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DOI-BLM-UT-Y010-2015-0197 EA

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Big Flat-Tenmile, Horsethief Point and Spring Canyon Bottom Allotments Grazing Permit Renewal

Location: Grand and San Juan Counties, Utah

Grazing Authorization Number: 4303228

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Big Flat-Tenmile, Horsethief Point and Spring Canyon Bottom Allotments Grazing Permit Renewal

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Big Flat-Tenmile, Horsethief Point and Spring Canyon Bottom Allotments Grazing Permit Renewal

DOI-BLM-UT-Y010-2015-0197 EA

1.0 PURPOSE & NEED

1.1 Introduction

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental consequences of renewing a ten year grazing permit on the Big Flat-Tenmile, Horsethief Point, and Spring Canyon Bottom Allotments with additional terms and conditions. The EA is a site-specific analysis of potential impacts that could result with the implementation of a Proposed Action or alternatives to the Proposed Action. The EA assists the Bureau of Land Management (BLM) Moab Field Office in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any "significant" impacts could result from the analyzed actions. "Significance" is defined by NEPA and is found in regulation 40 Code of Federal Regulations (CFR) §1508.27. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of "Finding of No Significant Impact" (FONSI). If the decision maker determines that this project has "significant" impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record (DR) may be signed for the EA approving the selected alternative, whether the Proposed Action or another alternative. A DR, including a FONSI statement, documents the reasons why implementation of the selected alternative would not result in "significant" environmental impacts (effects) beyond those already addressed in the Moab Resource Management Plan (*October, 2008*).

1.2 Background

The Big Flat-Tenmile Allotment is a product of the compilation of numerous smaller allotments surrounding the Moab area into one allotment. The allotment boundary once stretched from Crescent Junction in the north to Dead Horse Point in the south and from Arches National Park in the east to the Island in the Sky portion of Canyonlands National Park to the west. The allotment has undergone numerous changes in management and land ownership as portions of the allotment were changed due to land exchanges and the formation of Arches and Canyonlands National Parks. A land exchange of BLM-managed land to the State Institutional and Trust Lands Administration (SITLA) transferred a large tract of land at Crescent Junction to state ownership. The establishment of Arches and Canyonlands National Parks changed the allotments further as those lands were soon removed from public grazing. When the parks were established there were SITLA lands within the boundary of the parks and those lands were exchanged to Utah Sovereign Lands outside of the parks in two locations; Dalton Wells and Prairie Dog Heaven. The Dalton Wells location is being considered to become a pasture within the Big Flat-Tenmile Allotment and would potentially change the percentage of public land animal unit months (AUMs) on the permit. With the changes to the allotment in both management acres and AUMs being transferred from one agency to another, the grazing use on the allotment remained the same for a number of years. In 1989, Canyonlands Cattle Company acquired 5,504 AUMs on the Big Flat-Tenmile Allotment and 201 AUMs for the Spring Canyon

Bottom Allotment, while a Mr. Dan Jorgerson held 4,411 AUMs on the Big Flat-Tenmile Allotment and 210 AUMs on the Crescent Junction Allotment. An agreement was made with the two permittees and the BLM to keep the livestock separated. Mr. Jorgerson grazed the northern portion of the allotment and the Canyonlands Cattle Company grazed the southern portion. In 2002, the Big Flat-Tenmile Allotment was split forming the Little Grand Allotment in the north and the Big Flat-Tenmile Allotment in the south. In 2003, one of the Canyonlands Cattle Company shareholders lost control of their base property. Base property is land that is owned or controlled by a grazing permittee that has the capability to produce crops or forage that can be used to support their authorized livestock for a specified period of the year. The Code of Federal Regulations (CFR) at 43 CFR Section 4110.2-1 (d) states, "If a permittee or lessee loses ownership or control of all or part of his/her base property, the permit or lease, to the extent it was based upon such lost property, shall terminate immediately without further notice from the authorized officer." The shareholder did not notify the BLM of a transfer of preference when the base property was sold. The new owners of the base property did not file for a transfer of preference with the BLM, therefore preference was removed from the permit. The loss of preference resulted in 803 AUMs removed from the permit on the Big Flat-Tenmile Allotment and 29 AUMs removed from the permit on the Spring Canyon Bottom Allotment.

The current Big Flat-Tenmile Allotment consists of seven pastures; the Airport, Bartlett Flat, Big Flat, Courthouse, Deadman Point, Horsethief Point, and Mineral Point pastures. The Horsethief Point Pasture is a shared pasture with the Horsethief Point Allotment. The Spring Canyon Bottom Allotment has two pastures the Spring Canyon and Hell Roaring Pastures. The current permitted grazing preference for the Big Flat-Tenmile Allotment is 4,701 AUMs and for the Spring Canyon Bottom Allotment it is 173 AUMs.

In May 2014, the BLM completed the recreational land exchange with the SITLA. The BLM exchanged out ownership of 252 acres within the Big Flat-Tenmile Allotment was transferred from BLM to SITLA. Alan Swenson, Russel Stansfield, and Fred Hunzeker (the current permit holders of the Big Flat-Tenmile and Spring Canyon Bottom Allotments) request to renew their ten year grazing permit (see Appendix A for Application for Grazing Permit Renewal). The allotments are located approximately 15 miles northwest of Moab, Utah (see Appendix B, Map 1). The current grazing permit authorization is from January 25, 2008, to January 24, 2018, under the authority of Section 325, Title III, Public Law 108-108 (Department of the Interior and Related Agencies Appropriations Act, 2004).

The AUMs that are discussed in this document and shown in Table 1-1 reflect the authorized or active AUMs in the existing ten year grazing permit (Grazing Authorization # 4303228). An active AUM represents those AUMs that can potentially be consumed by livestock during the grazing season and is associated with valid grazing preference.

Table 1-1: Current Grazing Use Authorization

Allotment	Livestock		Grazing Period		%Public Land AUMs (%PL)	Public Land AUMs
	Number	Kind	Begin	End		
Big Flat-Tenmile	785	Cattle	11/15	5/31	92	4,701
Spring Canyon Bottom	89	Cattle	01/01	02/28	100	173
					Total AUMs	4,874

The BLM recognizes these AUMs as valid, while understanding that forage allocation varies from season to season, and from year to year. Both qualitative (e.g. visual observations, photo documentation, and utilization) and quantitative (e.g. actual use documentation and trend data) monitoring would be used to determine whether the level of use is appropriate for the area and if any adjustments (e.g. livestock numbers, herd size, season of use, etc.) are necessary to obtain resource objectives. Monitoring studies would continue to be carried out to address what impacts cattle grazing has on the existing vegetative communities. Current monitoring studies would be supplemented with both additional sites and additional techniques (e.g. line point intercept, nested frequency, and repeat photographs). These studies would focus on livestock distribution, plant community composition, overall utilization, and trend of key plant species. Objectives for the ecological health of the allotment are to reevaluate stocking rates.

1.3 Need for the Proposed Action

The need for the Proposed Action is for the BLM to consider renewing the grazing permit for the Big Flat to Tenmile, Horsethief Point, and Spring Canyon Bottom Allotments while making adjustments to management to continue to move towards meeting Utah's Standards for Rangeland Health standard number one upland soils and standard number three desired plant species. The BLM is responsible for ensuring that all management actions on public land conform to the appropriate land use plans, are site specific, and provide for balanced uses among different resource values.

1.4 Purpose(s) of the Proposed Action

The purpose of the Proposed Action is to modify current livestock grazing practices on the Big Flat-Tenmile, Horsethief Point, and Spring Canyon Bottom Allotments while making adjustments to management to continue towards meeting Utah's Standards for Rangeland Health. Improved allotments management would be achieved by modifying and renewing a grazing permit under the authority of the Taylor Grazing Act (TGA), the Federal Land Policy Management Act (FLPMA) and the Moab Field Office Resource Management Plan (Moab RMP), approved in October of 2008 (BLM 2008). The grazing permit would be renewed for a period of ten years in accordance with the Federal Regulation at 43 CFR 4130.2. The BLM is responsible for ensuring that all management actions on public land conform to the appropriate land use plans, are site specific, and provide for balanced uses among different resource values.

1.5 Decision to be Made

The BLM Moab Field Office will decide whether or not to renew the grazing permit and if renewed what modifications will be made from the current permit.

1.6 Conformance with BLM Land Use Plan(s)

As required by Federal regulation 43 CFR 1610.5, the Proposed Action and alternatives addressed in this document have been determined to be in conformance with the goals and objectives of the of the Livestock Grazing (GRA, page 68) section Moab RMP (2008) which are 1) "achieve the attainment of Standards for Rangeland Health and other desired resource conditions by maintaining appropriate utilization levels of the range through management prescriptions and administrative adjustments of grazing permits and 2) achieve healthy, sustainable rangeland ecosystems that support the livestock industry while providing for other resource values such as wildlife habitat, recreation opportunities, clean water, and functional

watersheds." It has been determined that the Proposed Action and alternatives would not conflict with other decisions throughout the Moab RMP (2008).

The Moab RMP (2008) decision GRA-2 (page 68) allows for allotment boundary adjustments, joining and splitting, and modification of the grazing season subject to appropriate NEPA review and analysis. The adjustments in season outlined in the Proposed Action would be compliant with this decision.

1.7 Relationship to Statutes, Regulations, or Other Plans

Agency policy is that "compliance with all applicable laws and regulations" includes consultation, coordination and cooperation with affected individuals, interested publics, States and Indian Tribes, completion of the applicable level of NEPA review; and consultation with the United States Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act (ESA), as appropriate. A grazing permit renewed under the authority of Public Law 108-108 would be modified (i.e., cancelled and renewed) if the analysis and/or any needed consultation indicated a change was warranted.

The Proposed Action and Alternatives are in conformance with the laws and/or agency regulations/policy found in table 1-2.

Table 1-2: Conformance with Laws and/or Agency Regulations/Policy Table	
Federal Authorities and Responsibilities	
Cultural Resources	
Programmatic Agreement among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers Regarding the Manner in which the BLM will meet its Responsibilities under the National Historic Preservation Act (February 2012)	The agreement outlines the BLMs responsibilities specific to the NHPA, the BLM has: (1) developed policies and procedures through its directives system (BLM Manual Sections 8100-8170); (2) executed a national programmatic agreement (PA) in 1997 to help guide the BLM's planning and decision making as it affects historic properties as defined in the NHPA; and (3) assembled a cadre of cultural heritage specialists to advise the BLM's managers and to implement cultural heritage policies consistent with the BLM's statutory authorities.
Land Management and Use	
Federal Land Policy and Management Act of 1976, Section 201(a) (PL 94-579; 43 USC 1701 et seq.)	Management of federal lands under principles of multiple use and sustained yield while protecting environmental resources.
National Environmental Policy Act of 1969 (PL 91-190; 42 USC 4321); 40 CFR Parts 1500-1508 CEQ implementation of NEPA; BLM Handbook H-1790-1; U.S. Department of the Interior Department Manual 516, Environmental Quality	Evaluation of impacts to environmental resources that may result from a Proposed Action prior to its implementation.

Table 1-2: Conformance with Laws and/or Agency Regulations/Policy Table	
Grazing	
43 Code of Federal Regulations §4100 Grazing Administration – Exclusive of Alaska; General	Directs the BLM in the administrative functions of grazing management.
Public Rangelands Improvement Act of 1978 (P.L. 95-514; 43 USC 1901)	Directs federal agencies to improve and maintain the range condition of the public rangelands.
The Pierce Act of 1938 (52 Stat. 1033)	Directs federal agencies to lease State, county, or privately owned lands for grazing purposes with the boundaries of a grazing district. The leasing of these lands would be to promote the orderly use of the district.
The Taylor Grazing Act of 1934 (P.L. 73-865)	Directs the federal agencies to stop injury to the public grazing lands by preventing overgrazing and soil deterioration; to provide for their orderly use, improvement, and development; to stabilize the livestock industry dependent upon the public range.
Rangeland Health; Standards and Guidelines for Healthy Rangelands (BLM UTSO, 1997)	Directs the field offices within Utah to set the minimum standard to achieve a healthy rangeland. It also sets guidelines for grazing management to help achieve those standards.
Wildlife	
Endangered Species Act of 1973 (PL. 85-624; 16 USC 661, 664 1008)	Coordination, consultation and impact review regarding federally listed threatened and endangered species.
Migratory Bird Treaty Act of 1918 (P.L. 65-186, 16 USC 703-712, as amended); EO 13186 Responsibilities of Federal Agencies to Protect Migratory Birds; BLM MOU WO-230-2010-04 To Promote the Conservation of Migratory Birds	Migratory bird impact coordination and protection of nesting migratory birds.
State of Utah Authorities and Responsibilities	
Wildlife	
UDWR Rules and Regulations, Rule 657 series; UAC Title 23, Wildlife Resources of Utah. Utah Division of Wildlife Resources	Coordination on wildlife and state-sensitive species; management of big game and wildlife.
Grand County Authorities and Responsibilities	
County codes	Road use agreements/oversize trip permits, access permits, and road crossings; noxious weed control and designates economic uses such as livestock grazing.

1.8 Identification of Issues

The BLM conducted internal review and public scoping to solicit input and identify environmental issues associated with the Proposed Action. Through input from the BLM Interdisciplinary Team (IDT), issues were identified for this EA by considering the resources that could be affected by the implementation of the Proposed Action and Alternatives. These issues were identified during the internal review and are summarized below. Documentation of the determination of impacts is included in this EA as the Interdisciplinary Team Analysis Records Checklist (Appendix C). The notice of the preparation of an EA was posted on ePlanning on June 26, 2015. A press release was issued on January 25, 2016, seeking public comments on the Proposed Grazing Permit Renewal for the Big Flat to Tenmile and Spring Canyon Bottom Allotment. The current grazing permittee was notified by mail in 2014 of the BLM's intent to evaluate grazing on the allotments through a NEPA analysis.

Initial scoping closed on February 15, 2016. Scoping comments were received from three parties; The State of Utah, Office of the Governor, Western Watersheds Project, and Marc Thomas. The detailed information including the scoping comments and responses are located in Appendix D and are summarized below.

1) The State of Utah, Office of the Governor: See section 2.6 Alternatives Considered, but Eliminated from Further Analysis: 1) if the allotments are in good condition the BLM should look to see if the allotments can sustain an increase in numbers. 2) Conduct analysis for common use on these allotments. Studies have shown that the combination of sheep and cattle grazing on the same allotment can improve range conditions compared to all sheep; the BLM must consider whether the allotments could be better managed through common use.

2) Western Watersheds Project: The comments from Western Watersheds Project were addressed to the BLM Vernal Field Office dated November 3, 2007, and were for the Winter Ridge AMP group of allotments, not the Big Flat-Tenmile, Horsethief Point and Spring Canyon Bottom Allotments and therefore are outside the scope of this document and will not be considered.

3) Marc Thomas: Requested that five benchmarks of sustainable grazing and restoration be incorporated into the EA. The Proposed Action and alternatives incorporate the pertinent sections and action required from the Moab RMP 2008, the Endangered Species Act (ESA) of 1973 as amended, Section 106 of the National Historic Preservation Act of 1966, as amended, Standards of Quality for Waters of the State, R317-2-6, Utah Administrative Code, December 1997, Fundamentals of Rangeland Health (43 CFR 4180) and Utah's Standards for Rangeland Health and Guidelines for Grazing Management, and the BLM Utah Riparian Management Policy (Instruction Memorandum No. UT 2005-091), which address benchmarks 1 through 4. Benchmark 5 is not supported by the Moab RMP 2008, and 43 CFR part 4100 Grazing Administration, does not contain regulatory authority to allow for an accountability benchmark. Additionally, the Proposed Action and alternatives include terms and conditions which incorporate the Moab RMP (2008) grazing utilization management decision, which requires cattle to be removed when utilization thresholds are met.

The issues identified internally and externally during scoping are listed below:

1.8.1 Fish and Wildlife Including USFWS Threatened and Endangered Species, State Sensitive Species and Migratory Birds

- How would grazing management impact the federally listed Mexican Spotted Owl (MSO), Southwestern Willow Flycatcher (SWFL), Razorback sucker, Colorado pikeminnow and their habitats?
- How would livestock grazing impact migratory birds and raptors?
- How would livestock grazing impact state sensitive species of bird, mammal and fish species and their habitats?
- How would livestock grazing impact pronghorn antelope, mule deer, desert bighorn sheep and their habitats?

1.8.2 Invasive Species/Noxious Weeds

- How would livestock grazing/grazing practices affect invasive/noxious weeds?

1.8.3 Livestock Grazing

- How would changing the livestock grazing management on the allotments impact the permittees?
- How would increasing the number of pastures and changing the grazing management system impact the livestock grazing?

1.8.4 Recreation

- How would changing watering patterns and season of use improve recreation-grazing interactions?

1.8.5 Soils

- How would grazing under new terms and conditions affect Sensitive Soils on the Big Flat to Tenmile Allotment?
- How would grazing with a new management strategy impact soils and vegetation in order to continue to meet Utah's Upland Soils Standard?

1.8.6 Vegetation

- How would livestock grazing impact the vegetation on these allotments?
- How would changing the grazing management impact the vegetation within the allotments?

1.9 Summary

This chapter has presented the purpose and need of the proposed project, as well as the relevant issues, i.e., those elements of the human environment that could be affected by the implementation of the proposed project. In order to meet the purpose and need of the proposed project in a way that resolves the issues, the BLM has considered and/or developed a range of action alternatives. These alternatives are presented in Chapter 2. The potential environmental impacts or consequences resulting from the implementation of each alternative considered in detail are analyzed in Chapter 4 for each of the identified issues.

2.0 DESCRIPTION OF ALTERNATIVES, INCLUDING PROPOSED ACTION

2.1 Introduction

Issues identified during internal scoping of the grazing permit renewal warranted the development of three alternatives to the No Action Alternative. Therefore, there are four alternatives analyzed in this EA, the Proposed Action, the No Action Alternative, Permittee Alternative and the No Grazing Alternative. Below is a brief summary of each alternative.

Alternative A – Proposed Action: This alternative involves: 1) renewing the existing grazing permit with new terms and conditions, 2) implementing a grazing management system that includes a deferred rotational grazing system which allows for spring rest for some of the pastures each year, 3) change the name of the Big Flat-Tenmile allotment to the Big Flat allotment, 4) administratively change the allotment where the Horsethief Point Pasture is managed (where the Horsethief Point pasture will no longer be managed out of the Big Flat Allotment but out of the Horsethief Point Allotment), 5) split the three of the five pastures on the Big Flat Allotment and add in the Dalton Wells portion to create ten pastures on the allotment to allow for new grazing management, 6) account for the SITLA recreational land exchange on the permit, 7) change the season of use on the Spring Canyon Bottom and Big Flat Allotments, and 8) implement new range improvements to improve grazing management, reduce conflicts with other land uses, to help better distribute livestock and keep them further away from Highway 313.

Alternative B – No Action: Renew the permit for a period of ten years, with the currently authorized grazing schedule and the current terms and conditions of the expiring permit. The allotments would be managed using the same allotment management plan.

Alternative C – Permittee Alternative: Is the same as the No Action alternative except for a change in the season of use for the Spring Canyon Bottom Allotment and the implementation of new range improvements.

Alternative D – No Grazing: Do not authorize grazing on the Big Flat-Tenmile and Spring Canyon Bottom Allotments for a period of ten years.

The alternatives are discussed at length in the sections that follow.

2.2 Alternative A – Proposed Action

The Proposed Action is a renewal of a grazing permit for a period of ten years on the Big Flat, Horsethief Point and Spring Canyon Bottom allotments (see Appendix B, Map 1) for livestock grazing on BLM managed lands. Within the Big Flat allotment there are ten proposed pastures; Airport, Bartlett Flat, Beehive, Big Flat, Courthouse, Dalton Wells, Deadman, Lone Mesa, Microwave, and Mineral Point Pastures. Within the Horsethief Point allotment there is one proposed pasture the Horsethief Point Pasture. Within the Spring Canyon Bottom Allotment there are two proposed pastures the Spring Canyon and Hell Roaring Pastures (see Appendix B, Map 2).

The Proposed Action would implement a grazing management program that would replace the current Allotment Management Plan (AMP). The Proposed Action will serve as the functional equivalent of an AMP as described in 43 CFR 4120.2 and outlined in Appendix E to help achieve and maintain rangeland health standards. The grazing management plan would function as a three herd deferred rotation through the allotment's pastures. The largest herd would be

grazing through five of the ten pastures on the Big Flat Allotment with a portion of the cattle rotating in and out of the Spring Canyon Bottom Allotment. The remaining two herds would be rotating the grazing use using a three pasture deferred rotational grazing system having a portion of the cattle rotating in and out of the Spring Canyon Bottom and Horsethief Point Allotments.

The BLM proposes to change the name of the Big Flat-Tenmile Allotment to the Big Flat Allotment. By removing the Tenmile portion from the name it would help to eliminate any confusion that this allotment is currently associated with the Tenmile Point allotment. In the past, the allotment included the portion that is now called the Tenmile Point Allotment. Under the current authorization this is no longer the case and the Tenmile Point Allotment has already been removed from the authorization leaving the last step of removing the Tenmile name.

The BLM proposes an administrative change of the Horsethief Point Pasture. This change would be to remove the pasture in the Rangeland Administration System from the Big Flat Allotment and put the Horsethief Point Pasture under the Horsethief Point Allotment and add the Horsethief Point Allotment on the permit. The change in which allotment the Horsethief Point Pasture is managed would prevent any confusion by BLM staff and the public as to where the cattle would be authorized to graze. The cattle would be authorized to graze in the Horsethief Point Pasture of the Horsethief Point Allotment. This change would not alter anything with the authorization of the cattle on the allotment nor would it be authorizing any more livestock use in the area.

The existing larger pastures would be split to allow for a differed rotational system which would require the placement of fencing to keep the livestock within the pasture areas. The current Airport Pasture would be split into the Airport and Microwave Pastures, the Bartlett Pasture would be split into the Bartlett and Lone Mesa Pastures and the Big Flat Pasture would be split into the Beehive and Big Flat Pastures. The proposed Lone Mesa Pasture would take in a small portion of the Mineral Point Pasture where Highway 313 passes through. The new fencing to create the Lone Mesa Pasture would make two miles of fence and the current Hell Roaring Cattleguard (currently separates the Bartlett Flat Pasture from the Mineral Point Pasture) obsolete and would need to be removed. The change in the Mineral Point Pasture would allow for the portion of the highway to be grazed in the off peak recreational season while allowing the remainder of the Mineral Point Pasture to be grazed during the proposed season out lined in Appendix E.

Through the potential implementation of the grazing management system and to improve conditions on the allotment there would be the need to implement new range improvements. These range improvements would include 48 new water developments with 44 of the 48 being temporary water haul trough locations.

A water haul trough location is an area next to a road where a temporary trough would be placed that is used to hold water for the purpose of supplying water to the livestock while in a given pasture. The temporary troughs would be filled by trucks used to haul the water to the water haul locations. The water haul locations have been used since the 1980's but were never formally authorized; this would authorize those water haul locations and assign them into the Rangeland Improvement Project System and the projects would be tracked through that system.

Two of the water developments would be new rock ponds within the Courthouse Pasture. This pasture has a very course soil structure making dirt reservoirs unreliable as the water infiltrates

quickly. The roads into the pasture are also not conducive to hauling of water so the use of a temporary water hauling site is not feasible. One rock pond would be used to pull the livestock out of Mill Canyon and replace an existing authorized pond within the riparian area. The other would be used to further distribute the livestock within the pasture on the bench above the Left Hand Fork of Seven Mile Wash. The names for the ponds would be Mill Canyon Rock Pond and "S" Curve Rock Pond. Please see Appendix F and Appendix B (Map 3) for locations of the rock ponds. The rock ponds would be constructed by drilling holes into the rock using a rock drill or something similar. Then an explosive charge would be placed into the holes and detonated. The explosives would be used to create a depression in the rock to collect water for livestock use. The measurements of the depression would be approximately eight feet deep by 15 feet wide by 35 feet long. The impact area would be approximately one half acre. A bulldozer or similar large machine would be used to clean out the rock fragments created during the construction and also during future maintenance activities.

Two of the proposed water developments would be permanent water haul trough locations. The method of use would be the same as temporary water haul locations. The primary difference in the permanent location would be having a trough that remains on the ground following livestock use in the area. These troughs would be farther from the road to keep livestock farther away from Highway 313. These troughs would be a quarter of a mile away from a road making the delivery of the water to the troughs through a two inch poly pipeline with a fill point next to a road to fill the troughs. With these there would be a buried two inch poly pipe pipeline running from near the road to the trough. A float valve would be installed to shut off the water being supplied to the tank allowing it to back up in the pipe to let the person filling the tank know that the trough is full. The fill point would be next to the road and made of steel with a lockable lid to prevent vandalism. The trough locations are identified in Appendix F. The title of the range improvements would be Lone Mesa #2 Water Haul and Lone Mesa #6 Water Haul.

To accommodate new pastures, construction of eight miles of new fence would be needed and two miles of fence would need to be removed. There would need to be four new cattleguards installed and one removed. The cattleguard to be removed would need to be coordinated with the Utah Department of Transportation as it is in a paved surface. The existing road to the Big

Flat Corral has a tendency to wash out and become impassible making the corrals unusable without road maintenance. The road is currently unmaintained. The Proposed Action would be to maintain the road to the corral and tie the maintenance of the road to the Big Flat Corral as the two would be connected (see Appendix F for a complete list and Appendix B Map 3 for locations), the corral will not function if the road to it is impassable. Typical road maintenance would include the use of a road grader to fill in the washed out portions of the road with fill either from the shoulder of the road or from the base of the road itself. Maintenance could also include the use of gravel as fill and to help build up the road base to prevent further down cutting of the road surface. There is also a need to channel the water off of the roadway and onto the surrounding natural drainages

The proposed fences, road and corral maintenance, and water developments would be maintained by the permittees for the orderly use of the allotments. The cattleguards are usually maintained by the county road departments as regular road maintenance, primarily due to the size and weight of the grid and technical expertise in maintaining them. The existing range improvements (see Appendix G) on the allotments will need to be maintained; fencing and cattleguards to ensure livestock are within the correct pastures, silt from ponds are removed to

better hold water to distribute the livestock, and corrals are functioning to hold and load livestock for transportation to and from the allotments.

