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EVALUATING RELATIONSHIPS OF KNOWLEDGE, ATTITUDES, AND  
PERCEPTION BETWEEN RANCHERS AND BUREAU OF LAND  
MANAGEMENT PROFESSIONALS

by

Calee L. Garn

A thesis submitted in partial fulfillment  
of the requirements for the degree

of

MASTER OF SCIENCE

in

Agricultural Extension & Education

Approved:

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Debra Spielmaker, Ph.D.  
Major Professor

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Committee Member

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UTAH STATE UNIVERSITY  
Logan, Utah

2019

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## ABSTRACT

Evaluating the Correlation of Knowledge, Attitudes, and Perception on the Relationships  
Between Ranchers and Bureau of Land Management Professionals

by

Calee L. Garn, Master of Science

Utah State University, 2019

Major Professor: Debra Spielmaker, Ph.D.  
Department: Applied Sciences, Technology and Education

The Bureau of Land Management (BLM) manages approximately 245 million acres in the U.S., the majority are in the western half of the country. There have been several conflicts in the west, which resulted in fatality, armed militias, incarcerations, and lawsuits against federal government. Following a preliminary needs assessment in Box Elder County, Utah, and a review of the literature, further research was needed to understand BLM professional (BLM managers or BLM specialists) and rancher perceptions regarding BLM policies and procedures. The study examined attitudes, perception and knowledge concerning the implementation of range improvement projects to potentially address conflicts and relationship issues between ranchers and BLM professionals. A needs assessment model framed the research. Six research questions were developed.

Two similar questionnaires, one for BLM professional and the other for ranchers,

were developed. The questionnaire was divided into four sections: participant characteristics; perceptions concerning BLM policies; knowledge concerning BLM policies; and attitudes concerning federal ownership and BLM policies. The rancher questionnaire was mailed to 182 ranchers and netted a 37.2% response rate. The BLM questionnaire was emailed to 15 BLM professionals in the Salt Lake Field office and netted an 84.6% response rate. Results were analyzed using descriptive and appropriate correlation statistics. Rancher interventions should include (a) when to submit rangeland improvement project requests, (b) what could cause a temporary reduction in AUMs on an allotment, (c) online NEPA location, and (d) responsibility of land management decisions for the BLM. BLM professional interventions could include the juniper removal project planning process, and when to submit a new waterline or fenceline request. Ranchers' background has minimal influence on their perception. Rancher age had a medium, positive relationship on ranchers' attitude regarding the NEPA process working and needing no revisions. Finally, the majority of rancher respondents identified as somewhat agreeing, somewhat disagreeing, or strongly disagreeing with the federal government owning land.

## PUBLIC ABSTRACT

### Evaluating the Correlation of Knowledge, Attitudes, and Perception on the Relationships Between Ranchers and Bureau of Land Management Professionals

Calee L. Garn

The Bureau of Land Management (BLM) manages approximately 245 million acres in the U.S., the majority of which are in the western half of the country. There have been several conflicts in Nevada, Oregon, Utah, and Arizona, since 2010 that have resulted in a fatality, armed militias, several incarcerations, and lawsuits facing the federal government. Following a preliminary needs assessment conducted in Box Elder County, Utah, and a comprehensive review of the literature, further research was needed to understand BLM professional (BLM managers or BLM specialists) and rancher perceptions regarding BLM policies and procedures. The study specifically looked at attitudes, perception and knowledge concerning the implementation of range improvement projects to potentially address conflicts and relationship issues between ranchers and BLM professionals. A needs assessment model was used to frame the research.

Two similar questionnaires, one for BLM professional and the other for permittees (ranchers) using federal land managed by the BLM, were developed by the researcher. The questionnaire was divided into four sections: participant characteristics; perceptions concerning BLM policies; knowledge questions related to BLM policies; and attitudes concerning federal land ownership and BLM policies. The rancher questionnaire was

mailed to 182 ranchers and netted a 37.2% response rate. The BLM questionnaire was emailed to 15 BLM professionals in the Salt Lake Field office and netted an 84.6% response rate. Results were analyzed using descriptive and appropriate correlation statistics. Multiple relationships between rancher and BLM professionals' perceptions and knowledge were identified. Rancher interventions should include (a) when to submit rangeland improvement projects, (b) what could result in a temporary reduction in AUMs on a grazing allotment, (c) where to access online NEPA documents, and (d) who makes final land management decisions for the BLM. BLM professionals' interventions could include the steps required for planning a juniper removal project, and when to submit a new waterline or fenceline request. Ranchers' background has minimal influence on their perception. Rancher age had a medium, positive relationship on ranchers' attitude regarding the NEPA process working and needing no revisions. Finally, the majority of rancher respondents identified as somewhat agreeing, somewhat disagreeing, or strongly disagreeing with the federal government owning land.

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I would like to thank my graduate committee, Debra Spielmaker, Kelsey Hall, and Eric Thacker for your diligence and help through this process. Thank you for catching the details I always seem to miss and for helping me increase confidence in writing, public speaking, understanding research, and always bringing it to my level.

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Calee L Garn

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# **CHAPTER I**

## **INTRODUCTION**

### **Background and Setting**

The Bureau of Land Management (BLM) is a division under the U.S. Department of the Interior. This division of the federal government is responsible for managing nearly 245 million acres of land in the U.S. (What We Manage, 2016). This management includes land for recreational use, fire management, energy development, historic sites, wilderness research, as well as land used in partnership with ranchers for grazing animals. In the past 80 years, legislation has been enacted to manage public rangelands, which has led to conflicts between BLM professionals and ranchers (Nelson, 1995).

Land within a state is managed broadly by state offices, then by district offices, then into field offices. The field offices are most involved in the day-to-day management of BLM land. In Utah, there are six district offices, 11 field offices, and one national monument managed by the BLM. The Salt Lake Field Office (SLFO), which is in the West Desert District, manages 3.3 million acres of land in northwest Utah and was the focus for this study.

Federal, state, and private land is intermixed in the western U.S. because of land granted to railroad companies for the construction of the Transcontinental Railroad ("Railroad Land Grants," 2018). Following railroad completion, land was sold to the states, private entities, or deeded back to the U.S. government. As a result, there is a mosaic of land ownership and makes land management complex ("Railroad Land

Grants,” 2018).

There have been numerous incidents since 1970, involving litigation, removal of cattle, and more throughout the western U.S. The scope of this thesis focused on three separate incidents in three different states, a state sponsored bill, and a public withdraw of consent that have led to the rising tension between BLM managers and BLM specialists (from this point forward noted as BLM professionals) and ranchers in the western U.S.

First, in 2004, Wally Klump, a rancher in southwest Arizona, was jailed for a year after a 10-year dispute about who owned a section of land and the water on it. Mr. Klump believed that if the cattle were not utilizing the water in the area, the BLM would claim it as their own. In an article published by the *New York Times*, Mr. Klump claimed liberty, water, and preservation of western life were at the heart of the dispute, and he won’t watch any of it evaporate (Leduff, 2004). Mike Taylor, the deputy director for resources in Arizona BLM at the time, confirmed the BLM had claims to the water, but all they really wanted was Mr. Klump to comply with grazing regulations and move his cattle (Leduff, 2004). Mr. Klump was released from jail when his cattle were removed from what the BLM considered public land (Gallaher, 2016).

In 2012, a state of Utah representative, Ken Ivory, sponsored a bill known as the Transfer of Public Lands Act (TPLA; Gallaher, 2016). The bill would have accomplished (a) committing congress to dispose of public lands in Utah and (b) transferring management of public land to states (Gallaher, 2016). The bill expired at the end of 2014 with the federal government failing to act. Utah republicans then began pursuing a lawsuit to lay claim to the federal lands in the state. Precedence for this case includes an

1845 Supreme Court case, which determined that the federal government can own land only for the benefit of creating new states (Gallaher, 2016). Utah's bill was one attempt of many that has been submitted by states to gain ownership to federal lands, and suggested that this litigation effort could have the best chance of any other legal claim.

An armed standoff between Cliven Bundy, a Nevada rancher, and Nevada BLM officials commenced in April 2014, and gained a lot of attention from the media (Young, 2015). Between the years of 1993-2011, over \$1 million in unpaid grazing fees and court-ordered fines were accumulated and owed to the BLM/federal government by the Bundy family. Failure to pay grazing fees and fines results in the illegal grazing of livestock, which the BLM refers to as trespass cattle ("Rangeland Administration System- BLM," 2012). In March 2014, the BLM planned to remove the trespass cattle from BLM lands (Young, 2015). Bundy organized a group of heavily armed protestors to postpone the removal of his cattle. Bundy's efforts were successful, and the cattle remained on public lands (Young, 2015). Following this incident, the federal government charged Cliven Bundy with assault on a federal law enforcement officer, use of a firearm for violence, obstruction of justice, and extortion (French, 2018). In January 2018, the case was dismissed due to the government's failure to deliver important items found in discovery to apposing council (French, 2018).

In 2012, Dwight and Steven Hammond were indicted by the U.S. District Court of Oregon on two counts of arson (one in 2001 and another in 2006) on federally managed lands, and nine other counts (Gallaher, 2016). Upon hearing of the situation, three sons of Cliven Bundy and a man named LaVoy Finnicum went to Oregon to provide aide to the

Hammonds. In January 2016, they formed an armed militia with a dozen or so men to take control of the federally managed Malheur National Wildlife Refuge in Oregon to present a stand against the federal government (Blumm & Jamin, 2016). During the stand-off, federal agents shot and killed LaVoy Finnicum. After regaining control of the refuge, the militia was pursued by the government to issue arrests, and those arrested were released of all charges related to the standoff. Additionally, in 2018, President Donald Trump pardoned Dwight and Steven Hammond of all charges (Bernstein, 2018).

A rebellion group in Utah including Marilyn Wood, Matthew Wood, Stanton Gleaves, and Todd McFarlane gathered to pledge and sign notices of “withdrawal of consent” (Levin, 2016). This means they have made a public rejection of federal agencies that manage public lands. Some in Utah tell stories of extreme governmental overreach, saying BLM and environmental groups have rules in places to prevent sustainable ranching practices; however, environmental groups argue that the BLM plays a vital role in protecting habitat and regulating multiple land use (Levin, 2016). Most want to avoid dramatic conflicts, but they also feel they are running out of options (Levin, 2016).

While there have been few documented conflicts between ranchers and BLM personnel in Northern Utah, a needs assessment could provide a proactive approach and insight to the current attitudes held by this population. A Needs Assessment Committee of ranchers, BLM staff, and other stakeholders was formed to obtain preliminary insight to the current situation between ranchers and BLM personnel in Box Elder County (Appendix A). The needs assessment found (1) the BLM staff perceived ranchers had a lack of understanding regarding BLM management decision procedures; (2) a perceived

lack of communication between BLM staff and ranchers; and (3) a perception of a lack of follow through by the BLM on approved projects. Left unaddressed these perceptions could become problematic and result in litigation, economic losses, and poor resource management. Further exploration of the identified concerns provided understanding for potential interventions that could prevent catastrophic conflicts.

### **Statement of the Problem**

Several articles have been published identifying the value of grazing permits on public land, value of private land, and conservation efforts on rangeland; however, few studies have been conducted evaluating relationship dynamics between land management agencies and ranchers (Andersen, 2000; Gentner & Tanaka, 2002; Nelson, 1995; Sayre, 2004; Talbert, Knight, & Mitchell, 2007; Torell & Doll, 1991; van Kooten, Thomsen, Hobby, & Eagle, 2006). Google Scholar search terms for this research study included: (1) BLM and rancher relationships, (2) conflicts on rangeland, and (3) managing relationships on rangeland. A lack of research evaluating these relationships presents a problem for ranchers, BLM personnel, and other organizations that work with these groups (i.e., Cooperative Extension, Natural Resources Conservation Service, conservation districts, etc.). Without understanding the gaps in these relationships, the potential of conflict could increase (van Kooten et al., 2006). This study explored the correlations identified by a previously formed Needs Assessment Committee and provide data for the development of programming to improve relationships between BLM personnel and ranchers in Box Elder County. This effort could reduce future public land

conflicts.

### **Purpose Statement**

The purpose of this study is to describe the perceptions, knowledge, and attitudes among ranchers and BLM professionals and use this data to determine if there are any relationships between the perceptions, knowledge, and attitudes among ranchers and BLM professionals regarding federal land policies and procedures for management.

### **Research Questions**

1. What are the demographics that describe ranchers and BLM professionals related to public land management?
2. What are the perceptions of ranchers and BLM professionals regarding BLM policies and procedures of range improvement project implementation and grazing permits?
3. What is the knowledge of ranchers and BLM professionals regarding BLM policies and procedures of range improvement project implementation and grazing permits?
4. What are the relationships between BLM professionals and ranchers' perceptions and their actual knowledge of BLM policies and procedures for range improvement project implementation and grazing permits?
5. Are there relationships between rancher participant background, attitudes, and knowledge?

6. What attitudes do ranchers have regarding federal land ownership and management?

### **Significance of the Study**

The preliminary Needs Assessment Committee identified three concerns, which was helpful, but to develop meaningful interventions, a deeper understanding of the identified concerns was required (Moote, Mcclaran, & Chickering, 1997). A comprehensive needs assessment, which provided opportunity for participant knowledge and communication to be evaluated may promote understanding of these concern areas (Borich, 1980). This research helped to accurately define what was needed to improve rancher and BLM relationships to avert possible conflicts in the future.

USU Extension was in a position to develop programming but more data was needed from the target populations (ranchers and BLM professionals) to develop a more meaningful program. Developed programming and materials could be used by other organizations (i.e., BLM specialists, Utah Department of Agriculture and Food [UDAF]; Utah Grazing Improvement Program [UGIP]; Utah Soil Conservation Districts; Local Working Groups; ranchers; and etc.) to foster better working relationships between ranchers and BLM professionals.

The results of this research will aid in the development of an action plan or program that could be implemented to address the needs identified (Altschuld & Watkins, 2014). For example, potential methods for addressing barriers, developing a training program, or any other possible considerations for interventions that could be

implemented to address the identified needs.

### **Basic Assumptions**

The following were assumptions concerning the study.

- The BLM and rancher target population honestly completed a self-reported questionnaire.
- The BLM personnel target population had access and the skills necessary to complete the online questionnaire.
- The questionnaire collected responses only from ranchers and BLM professionals that work with, or are employed by, the Salt Lake Field Office in the West Desert District of the Utah BLM.

## **CHAPTER II**

### **REVIEW OF THE LITERATURE**

Rangeland conflicts have resulted in stress, arguments, lawsuits, prosecutions, and even death (Nelson, 1995). Understanding the history of the BLM will provide context for the current state of relationships between ranchers and BLM professionals. Furthermore, few studies have evaluated the state of these relationships or programs developed to address concerns. A look at BLM policies and procedures will further explain potential causation for conflict. Finally, understanding rancher motivation will illuminate potential methods for minimizing conflict on American rangeland.

#### **History of the Bureau of Land Management**

In 1800, the General Land Office was created to sell public lands and encourage grazing settlement (BLM, 2017). By 1860, 300 million acres had been sold for pennies on the acre (BLM, 2017). In 1891, congress allowed the president to withdraw forest lands from disposal, and President Cleveland created the Forest Reserves to manage nearly 18 million acres, which were later transferred to the Bureau of Forestry in the Department of Agriculture (BLM, 2017). The withdrawal act of 1910 issues leases on the land and had the land office collecting fees and royalties from minerals off land that was withdrawn (BLM, 2017). In 1934, the Taylor Grazing Act was established to mitigate grazing impacts on public lands. This was done by establishing allotments, and allocating a set number of animals that the land could sustain. The act established a Division of Grazing within the U.S. Department of the Interior designed to manage grazing and was

called The Grazing Service (BLM, 2016). Many debates began surrounding the Grazing Service and the General Land Office due to lack of clarity regarding management (BLM, 2017). The BLM was officially established in 1946, when the General Land Office and the U.S. Grazing Service were consolidated (BLM, 2016)

In 1969, the National Environmental Policy Act (NEPA) required land management agencies to address environmental impacts, provide clear rationale for management decisions, and create an avenue for public input on public land management. (BLM, 2016). This resulted in major changes to BLM rangeland management. For example, under the NEPA legislation, environmental assessments were required for each grazing allotment to determine the condition of the land to create transparency in the BLM decision making process. At the conclusion of the initial assessments, it was found that much of the rangeland had been degraded due to intensive livestock grazing during the 1930s and 1940s (Nelson, 1995). Additionally, the environmental movement of the 1970s resulted in environmental activists challenging federal support for public land use including grazing, timber harvesting, and coal mining (Nelson, 1995).

In 1976, the Federal Land Management Policy and Management Act (FLPMA) was passed. This act repealed the homestead laws and established public lands in federal ownership. FLPMA also mandated that these lands be managed for multiple use (“History of Bureau of Land Management: National Timeline,” 2016). Multiple use purposes could include but are not limited to hiking, camping, ranching, energy production, or energy extraction (“What We Manage,” 2016) Due to the nature of sharing resources, the number of animals a rancher could graze was reduced to allow for other

uses on the rangeland (Nelson, 1995). The pressure from environmental legislation and environmental groups resulted in the Sagebrush Rebellion movement. The members or rebels formed to act against federal control beginning in Nevada (Nelson, 1995; Olson, 1980). The goal of the Sagebrush Rebellion movement was to privatize public lands, or at a minimum, give states control of land management (Nelson, 1995).

When the first resource management plan was developed, land in Utah and California were in critical condition, caused by too many cattle and not enough forage, which resulted in overgrazed and degraded rangelands. This resulted in assigning them as areas of critical concern. In 1980, ranchers' frustrations grew as more grazing privileges were removed due to degraded rangeland conditions (Nelson, 1995). To address the degraded rangelands, the BLM reduced the number of Animal Units per Month (AUM) on public rangeland due to overgrazing problems all over the western U.S. (Nelson, 1995). Reducing AUMs increased frustration and expanded the Sagebrush Rebellion into other states (Nelson, 1995). The Sagebrush Rebellion eventually lost momentum due to conflicting statements made by the ranching community and lack of state support (Nelson, 1995).

The land composition of Northwest Utah is similar to that of a checkerboard in some areas, in that multiple land ownerships are expressed across the rangeland. This is in large part because of national historic events including the transcontinental railroad and Homestead Act (Railroad Land Grants, 2018). The U.S. government recognized the economic importance of the transcontinental railroad. As a result, the government provided land grants to the larger railroad companies to construct their railroad to connect

the east coast to the west coast, between 1871-1900 (Railroad Land Grants, 2018). Following the completion of the railroad, land was given back to the federal government, sold to private entities, or deeded to the states, which explains the random arrangement of land ownership (Railroad Land Grants, 2018). The Rangeland Administration System (RAS) is the department within the BLM responsible for managing 258 million acres within 12 western states (“Rangeland Administration System- BLM,” 2012). These acres are split into separate pastures called allotments based on similar season of use by livestock and vegetation (“Rangeland Administration System- BLM,” 2012). There are approximately 3.3 million acres managed by the SLFO in Northern Utah. Due to the mixed nature of land ownership, grazing allotments have been established on the public land to allow for grazing. Most grazing allotments contain land owned by state, private landowners, and the federal government, which can make land management difficult.

### **Bureau of Land Management and Rancher Relationships**

Few studies have examined the cause of the relational disconnect between ranchers and BLM specialists (van Kooten et al., 2006). One study evaluated the purpose for the deterioration of relationships in Nevada and found that lack of trust and conflicts following wildfires were the leading contributors to relational conflict (van Kooten et al., 2006). Another study found that relationships are essential when implementing projects with a conservation focus and increase in income is not the leading motivating factor when considering conservation (Bergmann & Bliss, 2004). Additionally, few studies have evaluated methods to resolve the rancher-BLM conflicts. Understanding the

potential causes of the relationship disconnect and how to resolve it can provide insight for methods that can be implemented large scale to improve relationships between BLM professionals and ranchers (van Kooten et al., 2006).

In many locations, the relationship between the ranchers and the BLM professionals has been perceived as one of stress and tension and has been publicly demonstrated in multiple situations (Young, 2015). USU Extension plays a critical role in minimizing these conflicts through Local Working Groups (Belton, Jackson-Smith, Daniels, & Messmer, 2008). In partnership with Utah State University Extension, a needs assessment committee (NAC) was formed to identify preliminary causes of potential conflicts between ranchers and BLM specialists in West Box Elder County. This committee had representation from ranchers in the county, USU Extension, Utah Cattlemen's Association, Utah Grazing Improvement Program, and the BLM. The NAC determined that communication between the BLM specialists and area ranchers about land management legislation and failing to execute promised rangeland improvement projects contributed to a poor untrustworthy relationship. The NAC also suggested these challenges could lead to primary causes for health, stress and well-being risks amongst the ranching population in this county.

While most BLM field offices throughout the western U.S. hold annual meetings between BLM professionals and ranchers on specific allotments to address concerns and provide information about land use regulations, this does not always happen in West Box Elder County regularly for all allotments. The needs assessment committee summarized, without regular communication, a lack of understanding of the application of BLM land

management regulations exists amongst the ranchers. Finally, the complexity of managing the land, including evaluating the environmental impacts, often causes promised rangeland improvement projects to take longer to complete, which results in unfulfilled promises.

Throughout history, there have been various conflicts among ranchers and the federal government, especially in the western U.S. Some, such as the Sagebrush Rebellion, have resulted in political and social uprising (Olson, 1980). Others have resulted in armed standoffs between militiamen and federal officers, taking years in the federal court system to resolve (Young, 2015). If effective communication, adequate education, and rangeland improvement projects are addressed in the area managed by the SLFO, these social and political acts of insurrection could be averted. In addition, miscommunications between ranchers and state and federal government officials can lead to unnecessary stress. Stress has been shown by the World Health Organization to negatively impact overall health and well-being (Walker & Walker, 1988).

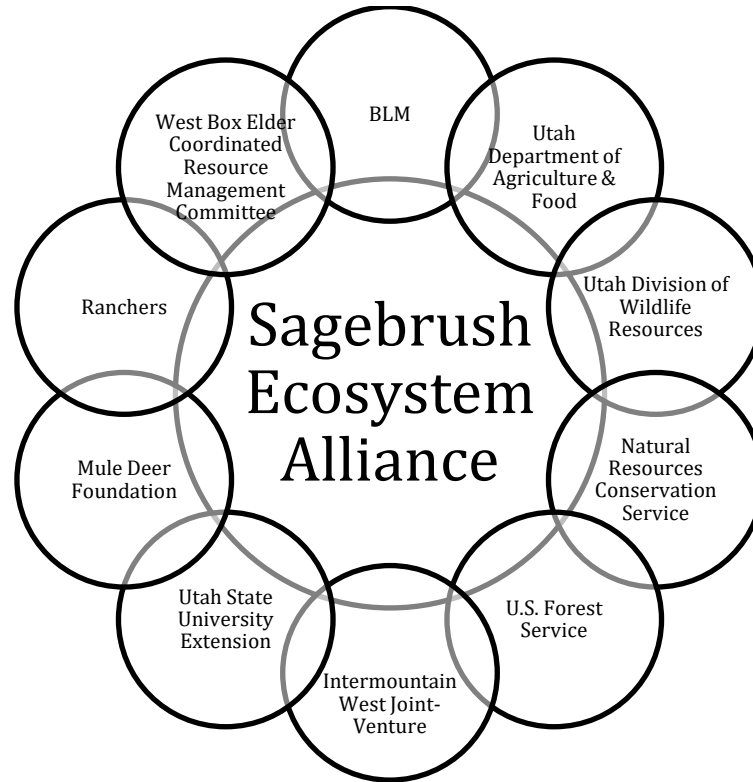
Recently, the Utah BLM has been partnering with groups including environmental organizations, agricultural advocates, and USU Extension to create a collaborative environment intended to improve these relationships (M. Wood, personal communication, October 2, 2017). These efforts are supported in Rich County and Box Elder County, counties that fall within land managed by the SLFO, and had active Coordinated Resource Management (CRM) Groups. The West Box Elder CRM group began in 2008, focusing on management of the Greater-Sage-Grouse. A coordinated resource management plan was developed by the BLM, ranchers, and numerous other

stakeholders, and focused on methodology and priorities for achieving various land management objectives (West Box Elder Local Working Group, 2013). Additionally, the Rich County CRM was comprised of ranchers and other stakeholders that meet regularly. Their primary objective is to expand habitat for the Greater-Sage-Grouse.

