

**ENVIRONMENTAL ASSESSMENT FOR 22 BLM ALLOTMENTS
LOCATED IN THE UPPER CANADIAN WATERSHED
DOI-BLM-NM-F020-2010-0034-EA**

PURPOSE AND NEED

One of the major uses of public lands administered by the Bureau of Land Management (BLM) has traditionally been the grazing of cattle, sheep or horses for the benefit of individuals and communities throughout the western United States. Livestock grazing is a provision of public land legislation, including the Taylor Grazing Act, the Endangered Species Act, the Federal Land Policy and Management Act, and the Public Rangelands Improvement Act. To ensure legislative compliance, the BLM needs to provide for livestock grazing in a manner that promotes healthy, sustainable rangeland ecosystems.

This document provides information necessary to determine whether, and under what conditions, the BLM should renew permits for cattle grazing on 22 allotments within the Upper Canadian watershed for an additional 10 years. The 22 allotments are being analyzed in one document in order to consider the cumulative effects of livestock on the BLM parcels within the Upper Canadian watershed and to improve the efficiency of the permit renewal process. The allotments addressed in this Environmental Assessment include: #719 Agauje Canyon, #721 Big East, #743 La Botella, #771 Lagartija Creek, #792 Ocate Creek, #798 Cañon Arguella, #826 Llano Oriente, #836 T.V. Rim, #838 North Canyon Largo, #848 Canyon Largo, #857 Alamosa Creek, #859 Sweetwater Creek, #861 Laguna Salada Mesa, #867 Cañon la Ciruela, #892 Cañon Hondo, #911 Chicito, #922 Apache Mesa, #938 Lagartija Bench, #950 Ocate, #952 Cañon Olguin, #958 Little West and #976 Ibex. Individual allotment maps are available at the Taos Field Office or can be obtained by visiting www.geocommunicator.gov.

CONFORMANCE WITH PLANS

The proposed permit renewals within this document are in conformance with the Taos Resource Area Management Plan (1988). Livestock grazing impacts were analyzed on a Resource Area wide basis in the Taos Resource Management Plan. An Allotment Evaluation (AE) document has been prepared for each allotment and is available for review at the Taos Field Office.

SCOPE / IDENTIFICATION OF ISSUES

In January of 2009 a meeting was held with the BLM interdisciplinary team to inform them that these permits were under consideration for renewal, and this warranted a field visit to determine if standards and guidelines are being met in the subject allotments. Also, a letter was sent to the affected lessees (03/05/09 and 04/06/09) and all interested publics (03/02/09) to inform them that the subject allotments were being visited to assess standards and guidelines. Field evaluations were conducted between 04/14/2009 and 05/15/2009. After the field evaluations were completed and Allotment Evaluations were prepared, the affected lessees and interested public were given an opportunity to provide comments on evaluations from July 12, 2010 through August 11, 2010.

Based on these efforts, the following issues have been determined relevant to the analysis of this action and are addressed in the Affected Environment / Environmental Impacts section:

- Climate
- Water Quality
- Standards for Rangeland Health
- Wetlands / Riparian Areas
- Wilderness Areas
- Noxious Weeds
- Wildlife
- Threatened or Endangered Species
- Special Management Areas
- Social / Economic Issues
- Air Quality
- Vegetation
- Cultural Resources

The following issues were considered but dismissed from analysis:

- **Native American Religious Concerns:** There have been no areas of concern identified within the subject allotments. All tribes within the Field Office boundary have received the opportunity to provide information on any areas of concern in or near the subject allotments.

PROPOSED ACTION AND ALTERNATIVES

Proposed Action (same as No Action Alternative)

Re-issue a 10-year term grazing permit without any changes as outlined in Table 1. For additional information, refer to Allotment Evaluation documents available for each allotment at the Taos BLM Field Office.

Table 1. Outline of allotment guidelines for permit renewal

Allotment Number	Livestock Type	Livestock Number	Season of Use	Total Federal Acres	Pastures	Grazing System	Proposed Improvements
719	Cattle	1	3/01 - 2/28	40	1	Rotational	None
721	Cattle	430	6/01 - 9/30	1,570	1	Rotational	None
743	Cattle	4	9/01 - 12/01	237	1	Rotational	None
771	Cattle	75	10/01 - 2/28	1,823	1	Rotational	None
792	Cattle	2	5/01 - 10/31	87	1	Rotational	None
798	Cattle	3	3/01 - 2/28	232	1	Rotational	None
826	Cattle	1	3/01 - 2/28	80	1	Rotational	None
836	Cattle	1	3/01 - 2/28	344	1	Rotational	None
838	Cattle	2	11/01 - 5/31	133	1	Rotational	None
848	Cattle	2	3/01 - 2/28	154	1	Rotational	None
857	Cattle	2	3/01 - 2/28	126	1	Rotational	None
859	Cattle	1	3/01 - 2/28	80	1	Rotational	None
861	Cattle	2	3/01 - 2/28	80	1	Rotational	None
867	Cattle	4	3/01 - 2/28	598	3	Rotational	None
892	Cattle	9	3/01 - 2/28	685	2	Rotational	None
911	Cattle	1	11/01 - 1/31	170	1	Rotational	None
922	Cattle	7	3/01 - 2/28	280	3	Rotational	None
938	Cattle	35	1/01 - 2/28	662	2	Rotational	None

950	Cattle	3	3/01 - 2/28	120	1	Rotational	None
952	Cattle	26	7/15 - 12/15	1,182	2	Rotational	None
968	Cattle	5	3/01 - 2/28	364	1	Rotational	None
976	Cattle	25	11/10 - 5/10	2,016	2	Rotational	None
Monitoring: BLM would continue the rangeland monitoring study program, continue to consult with the grazing permittee on placement of mineral and supplemental feed and continue monitoring for new populations of noxious weeds.							
** These would be addressed in a subsequent NEPA document if and when funding is available.							

Alternative 1, No Grazing:

Do not issue grazing permits for these allotments, thereby suspending livestock grazing.

Location and Maps

719 - Located approximately 6 miles northwest of Ocate in Mora County, New Mexico. Elevation on this allotment is roughly between 7,300 and 7,800 feet. The allotment is located on the USGS Mora Ranch Quadrangle 7.5 minute series topographic map. T. 23 N., R. 19 E. Sec 19.

721 - Located approximately 8 miles east of Wagon Mound, New Mexico. Access is located through a gate approximately 12 miles east of Wagon Mound. The allotment is located on the USGS Alamosa Creek and Alto de Hormiga Quadrangle 7.5 minute series topographic maps. T. 20 N., R. 22 E. Sec 1-4, 9-11 and 13; T. 20 N., R. 23 E. Sec 6. This allotment is comprised of seven parcels distributed across the top of Las Mesas del Conjelon.