Fences are typically maintained by fixing wire(s) broken by wildlife, recreationists, and/or livestock. The fence is typically repaired by stranding a new wire into the broken section and reattaching it to a post. Wooden and steel posts often degrade overtime and periodic replacement of a degraded post with a new one either of wood or steel is needed. The post is replaced then the wires are reattached using either a fencing staple or clip. There are times when a vehicle drives through the fence and the repair of the fence is completed as described above.

Ponds are usually maintained by using a piece of large machinery to repair the dam, remove silt or vegetation, or to re-contour the bowl at the base of the dam. This is accomplished typically by using a dozer or frontend loader. The blade or bucket is used to push the sediment behind the dam either to the side or onto the dam itself either strengthening or repairing the dam structure. Often woody vegetation establishes on the dam or in the pond. The roots of the vegetation create holes in the dam. As the built up water follows the path of least resistance it follows the roots and over time this wears a hole in the dam. The woody vegetation would need to be removed from the dam structure or the pond area to ensure that the range improvement continues to function.

The fencing would incorporate wildlife friendly designs and function to keep the livestock within the proper place and time. The fences would be no higher than 42 inches tall with the bottom wire 18 inches off the ground and the top wire 12 inches higher than the next closest wire. The proposed fence would have four strands of wire. The top three wires would be barbed wire and the bottom would be a smooth braided wire. The corners and braces would be pressure treated wood posts. The majority of the posts would be steel t-posts spaced 15 feet apart. Stays would be utilized to keep the wire's integrity in place and would not include the bottom smooth braided wire. This type of fence would allow larger wildlife to jump over the fence or to scuttle under it. The Lone Mesa Gap fence would consist of 0.5 miles of buck and rail style fencing that would use all wood posts constructed on top of the soil surface. The puposes of this fencing would be to avoid cultural sites in the area and to keep the integrity of those sites intact. If needed, a rock crib or brace could be used to anchor the fence or allow for a gate. A rock crib is a wood or wire structure that would be filled with rock to allow for an anchor point. The crib would be heavy enough where wire or a gate could be attached and it would be able to support the added stress of the gate or stretched wire. To protect cultural resources from livestock impacts a fence would also be constructed around Jug Rock to keep the livestock out and away from the resources.

The Proposed Action would also include the installation of cattleguards with a side gate on designated roads along the proposed new fence line. A cattleguard is a grid of metal bars that allows for vehicles to pass over it while keeping the cattle behind it. The cattleguard would be installed on designated roads where the proposed fence line crosses the road. The cattleguard would function to replace gates as the roads receive a lot of use by both the general public and oil and gas activities in the area.

The cattleguard and a side gate would be placed on the B roads rather than using a gate, because of the high use of the designated road. The cattleguard would be installed using a rubber-tired backhoe. The backhoe would be used to dig a hole that would be five feet wide by two feet deep and as wide as the designated road on the proposed fence line. Immediately following the

completion of the hole, two cement bases would be placed in the hole along the sides. The cattleguard grid would then be placed onto the bases. Two new wooden posts would be planted in the ground three feet from the edges of the cattleguard along the proposed fence line to accommodate the installation of the wings. The wings are triangular in shape with metal cross bars that attach to the edges of the cattleguard and to the two newly planted wooden posts. These posts would allow for the fence and side gate to then be tied together making a seamless line that would complete the installation of the cattleguard and side gate.

Over time the hole beneath the cattleguard fills in with sediment, washes out, or the wings become damaged and would need periodic maintenance. Maintenance includes pulling up the cattleguard, leaving the cement bases in place, and removing the sediment that has filled in between the bases or resetting bases and adding fill. To repair damage to wings would require bending them back into shape or complete replacement of the wing. Typically a rubber-tired backhoe or work truck with a rock winch would be used to pull up the cattleguard grid and a backhoe or a shovel would be used to remove or add the sediment.

The recreational land exchange, finalized in May of 2014, resulted in changes in both acres and AUMs to grazing permits managed by both BLM and SITLA within this allotment. The terms of the exchange stated that grazing permits would continue to be administered under their current terms until expired or terminated. BLM and SITLA will continue to work together with the permittee in managing the pastures. In this situation, the number of AUMs managed under the two permits is more an administrative function related to billing. These changes are described in the following paragraph.

SITLA acquired (BLM released) 350.26 acres, approximately 10 AUMs within the Airport pasture. Upon renewal of a 10 year grazing permit for the Big Flat Grazing Allotment, the prior permit authorized under the Appropriations Act would be terminated. The 350.26 acres (10 AUMs) acquired by SITLA would be managed under their discretion.

The BLM is proposing to change the season of use on the Spring Canyon Bottom Allotment from January 1st through February 28th to November 1st through December 31st. This purpose of this change would be to reduce the risk of cattle losses on the allotment. During the current season there are times when parts of the Green River freeze and the cattle fall through the ice. The proposed season would eliminate that potential as the river is rarely frozen during the proposed time period.

Changes in stocking rates and timing may be made annually. The need for changes would be based on criteria such as negative changes in vegetation trend, soil conditions or droughty climatic conditions warranting a need for reduced stocking. Changes would be based on monitoring and professional judgment of BLM rangeland management specialists in cooperation with the permittees.

Upon approval, the 10-year grazing permit would be renewed for the Big Flat, Horsethief Point, and Spring Canyon Bottom Allotments, and the current appropriations permit would be canceled.

Under the Proposed Action (Alternative A) the BLM would:

Authorize cattle grazing during the season of use and with the number of AUMs identified below in Table 2-1 with adherence to the new terms and conditions of the grazing permit.

Table 2-1: Grazing Schedule for the Proposed Action Alternative						
Allotment	**Livestock**		**Grazing Period**		**%Public Land AUMs (%PL)**	**Public Land AUMs**
	Number	**Kind**	**Begin**	**End**		
Big Flat	795	Cattle	11/01	5/31	84	4491
Horsethief Point	29	Cattle	11/01	5/31	100	200
Spring Canyon Bottom	94	Cattle	11/01	12/31	91	173
					Total AUMs	4864

2.2.1 Terms and Conditions

The following items would be included in the terms and conditions of the ten year permit. The terms and conditions of the grazing permit may be modified if additional information indicates that a revision is necessary to conform to the grazing regulations in 43 CFR § 4100.

Grazing within the Dalton Wells Pasture will be in conjunction with adjacent state managed lands.

An Actual Use Grazing Report must be submitted to the Bureau of Land Management within 15 days after the end of the grazing use period. Failure to file an Actual Use Report may result in future grazing authorizations being withheld.

Feeding protein supplements, salt-grain mixtures, hay (must be certified weed free hay), and/or other roughage on public lands is prohibited without prior authorization. Protein blocks and mineral supplements would be placed in outlying areas as necessary to help distribute livestock. These must be at least 1/4 mile from water sources.

Range improvements assigned in cooperative agreements and range improvement permits must be maintained in usable condition prior to livestock use each year. Construction of new range improvements on Bureau of Land Management lands is prohibited without approval from the authorized officer. Maintenance would be in accordance with cooperative agreements and/or range improvement permits. Failure to maintain assigned projects in a satisfactory condition may result in withholding grazing authorization until maintenance is completed.

Equipment used to maintain range improvements will have dirt and debris cleaned from the undercarriage and moving parts to prevent the spread of noxious/invasive plants.

Where feasible dead livestock on Bureau of Land Management managed lands within 300 feet of any open water (live stream, spring, or pond), trail or roadway will be promptly removed and properly disposed of by the permittee.

As specified in the Moab RMP, moderate utilization levels (40-60 percent) will be used to indicate if general management objectives can be met. Utilization levels above those identified as appropriate will be used to adjust livestock use on a yearly basis, and including possible early removal from the allotment as needed. The majority of the allotment will meet utilization standards with the exception of livestock concentration areas such as water developments and mineral/salt/protein supplement locations.

2.3 Alternative B – No Action

The existing permit was approved in 2008 for the term of January 25, 2008 to January 24, 2018.

Under the No Action Alternative, the BLM would renew the permit; the permit would operate as currently authorized, with the grazing schedule found below in table 2-2, with the current terms and conditions (see Section 2.3.1 below), and the current allotment management plans (see Appendices H and I)

Table 2-2: Grazing Schedule for the No Action Alternative

Allotment	Livestock		Grazing Period		%Public Land AUMs (%PL)	Public Land AUMs
	Number	Kind	Begin	End		
Spring Canyon Bottom	89	Cattle	01/01	02/28	100	173
Big Flat-Tenmile	785	Cattle	11/15	5/31	92	4701
					Total AUMs	4864

2.3.1 Terms and Conditions

The following are the current terms and conditions of the permit:

Your historical authorized use area in the allotment has been and is the southern seven pastures. These pastures are delineated on the attached map. Their names are the Deadman, Mineral, Big Flat, Bartlett, Airport, Horsetheif and Courthouse. This letter and attached permit clarifies that your authorized or permitted use is confined to these pastures within the existing Big Flat-Tenmile Allotment (see attached allotment map).

Alan Gurney (or previous permit holder) currently holds the permit for the northern four pastures of the Big Flat-Tenmile Allotment called the Little Grand. These four pastures are, and have been, historically grazed under the permit.

The Big Flat-Tenmile Allotment Management Plan for the Spring Canyon Bottom Allotment Management Plan are hereby made a part of this permit.

Supplemental feeding without written authorization is prohibited.

The requirement to maintain assigned range improvements is a conditions of this permit.

An Actual Use Report is due 15 days following grazing use.

2.4 Alternative C – Permittee Alternative

The existing permit was approved in 2008 for the term of January 25, 2008 to January 24, 2018.

Under Alternative C, the BLM would renew the permit; the permit would operate with the grazing schedule outlined in Table 2-3 with the terms and conditions in Section 2.4.1. There have been some changes to the percent public land AUMs (%PL) as SITLA has made some changes to their grazing leases and those changes are reflected in the Table 2-3 below. The permittee would manage the grazing on the allotment as out lined in Appendix J.

The recreational land exchange, finalized in May of 2014, resulted in changes in both acres and AUMs to grazing permits managed by both BLM and SITLA within this allotment. The terms of the exchange stated that grazing permits would continue to be administered under their current terms until expired or terminated. BLM and SITLA would continue to work together with the permittee in managing the pastures. In this situation, the number of AUMs managed under the two permits is more an administrative function related to billing. These changes are described in the following paragraph.

SITLA acquired (BLM released) 350.26 acres, approximately 10 AUMs within the Airport Pasture. Upon renewal of a 10 year grazing permit for the Big Flat Grazing Allotment, the prior permit authorized under the appropriations act would be terminated. The 10 AUMs acquired by SITLA would be managed under their discretion.

The permittee is purposing to change the season of use on the Spring Canyon Bottom Allotment from January 1st through February 28th to November 1st through December 31st. This change would be to reduce the risk of cattle losses on the allotment. During the current season there are times when parts of the Green River freeze and the risk of cattle falling through the ice is increased. The proposed season would eliminate that potential as the river is rarely frozen during the proposed season of use.

The permittee purposes to implement range improvements. These range improvements would include 45 temporary water haul trough locations. The water haul locations have been used since the 1980's but were never formally authorized. Alternative C would authorize those water haul locations and assign them into the Rangeland Improvement Project System and would be tracked through that system.

The existing road to the Big Flat Corral has a tendency to wash out and become impassible making the corral unusable without road maintenance. The road is currently an unmaintained road. The Permittee Alternative would be to maintain the road to the corral and tie the maintenance of the road to the Big Flat Corral as the two would be connected (see Appendix K for a complete list and Appendix B Map 3 for locations), the corral will not function if the road to it is impassable. Typical road maintenance would include the use of a road grader to fill in the washed out portions of the road with fill either from the shoulder of the road or from the base of the road itself. Maintenance could also include the use of gravel as fill and to help build up the road base to prevent further down cutting of the road surface. There is also a need to channel the water off of the roadway and onto the surrounding natural drainages.

The existing range improvements (see Appendix G) on the allotments will need to be maintained; the maintenance of the range improvements is the same as outlined in the Proposed Action.

Table 2-3: Grazing Schedule for Alternative C

Allotment	Livestock		Grazing Period		%Public Land AUMs (%PL)	Public Land AUMs
	Number	Kind	Begin	End		
Spring Canyon Bottom	94	Cattle	11/01	12/31	91	173
Big Flat	745	Cattle	10/31	6/15	84	4691
					Total AUMs	4864

2.4.1 Terms and Conditions

The following would be the terms and conditions added to the permit under Alternative C:

Your historical authorized use area in the allotment has been and is the southern seven pastures. These pastures are delineated on the attached map. Their names are the Deadman, Mineral, Big Flat, Bartlett, Airport, Horsetheif and Courthouse. This letter and attached permit clarifies that your authorized or permitted use is confined to these pastures within the existing Big Flat-Tenmile Allotment (see attached allotment map).

Supplemental feeding without written authorization is prohibited.

The requirement to maintain assigned range improvements is a condition of this permit.

An Actual Use Report is due 15 days following grazing use.

This permit may be revised if additional information indicates changes in livestock management are needed to ensure this allotment is meeting standards and conforming to guidelines or making significant progress towards meeting the standards and conforming to guidelines.

Ground disturbing actions for any new range projects would continue to require cultural inventories. Authorized use would continue to be adjusted, as needed, based upon annual climatic conditions, forage production and plant vigor.

2.5 Alternative D - No Grazing

No grazing means that livestock grazing would not be permitted within the Big Flat-Tenmile, Horsethief Point and Spring Canyon Bottom Allotments for a period of ten years. The ten year period constitutes one permit cycle.

Grazing would be eliminated for ten years and the current grazing permit (the one issued to Alan Swenson, Fred Hunzeker, and Russel Stansfield) would be cancelled. In accordance with BLM regulations 43 CFR §4110.4-2(2)(b), grazing would cease two years after prior notification of the decision to cancel the permit. The management of the allotments would not change during this two-year interval from the currently authorized management (see Alternative B - No Action for the currently authorized management). The preference for the allotments would continue to be tied to the base properties on the currently authorized permits. The current permit holders would hold the preference for livestock use (as long as the permittee owns or controls the base property) on the allotment if, after the ten year period, the BLM decided to renew the permits.

2.6 Alternatives Considered, but Eliminated from Further Analysis:

2.6.1 Increase the Authorized AUMs on the Allotments.

The State of Utah, Office of the Governor has requested: if the allotments are in good condition the BLM should see if the allotments can sustain an increase in numbers. This alternative is not being considered for further analysis because the permittee has not requested an increase in authorized AUMs and it is unknown whether the allotments could support an increase in AUMs for a period of ten years.

2.6.2 Convert the Allotments to Common Use Allotments with Cattle and Sheep.

The State of Utah, Office of the Governor has requested: for BLM to conduct analysis for common use on the allotments. The BLM must consider whether the allotments could be better managed through common use with both sheep and cattle.

This alternative was eliminated from further analysis because the permittee has not requested changes in class of livestock that would authorize both cattle and sheep grazing and the BLM has already considered the grazing of sheep on the allotments in the Moab RMP. The Big Flat to Tenmile, Horsethief Point, and Spring Canyon Bottom Allotments are all within desert bighorn sheep habitat. The conversion of cattle to sheep or the permitting of sheep grazing within recognized bighorn sheep habitat is not supported by the 2008 Moab RMP. The Moab BLM decided not to permit grazing of domestic sheep in recognized bighorn sheep habitat in GRA-8 (Moab RMP 2008 pg. 69), WL-28 (Moab RMP 2008 pg. 140) and WL-33 (Moab RMP 2008 pg. 141).

3.0 AFFECTED ENVIRONMENT

3.1 Introduction

This chapter presents the potentially affected existing environment (i.e., the physical, biological, social, and economic values and resources) of the impact area as identified in the Interdisciplinary Team Checklist found in Appendix C and presented in Chapter 1 of this EA. This chapter provides the baseline for comparison of impacts/consequences described in Chapter 4.

3.2 General Setting

The Big Flat, Horsethief Point and Spring Canyon Bottom Allotments are desert allotments and they are located approximately 15 miles west of Moab, Utah (Appendix B, Map 1). With enactment of the TGA in 1934, grazing allotments were created and the number and kind of livestock and season of use were established for the area. In 1946, the Grazing Service and General Land Office were combined and the BLM was established. In the 1950's and 1960's, range surveys were completed on the public lands to determine the amount of forage being produced. Following these surveys, grazing capacity for the allotments was adjudicated. The number of livestock authorized on the allotment was decreased to facilitate meeting management objectives. The number of livestock in Grand and San Juan Counties decreased significantly from the early 1900's to the present day. The landscape that includes the allotments was historically grazed heavily by cattle and sheep. Small railroad towns with shearing stations (Westwater, Agate, Cisco, Thompson, etc.), emerged throughout the landscape around the middle of the 1800's, lasted several decades and began to dissolve as the socioeconomic structure of the West shifted. However, during this time, the rangelands were grazed without grazing management practices, which specifically deal with immediate and long term ecological effects from different patterns of use.

Scattered across the allotments are range improvements that were implemented to improve range conditions. These improvements consist of fencing (to control the livestock and keep them within a given area), cattleguards (to allow for easier recreational access), and water developments (reservoirs, water hauling and spring developments to help distribute livestock over a broader area and reduce livestock pressure on natural water sources). Currently within

the allotments there are 39.8 miles of fencing, three corrals, 12 cattle guards, and 41 water developments (not including the 45 previously used water haul sites) (see Appendix G).

Geographically, the area of the Proposed Action is part of the Colorado Plateau physiographic province. The area in general is mainly situated within the eolian and residuum soil deposits of other sandstone formations or weathered shale. Soils vary from coarse sands, fine sandy loams, to silty clay loams (refer to table 3-5 for a complete list). Topography for the allotments is mostly level to rolling terrain with deep canyon bottoms, benches and mesa tops.

A majority of the allotments are within the salt desert shrub communities. The upland vegetative communities are comprised primarily of salt desert-shrub species such as blackbrush, shadscale, and four-winged saltbush; with other shrub species such as Mormon tea, Wyoming sagebrush, winterfat, spiny Hopsage, Mexican cliffrose and sand sagebrush. The primary grasses are Indian ricegrass, galleta grass, sand dropseed grass, needle & thread grass, and many other minor plant species. There are large areas of these allotments are blackbrush communities with scattered woodlands which are made up of Utah juniper and pinyon pine.

Surface waters for the allotments drain into the Colorado and Green Rivers via a series of desert washes. There are six perennial water sources within the Big Flat Allotment, one perennial water source within the Horsethief Point Allotment and three perennial water sources within the Spring Canyon Bottom Allotment.

The climate is characterized by cold winters, hot summers and with a range of 5-12 inches of annual precipitation within the allotments. Elevation ranges from approximately 4,000 feet along the Colorado River to 6,300 feet within the allotments. Most of the precipitation falls during spring, late summer and winter months within the allotments. Soil erosion occurs mainly during summer thunderstorm events, as these are usually high intensity and short duration storms. Precipitation records for the allotments are available from three local rain gauges: 1) the Arth's Pasture rain gauge sits at an elevation of 4,800 feet which is located near the Big Flat Allotment, 2) the Moab Airport rain gauge sits at an elevation of 4,500 feet) which is located within the Big Flat Allotment, and the Whitback Rock rain gauge sits at an elevation of 6,000 feet within the Big Flat Allotment. The rain gauges are read quarterly each year by season. The average annual precipitation for the period of record at the Arth's Pasture rain gauge is 8.59 inches, Moab Airport rain gauge is 6.96 inches, and the Whitback Rock rain gauge is 9.98 inches. There have been several droughts on record, namely 1999-00, 2001-02, 2008-09 and 2011-12.

These allotments contain habitat for both game and nongame wildlife species. Mesa and cliff faces in general, also provide habitat to raptors and other birds.

Historic cultural uses of the area include approximately 100 or more years of range use by livestock ranching. Livestock ranching was once a major part of the local traditions and economic enterprise; however, the social and economic emphasis of Grand County is currently based on tourism and recreation. Ranching now plays a minor role in the areas social-economic atmosphere.

3.3 Issues Brought Forward for Analysis

All the issues brought forward were listed in Chapter 1 and are discussed in the chapter below.

As identified in Appendix C (Interdisciplinary Team Analysis Record Checklist), the following resources were identified as having the potential to be impacted are; 1) Fish and Wildlife Including USFWS Threatened and Endangered Species, State Sensitive Species, Migratory Birds, 2) Invasive Species/Noxious Weeds 3) Livestock Grazing, 4) Recreation, 5) Soils, and

6) Vegetation Excluding USFWS Designated Species. These resources are carried forward for analysis in Chapter 4 "Environmental Consequences".

3.3.1 Fish and Wildlife Including USFWS Threatened and Endangered Species, State Sensitive Species, Migratory Birds

General Wildlife

The plant communities, riparian, riverine habitats and topography in these allotments would provide habitat for various small mammals, songbirds, raptors, snakes, and lizard species. Predators such as cougar, coyote, bobcat and fox can also be found here. Pronghorn antelope, bighorn sheep and mule deer reside in the area year round. The most commonly observed species include gopher snakes, antelope ground squirrels, cottontail rabbits, black-tail jackrabbits, mourning doves, horned larks, and ravens. The Green River contains adequate or consistent flows to support warm water fishery potentials. The plant communities in these allotments provides nesting habitat for various bird species.

Big Game Wildlife

The Utah Division of Wildlife Resources (UDWR) periodically reviews these big game habitat areas through coordination with the various land management agencies and updates these files as needed. The BLM works closely with the UDWR to ensure that big game habitats identified by the UDWR receive the needed management prescriptions identified by the UDWR.

<u>Desert Bighorn Sheep Habitat</u>

Desert bighorn are uniquely adapted to inhabit some of the most remote and rugged parts of the Moab Field Office. Desert bighorn use steep rocky areas for escape and safety habitat. Habitat is characterized by rugged terrain including canyons, gulches, talus cliffs, steep slopes, mountaintops, and river benches (Shakleton et al. 1999). Desert bighorn generally occur in Southern Utah and do not migrate.

According to the UDWR (2013) the Moab Field Office contains a total of 472,000 acres of desert bighorn sheep habitat within three separate herd units, the Professor Valley herd, the Dolores Triangle herd and the Potash Unit (which is 339,000 acres out of the 472,000 acres of habitat) and a portion of the Lockhart herd unit. The allotment renewal area supports the Potash Unit, which is a sub-unit of the Canyonlands National Park herd. This herd is one of the only remaining native (not transplanted or reintroduced) desert bighorn herds in Utah, often used for reintroductions and augmentations throughout the Western United States.

GPS collaring data was collected in 2002 through 2011 in the Potash Unit by a collaboration between the Moab BLM, UDWR, and Canyonlands National Park biologists This data was used with existing habitat modeling to develop a more accurate habitat delineation within the Moab Field Office. The data is located on the UDWR Conservation Data Center. With this data, approximately 122,200 acres of desert bighorn sheep lambing and rutting habitat has been identified within the Moab Field Office. Within the proposed allotment renewal area there is approximately 132,200 acres desert bighorn sheep habitat of which 44,400 acres have been identified as lambing and rutting habitat.

Desert bighorn herd populations have been decreasing in recent years in the Moab Field Office. Bighorn sheep require separation from domestic sheep to prevent the transmission of diseases

against which they have no natural defenses. As a result the Moab Field Office has implemented water and vegetation improvements to benefit bighorn sheep populations.

Within these habitats the Moab RMP developed prescriptions to protect lambing habitat during the spring, disallow cattle to sheep conversions and encourage the change in class of livestock use from sheep to cattle and habitat improvement projects to benefit the spread and growth of the desert bighorn.

Pronghorn Antelope

Pronghorn can be found throughout the western United States, Canada, and northern Mexico. They are generally associated with open plains where they feed mainly on forbs and grasses. Pronghorn prefer to occupy areas with large tracts of flat to rolling open terrain where they rely on keen eyesight and swift movement to avoid predators. They also rely on vegetation within the shrub and grassland plant communities for food. Pronghorn are often found in small groups and are usually most active during the day.

According to the UDWR (2014) the Moab Field Office contains a total of 791,400 acres of pronghorn habitat. Two pronghorn herds are located within the Moab Field Office; the San Juan Hatch Point herd and the La Sal South Cisco Desert herd. Animals from the Cisco Desert herd reside within the Big Flat allotment. The Cisco Desert pronghorn herd originated from 48 animals that were released in Colorado in 1968. In 1983 an additional 150 pronghorn were released. This increased the herd to approximately 250 animals. In 1988, Colorado Division of Wildlife released another 90 pronghorn near the Utah-Colorado State line. The Cisco pronghorn have expanded west to Green River and to the south of I-70. Within the proposed allotment renewal area there is approximately 14,600 acres pronghorn habitat that the UDWR has identified as crucial year-long habitat.

Pronghorn are highly responsive to climatic conditions: mild winters and good moisture conditions typically help pronghorn numbers increase during drought cycles, pronghorn numbers sharply decline. The Cisco herd is currently believed to be increasing.

Within these habitats the Moab RMP developed prescriptions to protect fawning habitat during the spring, implement rest/rotation management systems for livestock to promote forage availability prior to fawning, encourage the change in the class of livestock from sheep to cattle, and other habitat improvement projects for the benefit of the desert bighorn.

Mule Deer

Mule deer occupy most ecosystems in Utah but likely attain their greatest densities in shrublands on areas characterized by rough, broken terrain and abundant browse and cover. Since the large decline during winter 1992 and 1993, the deer herds in Utah are showing an increasing population trend.

According to the UDWR (2015) the Moab Field Office contains over 1,363,000 acres of mule deer habitat of which approximately 6,500 acres of yearlong habitat is found in the permit renewal area. Here, a small number of resident deer populate the lowlands along the Green River. No management prescriptions have been identified by the UDWR or the Moab RMP for these habitats along the river.