The Sagebrush Ecosystem Alliance (SEA) was a geographically-focused effort that emphasized on enhancing conservation and improving relationships across 1.1 million acres of sagebrush habitat in Box Elder County in partnership with the CRM. The SEA was a partnership that was developed in 2016 of federal agencies, private landowners, non-profit organizations, state agencies, and USU Extension. There is a coordinator for the SEA that is responsible for increasing communication and helping to complete range improvement projects. Figure 1 is the model used to better illustrate the role of the SEA coordinator.

### **Bureau of Land Management Policies and Procedures**

Grazing permits are issued to livestock producers to authorize grazing on public lands (Roberson, 2009). Grazing permits are offered, typically, on a 10-year renewable basis with exceptions including predetermined nonrenewable grazing pastures or otherwise specified by the field office (Roberson, 2009). An Environmental Assessment of the area is used to determine rangeland health status as per the National Environmental Protection Act (NEPA) Rangeland Health Standards (Roberson, 2009). This assessment determines if modification to grazing management needs to be implemented (Baca, 2001). Modifications could include, but are not limited to, the implementation of a



*Figure 1.* Communication model of the Sagebrush Ecosystem Alliance (SEA). The role of SEA is to coordinate conservation efforts between all interested parties by increasing communication between researchers, managers, and practitioners.

rangeland improvement project (i.e., fence, water trough, waterline expansion, etc.)

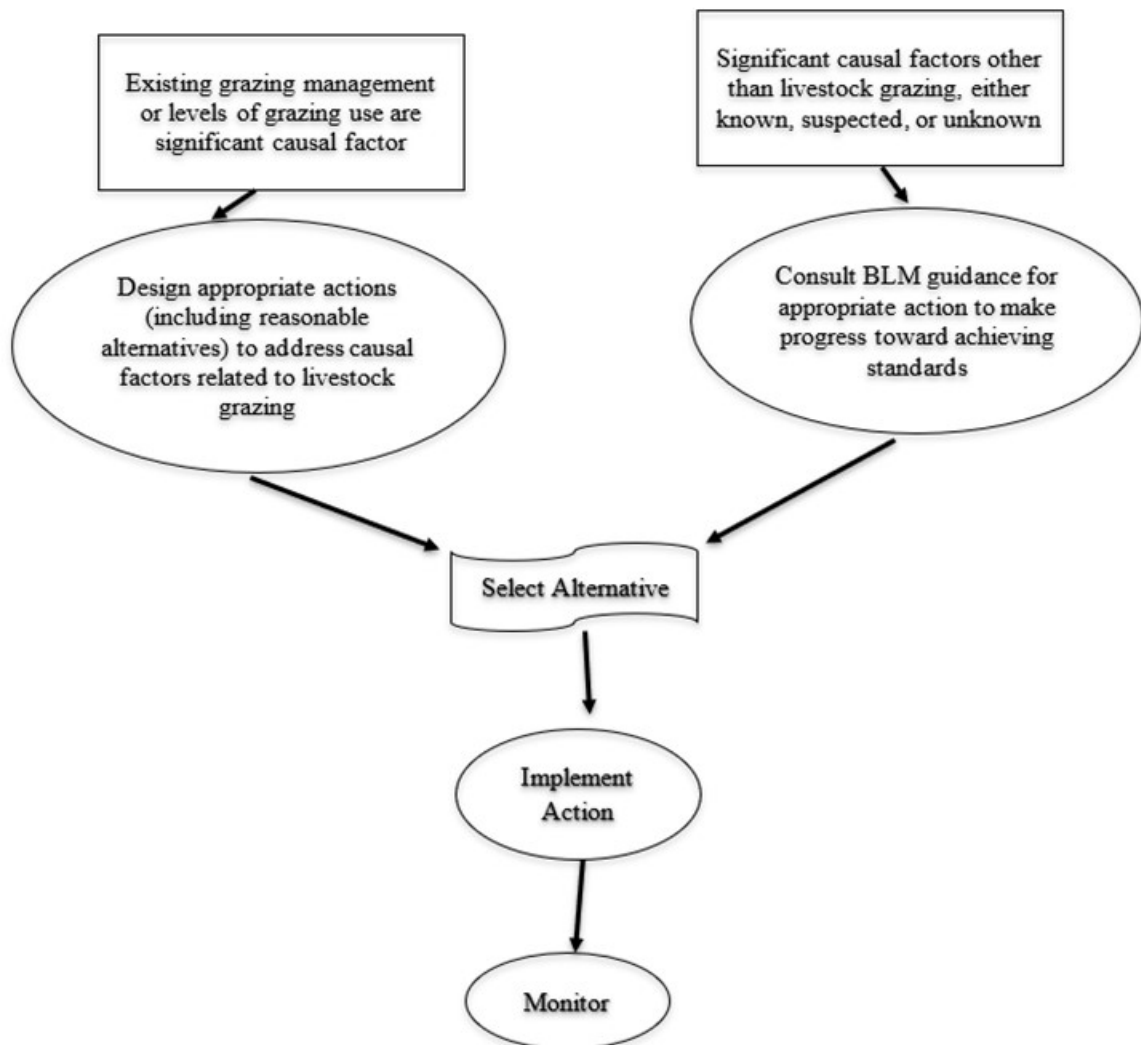
temporary reduction of allocated animals on the allotment, etc.

The BLM Healthy Lands Initiative was a presidential funding allocation in 2008 designed to optimize land health and provide habitat for species on a landscape scale, while still maintaining multiple use (Kempthorne, 2007). The Healthy Lands Initiative allocated \$21.9 million to achieving landscape objectives and was implemented by working closely with permit holders, tribes, leasers, and the public to improve the overall health of the rangeland (Baca, 2001; Kempthorne, 2007). Healthy Lands Initiative has

seven main objectives including: (1) periodically assessing public lands and resources to develop projections of present and future use; (2) managing for multiple uses and sustainable yields; (3) protecting the quality of research, aesthetics, historical, water resources, air, environment, ecologic, and archaeology values; (4) protecting natural conditions when appropriate; (5) providing food and habitat for fish, wildlife, and domestic animals; (6) providing opportunity for recreation and human occupancy use; and (7) managing, maintaining, and improving rangeland conditions to increase productivity (Baca, 2001). Specific areas were included in the initiative, including parts of Oregon, Idaho, California, Nevada, New Mexico, Colorado, Wyoming, and the entire state of Utah.

The BLM has developed standards, called Rangeland Health Standards that address: (1) watershed function; (2) nutrient cycling and energy flow; (3) water quality; (4) habitat for at risk species (i.e., endangered, threatened, proposed, candidate, or special status), and (5) habitat quality for native species and communities. Standards were developed by a team of BLM specialists that could include grazing, wildlife, watershed, water quality, soils, and etc. (Baca, 2001). These standards represent desired conditions on BLM lands in Utah and are supplemented with suggested practices to achieve them. There are several indicators in place to determine in Rangeland Health Standards are being met. These indicators are used at appropriate geographic areas to gather, synthesize, and interpret the existing ecosystem inventory to determine if health standards are being met (Baca, 2001). If the standards are achieved, monitoring takes place; however, if standards are not achieved, the entire site under study is evaluated to develop

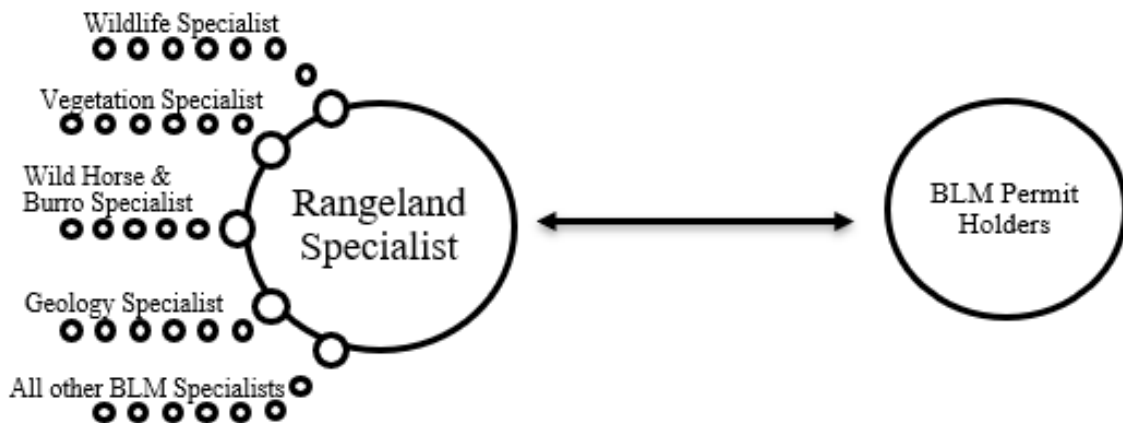
a plan for ecosystem health (Baca, 2001). This process is explained in Figure 2.



*Figure 2.* Determining BLM management alternatives. The process flow chart is used by the BLM to determine alternatives that will improve the condition of the rangeland to meet rangeland health standards. Alternatives are evaluated based on the potential impacts they could have in the NEPA associated with each project. Adapted from Baca, 2001, pp. 4-6. Copyright 2001 by the Bureau of Land Management.

After determining reasons for not meeting rangeland health standards, recommendations were made, with specific goals in mind that worked toward achieving those standards (Baca, 2001). BLM professionals were encouraged to work with permittee(s) and other stakeholders to determine best course of action to increase health

of the area (Baca, 2001). Figure 3 depicts the current communication model utilized by the SLFO of the BLM.



*Figure 3.* Communication model of the BLM Salt Lake Field Office. When information needs to be conveyed to the permit holders, the specialists within the field office convey that information to the rangeland specialist. The range land management specialist then conveys that information to the permit holders.

BLM professionals need to develop plans that comply with the following related laws when developing these plans: (1) National Environmental Policy Act, (2) Clean Water Act, (3) Endangered Species Act, (4) National Historic Preservation Act, (5) Wild and Scenic Rivers Act, and (6) Federal Land Policy and Management Act (Baca, 2001). The BLM Rangeland Management Specialist will develop and analyze two or three alternatives designed to achieve these objectives. Following deliberation with stakeholders, the decision must be justified using a NEPA Environmental Analysis. The document is then released to the public, where interested public may provide comments or feedback on the given decisions. The BLM is then required to address the comments and provide rationale for any comments not considered. The Environmental Analysis is then given to the Field Office Manager for the BLM and a Final Decision document is

developed and released.

### **Rancher Motivation and Perceptions**

Ranching is a business, and families depend on the success of the business to survive (J. Tanner, personal communication, October 5, 2017). Understanding what allows ranchers to be economically viable and sustain their family will enhance opportunity for future conservation practices and form stronger relationships between ranchers and those (i.e., USDA-NRCS, BLM, USDA-FS, and etc.) wanting to implement conservation programs (York, Brunson, Hulvey, & Brain, 2017). Researchers have evaluated decision making systems in Australia, but little has been done to understand what influences decision making in the minds of western U.S. ranchers (Farmer-Bowers & Lane, 2009; York et al., 2017). Studies have shown that when ranching businesses are faced with the opportunity of change, decisions are made based on preservation of family legacy and positive stewardship practices (Farmer-Bowers & Lane, 2009; York et al., 2017). Therefore, if a culture is created that promotes a continued legacy and increases sustainable forage for livestock grazing, management decisions will be made that will develop healthy rangeland (Didier & Brunson, 2004; York et al., 2017). A questionnaire found that 33% of respondents felt they were unable to make management decisions on their public grazing allotments because their autonomy is challenged (York et al., 2017). To minimize loss of autonomy, ranchers utilize programs that require baseline ecological health standards to minimize government regulations and oversight (York et al., 2017). Put simply, ranchers prefer to understand the basic objective that is trying to be met and

given the opportunity to develop solutions to assist in meeting those objectives (York et al., 2017).

Programs designed to increase positive stewardship while promoting autonomy include the Safe Harbor Agreement program conducted by the U.S. Fish and Wildlife Service and Conservation Stewardship Program through the USDA Natural Resources Conservation Service (USDA-NRCS). Other programs through Utah Department of Agriculture and Food (UDAF), Utah Department of Natural Resources (UDWR) and USDA-NRCS are designed to provide funding for projects that will improve wildlife habitat or create healthier rangeland. These programs do require monitoring following the completion of the project to ensure the desired conditions for the land area has been achieved. UDAF and USDA-NRCS programs typically fund projects on privately deeded land. UDWR funding is used on privately held land and publicly managed land. These programs provide opportunities for rancher-designed solutions to meet land management objectives.

### **Theoretical Framework**

To address the research questions, a needs assessment model was used to determine where the gaps were regarding rancher and BLM manager/specialist perceptions and knowledge. Any gaps identified could then result in programming to address the gaps, which could result in improved rancher and BLM relationships. The model used for this research was based on the work of Altschuld and Kumar (2010) and operationalized for Oregon State University Extension faculty (Angima & Etuk, n.d.). As

this research study was being conducted to determine the needs of rancher and BLM professionals to develop a program for USU Extension to improve relationships the simplified approach developed by Angima and Etuk was relevant to this research. The model operates on the theory that if needs are known, interventions can be developed to address needs for specific outcomes. The model by Altschuld and Kumar includes four basic steps or phases: (1) pre-assessment, (2) assessment, (3) develop intervention, and (4) post assessment.

Phase 1, the pre-assessment phase, identified what was already known. This step focused on the development of the needs assessment committee. The committee for this study was tasked with brainstorming ideas and prioritizing potential gaps that should be evaluated in the second phase.

Phase 2, or the assessment phase, was used to determine if a measurable gap existed between what is and what should be and assist in prioritizing to guide future intervention decisions (Altschuld & Kumar, 2010). Need prioritization is then determined by the (a) overall importance to the organization, (b) population size impacted, (c) size of need, (d) risk to the organization if ignored, (e) feasibility, (f) urgency of resolve, (g) extent of data sources agreeing on the need, and (h) willingness of staff (Angima & Etuk, n.d.).

Phase 3 was not part of this study. This phase would have utilized the data collected in phase one and two to develop an intervention that would address the needs identified. After conducting the preliminary needs assessment, it was determined that more data was needed to focus on the details and complexities for a relationship building

intervention. Essentially, this study is a continuation of phase two. The results of this study provide the necessary data to build a more effective Phase 3 (intervention) and evaluate (Phase 4) the efficacy of the program intervention. Critics of the needs assessment practice argue this practice focuses on program deficits and results in communities losing direction and could lose motivation for success (Altschuld & Watkins, 2014). This concern will need to be considered in a possible intervention.

### **Definition of Terms**

*Allotment:* A plot of federally managed land allocated to a person holding a grazing permit

*BLM manager:* Individuals employed by the BLM that are directly responsible for making decision on BLM administered land

*BLM specialist:* Individuals employed by the BLM that have a role in providing information that influences decision making on BLM administered land

*Habitat:* The natural environmental conditions of an animal or plant

*Needs assessment:* A process for determining gaps between current conditions and desired conditions

*Overgraze:* To graze vegetation to the point that vegetation is damaged and the likelihood of soil instability increases

*Ranchers:* Individuals directly involved with beef or sheep production on public lands

*Section of land:* A parcel of land containing 640 acres

### **CHAPTER III**

### **METHODOLOGY**

The purpose of this study was to describe the perceptions, knowledge, and attitudes among ranchers and BLM professionals and use this data to determine if there are any relationships between the perceptions, knowledge, and attitudes among ranchers and BLM professionals regarding federal land policies and procedures for management. Appropriate statistical techniques were used to determine if relationships existed. The overall understanding of ranchers regarding BLM policies and procedures were evaluated using a paper questionnaire. BLM professionals were evaluated using a Qualtrics-developed questionnaire.

The goal of this study was to provide USU Extension with information for the development of programming to develop and improve rancher and BLM professionals' relationships. The following research questions addressed this goal.

#### **Research Questions**

The research questions for this study were as follows.

1. What are the demographics that describe ranchers and BLM professionals related to public land management?
2. What are the perceptions of ranchers and BLM professionals regarding BLM policies and procedures of range improvement project implementation and grazing permits?
3. What is the knowledge of ranchers and BLM professionals regarding BLM policies and procedures of range improvement project implementation and grazing permits?
4. What are the relationships between BLM professionals and ranchers?

perceptions and their actual knowledge of BLM policies and procedures for range improvement project implementation and grazing permits?

5. Are there relationships between rancher participant background, attitudes, and knowledge?
6. What attitudes do ranchers have regarding federal land ownership and management?

### **Validity**

A panel of experts comprised of faculty in agricultural extension, communication, and rangeland reviewed the items in the instrument to establish face validity.

Additionally, knowledge questions were developed using input from the BLM field office manager and personnel from the Grazing Improvement Program, a division of the Utah Department of Agriculture and Food. These questions were then checked using published BLM manuals and handbooks found on their public website.

### **Research Design**

A comprehensive needs assessment was conducted, using questionnaires to determine if relationships existed between BLM professionals and ranchers' perceptions, knowledge and attitude. Ranchers and BLM professionals that participated were given a nearly identical questionnaire. The difference between the two questionnaires include the first section of the questionnaire, which gathered basic characteristic/demographic data. Ranchers that participated were required to have permits to graze on public land to participate. BLM professionals work with these permit holders out of the Salt Lake Field Office (SLFO). Questionnaires were used to collect descriptive data.

The BLM professionals' population completed an online questionnaire. Online questionnaire research provided quantitative data and was effective for collecting, organizing, and analyzing the data (Greenfield, 2016). Online questionnaire advantages included low cost, lack of geographic limitations, lack of time constraints; flexibility in data collection, and the disadvantages included anonymity of the BLM respondents by preventing the ability for the researcher to contact the nonresponders (Greenfield, 2016). A comprehensive analysis of web-based services influenced the development of the survey. The following recommendations were applied to the survey: (1) have an interesting first question; (2) have a motivating welcome screen; (3) provide clear instructions; (4) divide long questionnaires into sections; and (5) include progress timer to help responders know the amount of time the questionnaires will take (Umbach, 2004).

This study used a needs assessment to assist in determining potential solution strategies and gather insight to determine how to best evaluate a potential intervention (Altschuld & Watkins, 2014). Questionnaires were used to evaluate competencies and determine if a disconnect between ranchers and BLM professionals exists, by collecting descriptive statistics then utilizing correlations to determine if significant relationships exist (Altschuld & Watkins, 2014).

### **Selection of Respondents**

Approximately 182 ranchers who graze on public lands managed by the SLFO were contacted, and 15 BLM specialists who directly influenced management decision on lands managed by the SLFO comprised the census population of this study. Rancher age

ranged between 18 and 80 years old. BLM participant age was not gathered to assist in protecting the anonymity of the small population size. No respondents indicated ages below the age of 18. Additionally, the gender of the respondents was not relevant due to the nature of this study.

### **Instrumentation**

A researcher-developed questionnaire was created using Utah State University professors and information in BLM manuals and handbooks, and data from the preliminary interviews conducted during the phase 1 needs assessment (preliminary needs assessment, see Appendices A, B, and C) and the literature (Bergmann & Bliss, 2004; Sayre, 2004; van Kooten et al., 2006). The online questionnaire was developed using Qualtrics, an online questionnaire tool. The paper questionnaire was developed using Microsoft Word. The questionnaire included a letter of information including purpose of the study, procedures, participation, IRB approval statement, investigator statement, benefits, confidentiality, risks, new findings, and an offer to answer questions. BLM respondents could view and print a PDF version of the letter for their records. BLM respondents responded to questions stating they had (a) read the letter and agreed to participate and (b) were at least 18 years old. They were then able to proceed to complete the questionnaire. The ranching population received a printed copy of the letter of information, the questionnaire, and a stamped return envelope.

Section one of the questionnaire collected demographics and was the only section that differed from the other questionnaire. Rancher characteristics included how long they

had held their current grazing permits, participation in range improvement projects, determining decision making ability, and quantity of permits held. BLM professional characteristics included longevity in the SLFO, career length with BLM, frequency of communication, and percentage of time involved with National Environmental Policy Act (NEPA). The data from this section addressed research question one and aided in interpreting research questions 4 and 5.

Section two of the questionnaire asked questions concerning the perceptions of ranchers and BLM professionals regarding BLM policies and procedures of range improvement project implementation and grazing permits (research question two) using a 4-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). This section allowed rancher and BLM professionals to rate their perceived knowledge of policies and procedures as it relates to rangeland improvement projects and grazing permit renewals.

Section three addressed research question three to determine if there were any knowledge gaps between BLM professionals and ranchers related to BLM policies and procedures for range improvement project implementation and grazing permits. Some questions were multiple choice with one answer being the correct answer, while others involved selecting multiple correct answers or situations.

Section four gathered data on rancher and BLM professional attitudes related to land management decisions. This was done using a 4-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*).

## **Data Collection**

This study used an online data collection tool and a paper version of the questionnaire to collect participant data. Ranchers were contacted via U.S. Postal Service (USPS) with addresses found in a public online database (“BLM Reporting Application,” n.d.). BLM professionals were contacted using an internal email sent by the field office manager (Appendix D). The questionnaire was distributed to ranchers via the USPS (Appendix E) and BLM professionals (Appendix F) by sending the questionnaire to the BLM SLFO manager who then distributed it to the specialists within the SLFO.

Steps to ensure a high response rate included instructions that allowed the responders to return the questionnaire via mail, follow up the first questionnaire with a follow up postcard, then distribute a second copy of the questionnaire via mail (Dillman, 1991). All mailed copies of the questionnaires were sent using first class mail (Dillman, 1991). Ranchers were sent a letter telling them about the research project, a letter of information, a paper copy of the questionnaire, and a return envelope with postage (Appendix J). A number was placed on the return envelope to track who has responded. When a questionnaire was returned, the envelope number was shredded and the questionnaire went into a box in a locked office at USU. This kept the questionnaire anonymous in the data pile and allowed researchers to send out reminder postcards and the second questionnaire to nonresponders (Appendix K). A reminder postcard was mailed to the population of ranchers who had not returned their questionnaires 10 days after initial request, and a second requests was sent to nonresponders 1 week after that (17 days after initial mailing). The final reminder letter (Appendix L) was mailed to

respondents with a second copy of the letter of information, a paper copy of the questionnaire, an envelope, and postage to return the questionnaires. Again, only the envelope was numbered. Respondents were asked to return their questionnaires using the envelope and postage provided.

Following the distribution of the questionnaires, 10% of the nonresponders, or eight nonresponders, were contacted via telephone (Miller & Smith, 1983; see Appendix M). The data collected from the early responders were then compared using correlations to the data collected from the late responders to determine if differences between groups existed (Miller & Smith, 1983).

