case basis or through monitoring of vegetation conditions. Livestock grazing, road density, and other human activities contribute to non-point source pollution. Human disturbances may be additive to natural disturbance that may lead to exceedances; however, separating human from natural disturbance sources is difficult at best.

6) Recommendations:

Within the Lower North Platte River assessment area, the State of Wyoming has not identified any water quality impairments. The BLM will continue to work with livestock permittees and other partners to utilize BMPs for livestock grazing, vegetation treatments, oil and gas developments, and off-road vehicle use in order to maintain or improve water quality conditions across this watershed. Spring and seep water sources would continue to be fenced for protection, and off-site watering facilities developed where needed, while providing sufficient flows to support wetland and riparian habitats below these sites. Sage Creek has naturally high dissolved and suspended sediment loads due to erosion and sediment loading, especially from the lower portion of the watershed. BLM and permittees should continue to improve conditions in the Sage Creek Watershed by using a combination of short durational grazing, off-channel water developments, improved road management, grade control structures, water diversions, and vegetation filtering to reduce sediment loading from Sage Creek to the North Platte River, as well as improving the water quality within Sage Creek.

The BLM will continue to implement or refine BMPs for livestock grazing, which promote perennial vegetation to stabilize stream banks and improve cover and litter along the uplands. Season and duration of use are the principal factors when considering management changes to address this standard. BLM will continue to identify and correct existing road problems that alter surface water flows and result in accelerated erosion. The BLM will continue to promote mixed-age shrub and woodland communities with higher proportions of young and middle-aged stands, which have greater amounts of herbaceous cover to reduce runoff and soil erosion and increase infiltration and ground water recharge. BLM will assure that the design and plan surface discharge facilities for coal bed natural gas projects are acceptable in order to reduce impacts to water quality, and will minimize road developments through the development of transportation plans.

STANDARD 6- AIR QUALITY

Air Quality Meets State Standards.

1) Characterization:

The most current air quality information (since the 2004) watershed assessment) is obtained from the Chokecherry and Sierra Madre Wind Energy Project FEIS that was completed in 2012. Excerpts of the affected environment section of the FEIS are incorporated into this document. Air quality in a given location is defined by pollutant concentration in the atmosphere. One measure of a pollutant is its concentration in comparison to a national and/or state ambient air quality standard. These National Ambient Air Quality Standards (NAAQS) are established by the United States Environmental Protection Agency. The NAAQS represent maximum acceptable concentrations that generally may not be exceeded more than once per year, except the annual standards, which may never be exceeded. An area that does not meet the NAAQS is designated as a nonattainment area on a pollutant-by-pollutant basis. The State of Wyoming has adopted the NAAQS as state air quality standards and has additional Ambient Air Quality Standards for other pollutants that are more applicable to oil and gas projects. The Chokecherry and Sierra Madre Project area was considered to be in attainment of the NAAQS.

2) Issues and Key Questions:

Although much of the discussion in the 2004 S&G Report is still valid and should be reviewed, changes will be coming if/when the proposed Chokecherry and Sierra Madre Energy Project begins construction. Several different factors can greatly affect air quality within this analysis area, but most are unrelated to livestock grazing. While, there are very limited oil and gas developments and coal mining in the area, those activities can produce the greatest and most continuous amounts of air pollutants. Much of the air pollutants in this watershed come directly from the Sinclair Oil Refinery and its associated activities. Vehicle traffic contributes pollutants through the combustion of fossil fuels. Where interstates or highways are present, the increased motor vehicle traffic will result in increased levels of these pollutants. In less developed areas these levels of pollutants are greatly reduced due to less traffic. Traffic along dirt roads can affect air quality over the short-term in the form of dust, especially during dry conditions. How can we reduce source pollutants that enter the air, while at the same time address associated air quality issues, such as dust abatement?

Prescribed fires and wildfires affect air quality at a localized level for short periods of time. Prescribed fires are implemented in coordination with and permitted by the Wyoming Department of Environmental Quality. Most are planned in such a manner as to minimize impacts to more-populated areas. Large-scale fires are becoming much more common due to decades of fire suppression. If fuel breaks are not created occasionally by prior burned areas, could we be looking at larger wildfires with associated air quality issues?