743 - Located approximately 1 mile north of Sabinoso in San Miguel County, New Mexico. Elevation on this allotment is roughly between 4,800 and 5,700 feet. The allotment is located on the USGS Sabinoso Quadrangle 7.5 minute series topographic map. T. 17 N., R. 24 E. Sec 9.

771 - Located approximately 10 miles southwest of Sabinoso in San Miguel County, New Mexico. Elevation on this allotment is roughly between 5,200 and 6,100 feet. The allotment is located on the USGS Cañon Olguin and San Ramon Quadrangle 7.5 minute series topographic maps. T. 16 N., R. 35 E. Sec 19, 20, 28-30 and 33.

792 - Located approximately 7 miles southwest of Black Lake in Colfax County, New Mexico. Elevation on this allotment is roughly between 8,400 and 8,900 feet. The allotment is located on the USGS Agua Fria Peak Quadrangle 7.5 minute series topographic map. T. 24 N., R. 17 E. Sec 33.

798 - Located approximately 4 miles west of Sabinoso in San Miguel County, New Mexico. Elevation on this allotment is roughly between 4,800 and 6,000 feet. The allotment is located on the USGS Sabinoso Quadrangle 7.5 minute series topographic map. T. 17 N., R. 23 E. Sec 15.

826 - Located approximately 15 miles southeast of Wagon Mound in Mora County, New Mexico. Elevation on this allotment is roughly between 5,600 and 5,700 feet. The allotment is located on the USGS Alamito and Cañon Ancho Quadrangle 7.5 minute series topographic maps. T. 19 N., R. 23 E. Sec 20 and 22. This allotment is comprised of two parcels.

836 - Located approximately 9 miles northeast of Sabinoso in San Miguel County, New Mexico. Elevation on this allotment is roughly between 5,000 and 5,800 feet. The allotment is located on the USGS Arroyo Alamocito, Cañon Encierro and Montoya Point Quadrangle 7.5 minute series topographic maps. T. 18 N., R. 25

E. Sec 34 and 35. This allotment is comprised of two parcels.

838 - Located approximately 6 miles west of Sabinoso in San Miguel County, New Mexico. Elevation on this allotment is roughly between 5,000 and 6,000 feet. The allotment is located on the USGS Maes and Sabinoso Quadrangle 7.5 minute series topographic maps. T. 17 N., R. 23 E. Sec 20 and 21.

848 - Located approximately 3 miles east of Sabinoso in San Miguel County, New Mexico. Elevation on this allotment is roughly between 4,800 and 5,600 feet. The allotment is located on the USGS Arroyo Alamocito Quadrangle 7.5 minute series topographic map. T. 17 N., R. 24 E. Sec 14 and 24.

857 - Located approximately 9 miles east of Wagon Mound in Mora County, New Mexico. Elevation on this allotment is roughly between 6,100 and 6,700 feet. The allotment is located on the USGS Alamosa Creek Quadrangle 7.5 minute series topographic map. T. 20 N., R. 22 E. Sec 12 and 13; T. 20 N., R. 23 E. Sec 7. This allotment is comprised of two parcels.

859 - Located approximately 3 miles west and 5 miles southwest of Colmor in Mora County, New Mexico. Elevation on this allotment is roughly between 6,000 and 6,100 feet. The allotment is located on the USGS Colmor Quadrangle 7.5 minute series topographic map. T. 23 N., R. 21 E. Sec 23; T. 22 N., R. 21 E. Sec 11. This allotment is comprised of two parcels.

861 - Located approximately 10 miles southwest of Black Lake in Mora County, New Mexico. Elevation on this allotment is roughly between 8,500 and 8,900 feet. The allotment is located on the USGS Ocate Quadrangle 7.5 minute series topographic map. T. 23 N., R. 17 E. Sec 1.

867 - Located approximately 10 to 17 miles southeast of Wagon Mound in Mora County, New Mexico. Elevation on this allotment is roughly between 5,100 and 6,100 feet. The allotment is located on the USGS Alamosa Creek and Cañon las Cuevas Quadrangle 7.5 minute series topographic maps. T. 19 N., R. 23 E. Sec 1 and 12; T. 19 N., R. 24 E. Sec 5 and 8; T. 20 N., R. 23 E. Sec 23, 25, 26, 30 and 31; T. 20 N., R. 24 E. Sec 29. This allotment is comprised of eight parcels.

892 - Located approximately 9 miles west of Roy in Mora and Harding Counties, New Mexico. Elevation on this allotment is roughly between 5,000 and 5,500 feet. The allotment is located on the USGS Beaver Canyon and Cañon las Cuevas Quadrangle 7.5 minute series topographic maps. T. 20 N., R. 24 E. Sec 14, 15, 22, 22 and 26. This allotment is comprised of five parcels.

911 - Located approximately 6 miles west of Sabinoso in San Miguel County, New Mexico. Elevation on this allotment is roughly between 5,400 to 6,200 feet. The allotment is located on the USGS Maes Quadrangle 7.5 minute series topographic map. T. 17 N., R. 23 E. Sec 19.

922 - Located approximately 5 to 10 miles east and northeast of Ocate in Mora County, New Mexico. Elevation on this allotment is roughly between 6,900 to 7,300 feet. The allotment is located on the USGS Charette Lakes and Mora Ranch Quadrangle 7.5 minute series topographic maps. T. 23 N., R. 19 E. Sec 22, 27, 31 and 35; T. 22 N., R. 19 E. Sec 1 and 6.

938 - Located approximately 5 miles southwest of Sabinoso in San Miguel County, New Mexico. Elevation on this allotment is roughly between 4,900 and 5,900 feet. The allotment is located on the USGS Sabinoso and San Ramon Quadrangle 7.5 minute series topographic maps. T. 17 N., R. 23 E. Sec 36; T. 16 N., R. 23 E. Sec 9 and 10. This allotment is comprised of three parcels.

950 - Located approximately 4 miles east southeast of Colmor in Mora County, New Mexico. Elevation on this allotment is roughly between 6,100 to 6,250 feet. The allotment is located on the USGS Arroyo Stony Lake 7.5 minute series topographic map. T. 23 N., R. 22 E. Sec 27.

952 - Located approximately 7 miles northeast of Trujillo in San Miguel County, New Mexico. Elevation on this allotment is roughly between 5,300 to 6,200 feet. The allotment is located on the USGS Cañon Olguin Quadrangle 7.5 minute series topographic map. T. 16 N., R. 22 E. Sec 13, 22-24 and 26; T. 16 N., R. 23 E. Sec 18 and 19. This allotment is comprised of three parcels.