BLM responders were contacted via the field office manager in the Salt Lake Field Office three times by email. The researcher provided emails to the field office manager that were sent to the BLM professionals. BLM professionals were sent an email message telling them about the research project and providing them with a link to the questionnaire where they were provided with a letter of information, and question asking if they agree to participate. If they selected no, they exited the questionnaire. Those who opted in proceeded to the questionnaire. Contact was made to the BLM professionals through the field office manager (Appendix G). Two reminder emails (one a week for 2 weeks) were sent to all BLM professionals within the SLFO from the Field Office Manager (Appendix H & I). Individual responses were not tracked as there was no need for identifiers. The BLM population who did not respond to the questionnaires were not contacted via telephone due to the anonymous nature of the population (Miller & Smith, 1983).

## **Data Analysis**

### **Early vs. Late Responder Relationships**

Prior to analyzing data for specific research questions, an analysis was conducted to determine if differences existed between the early responders and late-responders. This analysis was completed using cross tabulation to compare the two groups based on specific demographic variables including: (1) number of allotments, (2) livestock species, (3) ranching income, and (4) number of generations the ranching operation had been established. No significant differences existed. Independent *t* tests were then run on the scale variables to compare the early and late responses. This was completed for the perception, attitude, and knowledge variables. Three statistically significant relationships were identified with the perception variables. This indicated that the two groups were not similar and caution should be used when interpreting the results of perception statement: (1) I understand what a range improvement project is, (2) I understand the process of juniper removal projects on grazing allotments, and (3) I understand the NEPA process for permanently removing AUMs.

**Question 1: What are the demographics that describe ranchers and BLM professionals related to public land management?** Descriptive statistics including mean, median, mode, and frequencies were calculated for the demographic questions asked to both BLM and rancher populations. IBM SPSS Version 23 was used to calculate descriptive statistics. Questionnaires missing more than 10% of their responses were excluded from the data set prior to analysis.

**Question 2: What are the perceptions of ranchers and BLM professionals**

**regarding BLM policies and procedures of range improvement project**

**implementation and grazing permits?** The researcher used IBM SPSS Version 23 to calculate the frequencies and percentages that explain the perceptions for both BLM and rancher populations. BLM and rancher respondents selected their level of perceived understanding using a 4-point Likert-type scale ranging from 1 (*strongly agree*) to 4 (*strongly disagree*). Frequency was used to better understand rancher perceived knowledge. Questionnaires missing more than 10% of their responses were excluded from the data set prior to analysis.

**Question 3: What is the knowledge of ranchers and BLM professionals regarding BLM policies and procedures of range improvement project**

**implementation and grazing permits?** The percentage of correct responses for each knowledge question was determined for the ranching respondents and BLM respondents using IBM SPSS Version 23.

**Question 4: What are the correlations between BLM professionals and ranchers' perceptions related to actual knowledge of BLM policies and procedures for range improvement project implementation and grazing permits?** Cross-tabulations examined relationships between the perception statements of ranchers and BLM professionals and their knowledge of BLM policies and procedures for range improvement project implementation and grazing permits. For the perception questions, the strongly agree and agree answer choices were recoded as agreement, and the strongly disagree and disagree answer choices were recoded as disagreement to aid in analysis. IBM SPSS Statistics Version 23 was used to calculate relationships.

**Question 5: Are there relationships between rancher participant background, attitudes, and knowledge?** Cross-tabulations, Spearman's Rank correlation, or Pearson Product correlation were conducted in IBM SPSS Version 23 to identify relationships involving attitude and knowledge (Glass & Hopkins, 1996). Questionnaires missing more than 10% of their responses were excluded from the data set prior to analysis.

Cross-tabulations and correlations were conducted to determine if any associations between rancher background and related perceptions, attitudes, and knowledge existed. The strengths of the Spearman's and Pearson's Product Moment associations were evaluated based on Davis' (1971) measures for magnitude, which are: (1) very strong relationships with a coefficient of .70 or higher, (2) substantial association with a coefficient of .50 - .69, (3) moderate association with a coefficient of .30 - .49, (4) low association with a coefficient of .10 - .29, and (5) negligible association with a coefficient of .01 - .09. Correlation tests were determined based on variable type (Glass & Hopkins, 1996). Strength of associations with variables using crosstabulations was not calculated.

**Question 6: What attitudes do ranchers have regarding federal land ownership and management?**

Frequencies and percentages were utilized to identify rancher attitude toward federal land ownership and management. IBM SPSS Version 23 was used to calculate descriptive statistics. Questionnaires missing more than 10% of their responses were excluded from the data set prior to analysis.

### **Limitations**

1. The rancher questionnaire was delivered via postal service, which could limit response rate. For this purpose, recruitment letters were sent to the participating population. Additionally, nonresponders were contacted via public contact information and asked to answer the questionnaire (Appendix M).
2. The BLM questionnaire was anonymous in nature and prevented the researcher from contacting the nonresponders.
3. Data analysis determined if relationships existed and did not identify what the relationship is.
4. The questionnaire collected responses only from ranchers and BLM professionals that work with, or are employed by, the Salt Lake Field Office in the West Desert District of the Utah BLM and should not be generalized.

## CHAPTER IV

### RESULTS

The purpose of this study was to describe the perceptions, knowledge, and attitudes among ranchers and BLM professionals and use this data to determine if relationships exist between perceptions, knowledge, and attitudes among ranchers and BLM professionals regarding federal land policies and procedures for management.

The goal of this study was to provide Utah State University Extension with information for the development of programming to develop and improve rancher and BLM professionals' relationships. The following research questions addressed this goal.

1. What are the demographics that describe ranchers and BLM professionals related to public land management?
2. What are the perceptions of ranchers and BLM professionals regarding BLM policies and procedures of range improvement project implementation and grazing permits?
3. What is the knowledge of ranchers and BLM professionals regarding BLM policies and procedures of range improvement project implementation and grazing permits?
4. What are the relationships between BLM professionals and ranchers' perceptions and their actual knowledge of BLM policies and procedures for range improvement project implementation and grazing permits?
5. Are there relationships between rancher participant background, attitudes, and knowledge?
6. What attitudes do ranchers have regarding federal land ownership and management?

Of the 182 ranchers who received the questionnaire, 70 returned their surveys via mail, resulting in a 37.2% response rate. Nine nonresponders were contacted via telephone. The responses from the early respondents were compared to the late

respondents of the ranching population. All responses were compiled as the ranching population ( $n = 79$ ) three of the perception statements and one of the attitude statements were found to be statistically significant. Two questionnaires were returned due to no available forwarding address or the wrong address. Additionally, seven of the returned questionnaires were completely blank and excluded from the data set. The BLM online questionnaire was forwarded to 15 BLM professionals, and 11 responded, which is an 84.6% response rate. One BLM questionnaire was excluded from the data set prior to analysis due to a lack of responses for more than 10% of the questionnaire.

### **Research Question #1**

Research question #1 asked, “*What are the demographics that describe ranchers and BLM professionals related to public land management?*” BLM respondents were asked (1) how long have you been employed by the BLM; (2) how long have you held your current position; (3) on average, how frequently do you communicate with permittees; and (4) what percentage of your time is spent working on various NEPA documents. Respondents had been working for the BLM an average of 12.9 years, with 17.2 years being the longest employed and 3.5 years of employment being the shortest. Of these respondents, current positions have been held approximately 3.6 years with the longest held position being held 11 years and 2 months being the shortest amount of employment in their current position. When asked about permittee communication frequency, four respondents indicated communicating with permit holders at least weekly, four respondents indicated quarterly communication, and two respondents

indicated communicating with permittees annually. Finally, BLM respondents identified the amount of time they spent working on NEPA related documents. One respondent indicated spending 1-25% of their time, another five indicated 26-50% of their time was spent on NEPA; two suggested 51-75% of their time was spent on NEPA, and two identified spending 76-100% of their time working on NEPA.

Rancher respondents were asked (1) how many grazing allotments they own/lease permits for; (2) how long they have held each of the permits; (3) which species they graze on these allotments; (4) percentage of household income their ranching operation accounts for; (5) number of generations involved in ranching; (6) which rangeland improvement projects that have been completed on their allotments; (7) where they obtain information about NEPA; (8) which counties they have permits in; and (9) the age of the rancher.

Of the 79 respondents, 83.3% ( $n = 65$ ) held permits for 1-3 allotments, 9.0% ( $n = 7$ ) held permits for 4-6 allotments, and 7.7% ( $n = 6$ ) held permits for 7-10 allotments, and one participant abstained from answering the demographic questions. The average number of allotments grazed by the respondents was  $M = 1.24$ ,  $SD = .59$ .

Fifty-two respondents (66.7%) reported holding their permit for multiple generations. One fifth of the respondents declared ( $n = 16$ , 20.5%) holding their permits for 11-20 years, 5.1% ( $n = 4$ ) having their allotment permits for 6-10 years, and 7.7% ( $n = 6$ ) having their first allotment for only 0-5 years. Of the 47 respondents having two allotments, 42.6% ( $n = 20$ ) have held their second permit for multiple generations, while 29.8% ( $n = 14$ ) of the population has held their permit for 11-20 years, 8.5% ( $n = 4$ ) have

had their allotment permits for 6-10 years, and 14.9% ( $n = 7$ ) have held their permit for 0-5 years. A total of 22 respondents held three allotments. Of these respondents, the majority, or 59.1% ( $n = 13$ ) have held their permits for multiple generations, 18.2% ( $n = 4$ ) held their permits for 11-20 years, 9.1% ( $n = 2$ ) have been grazing on their allotments for 6-10 years, and 4.5% ( $n = 1$ ) have been on their third allotment for 0-5 years. Of the 78 respondents, 12 hold grazing permits for 4 allotments. Of those, 76.9% ( $n = 10$ ) have been grazing on those allotments for multiple generations. One participant has held their permit for 11-20 years, and one participant has been grazing on their fourth allotment for 0-5 years. Only eight respondents (100%) have been grazing on five allotments, and all of those have been for multiple generations. Eight respondents have had six allotments. Of those, seven (87.5%) have been grazing for multiple generations, and one (12.5%) for six-ten years. Of the respondents, five have been grazing on seven allotments for multiple generations. Four respondents have been grazing on eight allotments for multiple generations. Four of the 78 respondents grazed on 9 allotments. Three of them (75%) had been grazing for multiple generations, and one (25%) for 0-5 years. Four respondents had been grazing on 10 allotments. Of those, two (50%) had been for multiple generations, one (25%) for 11-20 years, and one (25%) for 0-5 years.

Ranchers were asked to specify the livestock species they graze on their BLM allotments. Of the respondents, 78.5% of the population ( $n = 62$ ) grazed cattle, 8.9% ( $n = 7$ ) of them grazed only sheep, and 12.7% ( $n = 10$ ) of the population grazed both sheep and cattle.

On the question about household income, 29.1% ( $n = 23$ ) claimed 0-25% of their

income came from ranching, 13.9% ( $n = 11$ ) of respondents attributed 26-50% of their income came from ranching, another 13.9% ( $n = 11$ ) claimed 51-75% of their income came from their ranching operation, and finally, 43% ( $n = 34$ ) of the population stated that 76-100% of their income was attributed from ranching.

Generations involved in ranching was evaluated by providing a list of options for respondents to select from (Table 1). More than half were third and fourth generation ranchers.

Table 1

*Generations of Ranching Operation*

Generation	<i>f</i>	%
First	8	10.1
Second	11	13.9
Third	17	21.5
Fourth	26	32.9
Fifth	12	15.2
Sixth or more	5	6.3
Total	79	100.0

Ranchers were asked to select from a list which range improvement projects they have had experience with on their allotments. Table 2 identifies which projects respondents have participated in on BLM rangeland. The majority of the projects involved water development ( $n = 55$ , 72.4%) and fencing ( $n = 50$ , 65.8%).

Table 3 identifies where BLM allotment permit holders are obtaining their information regarding National Environmental Policy Act. Ranchers were allowed to select all sources they had used. Ranching experience emerged as the first information

source ( $n = 48$ , 63.2%), followed closely by information from BLM rangeland managers ( $n = 39$ , 51.3%). Of those that selected other as their source for NEPA information, none specified what other sources were utilized.

Table 2

*Rangeland Improvement Project Participation and Experience*

Range improvement project	Respondents with experience	% with experience
Water development	55	72.4
Fence	50	65.8
Brush removal (i.e., pinyon/juniper trees, sage)	30	39.5
Weed management (i.e., cheatgrass, noxious weed, etc.)	24	31.6
Fuel breaks	11	14.5
None	14	18.4

Table 3

*BLM Allotment Permittee Information Sources*

Information source	<i>f</i>	%
Ranching experience	48	63.2
BLM rangeland managers	39	51.3
My peers	19	25.0
My college experience	10	13.2
Other resources	8	10.5
Utah Department of Agriculture and Food	8	10.5
Google/other internet resources	5	6.6
University researchers	4	5.3

Ranchers were asked about the counties where they held grazing permits. Table 4 depicts the number of permits the respondents held in each county involved in their ranching operation. Box Elder ( $n = 28$ , 32.9%), Tooele ( $n = 27$ , 31.8%), and Rich ( $n = 22$ , 25.9%) counties emerged as the top three locations for permits. Respondents'

reported they held no permits in six counties (Davis, Morgan, Salt Lake, Summit, Wasatch, and Weber).

Table 4

*Location of Permit Holder Allotments*

County	<i>f</i>	%
Box Elder	28	32.9
Tooele	27	31.8
Rich	22	25.9
Utah	7	8.2
Cache	1	1.2
Davis	0	0.0
Morgan	0	0.0
Salt Lake	0	0.0
Summit	0	0.0
Wasatch	0	0.0
Weber	0	0.0

*Note.* Cache County is an anomaly as there are no BLM grazing allotments in the county.

The final question in this section of the survey asked about rancher age. Most respondents ranged from ages 31-88, with a mode age of 59 and mean age of 65 ( $SD = 12.45$ ).

## **Research Question #2**

Research question #2 asked, “*What are the perceptions of ranchers and BLM professionals regarding BLM policies and procedures of range improvement project implementation and grazing permits?*” Respondents evaluated their level of agreement based on their understanding of various policies and procedures followed by the BLM using a 4-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*).

Frequency was used to better understand rancher perceptions of their knowledge regarding rangeland management practices.

Of the ranching population, most respondents strongly agreed (51%) or somewhat agreed (44%) they understood what a range improvement project was (Table 5). The second question addressed rancher agreement with understanding the process of developing a pinyon/juniper tree removal process. Of the ranching population, most respondents strongly agreed (55%) or somewhat agreed (38%).

Table 5

*Rancher Perception of Knowledge Regarding BLM Processes and Grazing Permits*

Statement	<i>n</i>	Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree
I understand what a range improvement project is	77	39	34	4	0
I understand the process of juniper removal projects on grazing allotments	76	42	29	3	2
I am familiar with the standards and guidelines that apply to the management of specific allotments	77	25	43	6	3
I understand the complete process of NEPA for a range improvement project	77	9	38	22	8
I understand the NEPA process for permanently removing AUMs	77	8	13	21	35
I understand the NEPA process for converting sheep AUMs to Cattle AUMs	76	8	26	28	14
I understand the NEPA process for adding additional AUMs to my grazing permit on a temporary non-renewable basis	76	17	30	17	12
I understand the NEPA process required for temporarily reducing AUMs	78	6	25	24	23

Question three asked ranchers to indicate their level of familiarity with allotment specific standards and guidelines. Of the ranching population, 33% strongly agreed, 56% somewhat agreed, 8% somewhat disagreed, and 4% strongly disagreed.

Ranchers indicated their level of understanding the NEPA process for implementing range improvement projects. The majority of the respondents either somewhat agreed (49%) or somewhat disagreed (29%).

Question five asked ranchers to report their understanding of the NEPA process required to permanently remove grazing. The majority of respondents either somewhat disagreed (27%) or strongly disagreed (46%) they understood the NEPA process required for permanently removing grazing from an allotment.

Question six sought perception for the level of understanding of the process to convert sheep AUMs to cattle AUMs. Of the ranching respondents, 11% strongly agreed, 34% somewhat agreed, 37% somewhat disagreed, and 18% strongly disagreed.

Questions seven sought to obtain an understanding of rancher perception of the process of adding additional AUMs to a grazing permit on a temporary, non-renewable basis. The majority of responders indicated they somewhat agreed (40%), with an equal distribution between strongly agreed (22%) and somewhat disagreed (22%).

Question eight asked ranchers to indicate their perceived knowledge regarding their level of understanding of the temporary reduction of AUMs on a grazing allotment. There is a nearly equal distribution between somewhat agreed (32%), somewhat disagreed (31%), and strongly disagreed (30%), suggesting that ranchers are varied in their perceived understanding of the NEPA process required for temporarily reducing AUMs.

The BLM population was given identical perception statements to indicate their perception of BLM policies and procedures. Table 6 outlines their responses.

Table 6

*BLM Professionals' Perceptions of BLM Processes and Grazing Permits*

Statement	<i>n</i>	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
I understand what a range improvement project is	9	7	2	0	0
I understand the process of juniper removal projects on grazing allotments	10	6	4	0	0
I am familiar with the standards and guidelines that apply to the management of specific allotments	10	5	4	1	0
I understand the complete process of NEPA for a range improvement project	10	7	2	1	1
I understand the NEPA process for permanently removing AUMs	10	5	3	1	1
I understand the NEPA process for converting sheep AUMs to Cattle AUMs	10	4	3	2	1
I understand the NEPA process for adding additional AUMs to my grazing permit on a temporary non-renewable basis	10	5	2	2	1
I understand the NEPA process required for temporarily reducing AUMs	10	5	2	2	1

A total of nine respondents answered perception question one, which asks for level of understanding of what a range improvement project is. All BLM professionals indicated they either strongly agreed (60%) or somewhat agreed (40%) with this statement.

Question two sought to identify BLM professionals' understanding of juniper removal process. Five respondents strongly agreed (50%), four somewhat agreed (40%), and one respondent indicated they somewhat disagreed (10%). Of the 10 respondents, five indicated they strongly agreed (50%) and four indicated they somewhat agreed (40%) with being familiar with allotment specific standards and guidelines that apply to management. Seven respondents indicated they strongly agreed (70%) about understanding the NEPA process for range improvement projects. In regards to the level of agreement concerning the NEPA process for permanently removing AUMs, five respondents indicated they strongly agreed (50%), three respondents somewhat agreed (30%), one respondent somewhat (10%), and one respondent strongly disagreed (10%). Question six asked about the process of converting sheep AUMs to cattle AUMs. Four respondents indicated they strongly agreed (40%), three respondents somewhat agreed (30%), two respondents somewhat disagreed (20%), and one respondent strongly disagreed (10%). Of 10 respondents, 50% strongly agreed they understood the process of adding additional AUMs to a grazing permit on a temporary non-renewable basis. Half of the respondents ( $n = 5$ , 50%) strongly agreed they understood the NEPA process for temporarily reducing AUMs in a grazing allotment.

### **Research Question #3**

Research question #3 asked, "*What is the knowledge of ranchers and BLM professionals regarding BLM policies and procedures of range improvement project implementation and grazing permits?*" The percentage of correct responses for each

question was calculated to identify gaps in knowledge (Table 7). Some of the questions were not completed by the respondents. The ranching respondents appeared to mostly understand who makes the final land management decisions ( $n = 70$ , 62.0%), the steps

Table 7

*Correct Response Percentage for Knowledge Questions*

Knowledge question	Rancher		BLM	
	<i>n</i>	% correct	<i>n</i>	% correct
In planning a juniper tree removal project, after identifying a treatment area within the allotment, the next step for BLM is ____.	63	25.3	8	0.0
How can a request for a range improvement project be submitted?	66	27.8	9	18.2
Who is involved in preparing the NEPA document?	70	43.0	9	45.5
Who makes the final land management decision for BLM grazing permits and range improvement projects?	70	62.0	9	81.8
When evaluating my allotment, which area has the greatest influence on rangeland health?	69	43.0	9	72.7
When is my allotment evaluated to determine if rangeland health standards are being met?	69	39.2	9	81.8
On which of the following websites can I find active NEPA Documents?	53	6.3	9	72.7
According to the BLM, what is the first step in obtaining an increase in AUMs on a non-renewable basis?	67	70.9	9	81.8
A NEPA decision is required before beginning which of the following projects on BLM land?	73	15.2	9	54.5
When can a request for a new fenceline be submitted?	72	2.5	9	9.1
When can a request for a new waterline be submitted?	72	3.8	9	9.1
A range improvement project is...	74	60.8	9	63.6
What factors determine the BLMs rangeland improvement project priority list?	73	29.1	9	18.2
Under what circumstances could AUMs be reduced temporarily?	78	7.6	9	18.2
Which of the following are used to determine priority of apportioned additional AUMs?	69	40.5	9	18.2
According to the BLM rangeland management practices, which are indicators of rangeland health?	68	19.0	11	72.7
Please organize the proper procedures in order for notifying a permittee of a temporary reduction in AUMs	75	46.8	9	27.3

required to increase nonrenewable Animal Unit Months (AUMs) on an allotment ( $n = 67$ , 70.9%), and overall understanding of what a range improvement project is ( $n = 74$ , 60.8%). The BLM respondents appeared to have strong knowledge in knowing who makes the final decision in their office ( $n = 9$ , 81.8%), when allotments are evaluated to determine rangeland health ( $n = 9$ , 81.8%), and knowing the process required for temporarily increasing AUMs on an allotment ( $n = 9$ , 81.8%).

#### **Research Question #4**

Research question #4 asked, *“What are the relationships between BLM professionals and ranchers’ perceptions and actual knowledge of BLM policies and procedures for range improvement project implementation and grazing permits?”*

#### **Ranchers’ Perceptions Associated with their Knowledge**

Cross tabulations examined the relationships between ranchers’ perceptions and their knowledge of BLM policies and procedures for range improvement project implementation and grazing permits. Some of the questions were not completed by the ranchers. For perception statement one, identified in Table 8, the majority of ranchers agreed they understood what a range improvement project is, but 65 ranchers (91.6%) incorrectly answered the knowledge question about when to submit a request for a new fenceline. Additionally, 64 ranchers (90.1%) perceived to understand what a range improvement project is but incorrectly answered the knowledge question about knew when to submit a request for a new waterline.