3) Current Conditions:

As stated in the previous assessment, overall air quality is good within the assessment area, which is due in large part to the presence of reliable winds. However, when the proposed Chokecherry Sierra Madre is constructed in the future, air quality would be affected. Pollutants emitted during construction and operation of a wind energy project include particulates (fugitive dust), as well as nitrogen dioxide (NO₂), carbon monoxide (CO), and sulfur dioxide (SO₂) from roadways, batch plants, construction activities and engines powering construction equipment and other mobile sources. Fugitive volatile organic compounds (VOCs) emissions are relatively

small compared to other potential pollutants. These same pollutants, as well as others, are emitted by industrial facilities in the region including refineries, natural gas pipelines, compressor stations, mines, and sawmill operations. Fugitive VOCs also are emitted by exploration and production of oil and natural gas in the region.

NO₂

Several ambient air quality stations are operated in Wyoming by the State of Wyoming or other operators; however, there are few data collection sites that measure ambient air quality in the vicinity of the Application Area in Carbon County. The highest measured 1-hour value of NO₂ in Carbon County at a site near the Atlantic Rim was 13 parts per billion (ppb) in 2007 and 14 ppb in 2008. The annual average at Atlantic Rim was 2 ppb in 2008. These annual and 1-hour values are well below the allowable annual average NAAQS of 53 ppb (USEPA 2009b). An ambient air quality site near the town of Wamsutter in Sweetwater County is used to track meteorology and air quality downwind of an area of extensive natural gas development. The Wamsutter Station includes gaseous (NO_x, SO₂, and ozone), continuous particulate (PM₁₀, tapered element oscillating microbalance, and meteorological monitoring. This station began operations on March 13, 2006. The Wamsutter site is generally upwind of the Application Area and provides a conservative representation of regional air quality. The highest annual average NO₂ measurements at Wamsutter were 7 ppb in both 2006 and 2007 when activity was high and most recently 4 ppb in 2013 during lesser activity levels (WDEQ 2014).

PM₁₀

Two exceedences of PM occurred at the Wamsutter monitor in 2007. The first occurred on March 27, 2007 and the second occurred on April 18, 2007, with a concentration of 199. During the spring of 2007, a pipeline was being constructed less than 1 mile south of the Wamsutter station. On both days, strong winds occurred, blowing dust from the pipeline construction site northeast to the Wamsutter station (WDEQ 2008).

SO₂

In December 2013, WDEQ, Air Quality Division, began operating a mobile monitoring station at the Sinclair Refinery. The monitoring objective of the Sinclair station is to monitor air quality and meteorological data in a populated area near a large SO₂ source. This monitoring station had its highest value of 1 ppb on March 8, 2014 and 0.8 ppb on March 9, 2014. (WDEQ 2014)

PM_{2.5}

The Sinclair site also monitors PM_{2.5} data along with PM₁₀ data at this mobile monitoring site. PM₁₀ values were lower than those noted at the Wamsutter site and are not presented here. The PM_{2.5} data collected at the Sinclair site documented high 1 hour concentrations in the winter as follows: 335 on 1/29/2014, 135 on 1/11/2014 and 3/21/2014, and 130 on 2/8/2014 (WDEQ 2014)

Short-term impacts from prescribed and/or wildfires can also impact air quality. There have been very limited prescribed fires in this area with most being conducted mainly in the fall. The prescribed fires usually only take a few days to conduct and generally require winds in order to disperse smoke as part of the burn plan prescription. If they are close to communities, the burn plan will attempt to mitigate short-term impacts to air quality.

No large scale wildfires have occurred in the assessment area in recent years. With the exception of the Iron Draw fire that was discussed previously, the majority of wildfires are less than 10 acres and tend to be associated with railroad or highway rights-of-way. These wildfires have had minimal impacts on air quality in this assessment area. However, large-scale wildfires in the Intermountain West can affect air quality within the area through drift smoke.

Depending upon the type of grazing management being implemented, number of animals, and habitat type, pollution from the presence of livestock will vary. Season-long use and/or heavy use levels can increase the amount of bare ground, thereby increasing dust. In periods of drier climate conditions, dust created by the trailing, herding, and the day-to-day movements of livestock will increase.

4) Reference Conditions:

Please refer to the current conditions discussed in the 2004 S&G Report.