Migratory Birds

There are a wide variety of songbirds and neo-tropical migrants which spend at least part of the year within the Moab Field Office and variety of migratory bird species use habitats within the project area for breeding, nesting, and foraging. Migratory birds may nest on tree limbs, on the ground, or in/on rock outcrops. The nesting season for migratory birds is generally April 1st through July 31st.

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA). The MBTA makes it unlawful to pursue, hunt, kill, capture, possess, buy, sell, purchase, or barter any migratory bird, including the feathers or other parts, nests, eggs, or migratory bird products. Some birds are also protected by the Endangered Species Act, the Bald and Golden Eagle Protection Act, and/or are included in the State of Utah/BLM Sensitive Species Lists. To further the purposes of these protective acts, Memorandum of Understanding (MOU) WO-230-2010-04, To Promote the Conservation of Migratory Birds, was issued in 2010 by the BLM and the USFWS. Identifying species of concern, priority habitats, and key risk factors includes identifying species listed on the USFWS Birds of Conservation Concern (BCC) that are most likely to be present in the project area and evaluating and considering management objectives and recommendations for migratory birds resulting from comprehensive planning efforts, such Utah Partners in Flight (UPIF) American Land bird Conservation Plan. The UPIF Working Group completed a statewide avian conservation strategy identifying "priority species" for conservation due to declining abundance distribution, or vulnerability to various local and/or range-wide risk factors. One application of the strategy and priority list is to give these birds specific consideration when analyzing effects of proposed management actions and to implement recommended conservation measures where appropriate. The UPIF priority species list, the BCC list (Region 16 or the Colorado Plateau), and the Utah Conservation Data Center database was used to identify potential habitat for priority species that could utilize habitats within the project area are identified in table 3-1.

Table 3-1: The UPIF & BCC Species Found on the Big Flat to Tenmile, Horsethief Point, and Spring Canyon Bottom Allotments

Species	BCC§	UPIF‡	DWR Habitats†	1st Breeding Habitat‡	2nd Breeding Habitat‡	Winter Habitat‡
Bald Eagle	X		Winter	Lowland Riparian	Agriculture	Lowland Riparian
Black Rosy-finch	X	X	Substantial	Alpine	Alpine	Grassland
Black-throated Gray Warbler		X	Prime Breeding	Pinyon-Juniper	Mountain Scrub	Migrant
Brewer's Sparrow	X	X	High	Shrubsteppe	High Desert Scrub	Migrant
Burrowing Owl	X		Primary Breeding	High Desert Scrub	Grassland	Migrant
Gambel's Quail		X	High	Low Desert Scrub	Lowland Riparian	Low Desert Scrub
Golden Eagle	X		High	Cliff	High Desert Scrub	High Desert Scrub
Gray Vireo	X	X	Prime Breeding / Winter	Pinyon-Juniper	Oak	Migrant
Juniper Titmouse	X		Critical	Pinyon-Juniper	Pinyon-Juniper	Pinyon-Juniper
Pinyon Jay	X		Critical	Pinyon-Juniper	Ponderosa pine	Pinyon-Juniper
Prairie Falcon	X		Critical / High	Cliff	High Desert Scrub	Agriculture

Table 3-1: The UPIF & BCC Species Found on the Big Flat to Tenmile, Horsethief Point, and Spring Canyon Bottom Allotments						
Species	BCC§	UPIF‡	DWR Habitats†	1st Breeding Habitat‡	2nd Breeding Habitat‡	Winter Habitat‡
Sage Sparrow		X	Critical	Shrubsteppe	High Desert Scrub	Low Desert Scrub
Virginia's Warbler		X	Winter	Oak	Pinyon-Juniper	Migrant
‡Utah Partners in Flight Avian Conservation Strategy Version 2.0 (Parrish et al., 2002), §Birds of Conservation Concern 2008 (USFWS, 2008) †Utah Conservation Data Center, *Utah Sensitive Species,**=Federally List, *Italic*=Utah Sensitive Species						

Most bird species (especially neo-tropical) are decreasing in numbers throughout their ranges. Riparian habitats are used as either breeding or wintering habitat by Utah's birds almost twice as much as any other type of habitat (Parrish et al. 2002). Within Utah, 66 to 75 percent of all bird species use riparian habitats during some portion of their life cycle. Shrublands, forest, and additional habitat groups (e.g. water, rock, playa, agriculture, urban, and cliff) all are about equal and second to riparian when considering their importance to bird species. To prevent further population declines for bird species, the protection of these habitat types, especially riparian are crucial. Certain species can be followed more closely as indicators of overall ecosystem health.

Raptors and Eagles

Raptors and eagles typically use the same nest site year after year. Nesting and fledgling seasons for raptors vary but typically extend from March 1st through August 31st with eagles often beginning their nesting season in January. The Project Area also offers suitable wintering and migration habitats for non-nesting raptor species. The USFWS issued guidelines for the protection of raptors that includes species-specific timing limitations and spatial offsets to active nests (Romin and Muck 2002). These guidelines have been incorporated into the BLM RMP. Table 3-2 provides a summary of raptor habitats and species-specific timing limitations and spatial offsets to active nests.

Table 3-2: Raptor Species with the Potential to Nest in the Allotments and USFWS Spatial and Seasonal Buffers				
Common Name	Scientific Name	USFWS Spatial Buffer	USFWS Season Buffer	General Habitat and Potential in Project Area
American Kestrel	*Falco sparverius*	N/A	N/A	High potential and known occurrence and nesting in area. High potential to forage in open habitats, such as prairies, deserts, wooded streams, and farmlands and nests in natural holes in trees, abandoned woodpecker holes, cliffs, and nest-boxes. Moderate potential to nest on cliffs and ledges. Moderate potential to forage from cliffs and ledges, and low potential in desert shrub and pinyon-juniper woodland.
Burrowing Owl	*Athene cunicularia hypugaea*	0.25 miles	3/1-8/31	Low potential to nest and forage in area due to small and limited prairie dog colony activity. Low potential to nest and forage from cliffs and ledges and pinyon-juniper woodland and high potential in desert shrub.

Table 3-2: Raptor Species with the Potential to Nest in the Allotments and USFWS Spatial and Seasonal Buffers				
Common Name	Scientific Name	USFWS Spatial Buffer	USFWS Season Buffer	General Habitat and Potential in Project Area
Cooper's Hawk	*Accipiter cooperii*	0.5 miles	3/15-8/31	Moderate potential and limited known occurrence in area. High potential to nest and forage in woodland areas and riparian zones.
Golden Eagle	*Aquila chrysaetos*	0.5 miles	1/1-8/31	High potential and known occurrence and nesting in area. Commonly nests on cliff ledges and rock outcrops. Moderate potential to forage in desert shrub and pinyon-juniper woodlands.
Great-horned Owl	*Bubo virginianus*	0.25 miles	12/1-9/31	High potential and known occurrence and nesting in area. High potential to occur in a variety of habitat throughout the Moab Field Office. Nests occur on cliff ledges, pinyon-juniper, or nests of other species. Moderate potential to forage in desert shrub and pinyon-juniper woodlands.
Northern Harrier	*Circus cyaneus*	0.5 miles	4/1-8/15	Low potential and no known occurrence in area. Moderate potential to forage and nest in sagebrush/ grassland vegetative community and desert scrublands. Low potential to nest in pinyon-juniper woodlands. Utilizes open habitats such as marshes, fields, and grasslands.
Perigrine Falcon	*Falco peregrinus*	1 mile	2/1-8/31	High potential and known occurrence and nesting in area Utilize habitats containing cliffs and almost always nest near water.
Prairie Falcon	*Falco mexicanus*	0.25 miles	4/1-8/31	High potential and known occurrence and nesting in area. High potential to nest on cliffs and ledges. Moderate potential to forage in desert shrub moderate in pinyon-juniper woodland.
Red-tailed Hawk	*Buteo jamaicensis*	0.5 miles	3/15-8/15	High potential and known occurrence and nesting in area. High potential to nest and forage in open country where scattered trees or other elevated perches are available. Moderate potential to nest on cliffs and low potential to nest in pinyon-juniper woodlands. High potential to forage in desert shrub and pinyon-juniper woodlands.
Sharp-shinned Hawk	*Accipiter striatus*	0.5 miles	3/15-8/31	Low potential and no known occurrence in area. High potential to forage in forest and woodland habitats, often nesting in tall coniferous trees. In arid area and pinyon-juniper woodlands nest are found in riparian zones along streams and desert washes. Moderate potential to nest in pinyon-juniper woodlands.

Additionally, the Bald and Golden Eagle Protection Act, which initially protected only bald eagles, was amended in 1962 to include the golden eagles because of its dwindling populations and similar appearance to bald eagles when both eagles are young. The act prohibits anyone from taking eagles, including their parts, nests, or eggs without a permit issued by the Secretary of the Interior. A taking also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death, or nest abandonment.

State Sensitive Animal Species

Special Status Species Management Policy 6840 requires the BLM to manage State Sensitive Animal Species to prevent the need for future listing under the Endangered Species Act. The Utah BLM maintains a list of sensitive species that may occur on BLM managed lands. The BLM Utah State director's Sensitive Species List also includes animal species that are federally listed. Table 3-3 contains a list that has been identified by the Utah BLM as Utah State Sensitive Animal Species.

There are 12 Utah State Sensitive Animal Species (not including federally listed species) potentially occurring or habitat within the allotments (UDWR 2015b). It is expected that five of the 12 listed in Table 3-3 will not be impacted by the proposed grazing and will not be discussed further within this EA

The Utah state sensitive wildlife species (not including federally listed species) that have some potential to occur and be impacted by livestock grazing in the Big Flat to Tenmile, Horsethief Point and Spring Canyon Bottom Allotments are listed in Table 3-3. A brief description for wildlife species that will be further analyzed follows this table.

Table 3-3: BLM Sensitive Species Occurring in Utah

Common Name *(Scientific Name)*	Habitat	Area of Potential and/or Known Occurrence	Species with Habitat Within the Project Area that may be impacted Project Activities	Further Analysis (Yes/No)
Big free-tailed bat *(Nyctinomops macrotis)*	Rocky and woodland habitats, roosts in caves, mines, old buildings, and rock crevices.	Throughout southern Utah.	Species may occur within the area. Livestock activity typically would occur during the day when bats are roosting, therefore no direct impacts will occur to bats that forage in the area. Minimum site specific habitat alteration may occur and are not expected to reduce insect forage base. No impacts expected during roosting or to roosts.	No
Spotted bat *(Euderma maculatum)*	Found in a variety of habitats, ranging from deserts to forested mountains; roost and hibernate in caves and rock crevices.	Throughout Utah.		No
Townsend's big-eared bat *(Corynorhinus townsendii)*	Occur in many types of habitat, but is often found near forested areas; roosts and hibernates in caves, mines, and buildings.	Throughout Utah.		No
Western Red Bat *(Lasiurus blossevillii)*	Found near water, often in wooded areas, extremely rare in Utah.	No Habitat†		No
Kit fox *(Vulpes macrotis)*	Grasslands, semidesert and montane shrublands Open prairie, plains, and desert habitats	Throughout southeastern Utah	Suitable habitat throughout the allotments, known occupancy and high potential in the area.	Yes
White-tailed prairie dog *(Cynomys leucurus)*	Semi desert grasslands and open shrublands	Throughout north-central Utah.	Suitable habitat in all of Microwave Pasture and small portions of Dalton Wells & Airport Pastures with some known and	Yes

Table 3-3: BLM Sensitive Species Occurring in Utah				
Common Name *(Scientific Name)*	Habitat	Area of Potential and/or Known Occurrence	Species with Habitat Within the Project Area that may be impacted Project Activities	Further Analysis (Yes/No)
			historical colonies in the Microwave Pasture.	
Bald Eagle *(Haliaeetus leucocephalus)*	Roosts and nests in tall trees near bodies of water.	Throughout Utah.	Potential for winter use throughout the area. Livestock grazing is not expected to impact winter habitats, winter roost site or individuals.	No
Burrowing owl *(Athene cunicularia)*	Open grassland and prairies.	Throughout Utah.	Suitable habitat in known and historical prairie dog colonies in the Microwave Pasture. Limited known occupancy.	Yes
Short-eared owl *(Asio flammeus)*	Grasslands, shrublands, and other open habitats.	Throughout Utah.	Rare winter resident, nesting does not occur in the Moab Field Office. Livestock grazing is not expected to impact winter habitats or individuals.	No
Bluehead sucker *(Catostomus discobolus)*	Fast flowing water in high gradient reaches of mountain rivers	Mainstream and tributaries of the Colorado and Green rivers	Known occupancy and high potential for habitat in Green River.	Yes
Roundtail chub *(Gila robusta)*	Large rivers, and is most often found in murky pools near strong currents			Yes
Flannelmouth sucker *(Catostomus latipinnis)*	Large rivers, where they are often found in deep pools of slow-flowing, low gradient reaches			Yes

Kit fox

The kit fox opportunistically eats small mammals (primarily rabbits and hares), small birds, invertebrates, and plant matter. The species is primarily nocturnal, but individuals may be found outside of their dens during the day. The kit fox mates in late winter, with a litter of four to seven pups being born about two months later. Young first leave the den about one month after birth, in late spring or early summer. The species most often occurs in open prairie, plains, and desert habitats.

White-tailed Prairie Dog

The white-tailed prairie dog has declined by an estimated 84 percent in southern Utah. The decline can be attributed to this species' high susceptibility to sylvatic plague. Population numbers rarely rebound to previous numbers and occupied acreage once the plague has decimated a colony. Additional threats include poisoning, grazing, fire suppression, agricultural conversion, urbanization and oil and gas development (Segland 2004).

Burrowing owl

Burrowing owls are neotropical migrants, nest underground in burrows, and are typically found in open desert grassland and shrubland areas that are level and well drained (Gleason and Johnson 1985). They depend on burrowing mammals for nest sites and are often associated with prairie dog colonies (Konrad and Gilmer 1984). The decline of the owl's population across its potential habitat appears to be primarily from agricultural practices, use of pesticides, and the decline of prairie dog colonies (Haug et al. 1993).

Bluehead sucker

The blueheaded sucker has been reduced by 55 percent from its historical distribution. Within the Moab Field Office, populations can be found in the mainstream rivers and tributaries to the headwater reaches of the Colorado, Green and Dolores Rivers. Declines in populations are attributed to hybridization, altered hydrological regimes, in-stream habitat loss and degradation and predation of non-native fish (UDWR 2006).

Roundtail chub

The roundtail chub has been reduced by 45 percent from its historical distribution in the Colorado River Basin. Within the project area, populations are known to occur in the in the Green River from the Colorado Green confluence upstream to Echo Park. Declines in populations are attributed to hybridization with other chub, habitat loss and degradation due to dam and reservoir construction, competition and predation of non-natives, parasitism, and dewatering activities (UDWR 2006).

Flannelmouth Sucker

The flannelmouth sucker has been reduced by 50 percent from its historical distribution within the Upper Colorado River Basin. Within the project area, populations are known to occur in the Colorado, Green and Dolores rivers. The population has been declining since the 1960s due to impoundment of the mainstream of the Green and Colorado rivers. This fish is also susceptible to altered thermal and hydrological regimes, hybridization and competition of non-native fish (UDWR 2006).

Threatened and Endangered Animal Species

Species listed as threatened or endangered are afforded protection under the Endangered Species Act (ESA). The BLM is required to consult with the USFWS on potential impacts to federally listed species. A total of six federally listed species were identified as having the potential to occur within the allotments and four may be potentially be impacted by grazing activities and are listed in Table 3-4.

Table 3-4: USFWS Threatened, Endangered, and Candidate Animal Wildlife Species within the Project Area

Common Name (*Scientific Name*)	Habitat	Status	Designated Critical Habitat in Project Area	Potential for Occupancy in Project Area	Further Analysis (Yes/No)
California Condor (*Gymnogyps californianus*)	Roosts and nests in cliff habitat. Forages in open areas.	Endangered, Experimental	None	Very low-migrant only-no analysis will be presented	No

Table 3-4: USFWS Threatened, Endangered, and Candidate Animal Wildlife Species within the Project Area					
Common Name (*Scientific Name*)	Habitat	Status	Designated Critical Habitat in Project Area	Potential for Occupancy in Project Area	Further Analysis (Yes/No)
Mexican spotted owl (*Strix occidentalis lucida*)	Steep rocky canyons.	Threatened	No	Potential for nesting	Yes
Southwestern willow flycatcher (*Empidonax traillii extimus*)	Low scrub, thickets, or groves of small trees, often near watercourses.	Endangered	No	Low-migrant only, no nesting occurs in the area.	Yes
Western yellowbilled cuckoo (*Coccyzus americanus occidentalis*)	Riparian Areas	Threatened	None	Very low-no nesting habitat -no analysis will be presented	No
Colorado pikeminnow (*Ptychochelius lucius*)	Adults can be found in habitats ranging from deep turbid rapids to flooded lowlands. Young prefer slow-moving backwaters	Endangered	Yes	Known occupancy	Yes
Razorback sucker (*Xyrauchen texanus*)	Slow backwater habitats and impoundments	Endangered	Yes	Known occupancy	Yes

Mexican Spotted Owl

Steep slopes and canyons with rocky cliffs characterize much of the Mexican spotted owl (MSO) habitat in Utah. Within the Colorado Plateau, MSO are known to nest in steep-walled canyon complexes and rocky canyon habitat within desert scrub vegetation. Nesting and breeding begins in March, and eggs are laid in late March or early April and incubated for approximately 30 days. The eggs usually hatch in early May. Nesting MSO fledge from early to mid-June and disperse out of the nesting area in the fall. The MSO exists in small isolated subpopulations and is threatened by habitat loss and disturbance from recreation, improper grazing practices, road development, catastrophic fire, timber harvest, and mineral development.

Habitat models where developed by Willey and Spotskey in an attempt to determine potential MSO habitats within Utah. The 1997 model analyzes vegetation information from the Utah GAP analysis, slope, curvature and elevation to make habitat assessments. According to the Spotskey-Willey MSO habitat model (Willey and Spotskey 1997) there is roughly 1,502,600 acres of potential habitat on federal lands within the Moab Field Office with approximately 61,600 acres within in the allotments. Field evaluations of the allotments over the past sixteen

years indicate that approximately 17,000 acres provide the capacity to support nesting MSOs. All areas have been surveyed for nesting MSOs several times since 2001 with one active nesting territory, identified in 2012 near the allotments.

The Moab Field Office contains 55,600 acres of Designated Critical Habitats as identified the USFWS in the Moab Field Office. These Designated Critical Habitats are found in Shafer Basin, Kane Creek, Lockhart Basin and the very southern portions of the Big Flat to Tenmile Allotment (Horsethief, Beehive and Big Flat Pastures) adjacent to Canyonlands National Park. Approximately 2,300 acres of this critical habitat is located within the permit renewal area.

Southwestern Willow Flycatcher

The Southwestern willow flycatcher (SWFL) utilizes and breeds in patchy to dense riparian habitats along streams and wetlands near or adjacent to surface water or saturated soils. These dense patches are often interspersed with small openings, open water, and/or shorter/sparser vegetation, creating a mosaic habitat pattern. Population declines are attributed to numerous, complex, and interrelated factors such as habitat loss and modification, invasion of exotic plants into breeding habitat, brood parasitism by cowbirds, vulnerability of small population numbers, and winter and migration stresses.

Currently most of the riparian habitats in the Moab Field Office, other than the upper Bookcliffs, area have been assessed for SWFL habitat and surveyed. The surveys focused on presence of the SWFL and its habitat. There have been approximately 11,200 areas of riparian area identified that offer some level of SWFL migratory and breeding habitat. Nine thousand acres have been identified as potentially suitable for nesting use. Nesting season surveys have been conducted in various areas throughout the Moab Field Office since 2002 and no nesting birds have ever been detected and are not expected to nest in the Moab Field Office. All SWFL detections have indicated early season migrate use in only the most suitable habitats along the Green, Colorado and Dolores Rivers. Within the allotments there are approximately 690 acres of riparian that support habitat needs for SWFL use. The UDWR has identified 95 acres of small patches that offer suitable for nesting habitat.

Colorado River Basin Endangered Fish

Within the Moab Field Office both the Green and the Colorado offer suitable habitats for these fishes and portions of these rivers have also been identified as Designated Critical Habitat by the USFWS for these species.

Of the four federally listed endangered fish in the upper Colorado River, the Colorado pikeminnow (*Ptychocheilus lucius*) and the razorback sucker (*Xyrauchen texanus*) have the potential to occupy the Green River. These fish, once plentiful in reaches of the Colorado River in western Colorado and eastern Utah, have declined, due to competition with nonnative species (over 40 species of nonnative fish have been introduced into the upper Colorado River basin), reductions in the amount or quality of in-stream habitat, up-stream reservoirs and other water demands have altered the natural flow regime of the river. The combined effects of predation, competition, water resource development and altered the natural flow regime are thought to be key factors to the decline of these endangered fish.

Colorado Pikeminnow

Natural populations of the Colorado pikeminnow are restricted to the upper Colorado River Basin in Wyoming, Colorado, Utah, and New Mexico. The main stem of the Colorado River

from Palisade, Colorado, to Lake Powell has a known population. The fish population decline has been because of altered instream flow regulations, migration barriers, habitat loss/alteration, and introduced non-native fish (AET, 2003). The Moab Field Office contains designated critical habitat along the Colorado and Green Rivers for the Colorado Pikeminnow and there is potential for these fish to occur outside of their designated critical habitats.

Razorback Sucker

The Green River has the only known spawning areas for the razorback sucker, some of which are found in the project area. Populations have been identified in the Colorado River from Rifle Colorado to Lee's Ferry Arizona and in areas of the Green, Gunnison, and Yampa rivers (AET, 2003). The Moab Field Office has designated Critical Habitat for this species along the Green River to the confluence with the Colorado River and along the Colorado River downstream of Westwater Canyon.

3.3.2 Invasive Species/Noxious Weeds

A noxious weed is a plant that has been designated by statue as one that is injurious to agricultural or horticultural crops, natural habitats or ecosystems, or humans or livestock. Utah has designated a total of 54 weeds on the noxious weed list. The noxious weeds that have been documented within the allotments are Tamarisk, Russian olive, Russian knapweed, and perennial pepperweed. The majority of the weed species are found along the Green River. Tamarisk is also found at reservoir locations within the allotments. The invasion and spread of exotic plants is of management concern due to their prolific seed production. In 2006 Grand County Weed Department released the tamarisk leaf beetle on the *Tamarisk spp* within Grand County. Since 2006 the beetle has made its way across much of the Moab Field Office and is actively working on the Tamarisk within these allotments.

Invasive plants like cheatgrass, halogeaton and Russian thistle are present in areas across these allotments. Cheatgrass, halogeaton and Russian thistle are not on the Utah Noxious Weed List; but they are invasive, non-native plants that readily occupy disturbed areas.

The BLM considers an invasive plant as one that interferes with management objectives for a given area of land at a given point in time (BLM 2008b). A noxious weed is a plant designated by a federal, state, or county government to be damaging to public health, agriculture, recreation, wildlife, or any public or private property (Sheley, Petroff, 2003).

Invasive plants typically have no natural competition or enemies to limit their propagation and spread (Westbrooks, 1998). In most cases, noxious weeds are also non-native species (USDI, 1991). They are capable of invading plant communities and replace native species, particularly following a disturbance. If invasive plants are not controlled, there presence negatively influences the biotic integrity of the site and hinders rangeland health standards.

There are a number of causes for invasive plant infestations, such as human activities, livestock, wildlife, water, wind, disturbances, fire, and climatic fluctuations. Roads can provide a vector for the establishment and spread of noxious weeds, and control efforts are conducted along road right-of-ways.

The greatest impact of invasive plants in the project area is typically along the upland terraces and benches of the Green River. Tamarisk and Russian olive infestations are located along the river and other drainages, and have resulted in vegetation composition altered from their natural state. Russian knapweed has also reached high densities along the river corridor and

corresponding side drainages. Invasive species aggressively out-compete native species within a plant community and often alter the physical and biotic components enough to change the entire ecological community (BLM, 2008b).

Invasive plants often displace native desired plant species. Vegetation communities infested with invasive plants have landscapes whose structure, organization, and/or functions have been altered (Sheley, Petroff, 2003). This modifies the native plant species diversity, plant composition, relative abundance of desired vegetation, reduces forage production, and hinders the biotic integrity of a site. Many invasive species have transformed both the structure and function of landscapes by influencing nutrient cycling or disturbance regimes.

The ownership pattern along the Green River adds complexity to control efforts, as it is composed of BLM, State of Utah, and private lands. Past control efforts have focused integrated invasive plant management strategies along this river corridor.

Controlling invasive plant species is a priority and is a challenging task for the Moab Field Office, as it is a difficult and important issue as it relates to proper vegetation management. Typically, the Moab Field Office works cooperatively with Grand County to treat weeds on BLM lands utilizing integrated pest management strategies (combined use of mechanical, chemical, manual, biological, and prevention measures).

3.3.3 Livestock Grazing

The Big Flat, Horsethief Point, and Spring Canyon Bottom Allotments are located in the southwest portion of Grand County, Utah and the northwest portion of San Juan County, Utah and is bounded by the Colorado River to the southeast, the Canyonlands National Park Island in the Sky District to the south, and the Green River to the west. The allotments consist of 131,586 BLM acres with nine pastures: Airport, Bartlett Flat, Big Flat, Courthouse, Deadman, Horsethief, Mineral Point, Hell Roaring Canyon and Spring Canyon Pastures.

The authorization varies by Allotment. The Big Flat-Tenmile Allotment's authorization is for 785 head of cattle from November 15 through May 31 for 4,701 AUMs (also includes the portion authorized on the Horsethief Point Allotment). The Spring Canyon Bottom Allotment's authorization is for 89 head of cattle from Jan. 1 through Feb. 28 for 173 AUMs.

The permittees are required to submit annual Actual Use Reports that detail the livestock movements on, within and off the allotments. The Actual Use Reports for the Big Flat to Tenmile, Horsethief Point, and Spring Canyon Bottom Allotments has been summarized for the past ten years and can be found in Appendix L.