Table 8

*Relationships Between Ranchers' Understanding of a Range Improvement Project and Their Knowledge of BLM Policies and Procedures*

Knowledge question		Understand what a range improvement project is			
		Agree		Disagree	
		<i>f</i>	%	<i>f</i>	%
Who is involved in preparing the NEPA document? ( <i>n</i> = 69)	Correct	33	48.0	1	1.4
	Incorrect	32	46.3	3	4.3
In planning juniper tree removal projects, after identifying a treatment area within the allotment, the next step for BLM is ____? ( <i>n</i> = 63)	Correct	17	27.0	3	4.8
	Incorrect	42	66.6	1	1.6
How can a request for a range improvement project be submitted? ( <i>n</i> = 65)	Correct	22	33.8	0	0.0
	Incorrect	39	60.0	4	6.2
Who makes the final land management decisions for BLM grazing permits and range improvement projects? ( <i>n</i> = 71)	Correct	10	14.1	2	2.8
	Incorrect	57	80.3	2	2.8
When evaluating an allotment, which area has the greatest influence on rangeland health? ( <i>n</i> = 68)	Correct	34	50.0	0	0.0
	Incorrect	31	45.6	3	4.4
When is my allotment evaluated to determine if rangeland health standards are being met? ( <i>n</i> = 69)	Correct	29	42.0	2	2.9
	Incorrect	36	52.2	2	2.9
On which of the following websites can I find active NEPA documents? ( <i>n</i> = 53)	Correct	4	7.5	1	1.9
	Incorrect	46	86.8	2	3.8
A NEPA decision is required before beginning which of the following projects on BLM Land? ( <i>n</i> = 69)	Correct	45	65.2	3	4.3
	Incorrect	20	29.0	1	1.5
When can a request for a new fenceline be submitted? ( <i>n</i> = 71)	Correct	2	2.8	0	0.0
	Incorrect	65	91.6	4	5.6
When can a request for a new waterline be submitted? ( <i>n</i> = 71)	Correct	3	4.2	0	0.0
	Incorrect	64	90.1	4	5.6
A range improvement project is ____? ( <i>n</i> = 73)	Correct	45	61.6	2	2.7
	Incorrect	24	32.9	2	2.7
What factors determine the BLMs rangeland improvement projects priority list? ( <i>n</i> = 72)	Correct	21	29.2	2	2.8
	Incorrect	47	65.3	2	2.8

Table 9 shows the majority of the ranching respondents agreed they understood the process of a juniper removal project on a grazing allotment; however, the majority incorrectly answered six knowledge questions where juniper removal was considered part of the correct answer. For example, ranchers agreed they understood the process of a

Table 9

*Relationships Between Ranchers' Understanding of the Juniper Removal Project Process on Grazing Allotments and Their Knowledge of BLM Policies and Procedures*

		Understand the process of a juniper removal project on a grazing allotment			
		Agree		Disagree	
Knowledge question		<i>f</i>	%	<i>f</i>	%
Who is involved in preparing the NEPA document? ( <i>n</i> = 68)	Correct	31	45.6	2	2.9
	Incorrect	32	47.1	3	4.4
In planning juniper tree removal projects, after identifying a treatment area within the allotment, the next step for BLM is ____? ( <i>n</i> = 62)	Correct	18	29.0	2	3.2
	Incorrect	39	63.0	3	4.8
How can a request for a range improvement project be submitted? ( <i>n</i> = 64)	Correct	19	29.7	2	3.1
	Incorrect	40	62.5	3	4.7
Who makes the final land management decisions for BLM grazing permits and range improvement projects? ( <i>n</i> = 70)	Correct	12	17.2	0	0.0
	Incorrect	53	75.7	5	7.1
A NEPA decision is required before beginning which of the following projects on BLM Land? ( <i>n</i> = 68)	Correct	43	63.2	5	7.4
	Incorrect	20	29.4	0	0.0
Please organize in the proper procedure in order for notifying a permittee of a temporary reduction in AUMs. ( <i>n</i> = 72)	Correct	34	47.2	2	2.8
	Incorrect	33	45.8	3	4.2
Under what circumstances could AUMs be temporarily reduced? ( <i>n</i> = 75)	Correct	6	8.0	0	0.0
	Incorrect	64	85.3	5	6.7
A range improvement project is ____? ( <i>n</i> = 72)	Correct	45	62.5	1	1.4
	Incorrect	22	30.5	4	5.5
What factors determine the BLMs rangeland improvement projects priority list? ( <i>n</i> = 71)	Correct	21	29.6	2	2.8
	Incorrect	45	63.4	3	4.2

juniper removal project on a grazing allotment, but they incorrectly identified from a list of circumstances that could result in a temporary loss of AUMs on their grazing allotment ( $n = 64, 85.3\%$ ).

Table 10 presents the relationships between the relevant knowledge questions and the third perception statement about ranchers' level of agreement regarding familiarity with standards and guidelines for specific allotments. Respondents believed they understood the standards and guidelines for specific allotments but incorrectly answered (a) when a request for a new fenceline is submitted ( $n = 62, 87.3\%$ ), (b) when a request for a new waterline is submitted ( $n = 61, 85.9\%$ ), and (c) which website has active NEPA documents ( $n = 45, 84.9\%$ ).

Perception statement four asked about understanding of the NEPA process related to range improvement projects. Table 11 depicts the relationships between perception statement four and the relevant knowledge questions. The first gap was rancher knowledge regarding where to find active NEPA ( $n = 30, 56.6\%$ ). The second gap was ranchers knowing when to submit a request for a waterline ( $n = 43, 59.7\%$ ). Finally, 44 ranchers (61.1%) incorrectly identified when to submit a request for a fenceline.

Table 12 shows the relationship between the perception statement about understanding the NEPA process related to permanently removing AUMs and their knowledge of related BLM policies and procedures. Three questions identified a strong misalignment in actual knowledge and perceived knowledge. First, when asked to correctly identify the website that active NEPA would be found on ( $n = 26, 49.1\%$ ). Second, when ranchers were asked to identify circumstances that could result in a

Table 10

*Relationships Between Ranchers' Familiarity with Standards and Guidelines that Apply to the Management of Specific Allotments and Their Knowledge of BLM Policies and Procedures*

Knowledge question		Familiarity with standards and guidelines for specific allotments			
		Agree		Disagree	
		<i>f</i>	%	<i>f</i>	%
How can a request for a range improvement project be submitted? ( <i>n</i> = 65)	Correct	20	30.8	2	3.0
	Incorrect	38	58.5	5	7.7
Who is involved in preparing the NEPA document? ( <i>n</i> = 69)	Correct	33	47.8	1	1.5
	Incorrect	29	42.0	6	8.7
A NEPA decision is required before beginning which of the following projects on BLM land? ( <i>n</i> = 69)	Correct	43	62.3	5	7.3
	Incorrect	19	27.5	2	2.9
When evaluating an allotment, which area has the greatest influence on rangeland health? ( <i>n</i> = 68)	Correct	31	45.6	3	4.4
	Incorrect	32	47.1	2	2.9
When is my allotment evaluated to determine if rangeland health standards are being met? ( <i>n</i> = 69)	Correct	28	40.6	3	4.3
	Incorrect	34	49.3	4	5.8
On which of the following websites can I find active NEPA documents? ( <i>n</i> = 53)	Correct	5	9.4	0	0.0
	Incorrect	45	84.9	3	5.7
Who makes the final land management decisions for BLM grazing permits and range improvement projects? ( <i>n</i> = 71)	Correct	53	74.6	11	15.5
	Incorrect	6	8.5	1	1.4
When can a request for a new fenceline be submitted? ( <i>n</i> = 71)	Correct	2	2.8	0	0.0
	Incorrect	62	87.3	7	9.9
When can a request for a new waterline be submitted? ( <i>n</i> = 71)	Correct	3	4.2	0	0.0
	Incorrect	61	85.9	7	9.9
A range improvement project is ____? ( <i>n</i> = 73)	Correct	43	58.9	4	5.5
	Incorrect	22	30.1	4	5.5
According to the BLM Rangeland Health Standards and Guidelines for Healthy Rangelands, which of the following is NOT an indicator of healthy rangeland? ( <i>n</i> = 66)	Correct	14	21.2	1	1.5
	Incorrect	46	69.7	5	7.6
Please organize the proper procedures in order for notifying a permittee of a temporary reduction in AUMs. ( <i>n</i> = 73)	Correct	33	45.2	4	5.5
	Incorrect	32	43.8	4	5.5

Table 11

*Relationships Between Ranchers' Understanding the complete process of NEPA for a Range Improvement Project and Their Knowledge of BLM Policies and Procedures*

Knowledge question		Understand complete process of NEPA for a range improvement project			
		Agree		Disagree	
		<i>f</i>	%	<i>f</i>	%
In planning Juniper tree removal projects, after identifying a treatment area within the allotment, the next step for BLM is ____? ( <i>n</i> = 63)	Correct	13	20.6	7	11.1
	Incorrect	28	44.4	15	23.9
How can a request for a range improvement project be submitted? ( <i>n</i> = 66)	Correct	12	18.2	10	15.1
	Incorrect	27	40.9	17	25.8
Who is involved in preparing the NEPA document? ( <i>n</i> = 70)	Correct	19	27.2	15	21.4
	Incorrect	24	34.3	12	17.1
A NEPA decision is required before beginning which of the following projects on BLM land? ( <i>n</i> = 70)	Correct	33	47.1	16	22.9
	Incorrect	11	15.7	10	14.3
When evaluating an allotment, which area has the greatest influence on rangeland health? ( <i>n</i> = 69)	Correct	21	30.5	13	18.8
	Incorrect	22	31.9	13	18.8
When is my allotment evaluated to determine if rangeland health standards are being met? ( <i>n</i> = 69)	Correct	20	29.0	11	15.9
	Incorrect	24	34.8	14	20.3
On which of the following websites can I find active NEPA documents? ( <i>n</i> = 53)	Correct	4	7.5	1	1.9
	Incorrect	30	56.6	18	34.0
Who makes the final land management decisions for BLM grazing permits and range improvement projects? ( <i>n</i> = 72)	Correct	5	7.1	7	10.0
	Incorrect	40	55.6	3	4.3
When can a request for a new fenceline be submitted? ( <i>n</i> = 72)	Correct	2	2.8	0	0.0
	Incorrect	44	61.1	26	36.1
When can a request for a new waterline be submitted? ( <i>n</i> = 72)	Correct	3	4.2	0	0.0
	Incorrect	43	59.7	26	36.1
A range improvement project is ____? ( <i>n</i> = 74)	Correct	27	36.5	21	28.3
	Incorrect	19	25.7	7	9.5
What factors determine the BLMs rangeland improvement project priority list? ( <i>n</i> = 73)	Correct	15	20.5	8	11.0
	Incorrect	31	20.5	19	26.0

(table continues)

		Understand complete process of NEPA for a range improvement project			
		Agree		Disagree	
Knowledge question		<i>f</i>	%	<i>f</i>	%
According to the BLM Rangeland Health Standards and Guidelines for Healthy Rangelands, which of the following is NOT an indicator of healthy rangeland? ( <i>n</i> = 67)	Correct	30	44.8	5	7.5
	Incorrect	10	14.9	22	32.8
Under what circumstances could AUMs be reduced temporarily? ( <i>n</i> = 77)	Correct	4	5.2	2	2.6
	Incorrect	43	55.8	28	26.4

temporary AUM reduction (*n* = 33, 43.4%). Finally, ranching respondents were unable to correctly identify who is responsible for making final decisions on BLM allotments (*n* = 29, 40.9%).

Ranchers indicated their level of agreement regarding their understanding of the NEPA process for converting sheep AUMs to cattle AUMs. Table 13 showed the relationships between perceptions statement five and the related knowledge questions. Three of the questions identified a strong misalignment in actual knowledge and perceived knowledge. First, when ranchers were asked to correctly identify the website that active NEPA would be found on (*n* = 26, 49.1%). Second, when ranchers were asked to identify circumstances that could result in a temporary AUM reduction (*n* = 33, 43.4%). Finally, ranchers were unable to correctly identify who is responsible for making final decisions on BLM allotments (*n* = 29, 40.8%).

Ranch respondents indicated their level of agreement about understanding the NEPA process for adding additional AUMs on a temporary basis. Table 14 reported the relationships between this perception statement and relevant knowledge items. A few noteworthy relationships indicated respondents agreed they understood the process for

Table 12

*Relationships Between Ranchers' Understanding the NEPA Process for Permanently Removing AUMs and Their Knowledge of BLM Policies and Procedures*

Knowledge question		Understand the NEPA process for permanently removing AUMs			
		Agree		Disagree	
		<i>f</i>	%	<i>f</i>	%
Who is involved in preparing the NEPA document? ( <i>n</i> = 70)	Correct	18	25.7	16	22.9
	Incorrect	14	20.0	22	31.4
Who makes the final land management decisions for BLM grazing permits and range improvement projects? ( <i>n</i> = 71)	Correct	4	5.6	8	11.3
	Incorrect	29	40.9	30	42.2
When evaluating an allotment, which area has the greatest influence on rangeland health? ( <i>n</i> = 68)	Correct	15	22.1	19	27.9
	Incorrect	17	25.0	17	25.0
When is my allotment evaluated to determine if rangeland health standards are being met? ( <i>n</i> = 68)	Correct	14	20.6	16	23.6
	Incorrect	19	27.9	19	27.9
On which of the following websites can I find active NEPA documents? ( <i>n</i> = 53)	Correct	2	3.8	3	5.6
	Incorrect	26	49.1	22	41.5
According to the BLM rangeland management practices, which are indicators of healthy rangeland? ( <i>n</i> = 67)	Correct	10	14.9	5	7.5
	Incorrect	21	31.3	31	46.3
Under what circumstances could AUMs be temporarily reduced? ( <i>n</i> = 76)	Correct	1	1.3	5	6.6
	Incorrect	33	43.4	37	48.7
Which of the following are used to determine priority of apportioned additional AUMs? ( <i>n</i> = 68)	Correct	14	20.6	18	26.5
	Incorrect	19	27.9	17	25.0
Please organize the proper procedures in order for notifying a permittee of a temporary reduction in AUMs. ( <i>n</i> = 73)	Correct	18	24.7	18	24.7
	Incorrect	14	19.1	23	31.5

Table 13

*Relationships Between Ranchers' Understanding the NEPA Process for Converting Sheep AUMs to Cattle AUMs and Their Knowledge of BLM Policies and Procedures*

Knowledge question		Understand NEPA process for converting AUMs			
		Agree		Disagree	
		<i>f</i>	%	<i>f</i>	%
Who is involved in preparing the NEPA document? ( <i>n</i> = 70)	Correct	18	25.7	16	22.9
	Incorrect	14	20.0	22	31.4
Who makes the final land management decisions for BLM grazing permits and range improvement projects? ( <i>n</i> = 71)	Correct	4	5.6	8	11.3
	Incorrect	29	40.8	30	42.3
When evaluating an allotment, which area has the greatest influence on rangeland health? ( <i>n</i> = 68)	Correct	15	22.1	19	27.9
	Incorrect	17	25.0	17	25.0
When is my allotment evaluated to determine if rangeland health standards are being met? ( <i>n</i> = 68)	Correct	14	20.6	16	23.6
	Incorrect	19	27.9	19	27.9
On which of the following websites can I find active NEPA? ( <i>n</i> = 53)	Correct	2	3.8	3	5.6
	Incorrect	26	49.1	22	41.5
According to the BLM, what is the first step in obtaining an increase in AUMs on a non-renewable basis? ( <i>n</i> = 66)	Correct	26	39.4	29	43.9
	Incorrect	5	7.6	6	9.1
Under what circumstances could AUMs be temporarily reduced? ( <i>n</i> = 76)	Correct	1	1.3	5	6.6
	Incorrect	33	43.4	37	48.7
Which of the following are used to determine priority of apportioned additional AUMs? ( <i>n</i> = 68)	Correct	14	20.6	18	26.5
	Incorrect	19	27.9	17	25.0
According to the BLM rangeland management practices, which are indicators of rangeland health? ( <i>n</i> = 67)	Correct	10	14.9	5	7.5
	Incorrect	21	31.3	31	46.3

Table 14

*Relationships Between Ranchers' Understanding the NEPA Process for Adding Additional AUMs to a Grazing Allotment on a Temporary Non-Renewable Basis and Their Knowledge of BLM Policies and Procedures*

Knowledge question		Understand NEPA process for temporarily adding AUMs			
		Agree		Disagree	
		<i>f</i>	%	<i>f</i>	%
Who is involved in preparing the NEPA document? ( <i>n</i> = 69)	Correct	23	33.3	10	14.5
	Incorrect	20	28.9	16	23.2
When evaluating an allotment, which area has the greatest influence on rangeland health? ( <i>n</i> = 69)	Correct	21	29.0	13	18.8
	Incorrect	23	33.3	12	17.4
When is my allotment evaluated to determine if rangeland health standards are being met? ( <i>n</i> = 68)	Correct	18	26.5	13	19.1
	Incorrect	26	38.2	11	16.2
On which of the following websites can I find active NEPA documents? ( <i>n</i> = 52)	Correct	4	7.3	1	1.9
	Incorrect	31	59.6	16	30.8
According to the BLM, what is the first step in obtaining an increase in AUMs on a non-renewable basis? ( <i>n</i> = 66)	Correct	35	53.0	20	30.3
	Incorrect	6	9.1	5	7.6
Who makes the final land management decisions for BLM grazing permits and range improvement projects? ( <i>n</i> = 71)	Correct	7	9.9	5	8.8
	Incorrect	37	52.1	22	31.0
Under what circumstances could AUMs be temporarily reduced? ( <i>n</i> = 76)	Correct	2	2.6	4	5.3
	Incorrect	45	59.2	25	32.9
Which of the following are used to determine priority of apportioned additional AUMs? ( <i>n</i> = 68)	Correct	16	23.5	16	23.5
	Incorrect	28	41.2	8	11.8
According to the BLM rangeland management practices, which are indicators of rangeland health? ( <i>n</i> = 66)	Correct	13	19.7	2	3.0
	Incorrect	27	40.9	24	36.4
Please organize the proper procedures for notifying a permittee of a temporary reduction in AUMs. ( <i>n</i> = 73)	Correct	21	28.8	15	20.5
	Incorrect	24	32.9	13	17.8

adding additional AUMs on a temporary basis but did not correctly answer (a) the website where active NEPA can be found ( $n = 31$ , 59.6%), (b) when AUMs could be temporarily reduced ( $n = 45$ , 59.2%), and (c) who makes final land management decisions ( $n = 37$ , 52.1%).

The final perception statement determined ranchers' level of agreement about understanding the NEPA process required for temporarily reducing AUMs. Table 15 shows the relationships identified with related knowledge questions and the perception statement. Two relationships were noteworthy: (1) correctly identifying the website where NEPA could be found ( $n = 35$ , 48.6%) and (2) knowing who makes final land management decisions ( $n = 35$ , 48.6%). These ranchers indicated they disagreed with understanding the NEPA process for temporarily reducing AUMs and answered the questions incorrectly.

### **BLM Perceptions Associated with Knowledge**

Cross tabulations examined relationships between each perception statement and relevant knowledge questions among the BLM respondents. The first perception statement asked the BLM professionals to select their level of agreement with understanding what a range improvement project was. Table 16 showed relationships identified for the BLM respondents. Three of the relationships identified the BLM respondents agreed they understood what a range improvement project was but incorrectly answered the knowledge questions about (a) the next step for BLM after identifying a treatment area within the allotment when planning a juniper tree removal project ( $n = 7$ , 100%), (b) when to request a new waterline ( $n = 8$ , 100%), and (c) when to

Table 15

*Relationships Between Ranchers' Understanding the NEPA Process Required for Temporarily Reducing AUMs and Their Knowledge of BLM Policies and Procedures*

Knowledge question		Understand NEPA process for temporarily reducing AUMs			
		Agree		Disagree	
		<i>f</i>	%	<i>f</i>	%
Who is involved in writing the NEPA document? ( <i>n</i> = 70)	Correct	13	18.6	21	30.0
	Incorrect	16	22.9	20	28.6
A NEPA decision is required before beginning which of the following projects on BLM land? ( <i>n</i> = 70)	Correct	20	28.6	29	41.4
	Incorrect	7	10.0	14	20.0
When evaluating an allotment, which area has the greatest influence on rangeland health? ( <i>n</i> = 69)	Correct	15	21.7	19	27.5
	Incorrect	15	21.7	20	29.1
When is my allotment evaluated to determine if rangeland health standards are being met? ( <i>n</i> = 69)	Correct	13	18.8	18	26.1
	Incorrect	16	23.2	22	31.9
On which of the following websites can I find active NEPA documents? ( <i>n</i> = 72)	Correct	5	6.9	7	9.7
	Incorrect	25	34.7	35	48.6
According to the BLM, what is the first step in obtaining an increase in AUMs on a non-renewable basis? ( <i>n</i> = 67)	Correct	24	35.8	32	47.8
	Incorrect	4	6.0	7	10.4
Who makes the final land management decisions for BLM grazing permits and range improvement projects? ( <i>n</i> = 72)	Correct	5	6.9	7	9.7
	Incorrect	25	34.7	35	48.6
Under what circumstances could AUMs be reduced temporarily? ( <i>n</i> = 77)	Correct	2	2.6	4	5.2
	Incorrect	29	37.7	42	54.5
Which of the following are used to determine priority of apportioned additional AUMs? ( <i>n</i> = 69)	Correct	15	21.7	17	24.6
	Incorrect	14	20.3	23	33.3
According to the BLM Rangeland Health Standards and Guidelines for Healthy Rangelands, which of the following is NOT an indicator of healthy rangeland? ( <i>n</i> = 67)	Correct	9	13.4	6	9.0
	Incorrect	18	26.9	34	50.7
Please organize the proper procedures in order for notifying a permittee of a temporary reduction in AUMs. ( <i>n</i> = 74)	Correct	15	20.3	22	29.7
	Incorrect	15	20.3	22	29.7

Table 16

*Relationships Between BLM Professionals' Understanding of What a Range Improvement Project is and Their Knowledge of BLM Policies and Procedures*

Knowledge question		Understand what a range improvement project is			
		Agree		Disagree	
		<i>f</i>	%	<i>f</i>	%
In planning a juniper tree removal project, after identifying a treatment area within the allotment, the next step for BLM is ____? ( <i>n</i> = 7)	Correct	0	0.0	0	0.0
	Incorrect	7	100.0	0	0.0
How can a request for a range improvement project be submitted? ( <i>n</i> = 8)	Correct	2	25.0	0	0.0
	Incorrect	6	75.0	0	0.0
Who is involved in preparing the NEPA document? ( <i>n</i> = 8)	Correct	4	50.0	0	0.0
	Incorrect	4	50.0	0	0.0
A NEPA decision is required before beginning on which of the following projects on BLM land? ( <i>n</i> = 8)	Correct	8	100.0	0	0.0
	Incorrect	0	0.0	0	0.0
When evaluating an allotment, which area has the greatest influence on rangeland health? ( <i>n</i> = 8)	Correct	7	87.5	0	0.0
	Incorrect	1	12.5	0	0.0
When is my allotment evaluated to determine if rangeland health standards are being met? ( <i>n</i> = 8)	Correct	8	100.0	0	0.0
	Incorrect	0	0.0	0	0.0
On which of the following websites can I find active NEPA documents? ( <i>n</i> = 8)	Correct	7	87.5	0	0.0
	Incorrect	1	12.5	0	0.0
Who makes the final land management decision for BLM grazing permits and range improvement projects? ( <i>n</i> = 8)	Correct	5	62.5	0	0.0
	Incorrect	3	37.5	0	0.0
When can a request for a new fenceline be submitted? ( <i>n</i> = 8)	Correct	0	0.0	0	0.0
	Incorrect	8	100.0	0	0.0
When can a request for a new waterline be submitted? ( <i>n</i> = 8)	Correct	0	0.0	0	0.0
	Incorrect	8	100.0	0	0.0
A range improvement project is ____? ( <i>n</i> = 8)	Correct	7	87.5	0	0.0
	Incorrect	1	12.5	0	0.0
What factors determine the BLMs rangeland improvement project priority list? ( <i>n</i> = 8)	Correct	2	25.0	0	0.0
	Incorrect	6	75.0	0	0.0

request a new fenceline ( $n = 8$ , 100%).