5) Synthesis and Interpretation:

During construction and operation of the proposed Chokecherry Sierra Madre wind project will best management practices and design of the project ensure that the air quality standard will continue to be met? The FEIS states that the air quality analysis concluded that neither the WAAQS nor NAAQS would be exceeded by the proposed project. In addition, would implementation of environmental protection measures during construction, including the utilization of dust control measures, posting and enforcing speed limits, and watering storage piles, would minimize impacts on air quality due to fugitive dust.

Catastrophic wildfires throughout the West are a problem beyond the scope of this document. Forest fires both regionally and locally could continue to have a significant impact on the area's air quality. Continued efforts to address this widespread problem are being implemented on a national basis; however, in the short-term there will continue to be large-scale wildfires. On the local level, creating fuel breaks and diversifying vegetation communities will help to ensure that wildfires in this area do not become catastrophic in scope.

Best management practices for livestock grazing will continue to reduce particulate pollution caused by this use. Reducing the size of disturbed areas, re-establishing vegetation on disturbed sites, and managing livestock to reduce the amount of bare ground will reduce soils susceptible to wind erosion (dust).

6) Recommendations:

Within this assessment area there are no air quality criteria pollutant non-attainment areas for either state or federal standards as determined by the Wyoming Department of Environmental Quality. Due to prevailing winds and limited pollution within the general area, overall air quality meets this Standard.

Continue to implement mitigation measures for new oil and gas development operations, while attempting to resolve existing issues. Dust abatement due to vehicle traffic is an important concern, both on a resource level and a public safety basis.

Continue implementing prescribed fires and other vegetation treatment operations to provide for fuel breaks to ensure catastrophic wildfires do not occur. Treatments will greatly reduce the risk for large amounts of particulate matter in the air as a result of local wildfires.

SUMMARY

Standard 1 – Watershed

Due to the existing diversity and amount of vegetative cover in the uplands, existing conditions of primarily ephemeral channels, management responsibilities to mitigate impacts from roads on hydrologic flow events and soil erosion, and the generally small number of management issues needing to be dealt with, it is determined that the Sage Creek watershed is meeting Standard #1.

Due to the existing diversity and amount of vegetative cover in the uplands, existing and improving trends in stream vegetation and channel morphology, and the small number of remaining management issues, it is determined that the remaining area of the Lower North Platte watershed within the assessment area is meeting Standard #1.

Standard 2 – Riparian/Wetlands

There have been improvements in riparian/wetland conditions within the assessment area over the past 10 to 15 years; however, there are still some specific areas needing attention. Grazing allotments containing riparian/wetland habitats not meeting this standard are: Pass Creek Ridge, Middlewood Hill, Sixteen Mile and Wolfe grazing allotments.

Most of the lentic and lotic sites not meeting the standard have been, or are in the process of being addressed in management plans or as range improvement projects. Continued progress in grazing management practices for livestock will ensure further improvements of all riparian areas within this area. Although there are areas where desired future conditions have yet to be obtained for woody species dominance and composition in the upper watersheds, these areas still meet the minimum standards for rangeland health. Other than the specific grazing allotments previously listed, the remainder of the grazing allotments within this assessment area are meeting Standard #2 – Riparian/Wetland.

Standard 3 – Uplands

At present, the review of upland vegetation conditions in the Lower Platte River watershed reveals generally good overall community health. Natural ecological and biological processes appear to be functioning adequately overall, although concerns about current, and especially near-future, functionality of certain community types remain. Specifically, the review group determined that the majority of upland vegetation communities are properly functioning in relation to the seral stage to which they have evolved. Several specific communities however, are

threatened or elicit concerns due to their uniformity of age and structural class, and the imminent onset of over-maturity to decadence (big sagebrush, aspen, lodgepole pine, and mountain shrub stands). Livestock grazing is one component of the management scenario for these plant communities, but it is not the principle factor for non-attainment of this Standard.

Standard 4 – Wildlife/Threatened and Endangered Species/Fisheries Habitat, Weeds

Habitat types needed to support healthy wildlife populations, including listed or proposed threatened and endangered, or candidate species are generally in acceptable condition. This does not mean that there are not problems or concerns about wildlife habitat. The discussion under Standard #2 – Wetland/Riparian Health and Standard #3 – Upland Plant Health outlines the current conditions and recommendations for improving management of these resources. Although an area may meet a standard, it still may not be at our “desired or future” condition. On the other hand, the composition of native species is good, with some weed problems at this time. Due to the existing good condition of native vegetation and its ability to support diverse wildlife populations, it is determined that the majority of the Lower North Platte assessment area is meeting Standard #4 with respect to wildlife.