968 - Located approximately 2 miles southeast of Wagon Mound in Mora County, New Mexico. Elevation on this allotment is roughly between 6,400 to 6,900 feet. The allotment is located on the USGS Mogote Hills Quadrangle 7.5 minute series topographic map. T. 20 N., R. 21 E. Sec 1, 2 and 12.

976 - Located approximately 5 to 7 miles southwest of Sabinoso in San Miguel County, New Mexico. Elevation on this allotment is roughly between 4,900 to 6,100 feet. The allotment is located on the USGS Maes and Sabinoso Quadrangle 7.5 minute series topographic map. T. 17 N., R. 23 E. Sec 20-22, 37-31, 33 and 34; T. 16 N., R. 23 E. Sec 3 and 4.

See Figure 1 for a map of the subject allotments.

AFFECTED ENVIRONMENT / ENVIRONMENTAL IMPACTS

Areas of Critical Environmental Concern / Special Management Areas

Allotments 771, 838, 911, 938, 952 and 976 are within the Sabinoso Special Management Area (SMA). In accordance with the management prescriptions for these areas no increase in grazing preference is proposed in **either alternative**. Thus, there would be no adverse affect to the Sabinoso SMA area by **either alternative**.

Wilderness / Wilderness Study Areas

Allotments 771, 938, 952 and 9476 are within the boundary of the Sabinoso Wilderness Area. Livestock grazing is one of the grandfathered uses within the Wilderness. In accordance with the management prescriptions for these areas no increase in grazing preference is proposed in **either alternative**. Thus, there would be no adverse affect to wilderness by **either alternative**.

Air Quality

The Clean Air Act Amendments in 1990 required that all federal actions conform to State Implementation Plans for air quality. The subject allotments are not located in or near a non-attainment area.

Although the subject allotments are not within a non-attainment area, greenhouse gas emissions from non-renewable sources often occur from ranching operations. Greenhouse gases (GHG), including carbon dioxide (CO₂) and methane (CH₄), and the potential effects of GHG emissions on climate, are not regulated by the EPA under the Clean Air Act. However, greenhouse gas emissions are linked to climate change.

Under the **proposed action**, GHG emissions are expected to be generated primarily from vehicles used to manage cattle operations and may be estimated to be about 10 tons of relevant emission. The BLM recommends using best management practices to reduce these emissions, such as reducing number of trips, keeping vehicles well maintained and purchasing more fuel efficient vehicles. There would be no effect under the **no grazing alternative**.

Climate

In 2001, the Intergovernmental Panel on Climate Change (IPCC) predicted that by the year 2100, global average surface temperatures would increase 1.4 to 5.8°C (2.5 to 10.4°F) above 1990 levels. The National Academy of Sciences (2006) supports these predictions, but has acknowledged that there are uncertainties

regarding how climate change may affect different regions. Computer model predictions indicate that increases in temperature will not be equally distributed, but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures is more likely than increases in daily maximum temperatures. It is not, however, possible at this time to predict with any certainty the causal connection of site specific emissions from the Proposed Action or other alternatives in this EA to impacts on the global/regional climate.

Mean annual temperatures have risen across New Mexico and the southwestern U.S. since the early 20th century. When compared to baseline information, periods between 1991 and 2005 show temperature increases in over 95% of the geographical area of New Mexico. Warming was greatest in the northwestern, central, and southwestern parts of the state. Recurrent research has indicated that predicting the future effects of climate change and subsequent challenges of managing resources in the Southwest is not feasible at this time (USFS, 2008). However, it has been noted that forests at higher elevations in New Mexico, for example, have been exposed to warmer and drier conditions over a ten year period. Should the trend continue, the habitats and identified drought sensitive species in these forested areas and higher elevations may also be affected by climate change (Enquist and Gori).

Under the **proposed action** and the **no action alternative**, monitoring efforts will indicate vegetation shifts, allowing for site specific management modifications to address global climate change impacts.

Standards for Rangeland Health

Field crews completed the Rangeland Health Evaluation Summary Worksheet for all the subject allotments, with subdivision by parcel or distinct ecological site. Results are summarized in Table 2 by Soil/Site Stability, Hydrologic Function and Biotic Integrity and averages by site. In Table 2 each percent is a percent similar indicator score. The indicator score is created by multiplying an assigned value for departure from site descriptions/reference areas by the number of indicators at the level. Departure scores are categorized as: none to slight = 5, slight to moderate = 4, moderate = 3, moderate to extreme = 2 and extreme = 1, thus giving the most similar sites the highest score. For example, if all indicators under Soil/Site Stability were rated none to slight (5), the equation would be: (score) (nine indicators) / 45 X 100 = 100% similarity, or what is expected based on an Ecological Site Description.

Table 2. Summary of indicators by allotment.

Allotment Number	Observers	Survey Date	Percent of Soil/Site Stability	Percent of Hydrologic Function	Percent of Biotic Integrity	Average Percentage
719	Young	5/7/2009	100%	98%	95%	98%
721	Young	5/13/2009	90%	90%	95%	92%
743	Herrera-Olivas, Mrstik, Young	4/14/2009	94%	92%	98%	95%
771	Herrera-Olivas, Mrstik, Young	4/15/2009	90%	88%	93%	90%
792	Young	5/8/2009	100%	98%	91%	96%
798	Harmon, Herrera-Olivas, Young	4/21/2009	92%	90%	95%	92%
826	Young	5/15/2009	98%	98%	98%	98%
836	Herrera-Olivas, Mrstik, Young	4/14/2009	88%	90%	93%	90%
838	Harmon, Herrera-Olivas, Young	4/21/2009	88%	90%	93%	90%
848	Herrera-Olivas, Mrstik, Young	4/14/2009	84%	86%	87%	86%
857	Young	5/12/2009	96%	94%	98%	96%

859	Young	5/12/2009	92%	90%	93%	92%
861	Young	5/8/2009	100%	98%	95%	98%
867	Young	5/5/2009	96%	96%	100%	97%
892	Young	5/6/2009	84%	84%	93%	87%
911	Harmon, Herrera-Olivas, Young	4/21/2009	84%	82%	87%	84%
922	Young	5/7/2009	96%	96%	100%	97%
938	Herrera-Olivas, Mrstik, Young	4/15/2009	98%	94%	93%	95%
950	Young	5/12/2009	98%	96%	93%	96%
952	Harmon, Herrera-Olivas, Young	4/20/2009	86%	82%	84%	84%
968	Young	5/15/2009	96%	96%	98%	97%
976	Harmon, Herrera-Olivas, Young	4/21/2009	86%	84%	91%	87%

The Standards are a tool for assessing range condition and are not analyzed under **any alternative** here. The Taos Field Office uses this tool to identify rangelands that may need extra management attention to maintain or improve health. If an allotment or pasture falls below 80% in the Soil Site Stability, Hydrologic, or Biotic indicators, monitoring should be established to determine the cause(s) of the low rating. When the casual factor is determined to be livestock, grazing would be manipulated and/or range improvements would be implemented to improve conditions. The BLM in consultation with the lessee and various other agencies, through an interdisciplinary effort would develop goals and objectives for the areas that are falling below 80% to improve the condition. These improvements would take place after further planning and proper NEPA analysis is completed.