The BLM respondents selected their level of understanding the process of juniper removal projects on grazing allotments. Table 17 described the relationship of this perception statement and its related knowledge questions. The BLM respondents agreed

Table 17

*Relationships Between BLM Professionals' Understanding of the Process Required for Juniper Removal Projects on Grazing Allotments and Their Knowledge of BLM Policies and Procedures*

Knowledge question		Understand process for juniper removal projects			
		Agree		Disagree	
		<i>f</i>	%	<i>f</i>	%
In planning juniper tree removal projects, after identifying a treatment area within the allotment, the next step for BLM is ____? ( $n = 8$ )	Correct	0	0.0	0	0.0
	Incorrect	8	100.0	0	0.0
How can a request for a range improvement project be submitted? ( $n = 8$ )	Correct	2	25.0	0	0.0
	Incorrect	6	75.0	0	0.0
Who is involved in preparing the NEPA document? ( $n = 9$ )	Correct	5	55.6	0	0.0
	Incorrect	4	44.4	0	0.0
A NEPA decision is required before beginning on which of the following projects on BLM land? ( $n = 9$ )	Correct	9	100.0	0	0.0
	Incorrect	0	0.0	0	0.0
Who makes the final land management decision for BLM grazing permits and range improvement projects? ( $n = 9$ )	Correct	6	66.7	0	0.0
	Incorrect	3	33.3	0	0.0
A range improvement project is ____? ( $n = 9$ )	Correct	7	77.8	0	0.0
	Incorrect	2	22.2	0	0.0
What factors determine the BLMs rangeland improvement project priority list? ( $n = 9$ )	Correct	2	22.2	0	0.0
	Incorrect	7	77.8	0	0.0
Under what circumstances could AUMs be reduced temporarily? ( $n = 9$ )	Correct	2	22.2	0	0.0
	Incorrect	7	77.8	0	0.0
Please organize the proper procedures in order for notifying a permittee of a temporary reduction in AUMs. ( $n = 9$ )	Correct	3	33.3	0	0.0
	Incorrect	6	66.7	0	0.0

they understood the process of removing juniper on grazing allotments; however, the eight respondents (100.0%) answered the knowledge question incorrectly.

The third perception statement determined BLM professionals' level of perceived understanding regarding their familiarity with standards and guidelines of specific grazing allotments. Table 18 showed the relationships identified between the perception statement and related knowledge questions. Eight BLM respondents (88.9%) adequately knew which projects require a NEPA decision prior to implementation and when allotments are evaluated to determine if rangeland health standards are being met.

The BLM respondents selected their level of understanding regarding the NEPA process for range improvement projects. Table 19 described this perception statement as compared with related knowledge questions. Seven respondents (87.5%) agreed they understood the NEPA process for a range improvement process, but they incorrectly answered the question regarding the proper procedure for implementing a juniper removal project.

Perception statement five sought to determine BLM professionals' perceptions of the NEPA process regarding the permanent removal of AUMs from grazing allotments. Table 20 showed all relevant relationships between the perception statement and knowledge questions. BLM professionals perceived to understand the NEPA process for permanently removing AUMs; however, six respondents (66.7%) incorrectly answered the circumstances that could result in a temporary reduction of AUMs.

Cross tabulations explored the relationships between the perception statement about the NEPA process for converting sheep AUMs to cattle AUMs and relevant

Table 18

*Relationships Between BLM Professionals' Familiarity with the Standards and Guidelines Applicable to Specific Allotment Management and Their Knowledge of BLM Policies and Procedures*

Knowledge question		Familiarity with allotment specific standards and guidelines			
		Agree		Disagree	
		<i>f</i>	%	<i>f</i>	%
How can a request for a range improvement project be submitted? ( <i>n</i> = 8)	Correct	2	25.0	0	0.0
	Incorrect	5	62.5	1	12.5
Who is involved in preparing the NEPA document? ( <i>n</i> = 9)	Correct	5	55.6	0	0.0
	Incorrect	3	33.3	1	11.1
A NEPA decision is required before beginning which of the following projects on BLM land? ( <i>n</i> = 9)	Correct	8	88.9	1	11.1
	Incorrect	0	0.0	0	0.0
When evaluating an allotment, which area has the greatest influence on rangeland health? ( <i>n</i> = 9)	Correct	7	77.8	1	11.1
	Incorrect	1	11.1	0	0.0
When is my allotment evaluated to determine if rangeland health standards are being met? ( <i>n</i> = 9)	Correct	8	88.9	1	11.1
	Incorrect	0	0.0	0	0.0
On which of the following websites can I find active NEPA documents? ( <i>n</i> = 9)	Correct	7	77.8	1	11.1
	Incorrect	1	11.1	0	0.0
Who makes the final land management decisions for BLM grazing permits and range improvement projects? ( <i>n</i> = 9)	Correct	5	55.6	1	11.1
	Incorrect	3	33.3	0	0.0
When can a request for a new fenceline be submitted? ( <i>n</i> = 9)	Correct	1	11.1	0	0.0
	Incorrect	7	77.8	1	11.1
When can a request for a new waterline be submitted? ( <i>n</i> = 9)	Correct	1	11.1	0	0.0
	Incorrect	7	77.8	1	11.1
A range improvement project is ____? ( <i>n</i> = 9)	Correct	6	66.7	1	11.1
	Incorrect	2	22.2	0	0.0
According to the BLM Rangeland Health Standards and Guidelines for Healthy Rangelands, which of the following is not an indicator of rangeland health? ( <i>n</i> = 8)	Correct	7	77.8	1	11.1
	Incorrect	0	0.0	0	0.0
Please organize the proper procedures in order for notifying a permittee of a temporary reduction in AUMs. ( <i>n</i> = 9)	Correct	3	33.3	0	0.0
	Incorrect	5	55.6	1	11.1

Table 19

*Relationships Between BLM Professionals' Understanding the NEPA Process for a Range Improvement Project and Their Knowledge of BLM Policies and Procedures*

Knowledge question		Understand NEPA process for a range improvement process			
		Agree		Disagree	
		<i>f</i>	%	<i>f</i>	%
In planning a juniper removal project, after identifying a treatment area within the allotment, the next step for BLM is? ( <i>n</i> = 8)	Correct	0	0.0	0	0.0
	Incorrect	7	87.5	1	12.5
How can a request for a range improvement project be submitted? ( <i>n</i> = 9)	Correct	1	11.1	1	11.1
	Incorrect	6	66.7	0	0.0
Who is involved in preparing the NEPA document? ( <i>n</i> = 9)	Correct	4	44.4	1	11.1
	Incorrect	4	44.4	0	0.0
A NEPA decision is required before beginning on which of the following projects on BLM land? ( <i>n</i> = 9)	Correct	8	88.9	1	11.1
	Incorrect	0	0.0	0	0.0
When evaluating an allotment, which area has the greatest influence on rangeland health? ( <i>n</i> = 9)	Correct	8	88.9	0	0.0
	Incorrect	0	0.0	1	11.1
When is my allotment evaluated to determine if rangeland health standards are being met? ( <i>n</i> = 9)	Correct	8	88.9	1	11.1
	Incorrect	0	0.0	0	0.0
On which of the following websites can I find active NEPA documents? ( <i>n</i> = 9)	Correct	7	77.8	1	11.1
	Incorrect	1	11.1	0	0.0
Who makes the final land management decisions for BLM grazing permits and range improvement projects? ( <i>n</i> = 9)	Correct	5	55.6	1	11.1
	Incorrect	3	33.3	0	0.0
When can a request for a new fenceline be submitted? ( <i>n</i> = 9)	Correct	1	11.1	0	0.0
	Incorrect	7	77.8	1	11.1
When can a request for a new waterline be submitted? ( <i>n</i> = 9)	Correct	1	11.1	0	0.0
	Incorrect	7	77.8	1	11.1
A range improvement project is ? ( <i>n</i> = 9)	Correct	6	66.7	1	11.1
	Incorrect	2	22.2	0	0.0
What factors determine the BLMs rangeland improvement project priority list? ( <i>n</i> = 9)	Correct	2	22.2	0	0.0
	Incorrect	6	66.7	1	11.1

(table continues)

		Understand NEPA process for a range improvement process			
		Agree		Disagree	
Knowledge question		<i>f</i>	%	<i>f</i>	%
Under what circumstances could AUMs be reduced temporarily? ( <i>n</i> = 9)	Correct	2	22.2	0	0.0
	Incorrect	6	66.7	1	11.1
According to the BLM Rangeland Health Standards and Guidelines for Healthy Rangelands, which of the following is NOT an indicator of rangeland health? ( <i>n</i> = 9)	Correct	8	100.0	0	0.0
	Incorrect	0	0.0	0	0.0

knowledge questions. Table 21 outlined the relevant relationships identified. Two relationships were identified as BLM professionals' level of agreement being inadequately reflected by their actual knowledge: (a) when asked how additional AUMs are prioritized and apportioned (*n* = 5, 55.6%) and (b) when asked to identify the circumstances that could result in a temporary AUM reduction (*n* = 5, 55.6%).

The seventh perception statement was understanding the process for adding additional AUMs to grazing permits on a temporary renewable basis. Table 22 showed the relationships between the related knowledge questions and the perception statement. Seven respondents (77.8%) disagreed they understood the process but correctly answered the knowledge question regarding the area that has the greatest influence on rangeland health. The majority of BLM professionals agreed they understood but incorrectly answered these knowledge questions: (a) knowing which circumstances could result in a temporary reduction in AUMs (*n* = 6, 66.7%) and (b) knowing the priority of how additional AUMs are distributed amongst the permittees (*n* = 6, 66.7%).

Table 20

*Relationships Between BLM Professionals' Understanding the NEPA Process for Permanently Removing AUMs from a Grazing Allotment Project and Their Knowledge of BLM Policies and Procedures*

Knowledge question		Understand NEPA process for permanently removing AUMs			
		Agree		Disagree	
		<i>f</i>	%	<i>f</i>	%
Who is involved in preparing the NEPA document? ( <i>n</i> = 9)	Correct	4	44.4	1	11.1
	Incorrect	3	33.3	1	11.1
When evaluating an allotment, which area has the greatest influence on rangeland health? ( <i>n</i> = 9)	Correct	6	66.7	2	22.2
	Incorrect	1	11.1	0	0.0
When is my allotment evaluated to determine if rangeland health standards are being met? ( <i>n</i> = 9)	Correct	7	77.8	2	22.2
	Incorrect	0	0.0	0	0.0
On which of the following websites can I find active NEPA documents? ( <i>n</i> = 9)	Correct	6	66.7	2	22.2
	Incorrect	1	11.1	0	0.0
Who makes the final land management decision for BLM grazing permits and range improvement projects? ( <i>n</i> = 9)	Correct	5	55.6	1	11.1
	Incorrect	2	22.2	1	11.1
Under what circumstances could AUMs be reduced temporarily? ( <i>n</i> = 9)	Correct	1	11.1	1	11.1
	Incorrect	6	66.7	1	11.1
Which of the following are used to determine priority of apportioned additional AUMs? ( <i>n</i> = 9)	Correct	2	22.2	0	0.0
	Incorrect	5	55.6	2	22.2
According to the BLM Rangeland Health Standards and Guidelines for Healthy Rangelands, which of the following is NOT an indicator of rangeland health? ( <i>n</i> = 8)	Correct	6	75.0	2	25.0
	Incorrect	0	0.0	0	0.0
Please organize the proper procedures in order for notifying a permittee of a temporary reduction in AUMs. ( <i>n</i> = 9)	Correct	2	22.2	1	11.1
	Incorrect	5	55.6	1	11.1

Table 21

*Relationships Between BLM Professionals' Understanding the NEPA Process for Converting Sheep AUMs to Cattle AUMs and Their Knowledge of BLM Policies and Procedures*

Knowledge question		Understand NEPA process for converting AUMs			
		Agree		Disagree	
		<i>f</i>	%	<i>f</i>	%
Who is involved in preparing the NEPA document? ( <i>n</i> = 9)	Correct	3	33.3	2	22.2
	Incorrect	3	33.3	1	11.1
Who makes the final land management decisions for BLM grazing permits and range improvement projects? ( <i>n</i> = 9)	Correct	4	44.4	2	22.2
	Incorrect	1	11.1	2	22.2
When evaluating an allotment, which area has the greatest influence on rangeland health? ( <i>n</i> = 9)	Correct	6	66.7	2	22.2
	Incorrect	0	0.0	1	11.1
When is my allotment evaluated to determine if rangeland health standards are being met? ( <i>n</i> = 9)	Correct	6	66.7	3	33.3
	Incorrect	0	0.0	0	0.0
On which of the following websites can I find active NEPA? ( <i>n</i> = 9)	Correct	5	55.6	3	33.3
	Incorrect	1	11.1	0	0.0
According to the BLM, what is the first step in obtaining an increase in AUMs on a non-renewable basis? ( <i>n</i> = 9)	Correct	6	66.7	0	0.0
	Incorrect	3	33.3	0	0.0
Under what circumstances could AUMs be temporarily reduced? ( <i>n</i> = 9)	Correct	1	11.1	1	11.1
	Incorrect	5	55.6	2	22.2
Which of the following are used to determine priority of apportioned additional AUMs? ( <i>n</i> = 9)	Correct	1	11.1	1	11.1
	Incorrect	5	55.6	2	22.2
According to the BLM rangeland management practices, which are indicators of rangeland health? ( <i>n</i> = 8)	Correct	6	75.0	2	25.0
	Incorrect	0	0.0	0	0.0

Table 22

*Relationships Between BLM Professionals' Understanding the NEPA Process for Adding Additional AUMs to Grazing Allotment on a Temporary Non-Renewable Basis and Their Knowledge of BLM Policies and Procedures*

Knowledge question		Understand NEPA process for temporarily adding additional AUMs			
		Agree		Disagree	
		<i>f</i>	%	<i>f</i>	%
Who is involved in preparing the NEPA document? ( <i>n</i> = 9)	Correct	4	44.4	1	11.1
	Incorrect	3	33.3	1	11.1
When evaluating an allotment, which area has the greatest influence on rangeland health? ( <i>n</i> = 9)	Correct	1	11.1	7	77.8
	Incorrect	0	0.0	1	11.1
When is my allotment evaluated to determine if rangeland health standards are being met? ( <i>n</i> = 9)	Correct	7	77.8	2	22.2
	Incorrect	0	0.0	0	0.0
On which of the following websites can I find active NEPA documents? ( <i>n</i> = 9)	Correct	6	66.7	2	22.2
	Incorrect	1	11.1	0	0.0
According to the BLM, what is the first step in obtaining an increase in AUMs on a non-renewable basis? ( <i>n</i> = 9)	Correct	2	22.2	7	77.8
	Incorrect	0	0.0	0	0.0
Who makes the final land management decision for BLM grazing permits and range improvement projects? ( <i>n</i> = 9)	Correct	4	44.4	2	22.2
	Incorrect	3	33.3	0	0.0
Under what circumstances could AUMs be reduced temporarily? ( <i>n</i> = 9)	Correct	1	11.1	1	11.1
	Incorrect	6	66.7	1	11.1
Which of the following are used to determine priority of apportioned additional AUMs? ( <i>n</i> = 9)	Correct	1	11.1	1	11.1
	Incorrect	6	66.7	1	11.1
According to the BLM Rangeland Health Standards and Guidelines for Healthy Rangelands, which of the following is NOT an indicator of health rangeland? ( <i>n</i> = 8)	Correct	7	87.5	1	12.5
	Incorrect	0	0.0	0	0.0
Please organize the proper procedures in order for notifying a permittee of a temporary reduction in AUMs. ( <i>n</i> = 9)	Correct	3	33.3	0	0.0
	Incorrect	4	44.4	2	22.2

The last perception statement was regarding BLM professionals understanding the NEPA process for temporarily reducing AUMs. Table 23 showed the relationships for the

perception statement and related knowledge questions. Numerous relationships indicated that most BLM respondents scored very high in the knowledge section (Table 23). Respondents perceived understanding the NEPA process for temporarily reducing AUMs but incorrectly answered knowledge questions related to knowing which circumstances could result in a temporary reduction in AUMs ( $n = 6$ , 66.7%) and knowing the priority of how additional AUMs are distributed amongst the permittees ( $n = 6$ , 66.7%).

### **Research Question #5**

Research question #5 asked, “*Are there relationships between rancher background, attitudes, and knowledge?*” Correlations were conducted to determine if any relationships existed between rancher background and attitudes, and background and knowledge. The strengths of these associations were evaluated based on Davis’s (1971) measures for magnitude: (1) very strong relationships with a coefficient of .70 or higher, (2) substantial association with a coefficient of .50 - .69, (3) moderate association with a coefficient of .30 - .49, (4) low association with a coefficient of .10 - .29, and (5) negligible association with a coefficient of .01 - .09. Correlation tests were determined based on variable type (Glass & Hopkins, 1996).

### **Rancher Background and Knowledge Correlations**

Eta coefficients from crosstab analysis and Pearson product correlation coefficients determined what relationship existed between ranchers’ background and their actual knowledge. The ranching respondents’ overall knowledge of BLM policies and

Table 23

*Relationships Between BLM Professionals' Understanding the NEPA Process for Temporarily Reducing AUMs and Their Knowledge of BLM Policies and Procedures*

Knowledge question		Familiarity with allotment specific standards and guidelines			
		Agree		Disagree	
		<i>f</i>	%	<i>f</i>	%
Who is involved in preparing the NEPA document? ( <i>n</i> = 9)	Correct	4	44.4	1	11.1
	Incorrect	3	33.3	1	11.1
A NEPA decision is required before beginning on which of the following projects? ( <i>n</i> = 9)	Correct	7	77.8	2	22.2
	Incorrect	0	0.0	0	0.0
When evaluating an allotment, which area has the greatest influence on rangeland health? ( <i>n</i> = 9)	Correct	7	77.8	1	11.1
	Incorrect	0	0.0	1	11.1
When is my allotment evaluated to determine if rangeland health standards are being met? ( <i>n</i> = 9)	Correct	7	77.8	2	22.2
	Incorrect	0	0.0	0	0.0
On which of the following websites can I find active NEPA documents? ( <i>n</i> = 9)	Correct	6	66.7	2	22.2
	Incorrect	1	11.1	0	0.0
According to the BLM, what is the first stem in obtaining an increase in AUMs on a non-renewable basis? ( <i>n</i> = 9)	Correct	7	77.8	2	22.2
	Incorrect	0	0.0	0	0.0
Who makes the final land management decisions for BLM grazing permits and range improvement projects? ( <i>n</i> = 9)	Correct	4	44.4	2	22.2
	Incorrect	3	33.3	0	0.0
Under what circumstances could AUMs be reduced temporarily? ( <i>n</i> = 9)	Correct	1	11.1	1	11.1
	Incorrect	6	66.7	1	11.1
Which of the following are used to determine priority of apportioned additional AUMs? ( <i>n</i> = 9)	Correct	1	11.1	1	11.1
	Incorrect	6	66.7	1	11.1
According to the BLM Rangeland Health Standards and Guidelines for Healthy Rangelands, which of the following is NOT an indicator of health rangeland? ( <i>n</i> = 8)	Correct	7	87.5	1	12.5
	Incorrect	0	0.0	0	0.0
Please organize the proper procedures in order for notifying a permittee of a temporary reduction in AUMs. ( <i>n</i> = 9)	Correct	3	33.3	0	0.0
	Incorrect	4	44.4	2	22.2

procedures resulted in a mean score of 5.57 out of 18 points possible or 31% ( $SD = 2.41$ ).

Ranchers specified how many allotments they currently own/lease grazing permits for. Using the Eta coefficient, this information was correlated with the overall knowledge score to determine if a relationship existed. The relationship identified is of low strength ( $\eta = .21$ ). This is a low positive association between the number of permitted allotments and ranchers' overall knowledge related to BLM policies and procedures, meaning that the number of allotments a rancher owns permits for has little influence on their actual knowledge score.

Ranching respondents specified which livestock species they graze. This information was correlated with their overall knowledge to determine the strength of the relationship ( $\eta = .17$ ). This relationship suggested a negligible association between the two variables. This infers that the species of livestock ranchers' graze has minimal influence on their overall knowledge related to BLM policies and procedures.

Income from the ranching operation determined if a relationship between income and overall knowledge existed ( $\eta = .02$ ). This relationship suggested a negligible association between the two variables, which implies that rancher income has little relationship on the overall knowledge.

To determine if a relationship existed between the number of generations a ranch had been in operation and overall knowledge score, eta correlations were used ( $\eta = .25$ ). This low association suggested the number of generations a ranch has been in operation has a small relationship on the overall knowledge.

Point-biserial correlations determined if relationships existed between experience

with rangeland improvement projects and overall knowledge. The strength of the relationships was negligible for each rangeland improvement project (Table 24).

Table 24

*Range Improvement Project Experience and Overall Knowledge Relationships (n = 74)*

Range improvement project	$r_{pb}$	$p$
Weed management	.01	.97
Brush removal	.12	.37
Water development	.12	.33
Fuel breaks	.02	.90
Fencing	.12	.31
No range improvement project experience	-.14	.25

Rancher age was correlated with overall knowledge using a Pearson's product-moment coefficient ( $r = -.28, p = .02$ ). This represents a small, negative relationship. This suggested that as ranchers' age increases, their overall knowledge score is lower.

### **Rancher Background and Attitude Relationships**

Rancher background was correlated with the attitude statements to determine if relationships exist. Association tests included crosstabulation and Spearman's correlation coefficient. The numbers of allotments ranchers had permits for and ranchers' attitudes were compared (Table 25). One of the relationships that stood out was regarding ranchers having 1-3 allotments and their attitude regarding the improvement of land management with local input. Of the respondents, 42 strongly agreed (53.8%) that land management improves with increased local input. Additionally, 35 respondents who have 1-3 allotments (45.5%) somewhat agree they have a strong working relationship with their

range management specialist. Finally, 31 respondents having 1-3 allotments (41.9%) somewhat agree that federal land management is improving.

Table 25

*Relationship Between Number of Allotments and Ranchers' Attitudes*

Attitude statement	# of allotments	Strongly agree		Somewhat agree		Somewhat disagree		Strongly disagree	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
I believe the federal government should own land.	1-3	4	5.3	23	30.3	15	20.3	21	27.6
	4-6	0	0.0	4	4.3	2	2.6	1	1.3
	7-10	0	0.0	3	3.9	0	0.0	3	3.9
I have a strong working relationship with my BLM rangeland specialist.	1-3	16	20.8	35	45.5	9	11.7	4	5.2
	4-6	4	5.2	4	5.2	1	1.3	0	0.0
	7-10	1	1.3	2	2.6	3	3.9	0	0.0
The NEPA process is working and needs no revisions.	1-3	2	2.7	14	19.2	25	34.2	20	27.4
	4-6	0	0.0	1	1.4	5	6.7	0	0.0
	7-10	0	0.0	1	1.4	5	6.7	0	0.0
I believe land management improves with more local input.	1-3	42	53.8	20	25.6	1	0.0	2	0.0
	4-6	5	6.4	0	0.0	2	2.6	0	0.0
	7-10	5	6.4	1	1.3	0	0.0	0	0.0
Federal land management is improving.	1-3	5	6.8	31	41.9	14	18.9	11	14.9
	4-6	1	1.4	4	5.4	2	2.7	0	0.0
	7-10	1	1.4	1	1.4	2	2.7	2	2.7

Three attitude statements generated interesting statistics when livestock species and ranchers' attitudes were compared using cross tabulations. First, rancher attitude regarding federal government land ownership (Table 26). Of the respondents identifying as having cattle, 21 somewhat agreed (27.3%), 15 somewhat disagreed (19.5%), and 20 strongly disagreed (26.0) with the federal government owning land. Second, ranchers having cattle either strongly agree ( $n = 16$ , 20.5%) or somewhat agree ( $n = 31$ , 39.7%) they have a strong working relationship with their range management specialist. Finally,

43 respondents having cattle (54.4%) agreed land management improves with increased local input.