Currently there are range improvements (see Appendix B, Map 3) scattered throughout the allotments that are critical in the management of livestock. These range improvements include water developments (earthen reservoirs, spring developments, and rock tanks), fences, and cattleguards (see Appendix G). The water developments help to improve livestock distribution throughout the allotment. The fences help to keep the livestock within the allotment or pasture to control the distribution. The cattleguards save motorists time by not having to stop and open gates and prevent a gate from being left open and allowing the livestock to leave their authorized use area.

3.3.4 Recreation

Recreation use in many portions of the allotment is heavy. At least 1,130 vehicles per day travel on Highway 313 primarily to access recreation locations, including Canyonlands National Park and Dead Horse Point State Park. Motorists on Highway 313 are travelling at a high rate of speed, and are often not prepared when cattle choose to cross the highway.

Both non-motorized and motorized recreation use occurs throughout the allotment. The allotment contains numerous Jeep Safari routes, bicycle routes, hiking routes, watercraft takeouts, dispersed camping, and other destinations which attract recreationists of all types.

3.3.5 Soils

Soils in the Big-Flat, Horesthief, and Spring Canyon area are diverse, arid, and saline. Soils are the result of complex interactions between parent material (geology), climate, topography, organisms, and time (Brady and Weil 1999). Soils are classified by the degree of development into distinct layers or horizons and their prevailing physical and chemical properties (Fanning and Fanning 1989). Similar soil types are grouped together into soil orders based on defining characteristics, such as organic matter and clay content, amount of mineral weathering, water and temperature regimes, or other characteristics that gives the soil its unique properties (Jenny 1980).

There are two types of soil orders that are most present in the Moab area Aridisols and Entisols. Aridisols are found on over 40 percent of public lands (105 million acres). They occur across wide parts of the western U.S. in Nevada, Arizona, New Mexico, central Wyoming, southern Idaho, Utah, and southern California. These soils are characterized by an extreme water deficiency. They are light colored soils, are low in organic matter, and may have subsurface accumulations of soluble materials, such as calcium carbonate, silica, gypsum, soluble salts, and exchangeable sodium. Vegetation on these soils includes scattered desert shrubs and short bunchgrasses, which are important resources for livestock. Aridisols are generally not very productive without irrigation, and may be prone to salinity buildup. Surface mineral deposits often form physical crusts that impede water infiltration.

Entisols occur on about 9 percent of public lands (23 million acres). Entisols occur extensively in eastern Montana, western Colorado, South Dakota, Wyoming, Utah, and central California. They are young, weakly developed mineral soils that lack significant profile development (soil horizons) and are often found in lower elevations, arid and semiarid environments supporting desert shrub and sagebrush communities. Entisols can include recent alluvium, sands, soils on steep slopes, and shallow soils. Soil productivity ranges from very low in soils forming in shifting sand or on steep rocky slopes to very high in certain soils formed in recent alluvium. Productivity is often limited by shallow soil depth, low water holding capacity, or inadequate available moisture, but these soils do support rangeland vegetation and may support trees in areas of higher precipitation.

The soil orders can be further narrowed down into 25 soil types within the allotments and are reflected below in Table 3-5.

Table 3-5: Soil Types on the Big Flat-Tenmile and Spring Canyon Bottom Allotments

Soil Type	Common Characteristics	Acres	Percent
4-Begay-Sazi complex	These soils are found on undulating parks on broad cuestas and structural benches on the allotment. Slope is typically two to ten	14,437.6	9.14

Table 3-5: Soil Types on the Big Flat-Tenmile and Spring Canyon Bottom Allotments			
Soil Type	**Common Characteristics**	**Acres**	**Percent**
	percent. The elevation range from 4,700 to 6,300 feet. Precipitation ranges from eight to 12 inches. These soils are found in the Semidesert Sandy Loam range site.		
5-Begay-Sazi Rizno complex	These soils are found on structural benches and cuestas in near Dome Plateua. Slope is from ten to 20 percent. Elevation ranges from 4,700 to 6,000 feet. The average annual precipitation is between eight to 12 inches. These soils are in the Semidesert Sandy Loam range site and the Semidesert Shallow Sandy Loam (Utah Juniper-Pinion) range site.	757.1	0.48
6-Begay Rizno complex	These soils are found on structural benches between the Colorado and Green Rivers. The slopes range from two to ten percent. The evelation ranges from 4,700 and 6,100 feet. The average annual precipitation is between eight to 12 inches. These soils are found in the Semidesert Sandy Loam range site and the Semidesert Shallow Sandy Loam (Utah Juniper-Pinion) range site.	14,221	9.00
7-Blueflat complex	These soils are found on uplifted parts of pediments and on ridges south of Interstate 70 and north of Arches National Park. The slopes are between two to 25 percent but are more commonly between ten to 20 percent. The elevation ranges from 4,500 and 4,900 feet. The average annual precipitation is between five to eight inches. These soils are in the Desert Clay range site and the Desert Shallow Clay range site.	1,422.3	0.90
10-Chipeta silty clay loam	This soil is found south of the Book Cliffs on plains and highly dissected pediments. They formed in residuum and alluvium derived dominantly from marine shale. Slopes are less than 25 feet long. The elevation ranges from 4,000 to 5,000 feet. The average annual precipitation is from five to eight inches. This soil is in the Desert Shallow Clay range site.	1,249.8	0.79
11-Chipeta complex	These soils are found on broad benches below the Book Cliffs. The slope ranges between one and ten percent. The elevation ranges between 4,500 to 5,000 feet. The average annual precipitation is between five to eight inches. These soils are found in the Desert Shallow Clay range site and the Desert Clay range site.	8,328.0	5.27
12-Chepta-Badland complex	These soils are found on the back slopes of escarpments of fan pediments below the Book Cliffs and on highly dissected pediments and hills. The slope ranges between 25 and 50 percent. The elevation ranges from 4,000 to 5,000 feet. The average annual precipitation is between five to eight inches. These soils are in the Desert Shallow Clay range site.	5,55.8	0.35
15-Factory-Pastern fine sandy loams	These soils are found on pediments and structural benches north of Bartlett Flat, south of the Needles and near Dubinky Well. The slopes range between two and ten percent. The elevation ranges between 5,000 to 5,500 feet. The average annual precipitation ranges between eight to 12 inches. These soils are in the Semidesert Sandy Loam range site and the Semidesert Shallow Sandy Loam (Blackbrush) range site.	2,384.5	1.51
18-Hanksville family-Badland complex	These soils are found on back slopes of mesas and cuestas and on the face of the Book Cliffs. The slopes range between 30 to 50 percent. The slopes generally face south. The elevation ranges between 4,200 to 6,100 feet. The average annual precipitation ranges between six to eight inches. These soils are found in the Desert Clay range site.	3,027.9	1.92

Table 3-5: Soil Types on the Big Flat-Tenmile and Spring Canyon Bottom Allotments			
Soil Type	**Common Characteristics**	**Acres**	**Percent**
33-Mido loamy fine sand	This soil is found on excessively drained soil that is on cuestas and broad structural benches on the leeward side of ridges and in depressional areas. It formed in eolian material derived dominantly from sandstone. The slope ranges between two to 20 percent but more commonly less than ten percent. The elevation ranges between 4,700 to 5,200 feet. The average annual precipitation is between eight to 12 inches. This soil is in the Semidesert Sand range site.	1,050.5	0.67
34-Mido-Sazi complex	These soils are found on broad cuestas and structural benches between the Colorado and Green Rivers. The slope ranges between two to 20 percent. The elevation ranges between 4,700 to 5,800 feet. The average annual precipitation is between eight to 12 inches. These soils are in the Semidesert Sand range site and the Semidesert Sandy Loam range site.	4,166.5	2.64
35-Moenkopie-Rock outcrop complex	These soils are found on structural benches, mesas, and ridgetops. The slopes range between three to 20 percent. The elevation ranges from 4,100 to 5,000 feet. The average annual precipitation is between five to eight inches. These soils are in the Desert Shallow Sandy Loam range site.	7,441.2	4.71
38-Muff Family-Badland complex	These soils are found on hills and alluvial fans in the southern part of the survey area. The slopes range from one to 50 percent. The elevation ranges from 4,000 to 4,700 feet. The average annual precipitation is five to eight inches. These soils are in the Alkali Fan range site.	34.1	0.02
39-Myton family-Rock outcrop complex	These soils are found on the sides of deep canyons throughout the southern half of the survey area. The slopes range from 50 to 70 percent. The elevation is from 4,000 to 5,700 feet. The average annual precipitation is five to eight inches. These soils are in the Talus Slope range site.	12,983.5	8.22
40-Nakai fine sandy loam	This soil found on canyon floors and structural benches from eolian, residual, and alluvial material derived from sandstone. The slopes are convex to concave and are from 100 to 300 feet long. The elevation is from 4,100 to 5,000 feet. The average annual precipitation is from five to eight inches. This soil is in the Desert Sandy Loam range site.	2,998.1	1.90
47-Redbank-Flatnose families association	These soils are found on the flood plains of the Green and Colorado Rivers. The slope is from zero to three percent. The elevation ranges from 4,000 to 4,100 feet. The average annual precipitation is from five to eight inches. These soils are in the Alkali Flat range site and the Salt Riparian Stream Bank range site.	179.1	0.11
51-Rizno-Begay complex	These soils are found on structural benches and cuestas in areas between the Colorado and Green Rivers. The slope range from two to ten percent. The elevation ranges from 4,700 to 6,000 feet. The average annual precipitation is from eight to 12 inches. These soils are in the Semidesert Shallow Sandy Loam (Utah Juniper-Pinion) range site and the Semidesert Sandy Loam range site.	5,235.0	3.31
52-Rizno-Rock outcrop complex	These soils are found on the edges of cuestas and structural benches. The slop ranges from two to ten percent. The elevation ranges from 4,700 to 6,400 feet. The average annual precipitation is from eight to 12 inches. These soils are in the Semidesert Shallow Sandy Loam (Utah Juniper-Pinyon) range site.	43,704.8	27.67
53-Rock outcrop	This is found on the structural benches, cuestas, and ridges. This is dominated by massive sandstone slickrock that are dissected by crevices. The present vegetation in most areas is Utah juniper and singleleaf ash at the lower elevations and Utah Juniper and pinion at	5,438.4	3.44

Table 3-5: Soil Types on the Big Flat-Tenmile and Spring Canyon Bottom Allotments			
Soil Type	**Common Characteristics**	**Acres**	**Percent**
	areas above 4,700 feet in elevation. The vegetation is very sparse. There is no range site associated with the rock outcrop.		
54-Rock outcrop-Arches-Mido complex.	These soils are found on cuestas and structural benches and in areas around monoliths. The slope ranges from two to 20 percent. The elevation range from 4,700 to 6,000 feet. The average annual precipitation ranges from five to eight inches. These soils are in the Semidesert Shallow Sandy Loam (Utah Juniper-Pinion) range site and the Semidesert Sand range site.	22,522.4	14.26
55-Rock outcrop-Moenkopie association	These soils are found on toe slopes of mesas, cuestas, and structural benches south of the Book Cliffs. The slopes range from three to 20 percent. The elevation range from 4,000 to 5,000 feet. The average annual precipitation is from five to eight inches. These soils are in the Desert Shallow Sandy Loam range site.	865.6	0.55
56- Sagers silt loam	This soil is on valley floors and plains. It formed in alluvium derived from marine shale. The slopes are from one to three percent. The elevation ranges from 4,500 to 4,800 feet. The average annual precipitation is from five to eight inches. This soil is in the Desert Clay range site.	758.1	0.48
66-Sheppard fine sand	This soil is found on areas of valley fill and on alluvial fans south of the Moab airport, along the upper Courthouse Wash and Sevenmile Canyon. The soil formed in eolian material derived from sandstone. The slopes are undulating and less than 50 feet long. The elevation is from 4,500 to 4,800 feet. The average annual precipitation is from five to eight inches. This soil is in the Desert Sand range site.	889.9	0.56
74-Thedalund family-Rock outcrop-Badland association	These soils are found on northwest facing side slopes of pediments and canyon escarpments. The slopes range from 30 to 50 percent. The elevation is from 4,000 to 5,000 feet. The average annual precipitation is from six to ten inches. These soils are in the Semidesert Shallow Loam (Salina Wildrye) range site.	265.9	0.17
78-Windwhistle-Begay complex	These soils are found on the higher parts f cuestas near Dead Horse Point. The slops are between two to ten percent. The elevation ranges from 5,900 to 6,100 feet. The average annual precipitation is from eight to 12 inches. These soils are in the Upland Loam (Basin Big Sagebrush) range site and the Semidesert Sandy Loam range site.	3,022.2	1.91
	Total Acres (BLM, private, and State)	157,939.2	100

Biological soil crusts (also known as cryptogamic, microbiotic, cryptobiotic, or microphytic crusts) are commonly found in semiarid and arid environments. They provide important functions, such as improving soil stability and reducing erosion, fixing atmospheric nitrogen and contributing nutrients to plants, and assisting with plant growth (Belnap and Giliette 1998, Harper and Belnap 2001). Crusts are composed of a highly specialized nonvascular plant community consisting of cyanobacteria, green and brown algae, mosses, and lichens, as well as liverworts, fungi, and bacteria (Belnap and Phillips 2001).

Biological soil crusts can reach up to several inches in thickness and vary in terms of color, surface topography, and surficial coverage. Crusts generally cover all soil spaces not occupied by vascular plants, which may be 70 percent or more in arid regions (Belnap 1994). They are well adapted to severe growing conditions, but are influenced by disturbances such as compression from domestic livestock grazing, tourist activities (hiking, biking, and OHVs),

mechanical treatment and agricultural practices (extensive tillage and planting), application of herbicides, and military activities (Peterjohn and Schlesinger 1990, Belnap 1995, USGS 2004). Disturbance of biological crusts results in decreased soil organism diversity, nutrients, stability, and organic matter. Trampling may reduce the number of crust organisms found on the surface and increase runoff and the rate of soil loss without apparent damage to vegetation (Eldridge 1996). Burial of crusts by sediments kills non-mobile photosynthetic components (mosses, lichens, and green algae) of the crust (Campbell 1979). Fires can cause severe damage to biological crusts, but recovery is possible, depending on fire size and intensity. Shrub presence (particularly sagebrush) may increase fire intensity, thereby decreasing the likelihood of early vegetative or crust recovery after a burn (USGS 2003).

Sensitive soils are defined as soils having characteristics that make them extremely susceptible to impacts or difficult to reclaim or restore after disturbance. They include soils that have high water or wind erosion, are saline or sodic, are droughty or have limitations to grazing, low nutrient levels, or very steep slopes (BLM 2008b)).

Utah's Standards for Rangeland Health

The evaluations conducted on the Big Flat to Tenmile (see Appendix M), Horsethief Point (see Appendix N) and Spring Canyon Bottom (see Appendix O) Allotments found that the upland soils standards (number one) are being met with the exception of one small area within the Bartlett Flat Pasture, one area in the Big Flat Pasture, and one area in the Mineral Point Pasture. Horsethief Point and Spring Canyon Bottom Allotments are meeting this Standard number one. The detailed evaluations of Utah's Standards for Rangeland Health can be found in Appendices M, N and O.

3.3.6 Vegetation

Rangeland landscapes are divided into ecological sites for the purposes of inventory, evaluation, and management. Ecological sites are classes of land defined by recurring soil, landform, geological, and climate characteristics. An Ecological Site is defined as "a distinctive kind of land with specific characteristics that differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation" (NRCS 2017). While the natural plant community of a particular ecological site can be recognized by characteristic patterns of species associations and community structure, the specific species present from one location to another may exhibit tremendous variability based on soils, landforms, and microclimate as well as past land use and management. The natural plant community is not a precise assemblage of species for which the proportions are the same from place to place or even in the same place from year to year. The Ecological Site Description is the document that contains information about the individual Ecological Sites and describes the distinctive plant communities associated with each one, including the variability that frequently occurs in nature.

The ecological sites where most grazing occurs on the Big Flat to Tenmile, Horsethief Point, and Spring Canyon Bottom Allotments are: Desert Clay (Castle Valley Saltbrush), Desert Sand (Fourwing saltbrush), Desert Sandy Loam (Blackbrush), Desert Sandy Loam (Fourwing Saltbrush), Desert Shallow Clay (Mat Saltbrush), Desert Shallow Clay (Shadscale), Semidesert Sand (Fourwing Saltbrush), Semidesert Sandy Loam (Blackbrush), Semidesert Sandy Loam (Fourwing Saltbush), Semidesert Shallow Sandy Loam (Utah Juniper-Blackbrush), Semiwet Saline Streambank (narrowleaf willow/alkali sacaton) (U.S.D.A., 1989). Table 3-6 lists the plant species found within the ecological sites listed above.

Table 3-6: Ecological Sites and Functional Structural Groups on the Allotments	
Ecological site	Species in the Functional Structural Groups
Desert Clay (Castle Valley Saltbrush)	Indian ricegrass, James' galleta, sandburg bluegrass, alkali sacaton, shadscale saltbrush, valley saltbrush, Biglow sage, fourwing saltbrush, mat saltbrush, yellow rabbitbrush, Torry's jointfir, crispleaf buckwheat, broom snakeweed, greasewood, seepweed, cryptantha, desert trumpet, woolly plaintain, and scarlet globemallow.
Desert Sand (Fourwing saltbrush)	Indian ricegrass, needle and thread, James' galleta, purple three awn, sandhill muhly, spike dropseed, sand dropseed, blackbrush, shadscale saltbrush, Cutler's jointfir, painted milkvetch, globemallow, and woody aster.
Desert Sandy Loam (Blackbrush)	Indian ricegrass, needle and thread, James' galleta, purple threeawn, sandhill muhly, spike dropseed, sand dropseed, blackbrush, fourwinged saltbrush, Cutler's jointfir, littleleaf horsebrush, painted milkvetch, globemallow, and woodyaster.
Desert Sandy Loam (Fourwing Saltbrush)	Indian ricegrass, needle and thread, James' galleta, spike dropseed, sand dropseed, fourwinged saltbrush, Cutler's jointfir, Torry's jointfir, hoary tansyaster, pale evening primrose, and gooseberryleaf globemallow.
Desert Shallow Clay (Mat Saltbrush)	Indian ricegrass, James' galleta, squirreltail, shadscale saltbrush, valley saltbrush, mat saltbrush, bud sagebrush, woolly locoweed, sego lily, desert trumpet, woolly plantain, gooseberryleaf globemallow, desert princes plume, and woodyaster.
Desert Shallow Clay (Shadscale)	James' galleta, Indian ricegrass, purple three awn, black gramma, blue gramma, squirreltail, alkali sacaton, sand dropseed, mesa dropseed, shadscale saltbrush, Torry's jointfir, Bigelow sage, valley saltbrush, yellow rabbitbrush, blackbrush, Navada jointfir, broom snakeweed, bud sagebrush, littleleaf horsebrush, wooly locoweed, cryptantha, desert trumpet, woolly plantain, and Munro's globemallow.
Semidesert Sand (Fourwing Saltbrush)	Indian ricegrass, sand dropseed, giant spike dropseed, spike dropseed, sandhill muhly, desert primrose, Adonis blazingstar, sanddune linanthus, tansy aster, ribseed sandmat, scarlet globemallow, fourwing saltbrush, and sand buckwheat.
Semidesert Sandy Loam (Blackbrush)	Indian ricegrass, blue gramma, James' galleta, sand dropseed, Hopi blanket flower, scarlet Globemallow, rose heath, blackbrush, broom snakeweed, and spiny hopsage.
Semidesert Sandy Loam (Fourwing Saltbrush)	Indian ricegrass, sand dropseed, blue gramma, James' galleta, purple three awn, rose heath, fourwing saltbush, winterfat, rubber Rabbitbrush, broom snakeweed, and pricklypear cactus.
Semidesert Shallow Sandy Loam (Utah Juniper-Blackbrush)	Indian ricegrass, needle and thread, James' galleta, Bigelow sage, blackbrush, Torry's jointfir, Utah juniper, twoneedle pinion, cryptantha, pointed gumweed, fineleaf himenopappus, and mountain pepperweed.

Table 3-6: Ecological Sites and Functional Structural Groups on the Allotments	
Ecological site	Species in the Functional Structural Groups
Semiwet Saline Streambank (-narrowleaf willow/alkali sacaton)	Indian ricegrass, saltgrass, alkali sacaton, rubber rabbitbrush, Fremont cottonwood, narrowleaf willow, clustered field sedge, squirreltail, James' galleta, common reed, fourwing saltbush, Emory's baccharis, Nevada jointfir, skunkbush sumac, greasewood, littleleaf horsebrush, woolly plantain, and scarlet globemallow.
Upland Loam (Basin Big Sagebrush)	Indian ricegrass, blue gramma, James' galleta, purple three awn, wooly plantain, big sage, Douglas Rabbitbrush, Mormon tea, broom snakeweed, pricklypear cactus, and Utah juniper.

Common attributes used to characterize the health of vegetation

Frequency – The ratio between the number of sample units that contain a species and the total number of sample units (SRM 1999).

Vigor – The relative health of a plant, judged by observing its robustness and over-all ability to sustain and regenerate itself considering the climate and productivity of the site it occupies.

Diversity – The number of different species in a particular area weighted by some measure of abundance.

Density - Number of individuals per unit area (Bedell 1998).

Age classes – The distribution of different ages of the same species or group of species on a site.

Production by Plant Species (or annual production by plant species): All above-ground plant biomass produced during a single growing year for a given plant species. Production by plant species is expressed in pounds per acre (lb/acre) (Herrick 2005).

Plants use water and carbon dioxide in the presence of sunlight to create carbohydrates and oxygen (a process called photosynthesis). Plants use carbohydrates as an energy source for growth. When plant growth slows and more carbohydrates are produced than needed for growth, the surplus carbohydrates are stored. These reserves are important for the plant's survival over winter and for initiation of plant growth in spring. Regrowth after grazing depends on energy being produced either by the remaining leaf area, or from the carbohydrate reserves.

Plant growth starts slowly in the spring. Carbohydrate reserves stored in stem bases, roots, rhizomes and/or stolons have to be mobilized before they can be used to fuel growth. Once leaf area develops, growth quickens as the plant has an immediate source of energy from photosynthesis. After this vegetative period of fast growth is over, the plant becomes reproductive, growth slows and carbohydrate reserves are replenished.

Grazed plants left with enough leaf area to continue photosynthesizing regrow at a quicker rate, as they are not dependent on carbohydrate reserves. Plants frequently closely grazed can be damaged because they are unable to restore the carbohydrate reserves. The plant's carbohydrate reserves are reduced following a defoliation event and with time, they can be depleted. In addition, the intensity and duration of grazing causes plant root damage; root weight, length and vigor are reduced. The extent of the damage increases with the severity and frequency of the defoliation during the growing season of the plant.

Vegetative Monitoring and trend on the Big Flat to Tenmile, Horsethief Point, and Spring Canyon Bottom Allotments:

Vegetative trend data is an important tool used in determining if current management actions are effective in meeting, or enabling progress towards meeting objectives related to the allotment. The trend of a plant community may be determined by noting changes in characteristics such as composition, density, cover, production, reproduction, and frequency of occurrence for vegetation species tempered with climatic variations and uses.

The important forage grass species on the allotments include alkali sacaton, blue gramma, James' galleta, Indian ricegrass, inland saltgrass, needle and thread, sand dropseed, and spike dropseed. Important forage shrub species include fourwinged saltbrush, greasewood, Nuttal's saltbrush, shadscale saltbrush, and winterfat. These species are the main plant species used to monitor vegetative trend on the allotments. These forage species are also functional structural groups for the ecological sites listed in Table 3-3.

On the allotments, photo trend plots were established in the 1960s and density plots were established in the 1980s. These trend studies have been established throughout the allotments in Key Areas (see Appendix B, Map 4). Key Areas are a portion of a representative rangeland selected for its ability to detect changes within the plant community and variations in rangeland health conditions for a larger ecological site. Collected monitoring data is summarized and used to help determine directions in vegetative trend over a period of time. The BLM has converted key areas from density monitoring to frequency and line intercept.

The vegetation monitoring data for the allotment's analysis can be found in Appendix P. This analysis reveals the trends and utilization of the plant groups found across the allotments.

The utilization of the key plant species is broken down and given averages by years and plant species for the years and located in Appendix Q.

Utah's Standards for Rangeland Health:

Rangeland health assessments were used to complete an evaluation of Utah's Standards for Rangeland Health and Guidelines for Grazing Management for BLM Lands. There were three evaluations that were completed the Big Flat to Tenmile, Horsethief Point and Spring Canyon Bottom Allotments evaluations. The evaluations for Big Flat to Tenmile and Spring Canyon Bottom are meeting the Upland standard number three Desired species, including native, threatened, endangered, and special-status species, are maintained at a level appropriate for the site and species involved. The Big Flat to Tenmile evaluation showed that there are two areas in the allotment that are not meeting this standard, one is in the Airport Pasture and the other in the Deadman Pasture. The Horsethief Point Allotment was found not meeting this standard and was determined that livestock was a causal factor. Several changes were made to the horse grazing that was occurring on the allotment and several of the improvements were repaired to progress the allotment toward meeting this standard. These evaluations and the determinations are found in Appendices M, N, and O.

4.0 ENVIRONMENTAL IMPACTS

4.1 Introduction

This chapter analyzes the impacts of the alternatives to Fish and Wildlife Including USFWS Threatened and Endangered Species, State Sensitive Species and Migratory Birds, Invasive Species/Noxious Weeds, Livestock Grazing, Recreation, Soils, and Vegetation.

The potential consequences or effects of each alternative are discussed in this section. The intent is to provide the scientific and analytical basis for comparison of the effect of each alternative. This section analyzes the impacts of the alternatives to those resources described in Chapter 3, Affected Environment above. A potential impact is defined as any change or alteration in the existing condition of the environment related to implementation of the alternative, either directly or indirectly. Impacts can be beneficial to the resource (positive) or adverse (negative) and can be either long-term (permanent) or short-term (incidental and/or temporary).

4.2 Direct and Indirect Impacts

Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. As three of the four pastures in this allotment are not primarily BLM land, it is important to note that impacts are assessed for BLM lands only.