The improved management of riparian habitats through the use of grazing BMPs indicates both an upward trend and meeting of Standard #4 for fisheries for some of the streams in the assessment area. However, many other sites that should support fisheries currently do not. Standard #4 for fisheries is not being met for streams which currently failed Standard #2 – Riparian/Wetland. There are also sites that are rated as Proper Functioning Condition, but due to the lack of overhead cover (stream shading) exceed temperature requirements for some fish species and will not support them. However, these sites have not yet been defined. Due to the lack of credible data on the status of native fishes in the watershed, it is unknown whether Standard #4 is being met for these species.

Due to the existing good condition of native vegetation and the weed treatment programs in place to control and/or eradicate identified weed problem areas, it is determined that the majority of the watershed is meeting Standard #4 with respect to weeds. There are known areas of noxious weeds that are rapidly expanding and not being treated. These areas affect approximately 1,000 acres within the assessment area.

Standard 5 – Water Quality

The North Platte River is mostly designated Class 2AB due to the game fisheries on the river, and the municipal drinking water sources in the basin and downstream. Water bodies that do not meet their designated beneficial uses are placed on the State 303(d) list for factors identified that contribute to water quality impairment. Sage Creek drains into the North Platte River and was listed for habitat degradation and concerns about sediment contribution to the North Platte River. Sage Creek has a naturally high sediment load due to the highly erosive soils and arid climate in much of the watershed. The classification was based on a study of the North Platte River that concluded that Sage Creek was a major factor effecting turbidity in the North Platte River. Sage Creek received Clean Water Act Section 319 Funding, and was removed from the 303(d) list in 2008 .

Standard 6 – Air Quality

Within the assessment area there are currently no air quality criteria pollutant non-attainment areas for either State or Federal standards as determined by the Wyoming Department of Environmental Quality. Due to prevailing winds and limited pollution within the general area, overall air quality meets this standard.

Grazing allotments described in this report that do not meet Standards due to livestock grazing:

- Middlewood Hill: Standard #2 – Riparian/Wetland
- Pass Creek Ridge: Standard #2 – Riparian/Wetland
- Sixteenmile: Standard #2 – Riparian/Wetland
- Wolfe: Standard #2 – Riparian /Wetland

Standards not being met due to causes other than livestock grazing:

- Standard #1 - None
- Standard #2 - Wolfe: Irrigation impacts to Riparian/Wetland
- Standard #3 - None
- Standard #4 - None, there are no streams on public lands that do not meet Standard #2 and are capable of supporting fish populations on public lands; responsibility belongs to BLM. Expansion of noxious weeds – responsibility belongs to BLM, Bureau of Reclamation, private landowners, and the County Weed and Pest Districts. There are approximately 1,000 acres of weed infested areas due to untreated weeds, mostly along the North Platte River
- Standard #5 - None
- Standard #6 - None