Table 26

*Relationship Between Species of Livestock and Ranchers' Attitudes*

Attitude statement	Species	Strongly agree		Somewhat agree		Somewhat disagree		Strongly disagree	
		n	%	n	%	n	%	n	%
I believe the federal government should own land.	Sheep	0	0.0	4	5.2	1	1.3	2	2.6
	Cattle	4	5.2	21	27.3	15	19.5	20	26.0
	Both	1	1.3	5	6.5	1	1.3	3	3.9
I have a strong working relationship with my BLM rangeland specialist.	Sheep	1	1.3	4	5.1	2	2.6	0	0.0
	Cattle	16	20.5	31	39.7	11	14.1	3	3.8
	Both	4	5.1	5	6.4	0	0.0	1	1.3
The NEPA process is working and needs no revisions.	Sheep	0	0.0	3	4.1	3	4.1	1	1.4
	Cattle	2	2.7	11	14.9	28	37.8	16	21.6
	Both	0	0.0	3	4.1	4	5.4	3	4.1
I believe land management improves with more local input.	Sheep	3	3.8	3	3.8	1	1.3	0	0.0
	Cattle	43	54.4	16	20.3	2	2.5	1	1.3
	Both	7	8.9	2	2.5	0	0.0	1	1.3
Federal land management is improving.	Sheep	0	0.0	4	5.3	1	1.3	2	2.7
	Cattle	7	9.3	27	36.0	16	21.3	8	10.7
	Both	0	0.0	5	6.7	2	2.7	3	4.0

Ranching income was correlated with each of the attitudes, using cross-tabulations to determine if relationships existed (Table 27). Of the respondents making 0-25% of their income from ranching (13.5%), 10 somewhat disagreed that the NEPA process was working and needed no revisions. Additionally, 14 respondents earning 76-100% of their household income from ranching somewhat disagreed (18.9%), that the NEPA process is working and needs no revisions. Additionally, of the respondents earning 76-100% of their annual household income from ranching, 31.6% of them

strongly agree ( $n = 25$ ). Finally, 16 respondents earning 76-100% of their income from ranching (20.8%) strongly disagree that the federal government should own land.

Table 27

*Relationship Between Percentage of Household Income Attributed to Ranching and Ranchers' Attitudes*

Attitude statement	% income related to ranching	Strongly agree		Somewhat agree		Somewhat disagree		Strongly disagree	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
I believe the federal government should own land ( $n = 77$ ).	0-25	3	3.9	9	11.7	4	5.2	6	7.8
	26-50	0	0.0	8	10.4	3	3.9	0	0.0
	51-75	0	0.0	6	7.8	1	1.3	3	3.9
	76-100	2	2.6	7	9.1	9	11.7	16	20.8
I have a strong working relationship with my BLM rangeland specialist ( $n = 78$ ).	0-25	4	5.1	9	11.5	7	9.0	2	2.6
	26-50	2	2.6	8	10.6	1	1.3	0	0.0
	51-75	1	1.3	7	9.0	2	2.6	1	1.3
	76-100	14	17.9	16	20.5	3	3.8	1	1.3
The NEPA process is working and needs no revisions ( $n = 74$ ).	0-25	0	0.0	8	10.8	10	13.5	3	4.1
	26-50	0	0.0	1	1.4	5	6.8	5	6.8
	51-75	0	0.0	2	2.7	6	8.1	3	4.1
	76-100	2	2.7	6	8.1	14	18.9	9	12.2
I believe land management improves with more local input ( $n = 79$ ).	0-25	13	16.5	8	10.1	2	2.5	0	0.0
	26-50	7	8.9	4	5.1	0	0.0	0	0.0
	51-75	8	10.1	2	2.5	1	1.3	0	0.0
	76-100	25	31.6	7	8.9	0	0.0	2	2.5
Federal land management is improving ( $n = 75$ ).	0-25	2	2.7	10	13.3	6	8.0	2	2.7
	26-50	0	0.0	6	8.0	3	4.0	2	2.7
	51-75	0	0.0	5	6.7	3	4.0	2	2.7
	76-100	5	6.7	15	20.0	7	9.3	7	9.3

Ranching respondents specified the number of generations their ranch had been in operation. Answers were compared to attitudes to identify existing relationships (Table 28). Ranching respondents who identified as being fourth-generation ranchers strongly agree land management improves with more local input ( $n = 16$ , 20.3%). Additionally, 13

of the fourth-generation ranchers (17.6%) somewhat disagree the NEPA process is working and needs no revisions.

Table 28

*Relationship Between Generations Ranching and Ranchers' Attitudes*

Attitude statement	Generation	Strongly agree		Somewhat agree		Somewhat disagree		Strongly disagree	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
I believe the federal government should own land.	First	1	1.3	3	3.9	2	2.6	2	2.6
	Second	2	2.6	2	2.6	4	5.2	3	3.9
	Third	1	1.3	5	6.5	6	7.8	4	5.2
	Fourth	1	1.3	11	14.3	2	2.6	12	15.6
	Fifth	0	0.0	7	9.1	2	2.6	2	2.6
	Sixth or more	0	0.0	2	2.6	1	1.3	2	2.6
I have a strong working relationship with my BLM rangeland specialist.	First	3	3.8	4	5.1	1	1.3	0	0.0
	Second	5	6.4	3	3.8	3	3.8	0	0.0
	Third	5	6.4	10	12.8	1	1.3	0	0.0
	Fourth	6	7.7	13	16.7	5	6.4	2	2.6
	Fifth	1	1.3	8	10.3	3	3.8	0	0.0
	Sixth or more	1	1.3	2	2.6	0	0.0	2	2.6
The NEPA process is working and needs no revisions.	First	0	0.0	3	1.4	3	1.4	2	2.7
	Second	1	1.4	6	8.1	3	1.4	1	1.4
	Third	0	0.0	1	1.4	6	8.1	7	9.5
	Fourth	1	1.4	3	4.1	13	17.6	7	9.5
	Fifth	0	0.0	4	5.4	6	8.1	2	2.7
	Sixth or more	0	0.0	0	0.0	4	5.4	1	1.4
I believe land management improves with more local input.	First	5	6.3	2	2.5	1	1.3	0	0.0
	Second	8	10.1	3	3.8	0	0.0	0	0.0
	Third	12	15.2	2	2.5	1	1.3	2	2.5
	Fourth	16	20.3	9	11.4	1	1.3	0	0.0
	Fifth	7	8.9	5	6.3	0	0.0	0	0.0
	Sixth or more	5	6.3	0	0.0	0	0.0	0	0.0
Federal land management is improving.	First	0	0.0	5	6.7	2	2.7	1	1.3
	Second	2	2.7	3	4.0	5	6.7	1	1.3
	Third	0	0.0	8	10.7	3	4.0	5	6.7
	Fourth	4	5.3	10	13.3	6	8.0	5	6.7
	Fifth	1	1.3	8	10.7	1	1.3	0	0.0
	Sixth or more	0	0.0	2	2.7	2	2.7	1	1.3

Finally, respondents' age was correlated with their attitudes using a Spearman rank coefficient. One statistically significant relationship was identified (Table 29). A medium relationship, positive in nature, was identified with agreeing the NEPA process is working and needs no revisions ( $r_s = .26, p = .03$ ).

Table 29

*Rancher Age and Rancher Attitudes*

Attitude	<i>n</i>	<i>r<sub>s</sub></i>	<i>p</i>
The NEPA process is working and needs no revisions.	73	.26	.03*
Federal Land Management is improving.	74	.12	.30
I believe land management improves with more local input.	78	.09	.42
I believe the federal government should own land.	76	-.03	.80
I have a strong working relationship with my BLM rangeland specialist.	77	.06	.63

\* $p < .05$

**Research Question #6**

Research questions #6 asked, “*What attitudes do ranchers have regarding federal land ownership and management?*” Seventy-seven respondents identified their attitude toward the U.S. federal government owning land, using a 4-point Likert scale. Essentially 45.5% agreed with this statement and 54.5% disagreed with this statement (Table 30).

Table 30

*Rancher Attitude Regarding Federal Government Land Ownership*

Statement	Strongly agree		Somewhat agree		Somewhat disagree		Strongly disagree	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
I believe the federal government should own land	5	6.5	30	39.0	17	22.0	25	32.5

## CHAPTER V

### DISCUSSION

The theoretical framework guiding this study was based on the needs assessment model (Altschuld & Kumar, 2010). Rancher respondents and BLM professionals returned their questionnaires identifying their perceptions, knowledge, and attitudes of various BLM policies and procedures. The goal of this study was to identify possible gaps in perceptions and knowledge among ranchers and BLM professionals to inform an educational program to improve rancher and BLM professionals' relationships. This chapter discusses the research findings and offers recommendations for the development of programming and identifies possible areas for future research. This discussion has been organized around the research questions.

#### Research Questions

##### Question 1

Research question 1 asked, *“What are the demographics that describe ranchers and BLM professionals related to public land management?”*

**BLM demographics.** According the responses of the BLM population ( $n = 11$ ), the average employee had been working for the BLM for approximately 12.9 years, with each participant staying in their given position for an average of 3.6 years. The average time working for the BLM could affect relationships between the two populations due to BLM employee turnover. If a BLM manager or specialist was to remain in a position for a longer period of time, better relationships between ranchers and BLM professionals

could form, which could result in fewer conflicts. Additionally, if BLM professionals remained in their positions for a longer period of time, ranchers would know exactly who they need to communicate with regarding various rangeland management policies and procedures.

BLM professionals were asked to describe how often they communicate with permit holders. The majority of respondents identified communicating either weekly or quarterly. This indicated regular communication is a common practice; however, due to the relationships identified in the study, BLM policies and procedures may not be part of these communications. This study did not evaluate the purpose or the content of this regular communication. Additionally, it is possible that the BLM manager or specialist is not talking to the same permittee weekly, but rather different permittees, which could explain rancher attitude regarding communication enhancing project completion.

The majority of BLM professionals identified working on NEPA 26-50% of their time. This is congruent with the expectations of their positions. Due to the nature of the different specialists in the BLM Salt Lake Field Office, there are specialists in many different areas including, but not limited to, wildlife, sage grouse, aquatics, vegetation, etc. This could explain the level of perception and their actual knowledge of BLM guidelines and policies related to grazing management. Additionally, it is important to note that the researcher did not seek to know if the respondents were responsible for other rangeland components, not related to grazing management, (i.e., wildlife habitat, wild horse & burros, vegetation, etc.). The study did not ask the BLM professionals about the programs/projects they spent outside of working on NEPA documents.

**Rancher demographics.** Of the 182 ranchers who were invited to participate, 79 responded with valid responses either by mail (71) or by phone (8). The majority of responders had grazing permits for 1-3 allotments, which they held for multiple generations. Only four respondents reported having 10 allotments. Additionally, 78.5% ( $n = 62$ ) of the respondents graze only cattle. The majority of respondents claimed most of their income came from their ranching operation. With their livelihood relying, at least in part, on BLM land, rancher stress may be reduced with a better working relationship.

Most ( $n = 26$ , 32.9%) of the ranching population surveyed were fourth generation ranchers. This suggests that family legacy may influence their management decisions. In addition, more than half of the ranchers ( $n = 48$ , 63.2%) stated they relied on their ranching experience as their source for BLM allotment and NEPA related information. This result suggests that an intervention should connect with their previous experience for greater impact.

Ranching respondents stated getting the majority (63.2%,  $n = 48$ ) of their knowledge about NEPA from personal ranching experience. Over half of the respondents ( $n = 39$ , 51.3%) utilize their BLM rangeland specialists as a resource for understanding the NEPA process. The majority of projects that ranching respondents have experience with on their allotments include weed management and fencing. These experiences indicate they should be able to connect the NEPA process required for completing rangeland improvement projects. However, only 15.2% ( $n = 73$ ) of the respondents could correctly identify which projects would require NEPA, and only 68.1% ( $n = 74$ ) of the respondents could correctly identify range improvement projects from the list provided.

This could mean that ranchers are either not going through the proper process to implement rangeland improvement projects or that they have a false sense of confidence in their understanding of the process. This also suggests that BLM rangeland specialists may need to do a better job of explaining or providing resources on NEPA process.

Three northern Utah counties accounted for 92% of the permittee respondents. This information provides program developers with location information if they decide to do a face-to-face intervention. Most respondents were between the ages of 51-88. This provides valuable information as to the structure or type of intervention that should be implemented. For example, an online intervention may not be the best platform, but a workshop conducted at a producer meeting (i.e., Utah Cattlemen's Association or Utah Farm Bureau) could result in greater participation.

## **Question 2**

Research question #2 asked, "*What are the perceptions of ranchers and BLM professionals regarding BLM policies and procedures of range improvement project implementation and grazing permits*"? The findings on the perceptions of the ranchers and BLM professionals identified a few areas where a program could focus on policy content for greater understanding to build a better relationship.

Overall rancher perceptions suggest there should be high rate of correct answers in the knowledge section of the questionnaire. However, answers were not consistent with perceptions, as many ranchers answered knowledge questions incorrectly. The average overall knowledge score for the ranching population was 5.57 out of 18 questions (31% correct),  $SD = 2.41$ . This suggests a false sense of knowledge among the ranching

respondents, which could lead to conflicts between ranchers and BLM professionals.

Additionally, due to higher knowledge perceptions among the ranching respondents the ability to increase the actual knowledge in an educational setting may require methods that are not confrontational and leverage their experiences.

BLM perceptions were divided into either strongly agreeing or somewhat agreeing. This suggests that BLM perceives their knowledge regarding BLM policies and procedures to be high. When reviewing the frequency of correct answers, questions were often answered incorrectly. The average score for overall knowledge for the BLM respondents was 9.78 out of 18 questions (54% correct),  $SD = 3.19$ . Like the ranchers, BLM professionals believed they understood the various policies and procedures better than they actually did. It is important to note that not every BLM manager/BLM specialist is directly involved with making or enforcing grazing policies and procedures, and this could explain the gap in knowledge. However, these results could aid BLM directors in planning BLM professional trainings. Furthermore, if professionals are discussing rangeland improvement projects, and using misinformation to inform their decisions regarding range improvement projects, the wrong information could be communicated and result in conflict.

### **Question 3**

Research question #3 asked, “*What is the knowledge of ranchers and BLM professionals regarding BLM policies and procedures of range improvement project implementation and grazing permits*”? The ranching respondents indicated having an average understanding on three of the knowledge questions (a) who makes the final land

management decisions ( $n = 70$ , 62.0%), (b) identifying the steps required to increase non-renewable Animal Unit Months (AUMs) on an allotment ( $n = 67$ , 70.9%), and (c) understanding of what a range improvement project is ( $n = 74$ , 60.8%). This indicates that there are discrepancies in understanding who makes land management decisions. Increasing rancher knowledge in these areas could reduce conflicts between BLM professionals and ranchers because they will have a better understanding of how decisions are made, the process of increasing AUMs temporarily, and helping them understand what a range improvement project is.

The BLM respondents had an above average knowledge score regarding who makes the final decision in their office concerning rangeland management ( $n = 9$ , 81.8%), when allotments are evaluated to determine rangeland health ( $n = 9$ , 81.8%), and knowing the process required for temporarily increasing AUMs on an allotment ( $n = 9$ , 81.8%). However, when BLM respondents were asked when requests for new waterlines or new fencelines should be submitted, only 9.1% of the respondents for both questions answered correctly. Additionally, when asked what the process was for juniper removal projects, not one respondent answered the question correctly. This suggests that the majority of the BLM professionals that participated may not be involved in the process for juniper removal projects or rangeland improvement projects. In the case of the SLFO, this may not be extremely concerning as the individuals responsible for planning these projects are located within the district office and were outside the scope of this study.

#### **Question 4**

Research question #4 asked, “*What are the correlations between BLM*

*professionals and ranchers' perceptions and their actual knowledge of BLM policies and procedures for range improvement project implementation and grazing permits”?*

**Rancher perception and knowledge relationships.** Cross-tabulations determined what relationships existed between ranchers' perception and their actual knowledge of various BLM policies and procedures for range improvement project implementation. Multiple relationships were identified indicating that ranchers had a higher perception level of their knowledge than their actual knowledge. According to the needs assessment framework, the next step of the assessment phase is to rank priority of needs based on the needs highlighted in the theoretical framework. Important topics to be addressed in an intervention should include the following (a) when and how to submit a rangeland improvement project request form, (b) the circumstances that could result in temporary loss of AUMs, (c) where to access active NEPA document online, and (d) who makes final land management decisions for the BLM. Furthermore, when ranchers were asked to indicate their level of agreement with perception statement eight regarding NEPA rules, respondents indicated disagreement with understanding the NEPA process for temporarily reducing AUMs and also answered the questions on NEPA incorrectly. This indicates that the perception of the respondents aligns with their actual knowledge.

**BLM perception and knowledge relationships.** The first perception statement asked the BLM population to select their level of agreement with understanding what a range improvement project was. Three of the relationships evaluated identified that the BLM population agreed that they understood what a range improvement project was, but three knowledge question responses in this section of the survey were incorrect. These

questions were (1) in planning a juniper tree removal project, after identifying a treatment area within the allotment, the next step for BLM is \_\_\_\_; (2) when to request a new waterline; and (3) when to request a new fenceline. This suggests that BLM respondents have a higher perception of understanding range improvement projects than their knowledge suggests. One potential reason could be that all BLM professionals are not necessarily involved with rangeland improvement projects.

The BLM population then selected their level of understanding the process of juniper removal projects on grazing allotments. One relationship result indicated that the BLM population agreed that they understood what a range improvement project was; however, responses for all respondents were incorrect for this knowledge question. This question asked about the procedures required in planning a juniper tree removal project. This finding suggests that the BLM respondents may not know the exact procedures required in planning a juniper removal project. Further research may be helpful to determine if having this knowledge would increase their ability to improve relationships with the ranching population.

The third perception statement sought to determine BLM's level of perceived understanding regarding their familiarity with standards and guidelines of specific grazing allotments. One of the relationships identified showed that the BLM adequately knows which projects require a NEPA decision prior to implementation. This suggests that BLM professionals are able to correctly identify which rangeland improvement projects require a NEPA decision.

The BLM population was asked to select their level of understanding regarding

the NEPA process for range improvement projects. This perception statement was then evaluated with related knowledge questions. Relationships that stood out include the question regarding the proper procedure for implementing a juniper removal project. This could mean that although the BLM respondents may know which projects require NEPA decisions, they might not understand the steps required for project implementation.

Perception statement five sought to determine BLM professionals' perceptions of the NEPA process regarding the permanent removal of AUMs from grazing allotments. One relationship that stood out included the BLM respondents' knowledge regarding the circumstances that could result in a temporary reduction of AUMs. This relationship could infer that BLM professionals may not know which circumstances could result in a temporary reduction in AUMs. An intervention or training to help BLM professionals understand these policies could increase knowledge and positively impact the relationships between BLM professionals and ranchers.

Perception regarding the NEPA process for converting sheep AUMs to cattle AUMs was analyzed then compared with the relevant knowledge statements. Numerous relationships were identified as BLM professionals' level of agreement was adequately reflected by their actual knowledge. This suggests that an intervention to increase the knowledge in this area is not necessary.

The seventh perception analyzed was understanding the process for adding additional AUMs to grazing permits on a temporary renewable basis. One relationship that stood out was regarding the number of respondents who indicated they disagreed with their understanding then correctly answered the question regarding the area that has

the greatest influence on rangeland health. This suggest that BLM professionals may have a better understanding of this process than they perceive. However, two other relationships stood out because of the number of BLM respondents who identified in agreement regarding their understanding and their incorrect answers. These knowledge questions include (a) knowing which circumstances could result in a temporary reduction in AUMs and (b) knowing the priority of how additional AUMs are distributed amongst the permittees. This suggests that BLM professionals may have a strong understanding in some areas but not in all areas. An intervention could address these gaps in knowledge.

The last BLM professional perception statement regarded their perceived understanding of the NEPA process for temporarily reducing AUMs. Numerous relationships indicated that most BLM respondents scored very high in the knowledge section. However, two relationships stood out because of the number of BLM respondents who identified in agreement regarding their understanding and their incorrect answers. These knowledge questions include (a) knowing which circumstances could result in a temporary reduction in AUMs and (b) knowing the priority of how additional AUMs are distributed amongst the permittees. This suggests that perception and knowledge are not aligned. Increasing knowledge regarding these questions could improve knowledge and potentially improve relationships.

### **Question 5**

Research question #5 asked, “*Are there relationships between rancher participant background, attitudes, and knowledge*”? Ranching respondents’ answers to background or demographic questions were evaluated to determine if ranchers’ background had any

relationship to what they know and their overall attitudes. Understanding rancher background and attitude could influence development of an effective intervention to dispel misconceptions and build stronger relationships based on factual policy information.

**Rancher background and knowledge.** Most relationships between rancher background and knowledge revealed low or negligible associations. This means rancher knowledge is not largely influenced by rancher background. This suggests that an intervention to improve knowledge with the hope of fostering better relationships does not need to be segregated or stratified by rancher background.

**Rancher background and attitude.** Multiple relationships between rancher background and attitude were identified. First, of the ranchers having between one and three allotments, 42 strongly agree that land management improves when local input is utilized in decision making. Additionally, 43 of the ranchers that declared they graze cattle also strongly agreed that local input improves land management. This suggests that ranchers' attitude is influenced by the number of allotments they hold permits for and the species they graze. Finally, age and the level of agreement with the NEPA process working and needing no revisions generated a medium, positive correlation. This suggests that as rancher age increases, they are more likely to have a more positive attitude regarding the NEPA process.

## Question 6

Research question #6 asked, “*What attitudes do ranchers have regarding federal land ownership and management*”? Each participant was asked, using a 4-point Likert

scale ranging from 4 (strongly agree) and 1 (*strongly disagree*), their level of agreement with the following statement, “I believe the federal government should own land.”

Analysis showed that ranching respondents were split on this question. Most respondents selected between somewhat agree ( $n = 30$ , 39.0%), somewhat disagree ( $n = 17$ , 22.0%), and strongly disagree ( $n = 25$ , 32.5%). Only five respondents strongly agreed with the federal government owning land (6.5%). This suggests that a small majority of respondents do not agree that the federal government should own land. This finding is significant as rancher attitudes may impact the perceived need for any type of intervention to increase their knowledge about BLM policies and practices for a better relationship. To overcome this, a non-confrontational intervention or an intervention woven into a setting that ranchers typically participate in with organizations and people they trust in may be the best approach to increase their knowledge and improve relationships—regardless of their attitude. The Sagebrush Ecosystem Alliance (SEA) is in a position to engage ranchers in comfortable, non-confrontational setting and is skilled in the appropriate methods to facilitate an intervention for improved relationships. The SEA program is supported by Utah State University Extension and provides research-based information based on science reducing bias. SEA needs to be aware of findings of this study to develop programming to address deficiencies or gaps in knowledge and to introduce more efficient methods that could be used for communication between ranchers and BLM professionals. The theoretical construct for this research was based on the work of Altschuld and Kumar (2010), which posits that addressing needs and knowledge gaps, clarifying misconceptions, or clarifying misunderstanding may improve relationships.

### **Recommendations for Extension Programming**

Based on the theoretical framework for this study, prioritizing needs would be an essential step prior to developing any kind of intervention for the ranching population or BLM population. Needs could be prioritized based on the importance of each need. Additionally, priorities could be established by determining the need areas that will result in the greatest impact for improved relationships. For example, as there were more cattle producers than sheep producers who participated in the questionnaire, developing an intervention for beef producers could have a greater impact.