4.2.1 Alternative A – Proposed Action

4.2.1.1 Fish and Wildlife Including USFWS Threatened and Endangered Species, State Sensitive Species and Migratory Birds

Under the Proposed Action the term and condition to limit utilization to moderate use levels, 89 percent of the allotment would not be grazed in the spring, and improved water availably would be implemented to ensure proper stocking rates. As discussed in the Vegetation Section (4.2.1.6), the timing and utilization of grazing can have an impact on plant productivity and vigor. If grazing is properly managed during the spring the result is more robust plants which are more likely to survive and increase overall forage production.

The Proposed Action assumes that; the implementation of moderate utilization would facilitate improved long-term vegetative health; vegetative conditions would offer denser and taller vegetative cover then the current grazing system (no action) over time the vegetative conditions are expected to improve. It is also assumed that, in pasture(s) where spring rest is occurring that year: 1) there would be lack of physical grazing pressure on wildlife and 2) the vegetative structure, density and reproductive capacity (cover and forage) would not be removed. It is also assumed that in pasture(s) where spring grazing is occurring that year: 1) there would be physical grazing pressure on wildlife and the vegetative structure, and 2) density and reproduction (cover and forage) would be removed no more than at a moderate utilization level.

General Wildlife

Animals such as small mammals, reptiles, songbirds and insects rely on the cover and forage provided by the vegetative community they inhabit. This vegetative community offers forage and cover in the forms of leaves, stems, roots, seeds, pollen, canopy cover and duff for various animals and insects. Predator species such as mountain lions, bobcats, coyotes, foxes, badgers, birds, and raptors are dependent upon the quantity and quality of their prey base, which is typically smaller mammals, reptiles, songbirds, and insects that are reliant on the vegetative

base. The ecological condition of the range directly affects the quality and quantity of the vegetative communities that support the wildlife in these allotments.

The vegetative communities determine the vegetative structure that often provides forage and cover for various wildlife species and their life functions. Vegetative cover offers protection from the elements and predators and in the spring many wildlife species rely on dense and tall vegetation to give birth, protect their young from the elements, and hide their young from predators. Adequate and nutritional vegetative forage is important to many wildlife species during the birthing and rearing of their young as the need for nutrition is great during this time. Additionally some wildlife species do not tolerate the presence of cattle well, especially during the spring, due to birthing, nesting, and rearing activities.

As discussed in the Vegetation section (4.2.1.9), regrowth of plants after grazing depends often on the carbohydrate reserves and remaining plant material available to facilitate the production of carbohydrates needed for future new growth and storage. Depending on the intensity of grazing, remaining above ground plant material has the potential to produce carbohydrates needed for growth, reproduction and storage. Most rangeland grasses and forbs can have 40-50 percent of their leaves and stems removed every year and still remain healthy and productive. Under the Proposed Action, livestock grazing would not exceed moderate levels, therefore native plant communities are expected to improve, resulting in greater density. Increased plant density offers improved thermal protective cover for both prey and predator species and a greater forage base for prey species. Improved plant survival would support increased plant community diversity and foraging opportunities that support diversification in ecological niches, thus potentially allowing for enhanced species diversity.

Under the Proposed Action, changes made to the pastures and the rotation of livestock would control when and where the livestock can graze. Based on the proposed deferred rotational system at least 89 percent of the allotment is rested during the critical growing season of the late spring. Since the majority of the allotment would be rested during the critical growing season, plant growth would be less impacted, thus facilitating vegetative density, health and recruitment potentially resulting in increased cover and forage.

In the spring, grazed portions of the allotment (less the 11 percent), could have short-term effects to wildlife during sensitive breeding, birthing, and nesting periods as various species with young may be temporarily displaced due to cattle activity, loss of cover and reductions in forage. More mobile individuals and young may readily find suitable habitat on adjacent lands within the allotment that would be rested during the spring. Grazing during the spring could result in the direct loss of less mobile species as well as nesting and burrowing species with young, and young of the year as they cannot readily relocate. Due to the high fecundity of small mammals and reptiles, some populations may not be impacted. Any displacement of mobile species not tied to nests, burrows, or young would be short term and insignificant because of the expanses of habitat available in the allotment that would not be grazed at that time.

Migratory birds utilizing the allotment would tend to avoid the grazed portions and occupy the un-grazed areas for nesting. Migratory birds avoiding portions of the allotment would be impacted during one specific nesting season however, as parent birds would re-nest in following years in suitable locations.

Some wildlife species would avoid interactions with cattle by utilizing portions of the allotment that are not being grazed that spring.

Within the spring rested portions of the allotment (89 percent) competition for space and forage between wildlife and cattle would be eliminated. It is expected that adequate vegetative density and diversity would provide important cover, structure, and forage to resident wildlife species during the birthing and rearing of their young. The lack of grazing in these areas would provide space for wildlife species less tolerant of livestock activity.

The Proposed Action would insure on an annual basis that grazing would not exceed moderate levels and a large portion of the allotment is void of livestock grazing during the spring. By allowing the spring rest and rotating the use it is expected that the vegetative communities would improve. As the health of the vegetative communities that support various wildlife species in the area improves it is expected to facilitate space, cover, and forage for wildlife. The current system (No Action) may allow for livestock utilization levels to exceed a moderate level and a greater area of competition between wildlife and livestock throughout the allotments in the spring during sensitive breeding, nesting, and rearing seasons would occur.

Big Game

Desert Bighorn Sheep Habitat

Impacts to bighorn sheep from livestock grazing may include competition for forage and space, habitat fragmentation, and disease. There is mixed evidence that cattle and bighorn sheep directly compete for forage. (Monson and Sumner 1980, USFWS 1981, Krausman et. al.1996). In Aravaipa Canyon, Arizona, the average percentage yearly dietary overlap between cattle and bighorn sheep was 35 percent (Dodd and Brady 1986). Cattle, however, are generally unable to negotiate the steep rocky habitat where bighorn spend the majority of their time, implying some degree of habitat partitioning and minimizing the potential for forage competition (Monson and Sumner 1980, Dodd and Brady 1986), though some overlap in habitat use is possible. Cattle grazing could increase bighorn forging efforts that can negatively impact animal health. As cattle reduce available forge on bighorn habitats, bighorn increase investments in searching for food, their overall foraging efficiency typically declines and unless otherwise compensated for (e.g., nocturnal feeding, bite rate, and size), would negatively influence animal condition (Garrison et. al. 2015).

Bissonette and Steinkamp conducted a study that showed the California bighorn sheep reduced their home range size and decreased their distance to escape terrain as cattle were moved to pastures that were closer and more visible to the bighorn. The bighorn sheep fled the area when cattle approached to within about 2,600 feet (800 meters).The results suggest that the “social intolerance” exhibited by bighorn sheep toward cattle may impose greater limitations on their distribution and habitat use than competition for forage (Bissonette and Steinkamp 1996).

The role of cattle in the spread of disease to bighorn sheep is poorly documented and not well understood (Krausman et. al. 1996).

Bighorn habitats, including lambing and rutting habitats, exists in all pastures except Dalton Wells and Microwave Pastures, with the entirety of Spring Canyon Bottom providing the best high quality lambing areas within the allotments. Bighorn may be impacted by the presence of cattle within these habitats as there is potential for forage and space competition and social intolerance to occur when these allotments have active grazing occurring, as discussed above.

Spring Canyon Bottom Pasture currently (No Action) has limited grazing in January and February while the Proposed Action changes this season of use to November and December.

Grazing during November and December has the potential to alter ram movements as they travel through and into these areas during the rut (October 1st to December 15th). The Spring Canyon Bottom Pasture consists of both Hell Roaring and Spring Canyon, two steep walled canyon systems with few areas where cattle can access forage. The best habitats for bighorn are on these steeper canyon walls where bighorn can move through and avoid contact with cattle. Changing the season of use in this pasture could have some impacts to current rut activities but bighorn rams have ample terrain that is unavailable to cattle that they can move through to visit resident ewe groups. Foraging availability and quality are not expected to change in this pasture.

Barrlett, Airport, Courthouse and Lone Mesa Pastures support prime lambing and rutting habitat in the more rugged and dissected terrian and canyon portions of pastures. Whereas much of the lambing and rutting habitats in Deadman Point, Horsethief Point, Beehive and Big Flat Pastures are on the rims above the habitat. Mineral Point Pasture offers habitats above the rims of Hell Roaring and Mineral canyons and in the rugged, dissected areas occupied year round by rams and ewes.

Implementation of the rotational spring rest systems along with ensuring grazing levels are maintained at or below moderate utilization levels and providing consistent water sources for cattle is expected to improve the range. This would improve forage availability in areas where cattle are able to access bighorn foraging area. Social intolerance of bighorn to cattle grazing would be the most impacting during the lambing season (April 1st to June 15th) when cattle grazing occurs on different allotments during the spring. Ewes with lambs may seek areas that are inaccessible to cattle at that time.

Pronghorn

On a year round basis, forage and space competition between antelope and cattle is relatively low, as their dietary overlap in less than 30 percent and aggressive behavior between cattle and pronghorn appears to be minimal (Roebuck 1982). There are generalized tabulations over many different habitats that consistently depict a low rate of dietary overlap, likely due to the consumption of different forage classes by the two species (Autenrieth et al 2006).

Livestock utilizing pronghorn habitat in the spring prior and during fawning season (May 1st to June 15th) competition for space may occur as pregnant does or does with young fawns moving to sites with less desirable vegetative height to avid livestock presence. Less desirable vegetative height increases predation risks and may result in higher predation on the newborn fawns. Spring forbs and grass are important to female antelope prior to and during fawning. Forage competition between livestock and antelope for early spring forbs and grass can result in low fawn survival rates due to both nutritional and predation factors (Autenrieth et al 2006).

Microwave and a small portion (approximately 2,000 acres) of the Airport Pasture offer pronghorn habitat and are currently grazed throughout the entire season by first-year heifers with no spring rest. The grazing schedule developed in the Proposed Action would benefit antelope and their habitats more than the current grazing system as it reduces grazing pressures by offering spring rest in both these pastures two out of three years and insures grazing levels do not exceed moderate levels. This would allow for improved annual early spring forb and grass growth, recruitment, vegetative density and plant height, plus eliminates any space competition from cattle during fawning most years in one of these pastures.

Mule Deer

Grazing, as well as the physical presence of cattle, can have negative impacts on mule deer not only through vegetation limitation, but by causing behavioral changes and altering activity budgets that make foraging less productive (Chaikina and Ruckstuhl, 2006).

Typically, mule deer winter diets consist of approximately 75 percent browse from a variety of trees and shrubs and 15 percent forbs and ten percent grasses. In the spring, browse is 49 percent of the diet and grasses and forbs make up approximately 25 percent each. Summer diets are 50 percent browse, with forbs consumption increasing to 46 percent. Browse use increases again in the fall to approximately 60 percent of the mule deer diet, forb use declines to 30 percent, and grasses increase to ten percent (Fitzgerald et al. 1994). Deer are more adapted to browsing and selecting better quality plants and cattle have better ability to digest low-quality grasses (Chaikina and Ruckstuhl, 2006), therefore dietary overlap is typically minimal. Diet overlap increases when forage becomes less available, which usually happens in winter and early spring when snow limits access to forage. But Chaikina and Ruckstudhl (2006) and Gordon (1988) also found that winter cattle grazing in Scotland caused an increase in the amount of new vegetation in the following spring.

The small resident deer population uses the habitats along the Green River in the Spring Canyon Bottom allotment and in very limited areas of Deadman, Mineral and Horsethief Pastures. Here grazing activities may have the potential to impact the local resident deer. These impacts would include both spatial and forge competition as discussed above, though forage overlap is typically minimal.

As discussed in the vegetation section (4.2.1.9), moderate utilization levels, the rest rotational system and the lack of any grazing during the growing season in Spring Canyon Bottom Pasture would positively benefit plant species. In the pastures that are rested in the spring, allow the plants to build their root systems and increase nutrient storage at a quicker rate, therefore potentially providing improved forage year round for deer. Grazing would not exceed moderate levels, further ensuring plant health. The Proposed Action also has the potential to positively impact forage for deer along the river by maintaining good rangeland health throughout these allotments but spatial impacts may continue to occur.

Migratory Birds and Raptors

A variety of migratory bird and raptor species, including three Utah Partners in Flight (UPIF) priority species and one sensitive raptor species (burrowing owl), may use the allotment for breeding, nesting, foraging and migratory habitats. As discussed above, the ecological condition of the range directly affects the quality and quantity of the vegetative communities that support migratory birds. As discussed in the wildlife section above (4.2.1.1), the proposed grazing schedule for the Big Flat allotment would continue to support and improve good range conditions in to the future through moderate utilization levels and rotational spring rest. As range conditions improve, the density and diversity of these vegetative communities would also be expected to improve. Increased plant density offers improved thermal protective cover, nesting opportunity and increased forage and prey base.

Dominant vegetation types within the allotments desert scrub, pinion and juniper woodlands and shrub steppe communities. Extensive pinion and juniper woodlands provide nesting and foraging habitats for species such as the black-throated ray warbler, juniper titmouse and pinion jay and winter habitats for Virginia's warbler. Desert scrub and shrub steppe communities

provide nesting and foraging habitats for nesting and foraging habitats for species such as the Brewer's sparrow, sage sparrow and Gambles quail and prime foraging.

Stable or improving range conditions would maintain or facilitate greater density and diversity of these vegetative communities thus ensuring these species and other migratory bird species have suitable habitats for nesting and foraging on the allotments.

The allotments would be managed to achieve the objectives described in the Utah's Rangeland Health Standards, including maintaining desired species at a level appropriate for the site and species involved. Additionally, riparian areas would be managed in accordance with the Utah BLM Riparian Policy for Proper Functioning Condition. Riparian areas offer high quality breeding and foraging habitat to migratory birds due to the diversity and density of vegetation and insect prey.

Livestock may be in the area and have direct contact with breeding and nesting migratory birds during the first four weeks of migratory birds nesting season (typically May 1st through July 31st) and the first three months of the raptor nesting season (typically March 1st through August 31st) in pastures where spring grazing is occurring on a given year. Direct contact with cattle could result in migratory birds moving to other areas in or outside of the allotments that lack cattle activities to nest. If birds choose to nest in areas where grazing is occurring, nesting success could be directly affected by trampling nest sites located on the ground or in low shrub substrate, resulting in loss of eggs or possibly nestlings. Re-nesting, if needed, is often a very important way for birds to increase their lifetime fitness and for populations to maintain stable numbers (Wentworth 2001). Many birds that are unsuccessful in their first nesting attempt would re-nest thus ensuring reproductive success. Birds experiencing early nest failure due to the presence of cattle during the first few weeks of the nesting season may readily re-nest, resulting in reproductive success.

Overall, the proposed spring differed rotational grazing system coupled with the implementation of moderate utilization levels would maintain good range conditions on the allotments. As the health of the vegetative communities and ecological conditions improve local wildlife and migratory birds in the area would be expected to improve. Therefore, the Proposed Action is expected to support most wildlife and migratory bird habitats more than the No Action Alternative and Alternative C but less than the No Grazing Alternative.

Utah BLM Sensitive Species

Two Utah Sensitive mammal species (white-tailed prairie dog and kit fox), one sensitive raptor species (burrowing owl) have and three sensitive fish species (bluehead sucker, roundtail chub and flannelmouth sucker) have potential habitats within or adjacent to the allotments.

The proposed grazing schedule would facilitate vegetative health by providing a grazing management system that incorporates spring rest, moderate grazing levels and additional stock waters that would support the ecological condition of the range, as discussed above, while providing un-grazed areas during crucial wildlife periods in the spring.

Portions of these allotments have known occupancy and potential habitats for the white-tailed prairie dog, kit fox and burrowing owl.

Prairie dogs forage almost solely on plant matter, while kit fox and burrowing owls feed on smaller mammals, insects, and birds. Insects are an important food source to kit fox and burrowing owls. Healthy vegetative condition and plant cover are needed to provide a forage

base for prairie dogs, small mammals, and rodents while offering forage and cover for insects, which in turn provides a prey base for kit fox, burrowing owls and other predator species.

Burrowing Owls

Habitat in the Microwave Pasture offers the greatest potential for burrowing owl nesting.

In the Proposed Action, grazing would occur in the Microwave Pasture during the nesting period (March 1st through August 31st) by only15 days one year, in the next year grazing would be through the nesting season ending May 31st, and the third year grazing would be outside the nesting season. This rotation would serve to minimize potential impacts to nesting burrowing owls.

During active grazing years, grazing could occur in the vicinity of nesting owls when eggs and young owls are present underground. There is limited potential for cattle to impact nest burrows, especially near stock pond and watering areas where cattle congregate if they collapse an occupied burrow but overall burrow availability is not expected to be diminished. Prescriptions developed in the Moab RMP that require water sites and supplement locations to avoid nest sites by 0.25 miles would reduce the potential for impacts from livestock during the nesting season.

The U. S. Wildlife Service indicates that burrowing owls prefer grasslands moderately or heavily grazed by cattle or prairie dogs (James and Seabloom 1968, Butts 1973, Wedgwood 1976, MacCracken et al. 1985, Bock et al. 1993, and Klute et al. 2003). Optimal breeding habitat in portions of Colorado, Montana, Nebraska, North Dakota, South Dakota, and Wyoming occurred in heavily grazed areas with aridic ustoll soils and grazed areas with typic boroll soils (Klute et al. 2003 and Kantrud and Kologiski 1982). The continuation of grazing throughout the allotment would facilitate adequate suitable burrowing owl nesting habitat while ensuring the health of the vegetative community provides adequate vegetative cover and forage for prey base habitat, though grazing would be limited to moderate levels.

Prairie dogs

Habitat in the Microwave Pasture offers occupied, unoccupied and potential habitats. The White-tailed Prairie Dog Conservation Assessment recommends the development of grazing management practices that consider the season, duration, distribution, frequency and intensity of grazing use within the allotment to maintain sufficient vegetation on both upland and riparian sites to protect the soil from wind and water erosion to facilitate prairie dog habitat (Seglund 2004). As noted above, the proposed grazing schedule would continue to support good range conditions by providing rotational spring rest and moderate utilization. Since the Microwave Pasture would not be grazed in excess of moderate use and would be rested during the critical growing season two years out of every three, vegetative growth is expected to protect soils from excessive erosion, thus facilitating prairie dog habitats.

Kit Fox

Water developments in arid desert environments have been identified as creating negative influence to kit fox by enabling coyotes to expand distribution into arid landscapes under the assumption that water-dependent competitors would occur more frequently in areas near free water and would spatially and temporally displace arid-adapted subordinate competitors. Previous work has demonstrated that removal of coyotes did not influence survival of kit foxes, indicating that coyote-induced mortality may be compensatory and that other factors affect

population dynamics of kit foxes, such as prey availability. (Cypher & Scrivber 1992, Dennis & Otten 2000).

In the recently available study *Water Developments and Canids in Two North American Deserts: A Test of the Indirect Effect of Water Hypothesis* done on the United States Army Dugway Proving Ground in west-central Utah, approved and sanctioned by the United States Department of Defense and the Utah Division of Wildlife Resources, found that the intensity of visitation to water developments by kit foxes in the Mojave Desert indicates that arid-adapted species may use water developments more frequently than previously believed. The frequent visitation to free water by kit foxes in the Mojave Desert suggests that water developments may be more beneficial to this species than what has been previously understood. (Simpson et al 2011).

Additionally, the results of the study did not find any support for the assertion that free water played a negative indirect role on kit foxes but rather indicated that factor(s) other than the presence or distribution of free water were associated with occurrence of coyotes. (Hall et al., 2013). Therefore the various livestock water developments found throughout these allotments is not expected to limit potential kit fox habitat or occupancy.

Sensitive Species of Fish

Known habitats of the three sensitive fish species in the vicinity of the allotments to be renewed are found in the mainstream of the Green River and associated backwaters. Habitats for these fish are found only in and adjacent to the Spring Canyon Bottom Allotment. The two most noticable impacts to populations of roundtail chub, bluehead suckers, and flannelmouth suckers in the area are thought to be introductions of nonnative fishes and altered flow regimes (UDWR 2006). Introduction of nonnative fishes and altered flow regimes are not proposed in the renewal of these allotments. Livestock grazing in the riparian habitats associated to these habitats may have the potential to cause detrimental impacts to native riparian vegetation, bank stability, and water quality in a manner that contributes to the continued decline of these species (Chaney et al. 1990 and UDWR 2006). Though, excessive livestock grazing has the potential to negatively impact riparian and aquatic habitats in a variety of ways, impacts to the vegetation are not expected in this allotment due to the current lack of spring grazing. The Proposed Action would ensure grazing utilization would not exceed moderate levels and no spring grazing in this area would continue, therefore riparian detrimental impacts to native riparian vegetation, bank stability, and water quality is not expected.

The Proposed Action includes moderate grazing levels, rotational spring rest periods, and adjustment of livestock. As a result of these strategies combined with no spring grazing in the Spring Canyon Bottom Allotment, livestock grazing is expected to contribute to an increase in the relative abundance and diversity of native vegetation in riparian habitats along the Green River as a means of improving channel and floodplain conditions, potentially benefiting the habitats of the three sensitive fish species.

Overall, the Proposed Action would be more beneficial to Utah sensitive animal species and their habitats than the No Action and Alternative C. The Proposed Action would provide more areas of un-grazed space during the spring, rotating the spring rest, and moderate grazing utilization levels. The No Grazing Alternative is expected to provide more ungrazed space year round.

Threatened, Endangered, or Candidate Animal Species

Mexican spotted Owl

As noted in Chapter Three, there are approximately 17,000 acres in the project area that provide habitats capable to support nesting MSOs. These habitats include approximately 8,700 acres that offer suitable nesting habitat and 8,300 acres that provide supporting suitable foraging habitat. The majority of these nesting habitats are found below the rims of large, deep canyons where the actual nesting structure is not accessible to cattle; therefore no direct contact from cattle would be expected. Above the rims and in the canyon bottoms suitable foraging habitat could incur impacts from cattle grazing and indirect impacts to nesting owls.

Of these habitats, over 4,100 acres are located in the Spring Canyon Bottom Allotment where the season of grazing use would avoid the entire MSO nesting season (March 1st through August 31st) as no spring grazing would occur. Complete lack of spring grazing would provide vegetative growth and seed production to support the MSO prey base. No potential for indirect contact between nesting owls and cattle is expected and adequate vegetative growth to support the MSO prey base would be available.

In the Courthouse and Lone Mesa Pastures there are approximately 2,100 acres of suitable habitat, minimal grazing would occur during 3 weeks in March two years out of six. This is expected to result in very limited potential for indirect contact between nesting owls and cattle while ensuring adequate vegetative growth to support the MSO prey base.

Approximately 400 acres of suitable habitat is found in the Bartlett Pasture. Over the course of six years the Bartlett Pasture is grazed for one month in either March or May in four of the years and is grazed in January and early February two of the six years. This schedule would result in limited potential for indirect contact between nesting owls and cattle on some years if nesting was to occur in the pasture. The limited time (one month) in March or May when grazing would occur would allow adequate vegetative growth and recovery to support the MSO prey base.

The remainder of these suitable habitats (approximately 10,400 acres) is located in pastures where seasonal spring rest would occur every other year (Deadman and Big Flat Pastures) or two years out of three year (Beehive, Mineral and Horsethief Point Pastures). This schedule would result in some potential for indirect contact between nesting owls and cattle on some years if nesting was to occur in the pasture and is expected to provide for adequate vegetative growth to support the MSO prey base.

Southwestern Willow Flycatcher (SWFL)

All SWFL habitats and known migrate use is found in the Spring Bottom Allotment where the current and proposed grazing season of use would avoid the entire SWFL nesting season (April 15 through August 15) as no spring grazing would occur. Complete lack of spring grazing would provide vegetative growth and seed production to support the SWFL habitats and prey base. This in expected to result in no potential for direct or indirect contact between SWFLs and cattle while ensuring adequate vegetative growth to support the SWFL cover needs.

Colorado Pikeminnow and Razorback Sucker

Designated critical habitat for the Colorado pikeminnow and the razorback suckers exists in and along the Green River and its floodplain. The Spring Canyon Bottom Allotment is the only area where there is potential for these fish species are expected to occur. Livestock grazing is probably not a primary and direct factor in the decline of these populations over recent decades. Though, excessive livestock grazing has the potential to negatively impact riparian and aquatic habitats in a

variety of ways, impacts to the riparian vegetation are not expected in this allotment due to the lack of spring grazing as discussed above.

Overall, the Proposed Action would benefit most federally listed species and their habitats more than the No Action alternative and Alternative C. The Proposed Action would provide more areas of ungrazed space during the spring, rotation of the spring rest, and moderate grazing utilization levels. However, the No Grazing Alternative would provide the maximum amount of ungrazed space year round.

In summary, the benefits of the Proposed Action to vegetation from spring rest are documented in Chapter 4.2.1.9. Rotation of the spring grazing along with moderate utilization levels would help to maintain and improve the vigor and productivity of the vegetative communities throughout the allotments. This is expected to facilitate forage production, seed production, production of good plant vigor, aid in seed dispersal and establishment of young plant species. This would have overall positive effects to most wildlife habitats, prey base habitats and individual species, as discussed above. Impacts to some individuals could occur but this potential is limited, typically to grazed areas during the spring. The Proposed Action is expected to support most wildlife species and their habitats more than the No Action Alternative and Alternative C but not more than the No Grazing Alternative.

4.2.1.2 Invasive Species/Noxious Weeds

Disturbance is an important factor affecting community structure and dynamics (Elton, 2000), especially where disturbance disrupts species interactions and reduces competition (Crawley 1986). Areas that receive a large amount of disturbance include those around range improvements and livestock supplement locations. These areas of disturbance can allow for non-native plant species to become established as competition for space and resources decreases. Invasive plants that are most likely to be established after a disturbance would be cheatgrass, Russian thistle, halogeton, and tumble mustard. These species produce tremendous amounts of seed and spread effectively even without any livestock influence (Merritt et al, 2000).