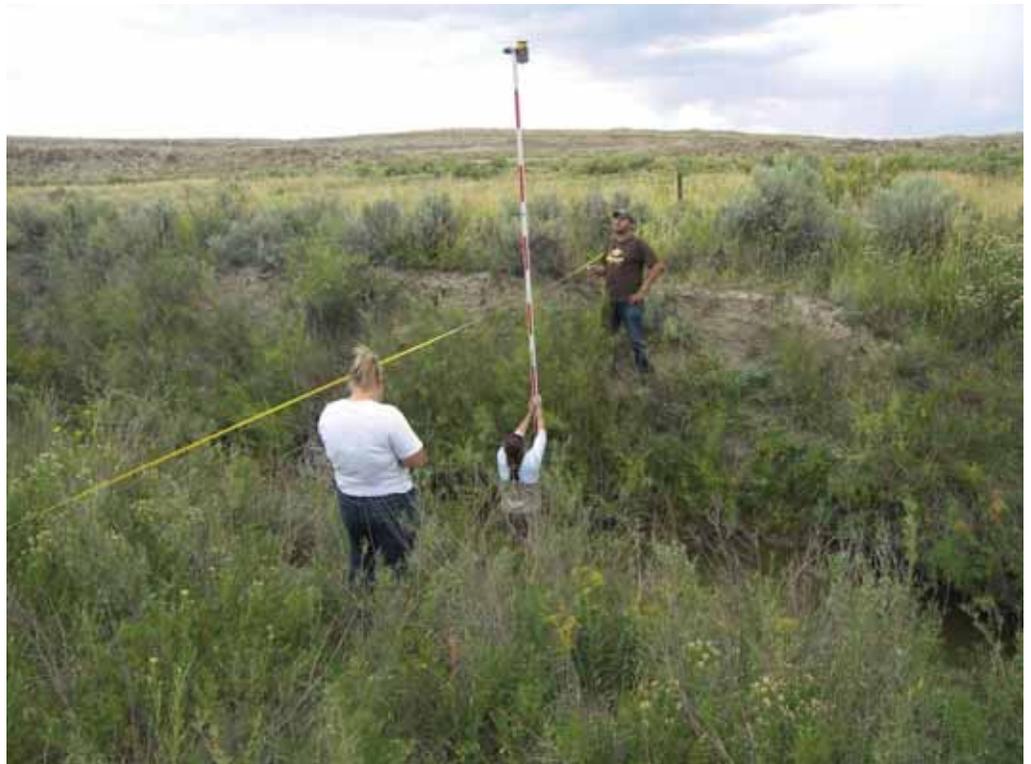
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STANDARD 1 Watershed