Phase three of the needs assessment model is to utilize the data collected to develop an intervention. Workshops, online courses, demonstrations, postcards and informational sessions are tools frequently used by Extension services. Analysis indicated that an intervention could improve relationships by increasing knowledge, perception, and potentially influencing attitudes. However, it should be noted that most ranchers did not use Utah State University resources as a source of information. This means Utah State University will need to assert itself as a useful resource and develop a website that will provide timely and easily accessed resources. In addition to the factual information shared online or in workshop settings, programming and resources should also focus on possible methods for more efficient communication between the two populations. Timely and accurate communication is essential for a good relationship. The age of ranchers also needs to be considered regarding program delivery. An online course may not be the best mode of delivery as this type of delivery may be foreign to this older population. Additional research should be conducted to determine the best method for an educational

intervention with ranchers to better inform them on BLM policies and procedures.

Findings also indicated that often times, there is a negative relationship between what ranchers perceive to be accurate and what they actually know. This means Extension program developers should carefully determine how the content should be presented. Approaches need to acknowledge rancher experience and connect with the factual BLM policies and processes.

Additionally, an intervention designed to train BLM professionals on communicating project policies and procedures during project implementation could provide opportunity for an increase in rancher understanding of the policies. This could be achieved through Extension programming including the Sagebrush Ecosystem Alliance, local working groups, Conservation District Boards, or other local resource groups with rancher involvement.

On the topic of attitude, the negative attitude ranchers have about the government owning land is a huge barrier for any intervention. This negative attitude could keep ranchers from participating in a program designed to “improve their knowledge.” Other types of more passive communication may be needed. While older ranchers may not use their smart phones for social networking, and may prefer conferences, newspapers, and face-to-face communication, the younger ranchers could be reached with podcasts and through social networks from peers they consider credible.

### **Recommendations for Researchers**

The results of this study provide insight into the perceptions, knowledge, and

attitudes of ranchers regarding BLM policies and procedures operating within the jurisdiction of BLM Salt Lake Field Office. The research suggests multiple knowledge gaps exist.

This study explored which resources are most commonly used as resources for NEPA information. Further data should be collected to gain a deeper understanding of what BLM is communicating to ranchers and how this information is being communicated. Identifying the other NEPA resources currently used could aid in identifying possible communication outlets.

This study identified the majority of public land ranchers are well over the age of 50. As a result, additional research is needed to determine rancher accessibility to the internet and use of the internet resources. This would be useful in determining the possible means for an intervention. Additionally, understanding if ranchers are confident in using those resources would be helpful.

This study identified the number of generations in ranching operations. Further research should seek answers to determine if there is a next generation planning to take over ranching operations. This information could assist in the development of an intervention for the next generation of ranchers.

Finally, as the Sagebrush Ecosystem Alliance has been implemented in only one county, Box Elder County. Data should be collected and analyzed comparing responses of Box Elder County respondents to respondents from other counties to implement a program statewide.

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## APPENDICES

## Appendix A

### Minutes with Needs Assessment Committee (NAC)

### Needs Assessment Committee Minutes

5 Ranchers in West Box Elder County (Bryan Morris, Jay Tanner, Spencer Morris, Ken Spackman, Kelly Warr), Brent Tanner (Utah Cattlemen's Association Executive Vice-President, and Clint Hill (Utah Grazing Improvement Program Coordinator)

October 5, 2017

- We asked this portion of the NAC how they would best explain the relationship between ranchers and BLM. The group explained that BLM is not listening to their individual concerns and BLM/Ranchers have different views on what is best for the land (i.e., during droughts, after a fire, etc.).
- This group feels there is a disconnect because their rangeland management specialist is difficult to communicate with based on their location and availability. There are rarely organized meetings held to discuss their grazing allotments.
- Due to the nature of the legislation surrounding federally managed land, ranchers feel it takes years to implement simple projects that could benefit the rangeland. Clint Hill mentioned two separate water lines that had been promised for three years, and ranchers still hadn't heard of any progress.
- Brent Tanner expressed that this topic is relevant throughout the state. He mentioned that during his time growing up in Box Elder County, and through his position with Cattlemen's he has witnessed numerous contentious meetings with BLM. He feels that by improving communication, most of them could be avoided.

Clint Hill expressed that there is a major concern with BLM not following through on what they say they are going to do. An example would be when a producer wanted to put in a water line. They talked with their rangeland specialist, and were told that the necessary paperwork would be filed and that BLM would contact them when it was ready to go. That was over three years ago. Ranchers find it frustrating that BLM says they want to distribute water more throughout the allotment, but are unable to do their part in improving the rangeland. Other examples were also shared.

## Appendix B

Minutes with BLM (September 28, 2017)

## BLM Minutes

Melissa Wood, Renewable Resources Coordinator, Bureau of Land Management

September 28, 2017

- Calee asked Melissa Wood about the common misconceptions that ranchers have regarding a reduction in AUMs on the rangeland. Melissa informed her that in the last 9 years, not one permittee in West Box Elder County has lost a permit or any Animal Unit Months (AUMs).
- Melissa provided Calee with the Policies and Procedures handbook which outlines how AUMs are determined, how AUMs are reduced, how fees are determined, and etc.
- Melissa also provided the group with a specific job outline for the rangeland management specialist job responsibilities. It was found that West Box Elder County BLM Allotments should be having annual meetings with their rangeland management specialist, but they haven't been happening for quite a while. Melissa believes that by having these meetings, relationships could be developed and even repaired.
- Melissa mentioned that in her previous position as a rangeland management specialist, she was most effective when she allowed her ranchers to have input on management projects and other decision on rangeland.

## Appendix C

Minutes with BLM (October 17, 2017)

## BLM Minutes

Dylan Tucker, Rangeland Management Specialist, Bureau of Land Management, Box Elder County

Oct. 17, 2017

- Dylan and I had a discussion regarding the frustrations related to follow through. I expressed ranchers concerns. He explained that what ranchers do not understand is the process. As much as we would love to implement their water line, fenceline, juniper removal, etc. the very next day from the discussion, we cannot. There are policies and procedures in place to make sure we are taking care of the land and to prevent environmentalists from suing.
- In order to implement a project, we have to initiate a NEPA process, evaluate the potential impacts to the environment, gather data, evaluate the data, and then make our recommendations in the form of an Environmental Assessment or Environmental Impact Statement. We then have to have a public comment period. This has to be a minimum of 15-30 days, sometimes longer. We then have to address the comments, re-publish the document, and then pray for approval from Washington D.C. The entire process can take up to a year or longer.

## Appendix D

### Needs Assessment Survey Emails

4/6/2018

Mail - calee.lott@usu.edu

## Re: [EXTERNAL] Master's Needs Assessment Survey

Preston, Matthew &lt;mpreston@blm.gov&gt;

Mon 4/2/2018 1:38 PM

To: Calee Lott &lt;calee.lott@usu.edu&gt;;

Cc: Debra Spielmaker &lt;Debra.Spielmaker@usu.edu&gt;; Eric Thacker &lt;eric.thacker@usu.edu&gt;; Wood, Mellissa &lt;mrwood@blm.gov&gt;;

Fair enough. I'd like to see the survey before I can commit to sending it to BLM staff. So, you can take me off the list of users to take the survey.

In terms of the permittees' emails, I believe these are probably protected PII, but maybe it is public. If it is protected, we could probably figure a way out for the BLM to transmit the survey on USU's behalf -- just so we don't have to disclose the PII. Mellissa may know better on this.

--

Matt Preston  
District Manager (acting), West Desert District  
Bureau of Land Management  
801-977-4350 (o); 801-503-5411 (c)

On Mon, Apr 2, 2018 at 1:35 PM, Calee Lott <calee.lott@usu.edu> wrote:

You will be able to view the survey, and the survey will go through IRB. I would prefer if those participating in the survey were not able to view the survey before distribution.

Calee Lott  
SEA Program Coordinator  
USU Extension

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**From:** Preston, Matthew <mpreston@blm.gov>  
**Sent:** Monday, April 2, 2018 1:30:42 PM  
**To:** Calee Lott  
**Cc:** Debra Spielmaker; Eric Thacker; Wood, Mellissa  
**Subject:** Re: [EXTERNAL] Master's Needs Assessment Survey

Hi Calee,

Thanks for the heads-up and reminder.

Would we be able to see the survey before it goes out? Will it go through USU's IRB?

Best, Matt

--

Matt Preston  
District Manager (acting), West Desert District  
Bureau of Land Management  
801-977-4350 (o); 801-503-5411 (c)

On Mon, Apr 2, 2018 at 10:56 AM, Calee Lott <calee.lott@usu.edu> wrote:

Hi Matt,

As you may remember, I'm working towards completing my thesis soon. I am hoping to be able to send a survey to all permittees within that work with the SLFO and all specialists within the SLFO and fuels, including

4/6/2018

Mail - calee.lott@usu.edu

Mellissa. Essentially, the survey is a needs assessment that will take approximately 15-20 minutes maximum to complete (hopefully less). The survey will ask questions to evaluate attitude towards federal land management, perceptions of policies and procedures, and evaluate actual knowledge of BLM policies and procedures. the data from both populations will be cross-analyzed to identify if any gaps are present.

I am hoping that upon approval of the survey, we will be able to use the BLM mailing list to get this survey sent internally. Additionally, would it be possible to use the emails on file with the BLM for the permittees?

Please let me know if you have any questions. Additionally, if you could please respond with a yes or no on access to the email list, that would be great.

Thanks,

Calee

Calee Lott  
Coordinator  
Sagebrush Ecosystem Alliance  
Utah State University

Appendix E  
Rancher Permittee Survey

## Rancher Permittee Survey

### *General Information*

**How many grazing allotments do you currently own/lease permits for?**

- ☐ 1-3
- ☐ 4-6
- ☐ 7-10
- ☐ I don't have any grazing permits

**How long have you owned/leased BLM grazing permit(s)?**

	0-5 years	6-10 years	11-20 years	Multiple Generatio	Does not apply
Allotment 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allotment 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allotment 3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allotment 4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allotment 5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allotment 6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allotment 7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allotment 8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allotment 9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allotment 10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Which livestock species do you run on your BLM allotments?**

- ☐ Sheep
- ☐ Cattle
- ☐ Both Sheep & Cattle

**What percentage of your household income does your ranching operation  
account for?**

- ☐ 0% - 25%
- ☐ 26% - 50%
- ☐ 51% - 75%
- ☐ 76% - 100%

**How long has your ranching operation been established?**

- ☐ 1st generation
- ☐ 2nd generation
- ☐ 3rd generation
- ☐ 4th generation
- ☐ 5th generations
- ☐ 6 or more generations

**The following projects have been completed on one or more of my**

**allotments. (Select all that apply)**

- ☐ Weed Management (i.e., cheatgrass, noxious weed, etc.)
- ☐ Brush Removal (i.e., pinyon/juniper trees, sage)
- ☐ Water Development
- ☐ Fuel Breaks
- ☐ Fence
- ☐ None

**Where do you access the majority of your information regarding National**

**Environmental Policy Act (NEPA)? (Select all that apply)**

- ☐ University Researchers
- ☐ My BLM Rangeland Managers
- ☐ Google/Other Internet Resources
- ☐ Ranching Experience
- ☐ My College Experience
- ☐ Utah Department of Agriculture & Food
- ☐ My Peers
- ☐ Other (please specify) \_\_\_\_\_

**What counties do you have grazing permits in? (Select all that apply)**

- ☐ Box Elder
- ☐ Cache
- ☐ Davis
- ☐ Morgan
- ☐ Rich
- ☐ Salt Lake
- ☐ Summit
- ☐ Tooele
- ☐ Utah
- ☐ Wasatch
- ☐ Weber

**What is your age? \_\_\_\_\_**

***Level of Agreement on BLM Rangeland Procedures. Select one response only.***

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**I understand what a range improvement project is.**

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Somewhat disagree
- ☐ Strongly disagree

**I understand the process of juniper removal projects on grazing allotments.**

- ☐ Strongly agree
- ☐ Somewhat Agree
- ☐ Somewhat disagree
- ☐ Strongly disagree

**I am familiar with the standards and guidelines that apply to the management of specific allotments.**

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Somewhat disagree
- ☐ Strongly disagree

**I understand the complete process of NEPA for a range improvement project.**

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Somewhat disagree
- ☐ Strongly disagree

**I understand the NEPA process for permanently removing AUMs.**

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Somewhat disagree
- ☐ Strongly disagree

**I understand the NEPA process for converting sheep AUMs to cattle AUMs.**

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Somewhat disagree
- ☐ Strongly disagree

**I understand the NEPA process for adding additional AUMs to my grazing permit on a temporary non-renewable basis.**

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Somewhat disagree
- ☐ Strongly disagree

**I understand the NEPA process required for temporarily reducing AUMs.**

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Somewhat disagree
- ☐ Strongly disagree

***BLM Rangeland Procedures. Select one response only.***

---

**What is the proper method for requesting a range improvement project on BLM administered land?**

- ☐ A verbal request with my rangeland specialist
- ☐ A completed form delivered to the BLM office or BLM personnel
- ☐ Applying for funding through state or federal programs
- ☐ Any of the above options will result in a completed rangeland improvement project

**In planning juniper tree removal project, after identifying a treatment area within the allotment, the next step for BLM is\_\_\_.**

- ☐ Develop a detailed map of potential trees to remove
- ☐ Identify trees that need to be removed using a GPS
- ☐ Begin working on NEPA
- ☐ Call all of the permittee holders for input

**How can a request for a range improvement project be submitted?**

- ☐ Emailing my range specialist
- ☐ Submitting a range improvement form
- ☐ Sending a letter to my rangeland specialist
- ☐ Discussing it at my allotment meetings
- ☐ Word of mouth with no written confirmation
- ☐ Word of mouth with written confirmation

**Who is involved in preparing the NEPA document?**

- ☐ Only the BLM rangeland specialist
- ☐ It depends on the project
- ☐ At least one specialist from each discipline within the field office
- ☐ The field office manager, multiple specialists, and the public

**Who makes the final land management decisions for BLM grazing permits and range improvement projects?**

- ☐ The BLM rangeland specialist
- ☐ The BLM wildlife biologist
- ☐ The BLM renewable fuels manager
- ☐ The BLM field office manager

**When evaluating an allotment, which area has the greatest influence on rangeland health?**

- ☐ Uplands
- ☐ Riparian Areas
- ☐ Grazing Enclosures
- ☐ Fenceline

**When is my allotment evaluated to determine if rangeland health standards are being met?**

- ☐ Once annually
- ☐ Twice per year
- ☐ When I turn in my utilization report
- ☐ During the permit renewal process for my allotment

**On which of the following websites can I find active NEPA documents?**

- ☐ blm.gov
- ☐ nepa.blm.gov
- ☐ eplanning.blm.gov
- ☐ active NEPA is not available online

**According to the BLM, what is the first step in obtaining an increase in AUMs on a non-renewable basis?**

- ☐ Apply with the field office when additional forage is temporarily available for livestock grazing use
- ☐ Call the field office and ask permission
- ☐ Discuss with other permittees and graze your livestock without written permission from the field office

***BLM Rangeland Procedures with Multiple Responses. Select all responses that apply.***

---

**A NEPA decision is required before beginning which of the following projects on**

**BLM land? (Select all that apply)**

- ☐ Maintaining a waterline
- ☐ Removing Juniper Trees
- ☐ Spraying weeds
- ☐ Adding a new trough to an existing pipeline
- ☐ Replacing an existing trough with a trough of a similar size
- ☐ Replacing an existing fenceline
- ☐ Constructing a new pasture fence within an allotment
- ☐ Adding a water tank for water storage

**When can a request for new fenceline be submitted? (Select all that apply)**

- ☐ Only during the permit renewal process
- ☐ Once annually while meeting with my rangeland specialist
- ☐ At any time a range improvement project is needed
- ☐ In the event of an emergency, when I have no other options

**When can a request for a new waterline be submitted? (Select all that apply)**

- ☐ Only during the permit renewal process
- ☐ Once annually while meeting with my rangeland specialist
- ☐ At any time a range improvement project is needed
- ☐ In the event of an emergency, when I have no other options

**A range improvement project is (Select all that apply)**

- ☐ Fenceline
- ☐ Waterline
- ☐ Trough
- ☐ Weed control
- ☐ Well
- ☐ Prescribed burn
- ☐ Seeding

**What factors determine the BLMs rangeland improvement projects priority list?  
(Select all that apply)**

- ☐ First come first serve
- ☐ Threatened or endangered species habitat related

- ☐ Proximity to the field office
- ☐ Policy
- ☐ My relationship with my rangeland specialist
- ☐ Funding availability

**Under what circumstances could AUMs be reduced temporarily? (Select all that apply)**

- ☐ Fire
- ☐ Drought
- ☐ Following the construction of a waterline
- ☐ Following the removal of juniper trees by mastication or bullhog
- ☐ Following the removal of juniper trees by lop & scatter
- ☐ Following the spraying of invasive weed species
- ☐ Whenever my rangeland specialist or the field office has an inclination to do so
- ☐ When overgrazing is taking place

**Which of the following are used to determine priority of apportioned additional AUMs? (Select all that apply)**

- ☐ Permittees in proportion to their contribution to rangeland improvements
- ☐ Permittees in proportion to their number of allocated AUMs
- ☐ The permittee that submitted their request for an increase in AUMs first
- ☐ A randomized drawing performed by the field office

**According to the BLM rangeland management practices, which are indicators of healthy rangeland? (Select all that apply)**

- ☐ Lack of excessive erosion such as rills, soil pedestals, and actively eroding gullies
- ☐ Frequency, diversity, density, age classes, and productivity of desired native species
- ☐ Nutrient loads and water temperature are within water quality parameters
- ☐ Habitat for endangered native species is designed to maintain current levels

**Please organize the proper procedures in order (with 1 being the first step and 4 being the last) for notifying a permittee of a temporary reduction in AUMs**

\_\_\_\_\_ The authorized officer determines that the soil, vegetation, or other resources requires immediate protection because of drought, fire, etc.

\_\_\_\_\_ The authorized officer consults with the permittee regarding rangeland conditions

\_\_\_\_\_The allotment or portions of the allotment are closed from grazing

\_\_\_\_\_A documented agreement is sent to the permittee from the field office to notify them

*Please answer according to your level of agreement.*

	Strongly agree	Agree	Disagree	Strongly disagree
I believe land management improves with more local input	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Communication enhances the likelihood of project completion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The NEPA process is working and needs no revisions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Federal land management is improving	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I believe the federal government should own land	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have a strong working relationship with my BLM rangeland specialist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Thank you for taking the time to complete this important survey. Your answers are valuable to the success of this study. Please place the completed survey in the enclosed envelope and drop it in the mail.**

## Appendix F

### BLM Permit Information Survey

# BLM Permit Information Survey

---

## Start of Block: Letter of Information

9570 spielmaker loi online approved

by clicking yes to this question, you agree to participate in this anonymous study and answer the following questions to the best of your ability.

- ☐ Yes I am over the age of 18 and agree to participate in this study.
- ☐ No I am not over the age of 18 or I do not agree to participate in this study.

*Skip To: End of Survey If 9570 spielmaker loi online approved by clicking yes to this question, you agree to participate in... = No I am not over the age of 18 or I do not agree to participate in this study.*

## End of Block: Letter of Information

---

## Start of Block: BLM Descriptive

How long have you been employed by the BLM? (Please answer in years and/or months, e.g., 1 year 4 months or 8 months if less than a year)

\_\_\_\_\_

How long have you held your current position in the Salt Lake Field Office? (Please answer in years and/or months, e.g., 1 year 4 months or 8 months if less than a year)

\_\_\_\_\_

On average, how frequently do you communicate with permittees?

- ☐ Weekly
- ☐ Monthly
- ☐ Quarterly
- ☐ Bi-annually
- ☐ Annually
-

What percentage of your time is spent working on various documents related to NEPA (i.e., EIS, EA, DNA, or CX)?

- ☐ 1-25% of your time
- ☐ 26-50% of your time
- ☐ 51-75% of your time
- ☐ 76-100% of your time
- ☐ NEPA is not part of your work responsibilities

End of Block: BLM Descriptive

---

Start of Block: Perceptions

I understand what a range improvement project is.

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Somewhat disagree
- ☐ Strongly disagree

---

I understand the process of juniper removal projects on grazing allotments.

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Somewhat disagree
- ☐ Strongly disagree

---

I am familiar with the standards and guidelines that apply to the management of specific allotments.

- ☐ Strongly agree
  - ☐ Somewhat agree
  - ☐ Somewhat disagree
  - ☐ Strongly disagree
-

I understand the complete process of NEPA for a range improvement project.

- ☐ Strongly agree
  - ☐ Somewhat agree
  - ☐ Somewhat disagree
  - ☐ Strongly disagree
- 

I understand the NEPA process for permanently removing AUMs.

- ☐ Strongly agree
  - ☐ Somewhat agree
  - ☐ Somewhat disagree
  - ☐ Strongly disagree
- 

I understand the NEPA process for converting sheep AUMs to cattle AUMs.

- ☐ Strongly agree
  - ☐ Somewhat agree
  - ☐ Somewhat disagree
  - ☐ Strongly disagree
- 

I understand the NEPA process for adding additional AUMs to my grazing permit on a temporary non-renewable basis.

- ☐ Strongly agree
  - ☐ Somewhat agree
  - ☐ Somewhat disagree
  - ☐ Strongly disagree
-

I understand the NEPA process required for temporarily reducing AUMs.

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Somewhat disagree
- ☐ Strongly disagree

### End of Block: Perceptions

### Start of Block: Attitude

Please answer according to your level of agreement.

	Strongly agree	Agree	Disagree	Strongly disagree
I believe land management improves with more local input	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication enhances the likelihood of project completion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The NEPA process is working and needs no revisions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Federal land management is improving	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe the federal government should own land	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a strong working relationship with the permittees I work with	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**End of Block: Attitude****Start of Block: Knowledge**

Please answer the following questions as best you can.

A NEPA decision is required before beginning which of the following projects on BLM land? (Select all that apply)

- ☐ Maintaining a waterline
- ☐ Removing Juniper Trees
- ☐ Spraying weeds
- ☐ Adding a new trough to an existing pipeline
- ☐ Replacing an existing trough with a trough of a similar size
- ☐ Replacing an existing fenceline
- ☐ Constructing a new pasture fence within an allotment
- ☐ Adding a water tank for water storage

A range improvement project is (Select all that apply)

- ☐ Fenceline
- ☐ Waterline
- ☐ Trough
- ☐ Weed control
- ☐ Well
- ☐ Prescribed burn
- ☐ Seeding

What is the proper method for requesting a range improvement project on BLM administered land?

- ☐ A verbal request with my rangeland specialist
  - ☐ A completed form delivered to the BLM office or BLM personnel
  - ☐ Applying for funding through state or federal programs
  - ☐ Any of the above options will result in a completed rangeland improvement project
- 

When can a request for new fenceline be submitted? (Select all that apply)

- ☐ Only during the permit renewal process
  - ☐ Once annually while meeting with my rangeland specialist
  - ☐ At any time a range improvement project is needed
  - ☐ In the event of an emergency, when I have no other options
- 

When can a request for a new waterline be submitted? (Select all that apply)

- ☐ Only during the permit renewal process
  - ☐ Once annually while meeting with my rangeland specialist
  - ☐ At any time a range improvement project is needed
  - ☐ In the event of an emergency, when I have no other options
- 

How can a request for a range improvement project be submitted?

- ☐ Emailing my range specialist
- ☐ Submitting a range improvement form
- ☐ Sending a letter to my rangeland specialist

- ☐ Discussing it at my allotment meetings
  - ☐ Word of mouth with no written confirmation
  - ☐ Word of mouth with written confirmation
- 

In planning juniper tree removal project, after identifying a treatment area within the allotment, the next step for BLM is \_\_\_\_\_.