The use of temporary water developments would be a short term disturbance with the impacts ceasing following the conclusion of livestock use in the area and the water storage tanks being removed. The majority of the temporary water developments have been in use since the 1980's and the invasive species that are evident on those locations is Russian thistle and cheatgrass. It is expected that the invasive species would occupy the tank locations and continue to be present following the removal of the tanks. The disturbance around the already authorized water developments would continue and any impacts to the establishment of invasive species and noxious weeds has already occurred and would be expected to continue as it currently is. The proposed new permanent water developments would be expected to have a potential future establishment of Tamarisk species as there is a viable seed source close by (within Mill Canyon, Seven Mile Wash and the Green River) and an increase of the invasive species (cheatgrass and Russian thistle) immediately around the proposed developments.

The deferred rotational grazing management for the allotments would potentially allow the native plants a partial rest during the boot stage to seed maturation in the majority of the allotments pastures; rotating of the spring grazing would allow for better establishment of native plants verses a season long grazing management where the plants would not have any rest during that period. The moderate utilization level term and condition would potentially increase

the vigor of the desired plants more than the No Action and Alternative C and less than the No Grazing Alternative. Having better establishment of native plants would increase the competition with non-native plants for resources which would potentially reduce the competitive ability of invasive/noxious plants.

There is the potential to spread noxious/invasive plants through feeding of hay even in certified weed free hay. Monitoring of feeding locations (if authorized) would take priority for surveying for noxious/invasive plants. To be certified weed free hay, an inspector inspects the field where the hay is grown and certifies that there were no weeds observed. This is not a guarantee that there are no weeds present in the field, but rather guarantees that no weeds were observed during the inspection.

Equipment used to maintain reservoirs could contain weed seeds within the working parts and undercarriage of the equipment. This potential would be decreased with the term and condition to clean the equipment of dirt and debris before bringing it out to do the work. However, the potential for weed infestation exists. If noxious weeds were to become established, the BLM inspects improvements regularly and identification of any invasive/noxious plants is part of the inspection. This would be used in identifying and prioritizing noxious weed treatment areas.

4.2.1.3 Livestock Grazing

The Proposed Action would implement new range improvements to help increase distribution of the livestock. The creation of the new pastures would allow for better livestock management and movements on the allotments. The implementation of the grazing management and utilization term and condition would help to improve vegetation on the allotment making more forage available for livestock use.

Hauling water to the proposed water haul sites would add to the cost of livestock management on the allotments. It is difficult to quantify the cost of hauling the water as not every site would need water hauled and would largely depend on the amount of precipitation as the livestock would drink from puddles formed in the rock formations or consume snow to rehydrate. It would also depend on when the livestock would be rearing their young as during lactation the livestock would need more water to support them and their young. The addition of two new water sources would help to pull the cattle away from the riparian and make better use of the allotment and would open up underutilized areas of the Courthouse Pasture.

The timing of grazing can have an impact on plant productivity and vigor, especially if livestock are repeatedly present during plant growth and reproductive stages (Mcginty, Baldwin, and Banner 2009), which occur in the spring for shrubs and cool season grasses. If grazing is properly managed during the spring, then plants can build their root systems and increase nutrient storage. The result is more robust plants which are more likely to survive and increase overall forage production (Mcginty, Baldwin, and Banner 2009). The livestock would then have more forage available and be able to continue to graze into the future.

As grazing guidelines continue to be achieved or moving toward achieving on the allotments and as vegetation condition improves, the Big Flat, Horsethief Point and Spring Canyon Bottom Allotments should over time meet the RMP goals and objectives of managing for the desired future condition. This would ensure an ecological diverse, stable, and sustainable system. By doing so it would ensure that the management of livestock on allotments would continue into the future.

The Proposed Action would maintain a productive ranching operation by managing the allotments for long term sustainability and would continue the use of a renewable resource for food production. The permittees would benefit by having the permit as they would be able to graze their livestock on pubic range at a greatly reduced cost as compared to private range or the feeding of hay.

4.2.1.4 Recreation

The season of use of recreationists (March – October) differs somewhat from the season of use for cattle. That is, cattle are not present on the allotments during the majority of the recreational use occurs. This helps reduce impacts to recreation users. Alternative A reduces the likelihood of cattle on Highway 313 by changing the season of use on the Lone Mesa and Big Flat Pastures (the two pastures which adjoin Highway 313). It is along Highway 313 where recreation users are most heavily impacted by grazing, due to the danger of cattle on the road. The Lone Mesa Pasture would be grazed only from January to March, when recreational use is low. The Big Flat Pasture would be grazed in years one and three from November through December, when recreation use is low. In years two and four, this pasture would be grazed from March through May. During years two and four, there would be some danger that cattle could be on the road during the heavy recreation season.

Dispersing water locations off the Highway 313 corridor would also help reduce conflicts between cattle and vehicles. When cattle water near the highway, the likelihood of vehicle-cattle collisions is increased. Moving watering locations away from the highway would reduce this risk.

4.2.1.5 Soils

The Proposed Action has potential for reduced impacts to overall soil conditions throughout the allotment, with fewer impacts than the No Action Alternative. Every pasture is grazed at some time every year. During the spring at least 89 percent of the allotment is rested during the late spring. This is less impacting than the No Action Alternative where the 83 percent of the allotments pastures are rested in the late spring.

Limiting grazing in the spring would allow upland soils the protection necessary to continue to meet Utah's Rangeland Health Standard number one (Upland Soils). Implementation of the proposed grazing system would potentially increase vegetative cover and litter which protect the soil surface from excessive water and wind erosion by increasing infiltration and soil moisture conditions (Lusby, 1963).

The Rangeland Health Assessments (Appendies M, N and O) did not make a determination that there was any erosion or soil stability issues on the allotments. The allotments are meeting standard number one (Upland Soils).

The Proposed Action includes a term and condition that limits utilization to an average of 50 percent (41 to 60 percent) utilization. "Using the suggested moderate utilization level of 50 percent as an end of growing season value ensures that half of the current year's biomass (production), by weight, can be removed without affecting the health of the plants. Moderate grazing also provides an adequate yearlong cover crop that would protect the soil surface from wind and water erosion." (Draft Utah Monitoring Manual, Appendix G Utilization Studies Pg. 300).

Although the No Grazing Alternative may reduce the impacts on the soils in the allotments, at a quicker rate than the Proposed Action, currently Standard 1 (Upland Soils) is being met and there is little evidence of wide spread soil erosion issues on the allotments.

The Proposed Action is less impacting to soils with the potential for a dust blowout area than the No Action Alternative. With a grazing system that would rest at least 89 percent of the allotment every year areas impacted by past drought and intense grazing use would have the potential to improve and increase in vegetative cover and soil stability. This would theoretically reduce the potential for dust generation areas.

The Proposed Action Alternative is less impacting to soils adversely affected by drought than the No Action Alternative. With a grazing system that would rest at least 89 percent of the allotment every year during the late spring, areas impacted by past drought would have the potential to improve and increase in vegetative cover and soil stability.

Natural erosion rates of saline soils are accelerated by surface disturbances. According to Lusby, 1963, "rest from grazing during …Feb 15 to May 15 allows soils to go partially through the annual change cycles of freezing/ thawing … and developing the popcorn surface appearance". This reduces the potential for wind and water erosion, increases infiltration rates, and reduces compaction. When soil erosion and compaction are kept to a minimum, the loading of salinity, selenium and sediment are minimized as well as maintaining overall soil health conditions.

The spring season is defined in the Proposed Action as March 21st through May 31st. In year one the Dalton Wells, Mineral Point, Barltett Flat and Deadman Pastures are used in the spring. The Airport, Beehive, Horsethief Point, Microwave, Big Flat, Courthouse and Lone Mesa Pastures are rested in the spring. In the following years, the spring use is rotated through the various pastures (see Appendix E).

This is less impacting than the No Action Alternative where the pastures would be grazed at the same time of year each year, with two of the pastures having the late spring grazing rotated every other year. Under the Proposed Action every year at least 89 percent of the allotments would be rested in the spring. The benefits to vegetation from spring rest are documented in section 4.2.1.9. and include improved vigor, vegetative cover, reproduction, and recruitment, all of which have the potential to protect the soil by decreasing accelerated wind and water erosion, increasing infiltration rates, reducing compaction, increasing overall soil health and reducing potential salinity and selenium in the Colorado River Basin.

Soils are most susceptible to wind erosion in the spring (April through June) during the heavy wind period in this area of the Colorado Plateau. Early spring rains can help reform physical crusts that may help stabilize the soil surface if the soils are undisturbed following storm events.

The Proposed Action Alternative is less impacting to soils with high wind erosion potentials than the No Action Alternative because with the implementation of a new pasture rotation system, vegetative ground cover should increase which would help to stabilize soils and reduce erosion. The best management practices in trying to achieve the DFC during extended drought conditions are to avoid unnecessary disturbance." The desired future conditions for vegetation can be found in Appendix S of the Moab RMP.

The Proposed Action Alternative is less impacting to biotic soil crusts than the No Action Alternative. With a pasture rotation system there should be a decrease in soil compaction and

an increase in vegetative cover and soil stability, improving overall soil health conditions as well as biotic soil crust conditions.

4.2.1.6 Vegetation

Plants use water and carbon dioxide in the presence of sunlight to create carbohydrates and oxygen (a process called photosynthesis). Plants use carbohydrates as an energy source for growth. When plant growth slows and more carbohydrates are produced than needed for growth, the surplus carbohydrates are stored. These reserves are important for the plant's survival over winter and for initiation of plant growth in spring. Regrowth after grazing depends on energy being produced either by the remaining leaf area, or from the carbohydrate reserves.

Plant growth starts slowly in the spring. Carbohydrate reserves stored in stem bases, roots, rhizomes and stolons have to be mobilized before they can be used to fuel growth. Once leaf area develops, growth quickens as the plant has an immediate source of energy from photosynthesis. After this vegetative period of fast growth is over, the plant becomes reproductive, growth slows and carbohydrate reserves are replenished.

Grazed plants left with enough leaf area to continue photosynthesizing regrow at a quicker rate, as they are not dependent on carbohydrate reserves. Plants frequently grazed close to the stems or soil surface can be damaged because they are unable to restore their carbohydrate reserves. During the growing season and during defoliation, the plant's reserves are reduced and with time, depleted. In addition, any intensity of grazing during the active growing season causes plant root damage; root weight, length and vigor are reduced. The extent of the damage increases with the severity of the defoliation.

Under Alterative A, the allotments would have changes made to the pastures and the rotation of livestock. These changes would control when and where the livestock can graze. This would change the timing of grazing use being made to the plants. The majority of the allotment would be rested during the critical time. The critical time is when the plant species changes from leaf growth to seed production or is commonly called the boot stage of plant production. This means that the plants in the spring rested pastures would regrow at the quicker rate, resulting in less impact to vegetation within the pasture. The pasture where the cattle are grazing during that time period would be impacted by having the leaf and seed head removed reducing the plants carbohydrate reserve to replenish the lost leaf and seed. This could potentially reduce the vigor of the plants and even cause plant death. This potential would be lessened by having the three pasture spring rest rotation for the three cattle herds. The livestock would not reenter the pasture during the boot stage until three years later. This would be better than the No Action and Alternate C where the pasture would be reentered every two years.

Alternative A would incorporate the utilization standards stated in the 2008 RMP which allow for moderate use throughout the allotments and when moderate use is reached livestock would be removed from the pasture or allotment. Perennial grasses vary in sensitivity to utilization, but a majority of them sustain little damage if grazing stops in time for them to complete seed maturation (Heady and Child, 1994).

The trend for the Big Flat to Tenmile Allotment would be expected to improve with the change in the timing and duration of the grazing use made and by incorporating the utilization standards on the grass species. It would be expected to have the most immediate change made to the grass plant community as they are the plants that are being targeted during the late spring. More

specifically it would be expected that the basal cover of the Indian ricegrass and needle and thread would improve and progress toward the meeting of objectives. Over time it would be expected that the trend for the allotment would be expected to follow a cyclical pattern matching that of the precipitation. The sod forming grasses (James' galleta and blue gramma) would be expected to have an upward trend over the next ten years as they would rarely if ever be grazed during the boot stage. The shrubs and forbs would be expected to have a trend of not apparent, this means that there is no statistical significance between the data from previous readings.

4.2.1.7 Mitigation Measures

None

4.2.1.8 Monitoring and/or Compliance

Qualitative monitoring and compliance would occur throughout the grazing season. Quantitative monitoring efforts would occur about every three years. Monitoring is established to assure that the overall ecological health of the allotment is being managed for as well as to detect the trend or change in vegetative composition. Grazing permit compliance monitoring and resource impact monitoring are included in the Proposed Action described in Chapter 2.

4.2.2 Alternative B – No Action

4.2.2.1 Fish and Wildlife Including USFWS Threatened and Endangered Species, State Sensitive Species and Migratory Birds

Under the No Action alternative it is expected that utilization could exceed moderate use, two pastures would receive spring rest once or twice every three years, Mineral Point and Bartlett Flat would receive minimal to no spring grazing, 83 percent of the allotments would not be grazed in the spring on a rotational bases, Airport and Courthouse Pastures would be used the entire season by first-calf heifers and no additional improved water availability would occur to insure proper stocking rates.

The analysis of the No Action Alternative assumes grazing utilization could exceed moderate use levels. Which could result in no improvement and possible degradation of the vegetative health and the vegetative conditions which would be not expected to improve. As the vegetative conditions potentially decline they would not be expected to offer denser and taller vegetative cover for wildlife habitat.

It is assumed that in pasture(s) where spring rest is occurring that year; 1) there would be lack of physical grazing pressure on wildlife and the vegetative structure, 2) density and reproductive capacity (cover and forage) would not be removed, though grazing levels above moderate levels in prior years may reduce that capacity of the plant communities abilities to recover in following years, resulting in diminished vegetative structure, density and reproductive capacity. It is also assumed that in pasture(s) where spring grazing is occurring that year, there would be physical grazing pressure on wildlife and the vegetative structure. The plant density and reproduction (cover and forage) would be removed potentially in excess of moderate utilization levels. It would also be assumed that, with no spring rest in the Airport and Courthouse Pastures and the potential to have greater than moderate utilization levels throughout the entire allotment, long term improved vegetative health may not occur, and As the vegetative conditions potentially decline they would not be expected to offer denser and taller vegetative cover for wildlife habitat.

General Wildlife

As discussed in the General Wildlife under section 4.2.1.1, the ecological condition of the range directly affects the quality and quantity of the vegetative communities that support the wildlife on the allotments. Under the No Action Alternative, grazing utilization could be in excess of moderate utilization levels. This has the potential to increase the severity of the defoliation; potentially resulting in decreased ability for regrowth after grazing. Reduced ability for regrowth could reduce carbohydrate reserves and the ability for the plant to produce new growth and create needed carbohydrates for storage. The grasses and forbs could have more than moderate utilization on their leaves and stems this could reduce the plants ability to remain healthy and productive. Under the No Action, native plant communities are not expected to improve and may incur diminished health, productivity and density. Decreased plant productivity and density would reduce thermal protective cover for both prey and predator species and reduce forage base for prey species. Decreased plant density reduces forage opportunities for larger ungulates.

At least 83 percent of the allotment would continue to be rested during the late spring with all cattle in one or two pastures. A large portion of the allotment would be rested during the critical growing season and within these pastures plant growth would be less impacted that year, thus vegetative structure produced that spring would remain intact, whereas the pastures grazed in the spring could sustain greater than moderate utilization for several years and could impact the regrowth capacity the following spring as the carbohydrate reserves have been depleted.

Plant density in un-grazed areas during the spring may continue to offer thermal protective cover for both prey and predator species and forage base for prey species, but greater then moderate utilization levels could have the potential to diminish the health and productivity of these vegetative communities resulting in reduced forage and cover.

As discussed in the General Wildlife under section 4.2.1.1, spring grazing could have short-term detrimental effects to local wildlife during sensitive periods.

As discussed in the General Wildlife under section 4.2.1.1, migratory birds utilizing the allotment would tend to avoid the grazed portions, occupy the un-grazed areas for nesting and would re-nest in following years in suitable locations.

The No Action Alternative provides a higher potential for greater than moderate utilization and less spring grazing rest then the Proposed Action and would benefit most wildlife species and their habitats in general, less than Proposed Action and the No Grazing Alternatives and is similar to Alternative C.

Big Game

<u>Desert Bighorn Sheep Habitat</u>

Bighorn sheep impacts from livestock grazing under the No Action Alternative may include forage and space competition, habitat fragmentation, and disease as discussed in section 4.2.1.1.

The allotments contain lambing and rutting habitats that exists in all of the pastures. The Spring Canyon Bottom Allotment provides the best high quality lambing habitat. Bighorn may be impacted by the presence of cattle within its habitat as there is potential for forage and space competition and social intolerance to occur when these allotments are being grazed.

The Spring Canyon Bottom Allotment currently has limited grazing in January and February outside of both the rut and the lambing period. Foraging availability and quality in this area are expected to remain adequate. Limited grazing in January and February in this pasture outside of the rut would not impact current rut activities as the cattle would not be present during the rut. Forging availability and quality are not expected to change in this pasture.

Throughout the Big Flat to Tenmile Allotment there is prime lambing and rutting habitat. This habitat is found in the more rugged and dissected terrain and in the canyon portions of each pasture. This alternative would continue to implement rotational spring rest with the exception of the Airport and Courthouse Pastures, moderate utilization levels could be exceeded, and better distribution of livestock by the addition of the new water sources for would not occur. This alternative is expected to have very similar impacts to bighorn and their habitats as identified in the Proposed Action but not in the Spring Canyon Bottom Allotment. This alternative would incur less interference with the rutting season in the Spring Canyon Bottom Allotment, as cattle would not be present during the rut. Social intolerance of bighorn and cattle would be the most impacting during the lambing season (April 1st to June 15th) when ewes with lamb. These impacts are expected to be similar to the Proposed Action.

Pronghorn

Forage and space competition between antelope and cattle are discussed under the Pronghorn heading found in section 4.2.1.1. The Airport Pasture is where the pronghorn habitat is found on the three allotments. The grazing schedule under this alternative allows for grazing from November through May every year with no spring rest. Livestock would continue to utilize pronghorn habitat in the spring prior and during fawning season (May 1st to June 15th). Competition for space and forage between cattle and pronghorn during the fawning season would continue to occur.

Mule Deer

As discussed under the Mule Deer heading found in section 4.2.1.1, in mule deer habitat, the physical presence of cattle can have negative impacts. The deer are primarily found in the habitat along the Green River within the Spring Canyon Bottom Allotment and in very limited areas of the Deadman, Mineral and Horsethief Pastures. This alternative would have similar impacts as the Proposed Action for the Spring Canon Bottom Allotment, due to the current and the lack of any grazing during the growing season. In the other three pastures there is rotational spring rest similar to the Proposed Action, but grazing could exceed moderate utilization levels. Impacts are nearly the same as the Proposed Action, though less forage may be available for mule deer use.

Migratory Birds and Raptors

As discussed in section 4.2.1.1 the ecological condition of the range directly affects the quality and quantity of the vegetative communities that support migratory birds. As discussed in the General Wildlife heading of Chapter 4.2.2.1 this alternative would continue to provide, on an annual basis a large portion (83 percent) of the allotment that would be void of livestock activity during the spring nesting season but there would be the potential for greater than moderate utilization levels throughout the allotment. This could result in negative impacts to the health of the vegetative communities as discussed above.

Overall, the existing grazing system and the potential for greater than moderate utilization levels are not expected to improve existing range conditions in the allotment. This could result in a lack of improved health of the vegetative communities and ecological conditions that support local wildlife in the area. The No Action Alternative would continue to provide un-grazed areas in the spring during crucial wildlife periods. The No Action Alternative is expected to support most wildlife and migratory bird habitats less than the Proposed Action and the No Grazing Alternatives and similar in impacts to Alternative C.

Utah BLM Sensitive Species

Section 4.2.1.1 provides general and more specific impacts to the two Utah sensitive mammal species (white-tailed prairie dog and kit fox), two sensitive raptor species (bald eagle and burrowing owl), and three sensitive fish species (bluehead sucker, roundtail chub and flannelmouth sucker) that have potential habitats within or adjacent to the allotments. Impacts from this alternative are expected to be very similar to those described in section 4.2.1.1 except as noted below.

Burrowing Owls

The Airport Pasture offers the greatest potential for burrowing owl nesting habitat. This alternative allows for cattle to continue to graze throughout the entire grazing season every year. Cattle have the potential to impact the nest burrows, especially near water developments where cattle congregate. The continuation of grazing throughout the allotment would facilitate adequate suitable burrowing owl nesting habitat where the owls like to nest in areas that is moderate to heavely grazed by livestock or praire dogs. There is still the potential for the livestock to collapse nest burrow on an annual basis. Though this this alternative may not facilitate the improvement of the health of the vegetative community by providing adequate vegetative cover and forage for the prey base habitat, as discussed in section 4.2.1.1.

Prairie dogs

Within the Airport Pasture, where the majority of suitable habitats exist and all known colonies are found, potential direct impacts could occur every year throughout the entire grazing season. The continuation of grazing with no spring rest and the potential for utilization to exceed moderate levels does not support the White-tailed Prairie Dog Conservation Assessment (Seglund 2004), which recommends the development of grazing management practices that consider the season, duration, distribution, frequency and intensity of grazing use within the allotment to maintain sufficient vegetation on both upland and riparian sites to protect the soil from wind and water erosion.

Kit Fox

Existing water developments are not expected to limit potential kit fox habitat or occupancy, as discussed in section 4.2.1.1.

Sensitive Species of Fish

As discussed in section 4.2.1.1, known habitats of the three sensitive fish species is found in the mainstream of the Green River and associated backwaters on the Spring Canyon Bottom Allotment. Through livestock grazing in the riparian habitats has the potential to cause detrimental impacts to native riparian vegetation; impacts are not expected on this allotment due to the current lack of spring grazing under this alternative.

Overall, the No Action Alternative would benefit most Utah's sensitive animal species less than the Proposed Action and No Grazing Alternatives and is very similar in impacts as Alternative C.

Threatened, Endangered, or Candidate Animal Species

Mexican spotted Owl (MSO)

As identified in section 4.2.1.1 the majority of MSO nesting habitats are found below the rims of large, deep canyons where the actual nesting structure is not accessible to cattle; therefore no direct contact from cattle would be expected. Above the rims and in the canyon bottoms there is suitable foraging habitat and impacts from cattle grazing could impact the prey species that the nesting MSOs would rely on.

The Spring Canyon Bottom Allotment and the Mineral Point Pasture's grazing season of use would avoid the entire MSO nesting season (March 1 through August 31). Potential impacts to MSO for the Spring Canyon Bottom Allotment would be the same as the Proposed Action.

Under the No Action Alternative the Courthouse Pasture would be grazed throughout the entire grazing season by first–calf heifers, resulting in the continuation of potential for indirect contact between nesting owls and cattle within the suitable habitats, if nesting was to occur.

Over the course of three years the Bartlett Flat Pasture is grazed once for one month in March and receives spring rest two of the three years. This schedule would result in very minimal potential for indirect contact between nesting owls and cattle on some years if nesting was to occur in the pasture. The one month in March while grazing would be occurring would potentially allow for adequate vegetative growth recovery to support the MSO prey.

In the Deadman and Big Flat Pastures, where seasonal spring rest would occur once or twice every three years would potentially result in some potential for indirect contact between nesting owls and cattle if nesting was to occur in the pasture.

The No Action Alternative would offer benefits to vegetation from spring rest as documented in section 4.2.1.9, but grazing levels could exceed moderate utilization levels. Rotation of the spring rest would help the vigor and productivity of the vegetative communities throughout the rested pastures but potential of greater than moderate utilization levels could reduce dispersal and establishment of young plant species.

Southwestern Willow Flycatcher (SWFL)

All potential and suitable SWFL habitats and known migrate use is found in the Spring Canyon Bottom Allotment where the season would be January 1st through February 28th, thus avoiding the entire SWFL nesting season (April 15th through August 15^{rh}). Impacts to SWFL are potentially the same as the Proposed Action.

Colorado Pikeminnow and Razorback Sucker

Critical habitat for the Colorado pikeminnow and the Razorback suckers are found in the Spring Bottom Canyon Allotment where the season would be from January 1st through February 28th. Impacts are potentially the same as the Proposed Action.

Overall, this alternative would have very similar impacts to federally listed species as discussed under the Proposed Action, but the potential for greater than moderate utilization levels could reduce the health of the vegetative communities that support the prey base habitats, provide

cover, and support stable soil conditions within the uplands for the federally listed species habitats.

In summary, the No Action Alternative includes the continuation of a spring rest/rotation system on several pastures and season long grazing in two pastures, coupled with the potential to exceed moderate utilization levels. The continuation of this grazing system is not expected to improve the health of the vegetative communities and ecological conditions that supports wildlife in the area. Therefore the No Action is expected to support most wildlife and their habitats but less than the Proposed Action and the No Grazing Alternatives and is very similar in impacts as Alternative C.

4.2.2.2 Invasive Species/Noxious Weeds

Disturbance is an important factor affecting community structure and dynamics (Elton, 2000), especially where disturbance disrupts species interactions and reduces competition (Crawley 1986). Areas that receive a large amount of disturbance include those around range improvements and livestock supplement locations. These areas of disturbance can allow for non-native plant species to become established as competition for space and resources decreases. Invasive plants that are most likely to be established after a disturbance would be cheatgrass, Russian thistle, halogeton, and tumble mustard. These species produce tremendous amounts of seed and spread effectively even without any livestock influence (Merritt et al, 2000).

The use of temporary water developments would be a short term disturbance with the impacts ceasing following the conclusion of livestock use in the area and the water storage tanks being removed. The majority of the temporary water developments have been in use since the 1980's, and would be expected to continue in their use, the invasive species that are evident on those locations is Russian thistle and cheatgrass. It is expected that the invasive species would occupy the tank locations and continue to be present following the removal of the tanks. The disturbance around the already authorized water developments would continue and any impacts to the establishment of invasive species and noxious weeds has already occurred and would be expected to continue as it is currently. There would be no new permanent water developments and impacts from those would not be expected under this alternative. However, the benefit of having a new source of water to help increase livestock distribution would not be realized under this alternative.