Soils

The following soils are identified as occurring on the allotments analyzed in the watershed:

Apache-Ayon complex, gently sloping. These soils consist of cobbly and stony loams with rooting depths between 5 to over 60 inches. Parent material is alluvium and colluviums derived predominantly from basalt and modified with eolian material. Average annual precipitation is between 14 to 17 inches. Hazards for erosion are moderate to high. Vegetation is characterized by sideoats grama, blue grama, western wheat, little bluestem and Indian ricegrass.

Apache-Ayon complex, rolling. These soils consist of cobbly and stony loams with rooting depths between 4 to over 60 inches. Parent material is alluvium and colluviums derived predominantly from basalt. Average annual precipitation is around 16 inches. Hazards for erosion are slight to moderate. Vegetation is characterized by sideoats grama, blue grama, western wheat, little bluestem, Indian ricegrass and mountain mahogany.

Apache-Rock outcrop complex, moderately sloping. These soils consist of stony loams with rooting depths between 5 to 18 inches. Parent material is alluvium and colluviums derived predominantly from basalt and modified with eolian material. Average annual precipitation is between 14 to 17 inches. Hazards for erosion are moderate to high. Vegetation is characterized by sideoats grama, blue grama, western wheat, little bluestem, mountain muhly and fringe sagewort.

Apache –Rock Outcrop –Ayon Complex, moderately steep. This map unit in on mesas on and around the edge of basalt flows. Slope is 10 to 30 percent. Areas generally are long and narrow in shape and are 40-640 acres in size. The native vegetation is mainly grass and scattered areas of oak. Elevation is 6,500 to 7,400 feet. The average annual precipitation is 14 to 17 inches.

Aridic Agiustolls-Rock outcrop association, steep. The soil consists of clay loams, with rooting depths ranging between 10 to over 60 inches. Parent materials of weathered from sandstone, shale, basalt and limestone comprise this soil. Average annual precipitation ranges between 14 and 19 inches. Hazards for erosion are slight to high. Vegetation is characterized by blue grama, western wheatgrass, Arizona fescue, little bluestem, Gambel oak, and scattered trees of pinyon, juniper and ponderosa pine.

Argiustolls-Rock outcrop complex, extremely steep. These soils consist of stony silty loams with rooting depths ranging from 28 to over 60 inches. Parent materials are formed in alluvial, colluvial, and residual material derived primarily from basalt. Average annual precipitation is between 14 and 18 inches. Hazards for erosion are slight to high. Vegetation is characterized by juniper, blue grama, sideoats grama, little bluestem and oak.

Barela-Yankee association, gently sloping. These soils consist of loams with rooting depths ranging from 40 to over 60 inches. Parent materials are formed in alluvium derived primarily from basalt modified with some eolian material. Average annual precipitation is between 16 and 20 inches. Hazards for erosion are moderate to high. Vegetation is characterized by Arizona fescue, mountain muhly, prairie junegrass, western wheatgrass, little bluestem and oatgrass.

Bernal-Rock outcrop-Carnero complex, moderately sloping. These soils consist of loam and clay loams, with rooting depths between 10 to 35 inches. Parent materials of residuum derived from sandstone and modified with eolian material comprise these soils. Average annual precipitation ranges between 14 and 18 inches. Vegetation is characterized by blue grama, sideoats grama, galleta, little bluestem, New Mexico feathergrass, western wheatgrass, bottlebrush squirreltail, juniper and cholla.

Burnac-Hillery association, hilly. The soil consists of stony loams, with rooting depths of 40 to over 60 inches. Parent materials of alluvium derived from basalt comprise this soil. Average annual precipitation ranges between 18 and 22 inches. Hazards for erosion are moderate to high. Vegetation is characterized by bristlecone pine, white fir, englemann spruce, and aspen with an understory of Thurber fescue, mountain brome, Arizona fescue, mountain muhly needlegrass and a variety of forbs.

Berthoud loam, 1 to 5 percent slopes. This soil consists of loams with rooting depths greater than 60 inches. Parent material of calcareous alluvium and valley fill comprise this soil. Average annual precipitation in this area ranges from 13 to 17 inches. Hazards for erosion are moderate. Vegetation is characterized by short and mid grasses.

Capulin-Charette-Ayon association, gently sloping. These soils consist of loams and stony loams with rooting depths over 60 inches. Parent materials consist of alluvium derived dominantly from basalt and modified with eolian material. Average annual precipitation is between 14 to 18 inches. Hazards for erosion are moderate to high. Vegetation is characterized by blue grama, sideoats grama, little bluestem, western wheatgrass and Galleta.

Capulin-Charette association, gently undulating. These soils consist of loams with rooting depths over 60 inches. Parent materials consist of alluvium derived dominantly from basalt and modified with eolian material. Average annual precipitation is between 14 to 18 inches. Hazards for erosion are moderate. Vegetation is characterized by blue grama, sideoats grama, little bluestem, western wheatgrass and Galleta.

Colmor loam, undulating. This soil consists of loams, with rooting depths greater than 60 inches. Parent materials derived from shale comprise these soils. Average annual precipitation ranges between 14 and 18 inches. Hazards for erosion are moderate to high. Vegetation is characterized by blue grama, western wheatgrass, galleta and bottlebrush squirreltail.

Colmor silt loam, 1 to 3 percent slopes. This soil consists of silt loams, with rooting depths greater than 60

inches. Parent materials derived from shale comprise these soils. Average annual precipitation ranges between 14 and 18 inches. Hazards for erosion are moderate to high. Vegetation is characterized by blue grama, western wheatgrass, galleta and bottlebrush squirreltail.

Crews-Tricon association, undulating. These soils consist of silt loams, with rooting depths 8 to 40 inches. Parent materials of mixed material derived from sandstone and shale comprise these soils. Average annual precipitation ranges between 14 and 18 inches. Hazards for erosion are moderate. Vegetation is characterized by blue grama, sideoats grama, little bluestem, New Mexico feathergrass, western wheatgrass, pinyon and juniper.