- ☐ Develop a detailed map of potential trees to remove
  - ☐ Identify trees that need to be removed using a GPS
  - ☐ Begin working on NEPA
  - ☐ Call all of the permittee holders for input
- 

Who is involved in preparing the NEPA document?

- ☐ Only the BLM rangeland specialist
  - ☐ It depends on the project
  - ☐ At least one specialist from each discipline within the field office
  - ☐ The field office manager, multiple specialists, and the public
- 

What factors determine the BLMs rangeland improvement projects priority list? (Select all that apply)

- ☐ First come first serve
- ☐ Threatened or endangered species habitat related
- ☐ Proximity to the field office
- ☐ Policy
- ☐ My relationship with my rangeland specialist
- ☐ Funding availability

---

Who makes the final land management decisions for BLM grazing permits and range improvement projects?

- ☐ The BLM rangeland specialist
  - ☐ The BLM wildlife biologist
  - ☐ The BLM renewable fuels manager
  - ☐ The BLM field office manager
- 

When evaluating an allotment which area has the greatest influence on rangeland health?

- ☐ Uplands
  - ☐ Riparian Areas
  - ☐ Grazing Enclosures
  - ☐ Fenceline
- 

When is my allotment evaluated to determine if rangeland health standards are being met?

- ☐ Once annually
  - ☐ Twice per year
  - ☐ When I turn in my utilization report
  - ☐ During the permit renewal process for my allotment
- 

On which of the following websites can I find active NEPA documents?

- ☐ blm.gov
- ☐ nepa.blm.gov
- ☐ eplanning.blm.gov
- ☐ Active NEPA is not available online

---

According to the BLM, what is the first step in obtaining an increase in AUMs on a non-renewable basis?

- ☐ Apply with the field office when additional forage is temporarily available for livestock grazing use
- ☐ Call the field office and ask permission
- ☐ Discuss with other permittees and graze your livestock without written permission from the field office

---

Which of the following are used to determine priority of apportioned additional AUMs? (Select all that apply)

- ☐ Permittees in proportion to their contribution to rangeland improvements
- ☐ Permittees in proportion to their number of allocated AUMs
- ☐ The permittee that submitted their request for an increase in AUMs first
- ☐ A randomized drawing performed by the field office

---

Under what circumstances could AUMs be reduced temporarily? (Select all that apply)

- ☐ Fire
- ☐ Drought
- ☐ Following the construction of a waterline
- ☐ Following the removal of juniper trees by mastication or bullhog
- ☐ Following the removal of juniper trees by lop & scatter
- ☐ Following the spraying of invasive weed species
- ☐ Whenever my rangeland specialist or the field office has an inclination to do so
- ☐ When overgrazing is taking place

---

Please organize the proper procedures in order for notifying a permittee of a temporary reduction in AUMs.

\_\_\_\_\_ the authorized officer determines that the soil, vegetation, or other resources requires immediate protection because of drought, fire, etc.

\_\_\_\_\_ the authorized officer consults with the permittee regarding rangeland conditions

\_\_\_\_\_ The allotment or portions of the allotment are closed from grazing

\_\_\_\_\_ a documented agreement is sent to the permittee from the field office to notify them

---

According to BLM rangeland management practices, which are indicators of healthy rangeland? (Select all that apply)

☐

Lack of excessive erosion such as rills, soil pedestals, and actively eroding gullies

☐

Frequency, diversity, density, age classes, and productivity of desired native species

☐

Nutrient loads and water temperature are within water quality parameters

☐

Habitat for endangered native species is designed to maintain current levels

**End of Block: Knowledge**

---

## Appendix G

### Letter to BLM Professionals

Subject: Help USU Understand BLM and Rancher Relationships in Utah

Dear BLM Personnel,

Utah State University is asking for your help with a research study conducted by the School of Applied Sciences, Technology, and Education. As personnel in the Salt Lake Field Office (SLFO), you offer insight about the actual state of relationships between ranchers and BLM personnel in the SLFO. Your answers will help researchers and extension professionals understand potential gaps in knowledge and better address these gaps to potentially improve relationships.

As part of this brief survey, we are asking about your attitude and knowledge of BLM policies and procedures. The survey should take about 15 minutes to complete. Please click on the link below to go to the survey website (or copy and paste the survey link into an internet browser).

Survey Link: [https://usu.co1.qualtrics.com/jfe/form/SV\\_3V3mR2EufXfgLBP](https://usu.co1.qualtrics.com/jfe/form/SV_3V3mR2EufXfgLBP)

Your participation is completely voluntary, and you are free to discontinue participation in the study at any time. With the anonymous nature of this survey, answers will be part of the data set, but you can skip questions or stop at any time. The information collected will be reported as a group and will not be linked to a specific participant. Should you have any further questions or comments, please contact Calee Lott Garn ([calee.lott@usu.edu](mailto:calee.lott@usu.edu) or 435-659-4638).

Many thanks,

Matt Preston  
Salt Lake Field Office Manager

Calee Lott Garn  
Sagebrush Ecosystem Alliance Coordinator  
Utah State University

Dr. Debra Spielmaker  
Extension Professor  
Utah State University

## Appendix H

### Reminder Letter to BLM Professionals

Subject: REMINDER: Voice Your Opinion about BLM and Rancher Relationships

We recently sent you an email asking for your participation in a research study conducted by the School of Applied Sciences, Technology, and Education.

Due to the anonymous nature of this study, we have no way of knowing if you've completed your questionnaire. If you have already completed the survey, thank you! If you have not, we realize your time is incredibly valuable, so this survey was designed to take about 15 minutes to complete. We hope that providing you with a link to the survey makes it easy for you to respond. To complete the survey, simply click on this link or copy and paste the survey link into an internet browser.

Survey Link: [https://usu.co1.qualtrics.com/jfe/form/SV\\_3V3mR2EufXfgLBP](https://usu.co1.qualtrics.com/jfe/form/SV_3V3mR2EufXfgLBP)

Your participation is completely voluntary and you are free to discontinue participation in the study at any time. With the anonymous nature of this survey, answers will be part of the data set, but you can skip questions or stop at any time. The information collected will be reported as a group and will not be linked to a specific participant.

Should you have any further questions or comments, please contact Calee Lott Garn at [calee.lott@usu.edu](mailto:calee.lott@usu.edu) or 435-659-4638.

Many thanks,

Matt Preston  
Salt Lake Field Office Manager

Calee Lott Garn  
Sagebrush Ecosystem Alliance Coordinator  
Utah State University

Dr. Debra Spielmaker  
Extension Professor  
Utah State University

## Appendix I

### Final Reminder Letter to BLM Professionals

Subject: REMINDER: Last Chance to Help USU Understand BLM and Rancher Relationships

You should have received an email asking for your help in a research study regarding relationships between ranchers and BLM personnel. If you have already completed the survey, thank you! If you have not, please take about 15 minutes to provide your responses to the questions. We will finish collecting data in **MONTH**.

Please click on the link below to go to the survey website (or copy and paste the survey link into an internet browser).

Survey Link: [https://usu.co1.qualtrics.com/jfe/form/SV\\_3V3mR2EufXfgLBP](https://usu.co1.qualtrics.com/jfe/form/SV_3V3mR2EufXfgLBP)

Your participation is completely voluntary and you are free to discontinue participation in the study at any time. With the anonymous nature of this survey, answers will be part of the data set, but you can skip questions or stop at any time. The information collected will be reported as a group and will not be linked to a specific participant.

Should you have any further questions or comments, please contact Calee Lott Garn at [calee.lott@usu.edu](mailto:calee.lott@usu.edu) or 435-659-4638.

Many thanks,

Matt Preston  
Salt Lake Field Office Manager

Calee Lott Garn  
Sagebrush Ecosystem Alliance Coordinator  
Utah State University

Dr. Debra Spielmaker  
Extension Professor  
Utah State University

## Appendix J

### Letter of Information



Month Date, 2018

Dear «First\_Name»,

Hello, my name is Calee Lott Garn, a master's degree student in agricultural extension & education at Utah State University. As part of this brief questionnaire, we are asking about your attitudes and knowledge of BLM policies and procedures. The survey should take about 15 minutes to complete.

This study will help to understand ranchers' attitudes and knowledge toward BLM policies and procedures. Unveiling the knowledge gap could promote improved relationships between BLM personnel and ranchers. Knowledge will be discovered about the gaps in knowledge and attitudes that influence relationships between ranchers and BLM personnel. Extension could use this information to know how to best address the gap and assist in improving relationships.

Your participation is completely voluntary, and you are free to discontinue participation in the study at any time. Please return the completed questionnaire in the enclosed stamped envelope. Your answers will never be associated with your name or mailing address, and responses are reported as a group.

If you have any questions about this study, please contact Calee Lott Garn via email at [calee.lott@usu.edu](mailto:calee.lott@usu.edu), or by phone at (435) 659-4638

Thank you very much for your help.

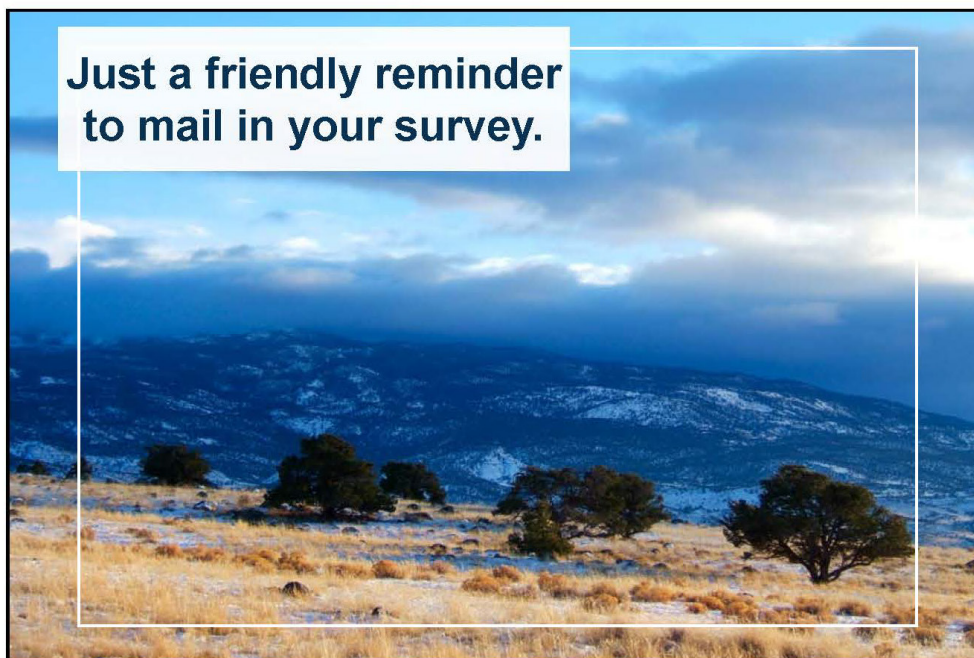
Sincerely,

Debra Spielmaker, PhD  
Professor, Graduate Program Chair  
School of Applied Sciences, Technology & Education  
[debra.spielmaker@usu.edu](mailto:debra.spielmaker@usu.edu)  
Phone: 435-213-5562

Calee Lott Garn  
Sagebrush Ecosystem Alliance Coordinator  
School Wildland Resources  
[calee.lott@usu.edu](mailto:calee.lott@usu.edu)  
Phone: 435-659-4638

Appendix K  
Survey Reminder Postcard

3/11/2019



### Please Respond by October 31, 2018.

One week ago, you were mailed a survey asking about your perceptions, knowledge and attitude regarding BLM policies and procedures. You were selected because you have BLM grazing permits through the Salt Lake Field Office.

If you've already completed your survey, and sent it back to me, please accept my sincere thanks. If not, please take a moment to do so. I am especially grateful for your help because we will be able to develop programing to improve your ranching experience.

If you did not receive a survey, or it has been misplaced, please contact me at [calee.lott@usu.edu](mailto:calee.lott@usu.edu) or 435-659-4638.

Sincerely,

Calee Lott Garn  
Graduate Student Investigator

EXTENSION.USU.EDU | Utah State University is an affirmative action/equal opportunity institution.

Nonprofit  
Org.  
U.S. Postage  
PAID  
Utah State  
University

**UtahStateUniversity.**  
APPLIED SCIENCES, TECHNOLOGY & EDUCATION

## Appendix L

### Final Reminder Letter to Nonrespondents



Month Date, 2018

Dear «First\_Name»,

Hello, my name is Calee Lott Garn, a master's degree student in agricultural extension & education at Utah State University. As part of this brief questionnaire, we are asking about your attitudes and knowledge of BLM policies and procedures. The survey should take about 15 minutes to complete.

This study will help to understand ranchers' attitudes and knowledge toward BLM policies and procedures. Unveiling the knowledge gap could promote improved relationships between BLM personnel and ranchers. Knowledge will be discovered about the gaps in knowledge and attitudes that influence relationships between ranchers and BLM personnel. Extension could use this information to know how to best address the gap and assist in improving relationships.

Your participation is completely voluntary, and you are free to discontinue participation in the study at any time. Please return the completed questionnaire in the enclosed stamped envelope. Your answers will never be associated with your name or mailing address, and responses are reported as a group.

If you have any questions about this study, please contact Calee Lott Garn via email at [calee.lott@usu.edu](mailto:calee.lott@usu.edu), or by phone at (435) 659-4638

Thank you very much for your help.

Sincerely,

Debra Spielmaker, PhD  
 Professor, Graduate Program Chair  
 School of Applied Sciences, Technology & Education  
[debra.spielmaker@usu.edu](mailto:debra.spielmaker@usu.edu)  
 Phone: 435-213-5562

Calee Lott Garn  
 Sagebrush Ecosystem Alliance Coordinator  
 School Wildland Resources  
[calee.lott@usu.edu](mailto:calee.lott@usu.edu)  
 Phone: 435-659-4638

## Appendix M

### Phone Survey Questionnaire Script

## Phone Survey Questionnaire Script

### Section 1

"Hello, this is Calee Garn, a graduate student at Utah State University. We're evaluating relationships between ranchers and BLM personnel. About three weeks ago, you should have received a letter in the mail with a survey. We have not received your responses and I am hoping you are willing to share your responses with me over the phone. Do you have time now to respond to the survey questions—it should take about 15-20 minutes."

If "yes" then go to Section 2.

If "no" ask "Would you prefer that I call at a particular time?" If "yes" schedule this date and time and begin with Section 2 when the call is returned. If "no" ask "do you have time to complete the paper survey and send back the survey?" If yes all good, if "no" then say "Thank you for your time today, I will note that you do not want to complete the survey."

If call goes to voicemail: "Hello, this is Calee Garn, a graduate student at Utah State University. We're evaluating relationships between ranchers and BLM personnel. About three weeks ago, you should have received a letter in the mail with a survey. We have not received your responses and I am hoping you are willing to share your responses with me over the phone. The survey should take about 15-20 minutes. If you're interested in participating, please call me at (435) 659-4638. Thank you, good bye."

### Section 2

Thank you for your willingness to respond to these questions about BLM and permittee relationships. (yes/no). As a reminder your responses will be kept confidential and anonymous. Your responses will be aggregated with other responses in our final analysis. You may pass on questions if you prefer not to respond. Do you have any questions about this research project? We sent a Letter of Information with your survey but I am happy to answer any additional question you may have."

1. I'm going to go through a list of possible projects you may have had on one or more of your allotments. Please answer yes or no to the following:
  - a. Weed management
  - b. Brush removal
  - c. Water development
  - d. Fuel breaks
  - e. Fences
  - f. None
2. How many grazing permits do you currently own/lease permits for?
3. How long have you owned/leased these permits?
4. Do you graze sheep, cattle, or both?
5. What percentage of your household income does your ranching operation account for?
  - a. 0%-25%
  - b. 26%-50%
  - c. 51%-75%
  - d. 76%-100%
6. How many generations has your ranching operation been established?

7. I'm going to list several possible sources where you may get the majority of your information regarding the National Environmental Policy Act, or NEPA. Please select the one that gives you the most information.
  - a. University Researchers
  - b. My BLM Rangeland Manager
  - c. Google/other internet resources
  - d. Ranching Experience
  - e. My College Experience
  - f. Utah Department of Agriculture & Food
  - g. My Peers
  - h. Other
8. What Counties do you have grazing permits in?
9. How old are you?

For the next set of questions, please respond with a strongly agree, somewhat agree, somewhat disagree, and strongly disagree.

1. You understand what a range improvement project is?
2. You understand the process of juniper removal projects on grazing allotments?
3. You are familiar with the standards and guidelines that apply to the management of specific allotments?
4. You understand the complete process of NEPA for a range improvement project?
5. You understand the NEPA process for permanently removing AUMs?
6. You understand the process for converting sheep AUMs to cattle AUMs?
7. You understand the NEPA process for adding additional AUMs to your grazing allotment on a temporary non-renewable basis.
8. You understand the NEPA process required for temporarily reducing AUMs

The next set of questions are assessing your overall attitude. Please answer according to your overall level of agreement using strongly agree, somewhat agree, somewhat disagree, or strongly disagree for the following statements.

1. I believe land management improves with more local input
2. Communication enhances the likelihood of project completion
3. The NEPA process is working and needs no revisions
4. Federal land management is improving
5. I believe the federal government should own land
6. I have a strong working relationship with my BLM rangeland specialist

The following questions will assess your knowledge regarding BLM policies and procedures.

1. I will be reading a list of projects that take place on BLM land. Please respond with a yes if it requires a NEPA decision, or a no if it does not.
  - a. Maintaining a waterline
  - b. Removing juniper trees
  - c. Spraying weeds
  - d. Adding a new trough to an existing pipeline

- e. Replacing an existing trough with a trough of a similar size
  - f. Replacing an existing fenceline
  - g. Constructing a new pasture fence within an allotment
  - h. Adding a water tank for water storage
2. Of the following choices, what is the proper method for requesting a range improvement project on BLM administered land?
    - a. A verbal request with my rangeland specialist
    - b. A completed form delivered to the BLM office or BLM personnel
    - c. Applying for funding through state or federal programs
    - d. Any of the above options will result in a completed rangeland improvement project
  3. I will be reading a list of options regarding when request a new fenceline. Please say yes if it would be appropriate to make the request, or no if its not.
    - a. Only during a permit renewal process
    - b. Once annually while meeting with my rangeland specialist
    - c. At any time a range improvement project is needed
    - d. In the event of an emergency, when I have no other options
  4. I will be reading a list of options regarding when request a new waterline. Please say yes if it would be appropriate to make the request, or no if it is not.
    - a. Only during a permit renewal process
    - b. Once annually while meeting with my rangeland specialist
    - c. At any time a range improvement project is needed
    - d. In the event of an emergency, when I have no other options
  5. I'm going to go over a list of items that may be considered a rangeland improvement project. Please say yes if the practice is considered a range improvement project or no if it is not.
    - a. Fenceline
    - b. Waterline
    - c. Trough
    - d. Weed control
    - e. Well
    - f. Prescribed burn
    - g. Seeding
  6. I'm going to list several possible ways to submit a range improvement project. Please say yes for possible requests and no if that's not the proper method.
    - a. Emailing your range specialist
    - b. Submitting a letter to your range specialist
    - c. Discussing it at my allotment meetings
    - d. Word of mouth with no written confirmation
    - e. Word of mouth with written confirmation
  7. Please select one of the following: in planning juniper tree removal project, after identifying a treatment area within the allotment, the next step is
    - a. Develop a detailed map of potential trees to remove
    - b. Identify trees that need to be removed using a GPS
    - c. Begin working on NEPA
    - d. Call all of the permittee holders for input

8. Please select one of the following: Who is involved in preparing the NEPA document?
  - a. Only the BLM range specialist
  - b. It depends on the project
  - c. At least one specialist from each discipline within the field office
  - d. The field office manager, multiple specialists, and the public
9. Of the following, what factors determine the BLMs rangeland improvement priority list? Say yes if it is a factor or no if it is not
  - a. First come first serve
  - b. Threatened or endangered species habitat related
  - c. Proximity to the field office
  - d. Policy
  - e. My relationship with my rangeland specialist
  - f. Funding availability
10. Please select one of the following: who makes the final land management decisions for BLM grazing permits and range improvement projects.
  - a. The BLM rangeland specialist
  - b. The BLM wildlife biologist
  - c. The BLM renewable fuels manager
  - d. The BLM field office manager
11. Please select one of the following: where can you find active NEPA that final decisions have not yet been issued?
  - a. Ask my rangeland specialist
  - b. Call the Salt Lake Field Office
  - c. Call my GIP coordinator
  - d. Check the online database (ePlanning)
  - e. Ask all that apply
12. What areas of the allotment are primarily used to determine rangeland health? Please select one.
  - a. Uplands
  - b. Riparian Areas
  - c. Grazing exclosures
  - d. Fencelines
13. Of the following, what areas of the allotment are primarily used to determine rangeland health?
  - a. Uplands
  - b. Riparian areas
  - c. Grazing exclosures
  - d. Fencelines
14. Of the following, when is your allotment evaluated to determine if rangeland health standards are being met?
  - a. Once annually
  - b. Twice per year
  - c. When I turn in my utilization report
  - d. During the permit renewal process for my allotment
15. Of the following, which of the following websites can I find active NEPA documents

- a. Blm.gov
  - b. Nepa.blm.gov
  - c. Eplanning.blm.gov
  - d. Active NEPA is not available online
16. Of the following, please select one. According to the BLM,, what is the first step in obtaining an increase in AUMs on a non-renewable basis?
- a. Apply with the field office when additional forage is temporarily available for livestock grazing use
  - b. Call the field office and ask permission
  - c. Discuss with other permittees and graze your livestock without written permission from the field office
17. Of the following, please select all that apply. Which of the following are used to determine priority of additional AUMs?
- a. Permittees in proportion to their contribution to rangeland improvements
  - b. Permittees in proportion to their number of allocated AUMs
  - c. The permittee that submitted their request for an increase in AUMs first
  - d. A randomized drawing performed by the field office
18. Of the following, please select all that apply: under what circumstances could AUMs be temporarily reduced?
- a. Fire
  - b. Drought
  - c. Following the construction of a waterline
  - d. Following the removal of juniper trees by mastication or bullhog
  - e. Following the removal of juniper trees by lop & scatter
  - f. Following the spraying of invasive weed species
  - g. Whenever my rangeland specialist or the field office has an inclination to do so
  - h. When overgrazing is taking place
19. Please organize the following procedures in order for notifying a permittee of a temporary reduction in AUMs with 1 being the first step and 4 being the last.
- a. The authorized officer determines that the soil, vegetation, or other resources requires immediate protection because of drought, fire, etc.
  - b. The authorized officer consults with the permittee regarding rangeland conditions
  - c. The allotment or portions of the allotment are closed from grazing
  - d. A documented agreement is sent to the permittee from the field office to notify them
20. And finally, of the following, which is not an indicator of healthy rangeland?
- a. Lack of excessive erosion, such as rills, soil pedestals, and actively eroding gullies
  - b. Frequency, diversity, density, age classes, and productivity of desired native species
  - c. Nutrient loads and water temperature are within water quality parameters
  - d. Habitat for endangered native species is designed to maintain current levels

Thank you very much for your time. Once Again, if you have any questions or concerns about this study, please do not hesitate to contact me at [calee.lott@usu.edu](mailto:calee.lott@usu.edu) or call (435) 659-4638. Have a great day, bye.