The grazing management for the allotments would not be changed and the potential for invasive plant establishment and spread would continue at the same rate as it is currently. It is expected that the main areas of concern for further spread would be the Airport, Big Flat, Deadman, Mineral, and Horesthief Point Pastures. These pastures would receive the most frequent spring grazing. The Airport Pasture is grazed season long and the desired plant species would be expected to reduce in density and production making more areas available for noxious or invasive plants to become established. The remainder of the allotments pastures would be grazed in rotating years. The lack of spring rest would target desirable plant species reducing their ability to compete in the environment. As the desirable plants receive more grazing pressure the less desirable plants receive less grazing pressure further promoting them in the environment. By having management that would allow for more rest during the boot stage to seed maturation would potentially increase the desirable plants ability to compete in the environment; rotating of the spring grazing would allow for better establishment of native plants

verses a season long grazing management where the plants would not have any rest during that period. Under the No Action Alternative the benefits of rotating the spring grazing would not be realized for the Airport Pasture where the current management is season long grazing.

Equipment used to maintain reservoirs could contain weed seeds within the working parts and undercarriage of the equipment. This potential would continue to be of concern as there is no term and condition to clean the equipment of dirt and debris. If noxious weeds were to become established, the BLM inspects improvements regularly and identification of any invasive/noxious plants is part of the inspection. By not cleaning equipment there may be an added cost as there would be no prevention measures in place to limit the potential of new infestations. However, the improvements would be inspected and the BLM would identify potential noxious weed infestations and potentially have an increased cost because of new treatment areas.

4.2.2.3 Livestock Grazing

This alternative would follow the grazing pattern outlined in Appendices H and I. The No Action Alternative would not implement a grazing system that allows for sufficient spring rest. The trend of the allotment may decline or continue to be static. As the quality and quantity of forage declines the livestock operation would have to adjust by reducing their stocking rate and/or changing the season of use on the allotments. There are potential negative impacts to long term sustainability of livestock grazing as a result of lost vegetation.

Under the No Action Alternative the season of use on the Spring Canyon Bottom Allotment would not be changed and the risk of livestock loss on the river would continue.

4.2.2.4 Recreation

The season of use of recreationists (March – October) differs somewhat from the season of use for cattle. That is, cattle are not present in the allotment for much of the time that recreation use occurs on it. This helps reduce impacts to recreation users. Unlike the Proposed Action, the No Action Alternative does not reduce the likelihood of cattle on Utah Highway 313 by changing the season of use on the Lone Mesa and Big Flat Pastures (the two pastures which adjoin Highway 313). This means that cattle-vehicle interactions would continue to occur. By not dispersing water locations off the Utah Highway 313 corridor, cattle would continue to concentrate near the highway, increasing the likelihood of vehicle-cattle collisions.

4.2.2.5 Soils

The impacts on soils would be similar to that of the Proposed Action as the allotment would be managed with a differed rotational system similar to the Proposed Action alternative with exception of the Airport Pasture where grazing would occur all season long. The main difference between the Proposed Action and the No Action is in the frequency of the spring grazing of the pastures. The Mineral, Horsethief Point, Big Flat and Deadman Pastures would be grazed every other year and rotated between two of the pastures. This would allow less time for the soils to recover from a grazing event than the Proposed Action. It would still offer about 83 percent of the allotment to be rested during the late spring grazing. The frequency of the late spring grazing would be one third less than the Proposed Action.

There would be no utilization standards under this alternative and the grazing use and the same grazing use patterns would be expected. There would be no improved management as the livestock management would remain the same. There would be no new pastures to change the

timing and duration of grazing use for the pastures. The impacts of the new range improvements would not be realized under the No Action Alternative.

Rangeland Health Assessments for majority of this allotment shows under the No Action Alternative at the present time the upland sites exhibited sufficient cover and litter relative to site potential to protect the soil surface from erosion. Soil surface has increased at the upland sites due to annual inputs of herbaceous vegetative cover, biological soil crust and litter. The indicators of erosion showed no erosion to minor erosion at the upland sites. Soil pedestals are not common and large connected areas of bare ground are not evident at these sites.

4.2.2.6 Vegetation

The impacts to the vegetation under this system would be similar to that of the Proposed Action. The main difference is the frequency of which the pastures would be grazed and the lack of a utilization standard. The Proposed Action would allow for a longer period of late spring rest for the pastures and limit the grazing use to moderate levels while this alternative would graze the late spring more frequently and have areas that would potentially receive more than moderate utilization. It is expected that under this alternative the vegetative trend would remain the same. There would be no increase in density of the perennial grasses and they would remain lower than the potential for the allotment. In 1997 there was a significant decrease in the perennial grasses and there has been little to no recovery since. It is expected that the allotments would remain at the lower level under this alternative.

4.2.2.7 Mitigation Measures

None

4.2.2.8 Monitoring and/or Compliance

See Section 4.2.1.8.

4.2.3 Alternative C – Permittee Alternative

4.2.3.1 Fish and Wildlife Including USFWS Threatened and Endangered Species, State Sensitive Species and Migratory Birds

Under Alternative C, utilization could exceed moderate use and the Big Flat allotment would be available for an additional 30 days with grazing from October 31st through June 15th and the Spring Canyon Bottom allotment would remain available from November 1st through December 31st. Spring grazing on a rotational basis would occur with Airport Pasture grazed from November through early April every year and Dalton Wells from early April through mid-June every year with no spring rest. Bartlett, Big Flat and Courthouse Pastures would receive early spring grazing every year but no late spring grazing. No additional improved water availably would occur to insure proper stocking rates.

The analysis of Alternative C assumes that: 1)grazing utilization could exceed moderate use because of the additional 30 days which could result in no long term improvement in vegetative health; 2) vegetative conditions are not expected to offer denser and taller vegetative cover over time, thus vegetative conditions are not expected to improve. It is also assumed that in pasture(s) where spring rest is occurring that year, there would be lack of physical grazing pressure on wildlife and the vegetative structure, density and reproductive capacity (cover and forage) would not be removed. It is also assumed that in pasture(s) where spring grazing is occurring that year, there would be physical grazing pressure on wildlife and the vegetative

structure, density and reproduction (cover and forage) could be removed in excess of moderate utilization level. It is also assumed, that with late spring rest in the Airport Pasture every grazing season may facilitate improved vegetative health if greater then moderate use does not damage existing plants.

General Wildlife

As discussed in the General Wildlife section in Chapter 4.2.1.1, the ecological condition of the range directly affects the quality and quantity of the vegetative communities that support the wildlife in these allotments. Under this alternative, within the Big Flat allotment, several pastures would be grazed every year during some portion of the spring (Airport, Dalton Wells, Bartlett, Big Flat and Courthouse Pastures) with the remaining pastures receiving the rotation of livestock off the pastures every other year. Over half of the pastures would be grazed during some portion of the critical growing season and at utilization levels that could exceed moderate levels. Within these pastures plant growth could be impacted on an annual basis resulting in less vegetative structure, seed production and reproductive capacity, as discussed in Chapter 4.2.1.1 under General Wildlife. Due to the additional spring grazing in some areas these impacts could be greater on these plant communities.

As discussed in Chapter 4.2.1.1 in the spring, grazed portions of the allotment would incur similar but slightly greater impacts but in more areas throughout the allotment then the Proposed Action Alternative and would have a greater potential to temporarily displace more individuals.

Within the pasture that receives spring rest, competition for space and forage between wildlife and cattle would be eliminated during the year of spring rest. In the spring rested pastures it is expected that vegetative density and diversity would be greater than in the grazed pastures and would provide more important cover, structure and forage to resident wildlife species during the birthing and rearing of their young then the grazed areas. The lack of grazing in these areas would provide space for wildlife species less tolerant of livestock activity.

Alternative C would continue to provide, on an annual basis, a smaller portion of the allotment void of livestock activity and grazing during the spring, thus facilitating less space, cover and forage for wildlife during sensitive breeding, nesting and rearing seasons then the all other alternatives.

Alternative C provides a smaller area of ungrazed space during the spring and combined with 30 days more grazing and the potential for greater than moderate utilization. This could have decreases in vegetative conditions and increases in competition between wildlife and cattle. They would be competing for space and forage during sensitive breeding, nesting and birthing periods. Therefore, this alternative would be similar but greater in impact as compared to the No Action Alternative. The impacts to wildlife in general would be more than the Proposed Action and the No Grazing Alternative.

Big Game

<u>Desert Bighorn Sheep Habitat</u>

Bighorn sheep impacts from livestock grazing under Alternative C may include forage and space competition, habitat fragmentation, and disease as discussed in Chapter 4.2.1.1 (Big Game section) with lambing and rutting habitats found in all pastures, with the entirety of Spring Canyon Bottom.

Bighorn may be impacted by the presence of cattle within these habitats as there is potential for forage and space competition and social intolerance to occur when these allotments are being grazed.

Alternative C would change the season of use in the Spring Canyon Bottom Allotment to November and December thus impacts would be the same as the Proposed Action.

The prime lambing and rutting habitats are found in the more rugged and dissected areas and in the canyon portions of the pastures. This alternative has grazing management that offers spring rest. The grazing in the Bartlett and Courthouse Pastures would overlap with the desert bighorns lambing season by two weeks every other year. This would reduce the potential for social conflicts between the cattle and the desert bighorn. One out of two years in the Horsethief, Mineral Point, Big Flat and Deadman Pastures there is the potential for social conflicts and these impacts would be the same as discussed in previous alternatives.

Alternative C is expected to have similar impacts to bighorn and their habitats as identified in the No Action. Social intolerance of bighorn to cattle grazing would be the most impacting during the lambing season (April 1st to June 15th) with the Bartlett and Deadman Pastures incurring less potential for impacts then the Proposed Action and the No Action Alternatives but more than the No Grazing Alternative.

Pronghorn

Forage and space competition between antelope and cattle are disused in the Fish and Wildlife Including USFWS in section 4.2.1.1 under the Big Game heading.

Competition for space during the fawning season are expected to be minimal from this alternative as livestock removed by early April, thus avoiding fawning season (May 1st to June 15th). The grazing schedule developed in this alternative could potentially benefit antelope during the fawning season more than the Proposed Action and the No Action if vegetative conditions provide adequate cover and foraging opportunity.

Mule Deer

As discussed in Chapter 4.2.1.1 (Mule Deer Section), in mule deer habitat, the physical presence of cattle can have negative impacts. The small resident deer population uses habitats along the Green River in the Spring Canyon Bottom allotment and in very limited areas of Deadman, Mineral, and Horsethief Pastures. Alternative C would have similar impacts in the Spring Canyon Bottom allotment to mule deer habitat as the No Action due to the current and the lack of any grazing during the spring growing season. In the other three pastures there is rotational spring rest and the potential for greater than moderate utilization levels, similar to the No Action therefore all impacts are nearly the same as the Proposed Action.

Migratory Birds and Raptors

As discussed in Chapter 4.2.1.1 the ecological condition of the range directly affects the quality and quantity of the vegetative communities that support migratory birds. As discussed in General Wildlife section (4.2.3.1) above this alternative would continue to provide, on an annual basis, a large portion of the allotment void of livestock activity, the potential to exceed moderate utilization levels, more spring use and a longer grazing season. This could result in negative impacts to the health of the vegetative communities as discussed above.

Overall, Alternative C would impact wildlife and migratory birds and their habitats more than the other alternatives. The proposed grazing system, the potential to exceed moderate utilization levels, less spring rest, and changing the season of use further into the spring is not expected to improve the health of the vegetative communities and ecological conditions. These vegetative communities would be less able to support wildlife and migratory birds and their habitat on the allotments.

Utah BLM Sensitive Species

In section 4.2.2.1 provides general and more specific impacts to the two Utah sensitive mammal species (white-tailed prairie dog and kit fox), the two sensitive raptor species (bald eagle and burrowing owl), and the three sensitive fish species (bluehead sucker, roundtail chub and flannelmouth sucker) habitats within or adjacent to the allotments. Impacts from this alternative are expected to be very similar as described in section 4.2.2.1 except as noted below.

Burrowing Owls

Habitat in the Airport Pasture offers the greatest potential for burrowing owl nesting habitat. This alternative allows for cattle to continue every year through mid-April. Impacts are expected to be very similar to the No Action Alternative except there would be less time (6 weeks) that cattle could potentially impact the owls nest burrows. There is expected to be an improvement of the health of the vegetative community to provide adequate vegetative cover and forage for prey base habitat due to the lack of late spring grazing.

Prairie dogs

The majority of the suitable prairie dog habitat is found within the Airport Pasture. This is where the known colonies are found, potential impacts could occur every year throughout the entire grazing season through mid-April. The continuation of grazing with late spring rest and the potential for utilization to exceed moderate levels does support some of the White-tailed Prairie Dog Conservation Assessment. The assessment recommends the development of grazing management practices that consider the season, duration, distribution, frequency and intensity of grazing use to maintain sufficient vegetation on both upland and riparian sites to protect the soil from wind and water erosion (Seglund 2004).

Kit Fox

Existing water developments are not expected to limit potential kit fox habitat or occupancy, as discussed in section 4.2.1.1.

Sensitive Species of Fish

As discussed in section 4.2.1.1, known habitats of the three sensitive fish species found in the mainstream of the Green River and associated backwaters on the Spring Canyon Bottom Allotment. Through livestock grazing in the riparian habitats has the potential to cause detrimental impacts to native riparian vegetation; impacts are not expected due to the season of use for the Spring Canyon Bottom Allotment.

Overall, the grazing system under Alternative C, the potential to exceed moderate utilization levels, less spring rest, and additional grazing time is not expected to improve the health of the vegetative communities and ecological conditions that support most Utah sensitive animal species and impacts are expected to be more than all of the other alternatives.

Threatened, Endangered, or Candidate Animal Species

Mexican spotted Owl (MSO)

As identified in section 4.2.1.1, the majority of MSO nesting habitats are found below the rims of large, deep canyons where the actual nesting structure is not accessible to cattle; therefore no direct contact from cattle would be expected. Above the rims and in the canyon bottoms suitable foraging habitat could incur impacts from cattle grazing and indirect impact to nesting owls.

The Spring Canyon Bottom Allotments grazing season of use would avoid the entire MSO nesting season (March 1st through August 31st). Impacts are expected to be the same as the Proposed Action Alternative for the Spring Canyon Bottom Allotment.

Every other year the Horsethief, Deadman, and Mineral Point Pastures would be grazed during a portion of the spring that overlaps the nesting season (March 1st through August 31st). Bartlett, Courthouse and Big Flat would be grazed every March and for 15 days in April every other year. The Big Flat Pasture would be grazed every March and every other year grazing would continue on through June. The grazing season beyond March and with the potential to have greater than moderate utilizations levels, could impact future nesting potential in these pastures.

Southwestern Willow Flycatcher (SWFL)

All SWFL habitats and known migrant use is found in the Spring Canyon Bottom Allotment where the season would be November and December. This season would avoid the entire SWFL nesting season (April 15th through August 15st). Impacts to SWFL are expected to be the same as the analysis for the Proposed Action.

Colorado Pikeminnow and Razorback Sucker

Designated critical habitat for the Colorado pikeminnow and the Razorback suckers are found in the Spring Canyon Bottom Allotment. The season of use would be in November and December and have no spring grazing. Impacts within the Spring Canyon Bottom Allotment are expected to be the same as the Proposed Action.

Overall, this alternative would have very similar impacts to federally listed species as discussed in the No Action with an addition 30 days where potential impacts could occur.

In summary, this alternative includes a spring rest/rotation system on most pastures with the potential to exceed moderate utilization levels. This grazing system combined with additional grazing days and greater then moderate utilization levels is expected to negatively impact the health of the vegetative communities and may result in degraded ecological conditions that supports wildlife in the area. Therefore, Alternative C is expected to support most wildlife and their habitats less than all other alternatives.

4.2.3.2 Invasive Species/Noxious Weeds

The impacts to Invasive Species/Noxious Weeds would be the same as the No Action Alternative.

4.2.3.3 Livestock Grazing

The impacts to livestock grazing would be the same as the No Action Alternative. Even though under this alternative, Alternative C, it appears that the season of use is being extended it is the same as the No Action. The Allotment Management Plans located in Appendices H and I allow the permittees a flexibility of 15 days prior to and after the season of use on the permit. This

alternative does away with the flexibility and extends the season to match what is proposed under the No Action Alternative.

The main difference between this alternative and the No Action is under this alternative the permittees would be able to manage their livestock separate from each other. By keeping their livestock separated they would be able to plan the calving season on their own and not have to worry about the mixing of calves. During this period of time the calves are unbranded as they have just been born and when mixing the heifers together with the calves it takes time and extra energy to ensure they have paired up prior to moving the cattle home. By keeping the herds separate it would save time and energy and prevent the potential of splitting up a mother and calf.

4.2.3.4 Recreation

The impacts of Alternative C are the same as the No Action Alternative.

4.2.3.5 Soils

Under Alternative C the impacts to soils would be the same as the No Action Alternative.

4.2.3.6 Vegetation

Under Alternative C, the impacts to the vegetation would be the same as the No Action Alternative.

4.2.3.7 Mitigation Measures

None

4.2.3.8 Monitoring and/or Compliance

See Section 4.2.1.8.

4.2.4 Alternative D No Grazing

4.2.4.1 Fish and Wildlife Including USFWS Threatened and Endangered Species, State Sensitive Species and Migratory Birds

Under Alternative D there would be no livestock utilization therefore all pastures would receive spring rest and existing water availability would not be maintained. As discussed in the section 4.2.4.9 the vegetation, as a whole, would be expected to increase across the allotment with a more noticeable increase in palatable shrubs and grasses.

The No Grazing Alternative would assume that 1) lack in grazing would facilitate and improve long term vegetative health and 2) vegetative conditions would offer denser and taller vegetative cover then the current grazing system (analyzed under the No Action Alternative) over time, thus vegetative conditions are expected to improve and vegetative communities expand. It would also be assumed that spring rest would provide a lack of physical grazing pressure on wildlife and the vegetative structure, density and reproductive capacity (cover and forage) would not be removed.

General Wildlife

As discussed in the General Wildlife in section 4.2.1.1, the ecological condition of the range directly affects the quality and quantity of the vegetative communities that support the wildlife in these allotments. Under the no grazing action alternative grazing utilization would not occur.

Vegetative communities, including native and non-native plant communities are expected to expand over time. Native plant communities are expected to improve, resulting in greater density and potential to deter non-native and invasive plant species. Increased plant density offers improved thermal protective cover for both prey and predator species and a greater forage base for prey species. Improve plant diversity increases forage opportunities and develops greater opportunities for diversification in ecological niches, thus allowing for enhanced species diversity.

Migratory birds utilizing the allotment would have greater opportunities to nest as the entire area would be un-grazed.

Competition for space and forage between wildlife and cattle would be eliminated.

By providing un-grazed space throughout the allotment, the No Grazing Alternative would generally benefit wildlife more than the other alternatives.

Below is a discussion on additional or different impacts that may occur to specific species.

Big Game

Desert Bighorn Sheep Habitat

Bighorn sheep would not be impacted by livestock grazing. Social intolerance of bighorn to cattle grazing would not occur during the lambing season (April 1st to June 15th). The current bighorn range may have the potential to expand into areas now grazed by cattle but this would be limited due to the recreational activities and energy development in the area.

Pronghorn

Pronghorn and their habitat would not be impacted from livestock grazing. Year-round and fawning habitat would be improved due to the availably of annual early spring forb and grass growth, recruitment, vegetative density and plant height. The increase of taller shrub species could create additional predation during fawning due to the potential for restricted views. Antelope may avoid these areas during fawning.

Mule Deer

Mule deer would not be impacted by livestock grazing and addition forage may be available. The habitat use in this area in mot expected to expand due to the arid conditions throughout most of the allotment.

Migratory Birds and Raptors

Impact where discussed in the General Wildlife section above.

Overall, the No Grazing Alternative is expected to improve range conditions throughout the allotment by improving the health of the vegetative communities and ecological conditions that support local wildlife in the area while providing un-grazed habitat that would eliminate all competition between wildlife and cattle. Pronghorn may experience some reduced habitat availability if vegetative cover, especially shrub communities increases substantially. The No Grazing Alternative is expected to support most wildlife and migratory bird habitats more than the all other alternatives.

Utah BLM Sensitive Species

The No Grazing Alternative would provide adequate density and diversity of vegetative communities within the allotments by offering thermal protective cover for both prey and predator terrestrial species and forge base for prey species. Maintaining and improving plant diversity facilitates forage opportunities and supports ecological niches that allows for species diversity.

Burrowing Owls

No grazing would occur in the vicinity of nesting owls therefore no impacts to nests sites from cattle activity would occur.

As noted in section 4.2.1.1, burrowing owls prefer grasslands moderately or heavily grazed by cattle or prairie dog. The lack of grazing throughout the allotment may not facilitate adequate suitable burrowing owl nesting habitat as the vegetative density and shrub cover may increase in areas where prairie dog activity does remove excessive vegetative cover. This may result in a decrease in available habitat for burrowing owls.

Prairie dogs

The White-tailed Prairie Dog Conservation Assessment (Seglund 2004) recommends the development of grazing management practices that consider the season, duration, distribution, frequency and intensity of grazing use within the allotment to maintain sufficient vegetation on both upland and riparian sites to protect the soil from wind and water erosion. As noted above, the No Grazing Alternative would continue to support an increase in vegetative density and shrub cover that could result in reduced suitable habitats in current prairie dogs habitats, though this is not expected to impact current population levels or potential population growth as there are currently large areas of unoccupied suitable habitats within the allotments.

Kit Fox

Water developments would not be maintained therefore coyote populations may be reduced in areas where kit fox reside, potentially increasing survival rates. Past study results do not support that free standing water played a negative role on kit foxes or their survival rates.

Sensitive Species of Fish

No grazing in the Spring Canyon Bottom Allotment is expected to contribute to the support of ongoing management efforts throughout the area. It is expected to increase the relative abundance and diversity of native vegetation in riparian habitats along the Green River as a means of improving channel and floodplain conditions, potentially benefiting the habitats of the three sensitive fish species.

Overall, the No Grazing Alternative would benefit most Utah sensitive species and their habitats more the all other alternatives. There may be some reduced habitat availability to burrowing owls and prairie dogs if vegetative cover, especially if shrub communities increase substantially.

Threatened, Endangered, or Candidate Animal Species

Mexican spotted Owl (MSO)

No grazing would occur in suitable MSO habitats therefore no impacts to nesting owls from cattle grazing would occur. Complete lack of grazing would provide vegetative growth and seed production to support the MSO prey base.

Southwestern Willow Flycatcher (SWFL)

No grazing would occur in suitable SWFL habitats therefore no impacts to SWFL from cattle grazing would be expected. Complete lack of grazing would provide vegetative growth to support habitat structure for SWFL use.

Colorado Pikeminnow and Razorback Sucker

No grazing in the Spring Canyon Bottom Allotment is expected to contribute to support ongoing management efforts throughout the area to increase in native vegetation in riparian habitats along the Green River as a means of improving channel and floodplain conditions, potentially benefiting the habitats of the these native fish.

Overall, the No Grazing Alternative would benefit federally listed species and their habitats more the all other alternatives impacts from cattle and grazing would be eliminated.

In summary, with no grazing the vigor and productivity of the vegetative communities throughout the allotments would improve, facilitating forage production, seed production, production of good plant vigor, aid in seed dispersal and establishment of young plant species. This would have overall positive effects to most wildlife habitats, prey base habitats and individual species. Impacts from livestock and grazing would not occur. The No Grazing Alternative is expected to support most wildlife species and their habitats more than the all other alternatives, though there may be some reduction of use in areas where vegetative cover, especially shrub communities, increases substantially.

4.2.4.2 Invasive Species/Noxious Weeds

Invasive Species/Noxious Weeds would continue to spread with or without livestock. There would be a continuation of spread along road ways, camping areas and through natural process with flooding and drought. Invasive and noxious plants would not be expected to spread from livestock or the maintenance of range improvements under this alternative. The activities from livestock grazing would cease and so would the potential for spread of weedy plant species from those actions.

4.2.4.3 Livestock Grazing

Under Alternative D there would be the greatest amount of impact to the permittee. There would be an economic impact to the permittee through lost income. The permittee may have to eliminate the livestock operation, reduce livestock numbers or have to incur the expense of feeding the livestock.

The permittee could choose to sell the livestock. The current market price in Utah for feeder cattle is $129.28 per100 pounds (lbs) (Feuz, 2017). The average weight of cattle sold for that price in Salina, Utah, as of January 4, 2017, was 525 lbs (USDA, 2017).The average weight of a calf produced by Mother cows each year would be 525 lbs. It is expected that the Mother cows would produce a calf each year and that calf sold at the market. Compounded over the life of the permit, would mean 6,980 fewer calves sold. Assuming the market remains the same, this would equate to

an estimated lost income from the herd to be about $4,737,465.60 (average weight of cattle times the number of cattle times the current market price divided by 100 lbs or 525 lbs times 6,980 calves times $129.28 divided by 100 lbs) over the life of the No Grazing Alternative.

Alternatively, the permittee could choose to feed the livestock outside the allotment. The current market cost (as of January 6, 2016) of good feeder hay within Utah is between $58.00 and $60.00 per ton (USDA, 2016). It is estimated one cow would consume up to an estimated 20 lbs. of dry forage per day. There are a total of 4,864 AUMs that would no longer be available to cattle and would require feed. One AUM means the amount of forage necessary for the sustenance of one cow or its equivalent for a period of one month. The average number of days that would be in any given month would be 30.41666 days. Therefore, if a cow needs 20 lbs. of forage a day and there are 30.41666 days (20 lbs. forage per day X 30.41666 day) then the needs for one cow for one month (one AUM) would be 608 lbs. of forage. The forage needs for 4,864 AUMs would be (4,864 AUMs X 608 lbs. forage per AUM) 2,957,312 lbs. or 1,478.656 tons of forage. Having to feed 1,478.656 tons of forage would cost the permittees between $85,762.05 and $88,719.36 per year to substitute for the 4,864 AUMs lost. Having to feed the livestock for the 10 year term of the permit is estimated to potentially cost the permittee between $857,620.50 and $887,193.60. However, if the resultant calves could be sold for approximately $4,737,465.60, this might provide an option for the rancher if this alternative were to be selected.