Sage Creek cross sections with NRCS and SERCD 2013



STANDARD 1 Watershed



Lower Sage
Creek 553
Sept 1992



Lower Sage
Creek 553
July 1997

Lower Sage
Creek 553
Sept 2014



STANDARD 1 Watershed



Sage Creek crossing 2004



2014

STANDARD 1 Watershed



Lone Tree Creek
2004

2014



STANDARD 1 Watershed



Little Sage
Creek
Sept 2005



Little Sage
Creek
Sept 2014

STANDARD 1 Watershed



Lower Sage
Creek
Sept 1992



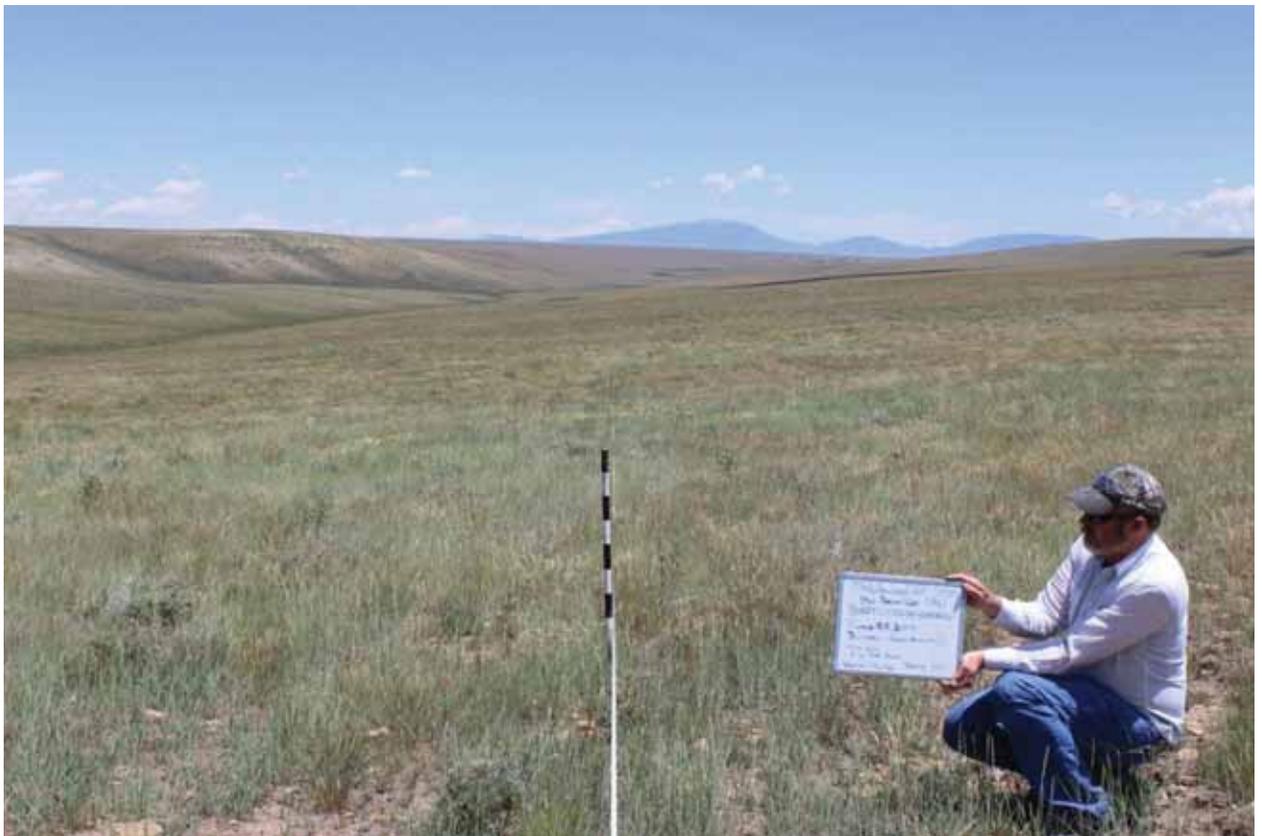
Lower Sage
Creek
Sept 2014

STANDARD 1 Watershed



July 2005
Middlewood Hill
Pre-burn

June 2014 Middlewood Hill Post-burn



STANDARD 1 Watershed



Page 21-1 Pass Creek
Wolfe Allotment

Sept 2014



STANDARD 1 Watershed



June 2005 Rattlesnake Creek

July 2009



Sept 2014



STANDARD 2 Riparian/Wetlands



Upper Sage
Creek 1986

Upper Sage
Creek 2013



STANDARD 2 Riparian/Wetlands



Upper Sage
Creek 1986

Upper Sage
Creek 2013



STANDARD 2 Riparian/Wetlands



Beaver Creek
August 1993



Beaver Creek
July 2013

STANDARD 2 Riparian/Wetlands



Percy spring, Dana Meadows South allotment



Percy Spring
2014

STANDARD 2 Riparian/Wetlands



Second Cottonwood
Draw Spring 2005



2014

STANDARD 2 Riparian/Wetlands



Martinez Spring
October 2008

Martinez Spring June 2013



STANDARD 2 Riparian/Wetlands



Rattlesnake
Creek
2001

2014



STANDARD 2 Riparian/Wetlands



Sixteenmile Tank
Battery Spring
Development
2004



STANDARD 2 Riparian/Wetlands



Lower Sage
Creek 553
Sept 1992



Lower Sage
Creek 553
July 1997

Lower Sage
Creek 553
Sept 2014



STANDARD 2 Riparian/Wetlands



Rasmussen Creek
2004



STANDARD 2 Riparian/Wetlands



Beaver dam above first Sage Creek diversion



Beaver dam near
Bolten headquarters

STANDARD 3 Uplands