Eutroboralfs-Rock outcrop-Vamer complex, extremely steep. The soil consists of stony loams, with rooting depths of 10 to over 60 inches. Parent materials of mixed materials derived primarily from sandstone and shale comprise this soil. Average annual precipitation ranges between 16 and 22 inches. Hazards for erosion are slight to very high. Vegetation is characterized by ponderosa pine, piñon and juniper with an understory of Gambel oak, mountainmahogany, prairie junegrass, Arizona fescue, mountain muhly, needlegrass and oatgrass.

Fuera-Burnac association, steep. The soil consists of cobbly loams, with rooting depths over 60 inches. Parent materials of colluviums and alluvium derived from sandstone and shale comprise this soil. Average annual precipitation ranges between 22 and 27 inches. Hazards for erosion are slight to high. Vegetation is characterized by Douglas-fir, white fir and ponderosa pine with an understory of Gambel oak, mountain muhly, pine dropseed and oatgrass.

Fuera-Dargol association, very steep. The soil consists of cobbly and stony loams, with rooting depths of 20 to over 60 inches. Parent materials of colluvium and alluvium derived predominately from sandstone and shale comprise this soil. Average annual precipitation ranges between 16 and 19 inches. Hazards for erosion are moderate to high. Vegetation is characterized by Douglas-fir, white fir, and ponderosa pine with an understory of Arizona fescue, mountain muhly and kinnikinnick.

La Lande-Redona association, undulating. These soils consist of loams and sandy loams with rooting depths over 60 inches. Parent materials are primarily alluvium derived from sandstone and shale. Average annual precipitation is about 14 inches. Hazards for erosion are moderate. Vegetation is characterized by black grama, blue grama, yucca, sand dropseed, sideoats grama, little bluestem and Galleta.

Latom-Newkirk-Rock outcrop association, rolling. These soils consist of fine sandy loams and rock outcrops, with shallow rooting depths of approximately 13 to 20 inches. Parent material is sandstone. Average annual precipitation is around 14 inches. Hazards for erosion are moderate to high. Vegetation is characterized by sideoats grama, blue grama, black grama and little bluestem.

Litle-Mion association, moderately sloping. This soil consists of clay and silty clay loams, with rooting depths between 10 to 40 inches. Parent material of residuum derived from shale comprises this soil. Average annual precipitation in this area ranges from 14 to 18 inches. Hazards for erosion are moderate to high. Vegetation is characterized by blue grama, western wheat, galleta, little bluestem, New Mexico feathergrass, sideoats grama, and alkali sacaton.

Mion-Penrose Variant-Rock outcrop complex, very steep. This soil consists of silt loams and channery loams, with rooting depths between 10 to 20 inches. Parent material of residuum derived from limestone and shale comprises this soil. Average annual precipitation in this area ranges from 14 to 18 inches. Hazards for erosion are moderate to high. Vegetation is characterized by blue grama, little bluestem, New Mexico feathergrass, sideoats grama and juniper.

Newkirk-Walkon-Conchas association, undulating. These soils consist of loam and sandy loams, with rooting depths approximately 13 to 40 inches. Parent materials of sandstone and shale comprise these soils. Average

annual precipitation is around 14 inches. Hazards for erosion are moderate to high. Vegetation is characterized by blue grama, black grama, galleta, sideoats grama, little bluestem and New Mexico feathergrass.

Partri-Carnero-Bernal association, undulating. These soils consist of loam and clay loams, with rooting depths from 10 to over 60 inches. Parent materials of residuum derived from sandstone and modified with eolian material and limestone comprise these soils. Average annual precipitation ranges between 14 and 18 inches. Hazards for erosion are moderate to high. Vegetation is characterized by blue grama, sideoats grama, galleta, western wheatgrass, juniper, ring muhly and cholla.

Raton-Rock outcrop complex, very steep. These soils consist of very stony loams, with rooting depths 10 to over 60 inches. Parent materials of residuum derived from basalt comprise these soils. Average annual precipitation ranges between 16 and 20 inches. Hazards for erosion are slight to severe. Vegetation is characterized by ponderosa pine, white fir, Douglas fir, little bluestem, Arizona fescue, western wheatgrass, prairie junegrass, mountain muhly and Gambel oak.

Redona-Quay association, undulating. These soils consist of loams with rooting depths over 60 inches. Parent materials are primarily alluvium derived from sandstone and shale. Average annual precipitation is about 14 inches. Hazards for erosion are moderate to high. Vegetation is characterized by black grama, blue grama, yucca, western wheatgrass, sideoats grama, vine-mesquite and Galleta.

Rock outcrop-Bernal complex, moderately steep. These soils consist of stony loams with rooting depths between 10 to 19 inches. Parent materials of residuum derived from sandstone and modified with eolian material comprise these soils. Average annual precipitation ranges between 14 and 18 inches. Hazards for erosion are moderate to high, Vegetation is characterized by blue grama, sideoats grama, little bluestem, New Mexico feathergrass, piñon and juniper.

Rock outcrop-Torriorthents complex, very steep. This soil is stony with variable depths and texture. Parent materials of sandstone and shale comprise this soil. Average annual precipitation is around 14 inches. Vegetation is characterized by little bluestem, sideoats grama, blue grama and galleta.

Rough Broken and Stony Land, 30 to 80% slope. This soil consists of stony loams on shallow soils with mainly steep slopes and rock outcrops with rooting depths between 5 to 40 inches. Some drainages have “meadow” inclusions that include deep, loamy soils. Average annual precipitation in this area ranges from 14 to 17 inches. Hazards for erosion are slight to moderate. Vegetation is characterized by blue grama, galleta, sideoats grama, oak, juniper and pinyon pine.

Sombordoro-Rock outcrop-Tuloso complex, moderately sloping. These soils consist of very stony sandy loams, with rooting depths between 6 to 19 inches. Parent materials of mixed material derived from sandstone and shale comprise these soils. Average annual precipitation ranges between 14 and 18 inches. Hazards for erosion are moderate to high. Vegetation is characterized by pinyon, juniper, blue grama, oak, sideoats grama, green needlegrass, pinyon ricegrass and little bluestem.

Sombordoro-Rock outcrop-Tuloso complex, very steep. These soils consist of very stony sandy loams, with rooting depths between 6 to 19 inches. Parent materials of mixed material derived from sandstone and shale comprise these soils. Average annual precipitation ranges between 14 and 18 inches. Hazards for erosion are moderate to high. Vegetation is characterized by pinyon, juniper, blue grama, oak, sideoats grama, and little bluestem.

Spud-Burnac association, very steep. The soil consists of stony loams, with rooting depths of 40 to over 60 inches. Parent materials of colluvium, alluvium and residual material derived predominately from basalt and modified with sandstone and shale comprise this soil. Average annual precipitation ranges between 18 and 20

inches. Hazards for erosion are moderate to high. Vegetation is characterized by Dougals-fir, white fir, and ponderosa pine with an understory of Gambel oak, Arizona fescue, mountain muhly and kinnikinnick.

Torreon-Thunderbird association, gently sloping. These soils consist of loams and cobbly loams with rooting depths between 20 to over 60 inches. Parent materials consist of alluvium derived dominantly from basalt and modified with eolian material. Average annual precipitation is between 14 to 18 inches. Hazards for erosion are moderate to high. Vegetation is characterized by blue grama, sideoats grama, threeawn, ring muhly, fringe sagewort, western wheatgrass and Galleta.

Tuloso-Rock outcrop-Sombordoro association, steep. These soils consist of stony sandy and stony loams with rooting depths ranging from 8 to 20 inches. Parent materials are primarily derived from sandstone. Average annual precipitation is about 16 inches. Hazards for erosion are slight to moderate. Vegetation is characterized by pinyon, juniper, blue grama, hairy grama, sideoats grama, little bluestem and pinyon ricegrass.

Tuloso-Sombordoro-Rock outcrop complex moderately sloping. These soils consist of stony sandy and stony loams with rooting depths ranging from 8 to 20 inches. Parent materials are primarily derived from sandstone. Average annual precipitation is about 16 inches. Hazards for erosion are slight to moderate. Vegetation is characterized by pinyon, juniper, blue grama, hairy grama, sideoats grama, and pinyon ricegrass

Ustorthents-Rock outcrop complex, very steep. This soil is stony with variable depths and texture. Parent materials of sandstone and shale comprise this soil. Average annual precipitation is around 16 inches. Vegetation is characterized by sideoats grama, pinyon, juniper and oak.

Under current management, soil indicators for the allotments point to good soil condition (Average = 92%) with the lowest Soil and Site Stability rating being 84% (see the ‘Standards for Rangeland Health’ portion and Table 2).

Based on current knowledge and current management practices, the **proposed action** would result in no impact or have a positive impact. The **no grazing alternative** would remove livestock from the area and eliminate both the positive and negative impacts of livestock.

Water Quality

These allotments are located in Hydrologic Unit Code (HUC) 11080003, or the Upper Canadian Watershed, which comprises 1,313,689 acres. These Hydrologic Units are further divided into smaller HUCs. The allotments analyzed in this document occur in five of these smaller HUCs (Table 3).

Table 3. Summary of BLM allotments by 10 Digit HUC (subwatershed and NMED assessment unit).

NMED Assessment Unit	Subwatershed	Allotments	BLM Acreage	Percent of Subwatershed
NM-2305.A_000	Cañon Largo - Canadian River	743, 771, 798, 836, 838, 848, 911, 938, 952, 976	6,953	3.4%
NM-2305.A_100	Carrizo Creek	721, 826, 857, 867, 968	2,434	1.0%
NM-2305.A_100	Carrizo Creek - Canadian River	721, 867, 892	921	0.4%
NM-2306.A_090	Headwaters Ocate Creek	792, 861	167	0.1%
NM-2306.A_070	Headwaters Ocate Creek	719, 922	320	0.1%
NM-2305.A_70	Outlet Ocate Creek	859, 950	200	0.3%

The New Mexico Environment Department (NMED) surveyed and evaluated perennial reaches in the Upper Canadian watershed in 2008 and identified impairments for stream reaches not meeting water quality standards

for designated uses. Impairments identified for the above assessment units are as follows:

NM-2306.A_070, Ocate Creek (Ocate to Wheaton) – Includes 320 acres of BLM in allotments 719 and 922. This unit was assessed in 2008 and categorized as not supporting high quality coldwater aquatic life. Probable cause was low flow alterations, with probable sources being a non-pollutant impairment.

NM-2305.A_000, Canadian River (Conchas River to Mora River) – Includes 6,953 acres of BLM in allotments 743, 771, 798, 836, 838, 848, 911, 938, 952 and 976. This unit was assessed in 2008 and categorized as not supporting secondary contact / recreation. Probable cause was identified as Escherichia Coli (E. Coli), with probable sources being drought related impacts (natural / wildlife) and rangeland grazing.

Based on the Environmental Protection Agency (EPA) assessments there are concerns with two waterways within the Upper Canadian watershed which may be associated with the subject allotments. According to NMED, the Ocate Creek impairment is not caused by rangeland grazing but the Canadian River impairment is associated with grazing. The allotments in the Cañon Largo – Canadian River subwatershed comprise approximately 3.5% of the total land mass. The Rangeland Health Evaluation surveys show that Soil/Site Stability and Hydrologic Function ratings for these allotments average 89% and 88% (respectively) similar to what should be expected. Also, the other three assessment units related to the allotments were found to be fully supporting all supported uses. Thus it can be determined that there negligible or not any current or likely to be any increased water quality impairments resulting from the **proposed action**. The **no grazing alternative** may or may not reduce probable sources of impairment by removing livestock due to the low number of livestock and the low percentage of federal land.

Wetlands / Riparian Areas

Allotments 743, 792, 867 and 892 contain riparian areas associated with the Canadian River (743 and 892), Manueles Creek (792) and Carrizo Creek (867). In the riparian assessments allotment 743 was deemed as non-functional due to the lack of native vegetation and channel morphology, allotment 792 was deemed properly functioning, allotment 867 was deemed functioning at risk with an upward trend and allotment 892 was deemed properly functioning. In allotment 743 there is approximately one tenth of a mile of the Canadian River with roughly 3 acres of riparian habitat. The area is grazed by multiple livestock operators due to the lack of fencing, but use at the time of the visit did not appear to be excessive. Historic use has degraded the area and native vegetation is not abundant. Tamarisk is the dominant tree species.

This allotment is located approximately 3.5 miles downstream of the Mora River confluence and one-third of a mile from the Cañon Largo confluence. The proximity of the allotment to these confluences and the road bordering the east bank of the river has resulted in a very flashy system with snow melt and monsoonal thunderstorms resulting in repeated changes to river channel morphology and siltation, restricting vegetation growth periodically after these high flow events. Due to these circumstances and the small area the BLM has the possible potential to influence riparian and floodplain functions, fencing is been determined to not to be a viable solution. The change from year round use to fall/winter use appears to be making improvements, but the rating remains as non-functional. Therefore, it is determined that the **proposed action** may have an adverse affect on the riparian areas, while the **no grazing alternative** may or may not remove any effect livestock grazing due to the surrounding private lands and the fencing being determined to not to be a viable solution.