Platte River 1968



Platte River 2013

STANDARD 3 Uplands



Page 32-1 Saltbush steppe flats in 1969
Bolten/Pine Grove allotment



2003

2013



STANDARD 3 Uplands



Limber pine in Sage Creek Basin 2014



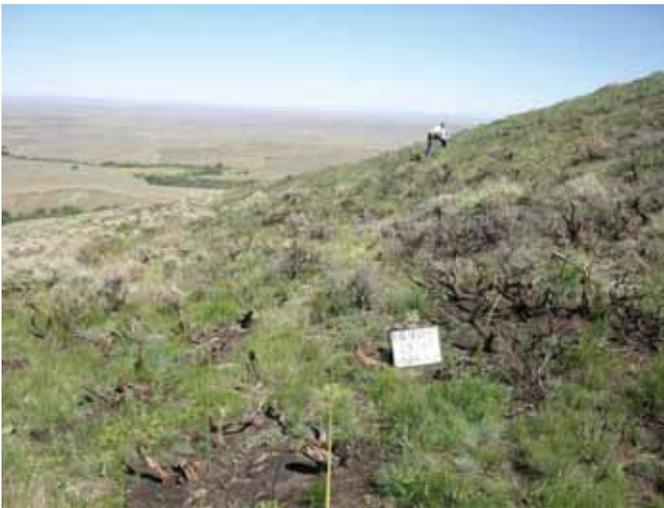
STANDARD 3 Uplands



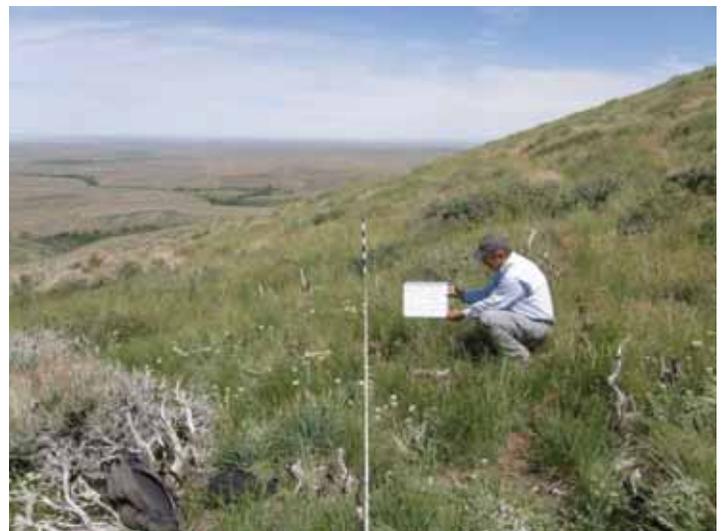
Pennock July 2003



Pennock March 2004



Pennock July 2004



Pennock June 2014

STANDARD 3 Uplands



Pennock July 2003



Pennock March 2004



Pennock July 2004

Pennock June 2014



STANDARD 3 Uplands



Rattlesnake Pass Prescribed Burn March 2007



STANDARD 3 Uplands



Iron Draw Wildfire
August 2010



Iron Draw Wildfire
August 2011

Iron Draw Wildfire
September 2014



STANDARD 3 Uplands



Chokecherry spike treatment



STANDARD 4 Wildlife/Threatened and Endangered Species Habitat Health



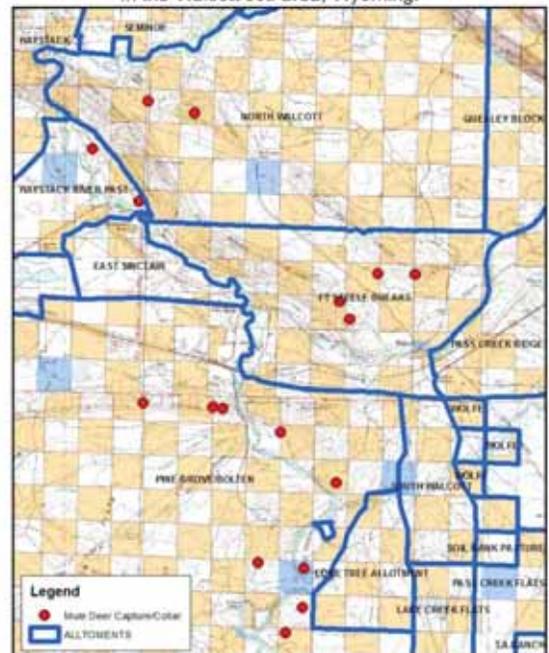
Severson Flats Fence Conversion 2014



STANDARD 4 Wildlife/Threatened and Endangered Species Habitat Health



2011 Mule deer capture/collaring locations in the Walcott Jct. area, Wyoming.



STANDARD 4 Wildlife/Threatened and Endangered Species Habitat Health



Mule deer along proposed CCSM Haul Road location

STANDARD 4 Wildlife/Threatened and Endangered Species Habitat Health



CCSM Collared Greater-Sage Grouse



STANDARD 4 Fisheries



Little Sage Reservoir prior to the drought, since that time, it has Completely dried up, lost most of the riparian vegetation above.

September 2014



STANDARD 4 Fisheries

North Platte River May 2014



STANDARD 4 Fisheries



Teton Reservoir
August 2013



Teton Reservoir
September 2014



STANDARD 4 Fisheries



Emigrant Reservoir 2011

STANDARD 4 Weeds



Perennial Pepperweed

STANDARD 4 Weeds



Diffuse knapweed

Marsh sow thistle