Vegetation

Vegetation expected for the soils identified in the allotments include: sideoats grama, blue grama, western wheat, little bluestem, Indian ricegrass, mountain mahogany, mountain muhly, fringe sagewort, pinyon, juniper, ponderosa pine, Arizona fescue, Gambel oak, junegrass, oatgrass, New Mexico feathergrass, bottlebrush squirreltail, cholla, Thurber fescue, mountain brome, needlegrass, Galleta, Douglas-fir, white fir, pine dropseed, kinnikinnick, yucca, sand dropseed, vine-mesquite, pinyon ricegrass and other species in smaller amounts.

Grazing may impact vegetation under adverse climate conditions or under poor grazing management. Other impacts to vegetation have been the lack of natural disturbance, such as fire. It has been determined that the current grazing systems within the subject allotments are not adversely affecting the vegetation. The lowest biotic integrity rating for the subject allotments was 84% similarity to the Ecological Site Description with an average of 94% (See section 'Standards for Rangeland Health and Table 2). Residual impacts of livestock grazing would not change under the **proposed action** due to the moderate removal of current year's growth on forage species. Therefore, under the **proposed action**, no additional impacts to vegetation are expected. Under the **no grazing alternative**, there would be no measurable vegetative removal from the allotment.

Noxious Weeds

Any time livestock are grazed in other areas and then returned to the allotment or fed non-certified feed there is a risk of introducing exotic or noxious plant species to the allotment. The **proposed action** would not pose additional risks of introduction or spread of noxious weeds beyond those already occurring. Under both the **proposed action** and **no grazing alternative**, weeds could be introduced by road maintenance equipment or recreational activities.

Under the **proposed action**, weeds could be introduced to the allotment through livestock feces, emergency feed, watering equipment or vehicles associated with the management of livestock. The **no grazing alternative**, would limit the risk of new infestation to those caused by human activities and wildlife.

Cultural Resources

Reconnaissance archaeology inventories were carried out within the area of the subject allotments during the spring and summer of 1999 and 2009. Thirteen of the 22 subject allotments were visited by an archaeologist, while the other 9 were visited by interdisciplinary teams without an archaeologist. Six sites were located in five allotments. Two sites were wagon roads, one which is a part of the Santa Fe Trail, two were stone structures related to historic homesteads, one was a rock shelter and one was a lithic scatter. The area of the lithic scatter was dated from 1800 BC – AD 200. All sites are in very good condition and no damage from cattle grazing is evident. The general area of the allotments was likely used in prehistoric times for hunting and gathering activities and seasonal camp sites.

Under the **proposed action** grazing intensity would remain at current levels. Nine of the 22 subject allotments were not visited by an archaeologist but based upon a literature, site and survey files review and the reconnaissance inventory, no direct impacts have been observed to potential cultural resources from current grazing activities. Natural erosion due to ground disturbance could damage sites; these effects may be slightly less under the **no grazing alternative** than the **proposed action**.

Wildlife

Existing habitat with the allotments include: pinyon-juniper woodlands, short / mid-grass prairie, coniferous forests and several canyons and supports seasonal home ranges for elk, mule deer, mountain lion, black bear, bobcat, fox, coyote, rodents, bats, raptors, songbirds, amphibians, and a variety of insects.

Judicious grazing practices can have positive effects on wildlife and can be a beneficial management tool, including increases in vegetation composition diversity and improvement of forage availability and quality for early to mid-successional wildlife species; creation of patchy habitat with high structural diversity for feeding, nesting and hiding; opening up areas of dense vegetation to improve foraging areas for a variety of wildlife; removing rank, coarse grass that would encourage regrowth and improve abundance of high quality forage for wild ungulates; stimulating browse production by reducing grass biomass; and improving nutritional quality of browse by stimulating plant regrowth (NMDGF 2005).

Studies in northern New Mexico have indicated that total elimination of grazing did not improve range condition on upland or lowland sites when compared with adjacent moderately grazed areas (Holecheck and Stephenson 1985). Smith et al. (1996) found that lightly grazed climax rangelands and conservatively grazed late seral rangelands had similar songbird and total bird populations. They also concluded that wildlife diversity was higher on the conservatively grazed late seral than the lightly grazed climax rangeland. Studies in southeastern Arizona by Bock et al. (1984) support the hypothesis that conservatively to moderately grazed areas in mid or late seral condition supported greater diversity of wildlife than ungrazed areas in climax condition. Livestock grazing was also shown to enhance forage for elk and manage their distribution by increasing availability and nutritional value of preferred grasses in early growth stages (Holechek et al. 2004).

Best management practices would ensure that forage production within this area can support fish, wildlife and livestock on a sustained basis. The functionality assessment of habitat components is outlined in Table 4.

Table 4. Functionality assessment for Biotic Fauna.

Allotment	Biotic Fauna Rating	Summary
719	Proper Functioning Condition	N/A
721	Proper Functioning Condition	N/A
743	Proper Functioning Condition	N/A
771	Proper Functioning Condition	N/A
792	Proper Functioning Condition	N/A
798	Proper Functioning Condition	N/A
826	Proper Functioning Condition	N/A
836	Proper Functioning Condition	N/A
838	Proper Functioning Condition	N/A
848	Proper Functioning Condition	N/A
857	Proper Functioning Condition	N/A
859	Proper Functioning Condition	N/A
861	Proper Functioning Condition	N/A
867	Proper Functioning Condition	N/A
892	Proper Functioning Condition	N/A
911	Functioning at Risk-Upward Trend	N/A
922	Proper Functioning Condition	N/A
938	Proper Functioning Condition	N/A
950	Proper Functioning Condition	N/A
952	Proper Functioning Condition	N/A
968	Proper Functioning Condition	N/A
976	Proper Functioning Condition	N/A

The **proposed action** would not have a notable adverse impact on wildlife. The **no grazing alternative** would remove all possible competition between wildlife and livestock.

Threatened or Endangered Species

Federally listed threatened (T) and endangered (E) species in San Miguel, Mora, Colfax and Harding Counties, New Mexico, include: black-footed ferret (*Mustela nigripes*) (E); Southwestern willow flycatcher (*Empidonax traillii extimus*) (E); Holy Ghost Ipomopsis (*Ipomopsis sancti-spiritus*) (E); Arkansas river shiner (*Notropis girardi*) (T); Piping plover (*Charadrius melodus*) (T); and Mexican spotted owl (*Strix occidentalis lucida*) (T).

It is determined that there are no federally listed threatened or endangered species likely to be found in the subject allotments. There is no designated critical habitat for any species listed by the U.S. Fish and Wildlife Service (USFWS) within the allotments.

BLM Sensitive Species that could occur in the allotments include several bat species, bald eagle (*Haliaeetus leucocephalus*), Western burrowing owl (*Athene cunicularia hypugea*), ferruginous hawk (*Buteo regalis*), loggerhead shrike (*Lanius ludovicianus*), Baird's sparrow (*Ammodramus bairdii*), and the Texas horned lizard (*Phrynosoma cornutum*).

It is determined that the **proposed action** and **no grazing alternative** will have no affect on federally listed proposed, candidate, threatened or endangered species, and no adverse impact on BLM Sensitive species.

Migratory bird species of conservation concern that have the potential to occur on the allotment include bald eagle, Brewer's sparrow, Ferruginous hawk, juniper titmouse, loggerhead shrike, mountain bluebird, prairie falcon, golden eagle, mourning dove, and pinyon jay. The **proposed action** has the potential to have a negative effect upon individual birds, eggs, young and/or the nesting habitat of ground nesting birds; however, there would be no noticeable impact to the population or to the species as a whole. The **no grazing alternative** could have either a beneficial or detrimental effect on individual migratory bird species of concern, depending on the response of range condition and individual species requirements, but affects at the population or species level would not be adverse.

Social / Economic Issues

BLM permits/leases are transferred to qualified applicants at the request of the current permittee/lessee; the BLM has had no influence on the social characterization of those who currently hold these permits. Therefore, it has been determined that neither the **proposed action** nor the **no grazing alternative** would be likely to result in impacts which would occur disproportionately in low-income groups, minorities or Indian tribes. With regard to economics, the **proposed action** would allow the permittee to continue the lifestyle they have known and earn money from cattle operations on federal lands. Suspension of the grazing permit under the **no grazing alternative** would cause monetary losses to the permittee/lessee, in the form of increased costs to rent additional pasture or in purchasing feed.

Cumulative Impacts

Cumulative Actions

Livestock grazing is only one of several disturbance activities within the area. Other possible cumulative actions in conjunction with livestock grazing on BLM administered lands include: historic grazing (grazing prior to the 1976 Federal Land Policy and Management Act and subsequent grazing policy), off-road vehicles use, other recreational use and road construction and maintenance.

Cumulative Effects

Based on current management the land health standards are being met, therefore there would be no measurable cumulative impacts from the **proposed action** or the **no grazing alternative**. Also, BLM land comprises only a small portion of the watersheds, roughly 2.2% of the area within the Upper Canadian watershed (percentages are relative to lands within Taos Field Office). The subject allotments cover roughly 38% of the BLM land in the Upper Canadian watershed and 0.8% of the total land mass of this watershed. Due to land health standards being met (except for the riparian area in allotment 743 – refer back to Wetland / Riparian Areas section), the relatively low percentages of federal land involved and no changes being made to livestock management on these allotments, there would be no measurable cumulative impacts from the **proposed action** or the **no grazing alternative**.

Consultation and Coordination

This Environmental Assessment has been mailed to all individuals or organizations who have notified the Taos Field Office of their interest. These individuals or organizations are given 15 days to make comments on the accuracy of this document.

Preparers

This document was prepared and reviewed by a team from the Taos Field Office. They include:

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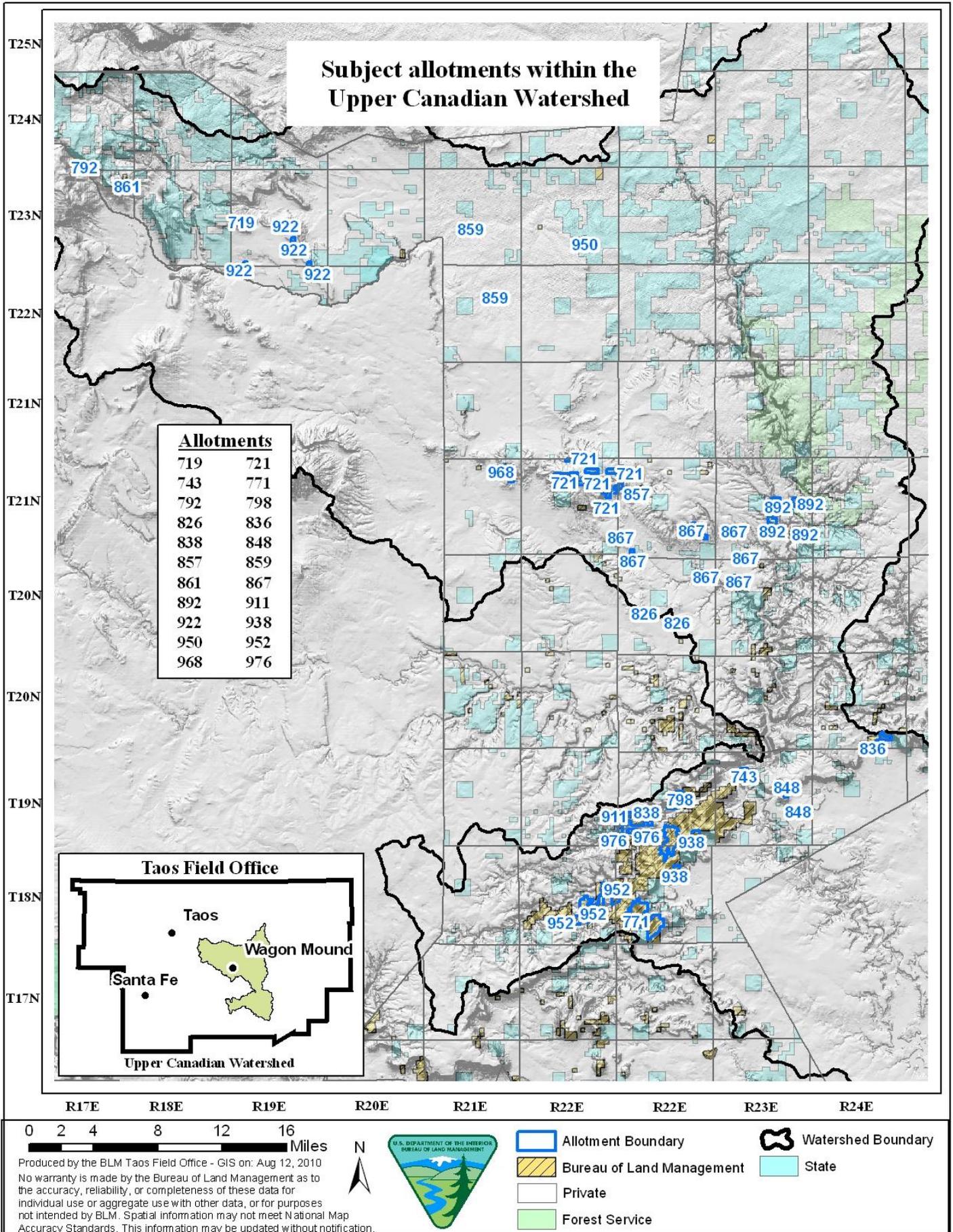


Figure 1. Map of subject allotments.