4.2.4.4 Recreation

The cessation of grazing in the allotments, especially in those pastures which adjoin Highway 313 would eliminate the chance of cattle-vehicle collisions because cattle would not be present along Highway 313.

4.2.4.5 Soils

The No Grazing Alternative D would eliminate the grazing use following the two year notification. This Alternative has a higher potential to positively benefit the overall conditions of the soils in the allotment than the Proposed Action, No Action and Permittee Alternatives.

The Proposed Action includes a term and condition that limits utilization to an average of 50 percent (41 to 60 percent) utilization. "Using the suggested moderate utilization level of 50 percent as an end of growing season value ensures that half of the current year's biomass (production), by weight, can be removed without affecting the health of the plants. Moderate grazing also provides an adequate yearlong cover crop that would protect the soil surface from wind and water erosion." (Draft Utah Monitoring Manual, Appendix G Utilization Studies Pg. 300).

The No Grazing Alternative is less impacting to soils within the dust blowout areas than the other action alternatives. With no grazing there is potential for the vegetative cover and soil stability to improve at a quicker rate than the other action alternatives by reducing the dust generation at the dust blowout areas.

This alternative is less impacting to drought sensitive soils than the other action alternatives. With no grazing there is potential for the vegetative cover and soil stability to improve at a quicker rate than the Proposed Action.

Natural erosion rates of saline soils are accelerated by surface disturbances. According to Lusby, 1963, "rest from grazing during …Feb 15 to May 15 allows soils to go partially through the annual change cycles of freezing/ thawing … and developing the popcorn surface

appearance". This reduces the potential for wind and water erosion, increases infiltration rates, and reduces compaction. When soil erosion and compaction are kept to a minimum, the loading of salinity, selenium and sediment are minimized as well as maintaining overall soil health conditions.

One hundred percent of the moderately saline soils would be rested, reducing the potential for accelerated wind and water erosion, increasing infiltration rates, reducing compaction, increasing overall soil health and reducing salinity and selenium loading to the Colorado River Basin. This Alternative has a higher potential to positively benefit the overall condition of soils in the allotment than the Proposed Action.

This alternative is less impacting to biotic soil crusts than the other action alternatives. With no grazing there is less potential for compaction and an increase in vegetative cover and soil stability, improving overall soil health conditions as well as biotic soil crust conditions.

Although the No Grazing Alternative may reduce the impacts on the soils in the allotments, at a quicker rate than the Proposed Action, currently Standard 1 (Upland Soils) is being met and there is little evidence of wide spread soil erosion issues on the allotment.

4.2.4.6 Vegetation

Impacts to the vegetation would not be realized as analyzed in Alternative A (Proposed Action), because grazing would not be permitted under this alternative. However, the vegetation would be expected to increase across the allotment as a whole. The key areas would be expected to be in an upward trend with the understory vegetation increasing at a faster rate than the Proposed Action.

The biggest impact to vegetation under this alternative would be expected in the palatable shrubs and grasses. They would no longer be grazed by livestock and would be able to grow uninhibited as the shrubs growth points would receive no livestock browsing and the grasses would not be grazed during the critical time. Wildlife would continue to use the allotment and browse the shrubs, but to a lesser degree than the cattle. The trend sites would be expected to show an increase in shrubs like four winged saltbrush and winterfat and an increase in Indian ricegrass and needle and thread.

4.2.4.7 Mitigation Measures

None

4.2.3.8 Monitoring and/or Compliance

Under Alternative D livestock grazing-related monitoring and compliance would not be necessary as no livestock would be in the allotments after the first two years after the decision.

4.3 Cumulative Impacts Analysis

The Code of Federal Regulations at 40 CFR §1508.7, define a cumulative impact as: "…the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." The following sections describe past, present, and reasonably foreseeable actions in the vicinity of the proposed project.

Currently, within the allotments there are 51 miles of fencing, 17 cattleguards, 78 water developments (see Appendix G), 127 exploratory oil and gas wells, 14 miles of gas pipeline, 4

acres of compression station sites, 2,360 acres of mineral material sites (includes sand, gravel, and stone gathering), 50 acres of campgrounds, 64 miles of bike trails, 2 miles of hiking trails, and 169 miles of Jeep Safari Routes.

4.3.1 Fish and Wildlife Including USFWS Threatened and Endangered Species, State Sensitive Species and Migratory Birds

The cumulative impact area (CIA) for all wildlife resources is the extent of all big game habitats (antelope, bighorn sheep and mule deer) identified by the UDWR located south of I-70, west of 191, east of the Green River and north of the Colorado River; encompassing approximately 545,600 acres. This area would be used as the Wildlife CIA because it encompasses all habitats for discussed species and general wildlife that have the capacity to move across the terrestrial landscape, represents all vegetative communities that support these species and offers natural (large rivers) and man-made boundaries (Interstate 70 and State Route 191) that would restrict or impede much of the terrestrial movement. The Wildlife CIA also includes the habitat for many avian and aquatic species, though these species are capable of crossing large landscapes outside of the CIA. The wildlife cumulative impact area (Wildlife CIA) overlaps with livestock use in this area and is effected by grazing, energy exploration and development, road development and transportation use, wildlife use and habitat improvements, limited recreation use, limited hunting opportunities, and the other resources. The timeframe for the analysis of cumulative impacts is 10 years because that is the length of time the permit would be issued.

Past, present, and reasonably foreseeable actions within the CIA for wildlife resources include the activities and actions of energy and mineral exploration and development, road development and use, livestock grazing, and range improvements, wildlife use and habitat improvements, recreation use and the occurrence of wildland fires.

The cumulative effects to wildlife resources from past, present, and reasonably foreseeable actions include: vegetative alternation, habitat fragmentation, increased human disturbances and the anthropogenic effects on the landscape that alters and impacts the quality, quantity and use of habitat associated with local wildlife species that utilize the Wildlife CIA for breeding, nesting, foraging, year-round use and seasonal migration (typically migratory birds and fish).

In this area, typical recreational activities, energy, mineral and road development and road use have the greatest impacts to wildlife habitats as these activities fragment the landscape, remove and alter the vegetative community and increase human conflicts and disturbances to wildlife populations. Livestock use alters the vegetative community and increases spatial and foraging competition between domestic animals and wildlife thus reducing available habitats or reducing habitat quality. Recreational actives would be the greatest impact within the Wildlife CIA, as use is high with activities in much of this area utilizing on and off existing roads. Wildfires remove and alter the vegetative community leading to habitat degradation and loss. Habitat improvements including water developments for both wildlife and livestock, vegetative treatments and improving wildlife passage through allotment and pasture fences can improve and increase quality, quantity and use of habitat for wildlife.

The Proposed Action would allow for some additional spring rest, grazing utilization levels below moderate levels and the installation and maintenance of livestock waters. This would help promote annual early spring forb and grass growth, recruitment, vegetative density, diversity, and reduce spatial competition from cattle during the birthing and nesting season of

wildlife species in some or all areas, therefore reducing the rate of cumulative impacts that are occurring under the grazing management system (No Action) that is in place currently.

Under the No Action Alternative and Alternative C, grazing utilization levels would not be maintained below moderate levels, the current spring rotational rest system would continue, the installation of new livestock waters grazing would not occur, and maintenance of current waters may continue. An increase in vegetative growth is not expected and spatial competition during the spring and would continue, which would not result in cumulative improvement of wildlife habitat. The rate of cumulative impacts that are occurring under the current grazing management system (No Action) would continue and cumulative impacts may increase under Alternative C due to the additional 30 days of grazing each year.

The No Grazing Alternative would allow for 10 years of rest from livestock grazing which would help promote annual early spring forb and grass growth, recruitment, vegetative density, diversity, and reduce spatial competition from cattle during the birthing and nesting season of wildlife species. The No Grazing Alternative is expected to reduce the rate of cumulative impacts that are occurring under the grazing management system (No Action) that is in place currently.

4.3.2 Invasive Species/Noxious Weeds

The CIA for Invasive Species/Noxious Weeds would be the roadways, oil and gas development, mineral material collection, campgrounds, bike trails, range improvements, and drainages within the allotment boundaries. This would be the CIA because these are the major vectors of weed infestations as they all create disturbances and invasive and noxious plants thrive with disturbance. The timeframe for the analysis of cumulative impacts is 10 years as it is the length of time the permit would be issued.

Past, present, and reasonably foreseeable actions ongoing in the cumulative impact area for the Invasive Species/Noxious Weeds include livestock grazing which has taken place in the CIA for more than the last 100 years. Cattle, horse, and sheep have grazed in the CIA. In the CIA, there are the following acres of disturbance exist; 7.42 acres of water developments, 1,905 acres of oil and gas wells and associated infrastructure, 42.42 acres of gas pipeline, 4 acres of compression station sites, 2,360 acres of mineral material sites (includes sand, gravel, and stone gathering), 50 acres of campgrounds, 38.79 acres of bike trails, 2.42 acres of hiking trails, 1,024 acres of Jeep Safari Routes and a horse grazing permit on 8,212 acres. The total disturbance for potential noxious and invasive weed infestation is 13,592.05 acres.

It is anticipated that approximately 390 acres of surface disturbance associated with new oil and gas wells, 400,000 recreational visitors annually, and 37 acres of expansion at Horsethief Campground, would occur in the Big Flat, Horsethief Point and Spring Canyon Bottom Allotments in the reasonably foreseeable future. Over the next 10 years it is expected disturbances would increase to 14,019.05 acres.

The Proposed Action Alternative would add an additional 10 miles of new fencing temporarily disturbing 1.2 acres (more than likely the disturbance caused by the construction of the fence would not be noticeable the next season), and 4r new water developments for 0.38 acres. It is expected this would increase the disturbance over the next 10 years to 14,019.43 acres.

The No Action Alternative would not add any additional disturbance.

Alternative C would not add any additional disturbance outside of the existing environment. The water haul sites have been used since the 1980's and are included in the existing environment.

Alternative D would remove grazing from the allotment. There would be no need to continue with the water developments and would subtract 7.42 acres of disturbance. This would reduce the overall disturbance on the allotment following the 2 year notification period to 14,011.63.

4.3.3 Livestock Grazing

The CIA of analysis for livestock grazing is the Big Flat, Horsethief Point and Spring Canyon Bottom Allotment boundaries because it is the area where livestock grazing would be authorized under the grazing permit. Topographic features and fencing limit the influence that livestock would have beyond the allotment boundary. The timeframe for analysis of cumulative impacts is 10 years as it is the length of time the grazing permit would authorize grazing. After 10 years, the area would be evaluated again to determine if it is appropriate to renew the permit and what management changes may be necessary.

Past, present, and reasonably foreseeable actions ongoing in the cumulative impact area for the livestock grazing which has taken place in the CIA for more than the last 100 years. Cattle, horse, and sheep have grazed in the CIA. In the CIA, there are the following acres of disturbance exist; 7.42 acres of water developments, 1,905 acres of oil and gas wells and associated infrastructure, 42.42 acres of gas pipeline, 4 acres of compression station sites, 2,360 acres of mineral material sites (includes sand, gravel, and stone gathering), 50 acres of campgrounds, 38.79 acres of bike trails, 2.42 acres of hiking trails, 1,024 acres of Jeep Safari Routes and a horse grazing permit on 8,212 acres. The total disturbance for potential noxious and invasive weed infestation is 13,592.05 acres. The disturbances affect the forage livestock rely on for a food source and the disturbance would potentially reduce their forage base.

It is anticipated that approximately 390 acres of surface disturbance associated with new oil and gas wells, 400,000 recreational visitors annually, and 37 acres of expansion at Horsethief Campground, would occur in the Big Flat, Horsethief Point and Spring Canyon Bottom Allotments in the reasonably foreseeable future. Over the next 10 years it is expected disturbances would increase to 14,019.05 acres.

The Proposed Action Alternative would add an additional 10 miles of new fencing temporarily disturbing 1.2 acres (more than likely the disturbance caused by the construction of the fence would not be noticeable the next season), and 4 new water developments for 0.38 acres. It is expected this would increase the disturbance over the next 10 years to 14,019.43 acres.

The No Action Alternative would not add any additional disturbance.

Alternative C would not add any additional disturbance outside of the existing environment. The water haul sites have been used since the 1980's and are included in the existing environment.

Alternative D would remove grazing from the allotment. This reduction would eliminate the livestock grazing and its infrastructure. This would remove all the forage on the allotments for livestock use following the two year notification.

4.3.4 Recreation

The CIA of analysis for recreation is the Gemini Bridges/Labyrinth Rims Special Recreation Management Area (SRMA) boundary. Past, present, and reasonably foreseeable actions within the cumulative impact area for recreation are grazing, mineral related activities, and recreation activities themselves. The cumulative impacts to recreation of continued grazing would be lessened with the adoption of Alternative A, because cattle would be removed from the most heavily used areas of the allotment, which is along Utah Highway 313.

Past, present, and reasonably foreseeable actions in the cumulative impact area include grazing, minerals and recreation activities. Cattle, horse, and sheep have grazed throughout the CIA. In the CIA the following acres of disturbance exist; 1,905 acres of oil and gas wells and associated infrastructure, 42.42 acres of gas pipeline, 4 acres of compression station sites, 2,360 acres of mineral material sites (includes sand, gravel, and stone gathering), 50 acres of campgrounds, 38.79 acres of bike trails, 2.42 acres of hiking trails, 1,024 acres of Jeep Safari Routes and a horse grazing permit on 8,212 acres. All of these activities have affect the CIA.

It is anticipated that approximately 390 acres of surface disturbance associated with new oil and gas wells, 400,000 visitors per year for the next 10 years, and 37 acres of expansion at Horsethief Campground would occur in the Big Flat, Horsethief Point and Spring Canyon Bottom Allotments in the reasonably foreseeable future. Over the next 10 years it is expected disturbances would increase to 14,019.05 acres.

The Proposed Action Alternative would add an additional 10 miles of new fencing temporarily disturbing 1.2 acres (more than likely the disturbance caused by the construction of the fence would not be noticeable the next season), and 4 new water developments for 0.38 acres. It is expected this would increase the disturbance over the next 10 years to 14,019.43 acres.

The No Action Alternative would not add any additional disturbance.

Alternative C would not add any additional disturbance outside of the existing environment. The water haul sites have been used since the 1980's and are included in the existing environment.

Alternative D would remove grazing from the allotment. This reduction would eliminate the livestock grazing and its infrastructure. This would remove all the forage on the allotments for livestock use following the two year notification.

4.3.5 Soils

The CIA for soils would be the roadways, oil and gas development, mineral material collection, campgrounds, bike trails, range improvements, and drainages within the allotment boundaries. This would be the CIA because topographic features and fencing limit the influence that the livestock analyzed would have on soils beyond the allotment boundary.

Past, present, and reasonably foreseeable actions ongoing in the cumulative impact area for the soils include livestock grazing which has taken place in the CIA for more than the last 100 years. Cattle, horse, and sheep have grazed in the CIA. In the CIA, there are the following acres of disturbance exist; 7.42 acres of water developments, 1,905 acres of oil and gas wells and associated infrastructure, 42.42 acres of gas pipeline, 4 acres of compression station sites, 2,360 acres of mineral material sites (includes sand, gravel, and stone gathering), 50 acres of campgrounds, 38.79 acres of bike trails, 2.42 acres of hiking trails, 1,024 acres of Jeep Safari

Routes and a horse grazing permit on 8,212 acres. The total disturbance for potential noxious and invasive weed infestation is 13,592.05 acres.

It is anticipated that approximately 390 acres of surface disturbance associated with new oil and gas wells, 400,000 recreational visitors annually, and 37 acres of expansion at Horsethief Campground, would occur in the Big Flat, Horsethief Point and Spring Canyon Bottom Allotments in the reasonably foreseeable future. Over the next 10 years it is expected that disturbances would increase to 14,019.05 acres.

The Proposed Action Alternative would add an additional 10 miles of new fencing temporarily disturbing 1.2 acres (more than likely the disturbance caused by the construction of the fence would not be noticeable the next season), and 4 new water developments for 0.38 acres. It is expected this would increase the disturbance over the next 10 years to 14,019.43 acres.

The No Action Alternative would not add any additional disturbance.

Alternative C would not add any additional disturbance outside of the existing environment. The water haul sites have been used since the 1980's and are included in the existing environment.

Alternative D would remove grazing from the allotment. There would be no need to continue with the water developments and would subtract 7.42 acres of disturbance to soils. This would reduce the overall disturbance on the allotment following the 2 year notification period to 14,011.63.

None of the alternatives would add to the present impacts such that the cumulative impacts would be deleterious to recreation use. Recreation use of the area would continue.

4.3.6 Vegetation

The CIA of analysis for vegetation is the Big Flat, Horsethief Point and Spring Canyon Bottom Allotments boundaries because it is the area where livestock grazing would be authorized under the grazing permit. Topographic features and fencing limit the influence livestock would have on vegetation beyond the allotment boundary. The timeframe for analysis of cumulative impacts is 10 years as this is the length of time the grazing permit would authorize grazing. After 10 years, the area would be evaluated again to determine if it is appropriate to renew the permit and what management changes may be necessary.

Past, present, and reasonably foreseeable actions ongoing in the cumulative impact area for the Invasive Species/Noxious Weeds include livestock grazing which has taken place in the CIA for more than the last 100 years. Cattle, horse, and sheep have grazed in the CIA. In the CIA, there are the following acres of disturbance exist; 7.42 acres of water developments, 1,905 acres of oil and gas wells and associated infrastructure, 42.42 acres of gas pipeline, 4 acres of compression station sites, 2,360 acres of mineral material sites (includes sand, gravel, and stone gathering), 50 acres of campgrounds, 38.79 acres of bike trails, 2.42 acres of hiking trails, 1,024 acres of Jeep Safari Routes and a horse grazing permit on 8,212 acres. The total disturbance for potential noxious and invasive weed infestation is 13,592.05 acres.

It is anticipated that approximately 390 acres of surface disturbance associated with new oil and gas wells, 400,000 recreational visitors annually, and 37 acres of expansion at Horsethief Campground, would occur in the Big Flat, Horsethief Point and Spring Canyon Bottom

Allotments in the reasonably foreseeable future. Over the next 10 years it is expected that disturbances would increase to 14,019.05 acres.

The Proposed Action Alternative would add an additional 10 miles of new fencing temporarily disturbing 1.2 acres (more than likely the disturbance caused by the construction of the fence would not be noticeable the next season), and 4 new water developments for 0.38 acres. It is expected this would increase the disturbance over the next 10 years to 14,019.43 acres.

The No Action Alternative would not add any additional disturbance.

Alternative C would not add any additional disturbance outside of the existing environment. The water haul sites have been used since the 1980's and are included in the existing environment.

Alternative D would remove grazing from the allotment. There would be no need to continue with the water developments and would subtract 7.42 acres of disturbance. This would reduce the overall disturbance on the allotment following the 2 year notification period to 14,011.63.

5.0 CONSULTATION AND COORDINATION

5.1 Introduction

The issue identification section of Chapter 1 identifies those issues analyzed in detail in Chapter 4. The ID Team Checklist provides the rationale for issues that were considered but not further analyzed. The issues were identified through the public and agency involvement process described in sections 5.2 and 5.3 below.

5.2 Persons, Groups, and Agencies Consulted

Several persons, groups and agencies were consulted during the development of this EA. Table 5-1 lists those entities that were consulted.

Table 5-1: Persons, Groups, and Agencies Consulted

Name	Purpose & Authorities for Consultation or Coordination	Findings & conclusion
Grazing Authorization number 4303228 – Current Permittees	Consulting with permittees for Alternatives and grazing system.	A meeting was held between the permittee and the BLM to discuss potential management actions needed to be included in the NEPA process.
Utah State Historic Preservation Office (SHPO)	Consultation for undertakings, as required by the National Historic Preservation Act (NHPA) (16 USC 470)	The BLM sent the SHPO a letter seeking concurrence on a "no effect on historic property determination. On April 22, 2016 SHPO concurred that no archaeological sites and no Historic Properties are Adversely Affected by the Proposed Action.
State and Institutional Trust Lands Administration (SITLA)	In working with the SITLA on the number of AUMs associated with the acres of land the BLM lost to the	The changes are reflected in the Alternatives A, B, and C. Where 10 AUMs and the consequent changes were made to the percent

Table 5-1: Persons, Groups, and Agencies Consulted		
Name	**Purpose & Authorities for Consultation or Coordination**	**Findings & conclusion**
	SITLA within the Airport Pasture. The SITLA did a comparison of adjacent SITLA authorized permits and figured the number 10 AUMs that would be lost from BLM management.	public land AUMs or %PL. The number of livestock authorized would not change on the allotment because the total number of collective AUMs would not change and therefore would not change the analysis for Alternatives A, B, and C.
Tribal Consultation	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	BLM sent letters to the Hopi, Southern Ute, Ute Mountain Ute, Northern Ute, Zuni, Jemez, and Navajo tribes on April 21, 2016. The Hopi requested further information which the BLM sent. Consultation with the Hopi is ongoing.

5.3 Summary of Public Participation

Posting of notification was on the BLM ePlanning website in January of 2015 and the current grazing permittee was notified in 2014 of the BLM's intent to evaluate grazing on the Big Flat to Tenmile, Horsethief Point and Spring Canyon Bottom Allotments through a NEPA analysis. Initial public scoping closed on February 15, 2016. See section 1.8 and Appendix D for more detailed information on scoping comments.

5.3.1 Comments and Responses

This section will be completed after the public comment period.

5.4 List of Preparers

Table 5-2: List of Preparers		
Specialist	**Title**	**Responsible for the Following Resources/Section(s) of this Document**
Katie Stevens	Recreation Planner	NEPA Review and Recreation.
Jordan Davis	Range Management Specialist	Invasive species/noxious weeds, livestock grazing, soils, Vegetation, maps, and project Lead.
Pamela Riddle	Wildlife Biologist	Fish and wildlife, migratory birds, T & E wildlife species, and Utah BLM sensitive species.

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Appendix A: Application for Grazing Permit Renewal

CASE FILE COPY

APPLICATION FOR GRAZING PERMIT RENEWAL

AUTH NUMBER: 4303228
DATE PRINTED: 11/4/2014

Form 4130-2a
(February 1999)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR GRAZING PERMIT RENEWAL

RETURN BY: December 04, 2014

STATE	UT
OFFICE	LLUTY01000
AUTH NUMBER	4303228
PREFERENCE CODE	03
DATE PRINTED	11/04/2014

ALAN SWENSON, RUSSEL STANSFIELD, AND FRED HUNZEKER
7710 SOUTH 2000 WEST
SPAINISH FORK UT 84660

BUREAU OF LAND MANAGEMENT
MOAB FIELD OFFICE
82 E DOGWOOD
MOAB UT 84532

This application for grazing permit renewal describes your current permit schedule(s) and summarizes your permitted use. If you wish to apply for renewal of this permit, sign and return this form by the date shown above. Contact your local BLM office at 435-259-2100 if you have questions.

Changed after meeting on 12/4/15 JO

MANDATORY TERMS AND CONDITONS

ALLOTMENT	PASTURE	LIVESTOCK NUMBER	LIVESTOCK KIND	GRAZING BEGIN	PERIOD END	%PL	TYPE USE	AUMS
			Cattle	11/15	01/15		12/31	173
05846	SPRING CANYON BOTT	89	CATTLE	01/01	02/28	100	ACTIVE	173
00009	BIG FLAT-TENMILE	785	CATTLE	11/15	02/28	92	ACTIVE	2517
		785	CATTLE	03/01	05/31	92	ACTIVE	2184

OTHER TERMS AND CONDITIONS:
NO GRAZING TERMS OR CONDITIONS

ALLOT NO CONDITIONS

NO ALLOTMENT TERMS OR CONDITIONS

NO OFFICE TERMS OR CONDITIONS

ALLOTMENT SUMMARY (AUM'S)

ALLOTMENT		ACTIVE AUMS	SUSPENDED AUMS	TEMP SUSPENDED AUMS	PERMITTED USE
00009	BIG FLAT-TENMILE	4701	0	0	4701
05846	SPRING CANYON BOTTOM	173	0	0	173

APPLICATION FOR GRAZING PERMIT RENEWAL

STANDARD TERMS AND CONDITIONS

1. Grazing permit or lease terms and conditions and the fees charged for grazing use are established in accordance with all the provisions of the grazing regulations now or hereafter approved by the Secretary of the Interior.

2. They are subject to cancellation, in whole or in part, at any time because of:
   a. Noncompliance by the permittee/lessee with rules and regulations.
   b. Loss of control by the permittee/lessee of all or a part of the property upon which it is based.
   c. A transfer of grazing preference by the permittee/lessee to another party.
   d. A decrease in the lands administered by the Bureau of Land Management within the allotment(s) described.
   e. Repeated willful unauthorized grazing use.
   f. Loss of qualifications to hold a permit or lease.

3. They are subject to the terms and conditions of allotment management plans if such plans have been prepared. Allotment management plans MUST be incorporated in permits or leases when completed.

4. Those holding permits or leases MUST own or control and be responsible for the management of livestock authorized to graze.

5. The authorized officer may require counting and/or additional or special marking or tagging of the livestock authorized to graze.

6. The permittee's/lessee's grazing case file is available for public inspection as required by the Freedom of Information Act.

7. Grazing permits or leases are subject to the nondiscrimination clauses set forth in Executive Order 11246 of September 24, 1964, as amended. A copy of this order may be obtained from the authorized officer.

8. Livestock grazing use that is different from that authorized by a permit or lease MUST be applied for prior to the grazing period and MUST be filed with and approved by the authorized officer before grazing use can be made.

9. Billing notices are issued which specify fees due. Billing notices, when paid, become a part of the grazing permit or lease. Grazing use cannot be authorized during any period of delinquency in the payment of amounts due, including settlement for unauthorized use.

10. The holder of this authorization must notify the authorized officer immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (cultural items), stop the activity in the area of the discovery and make a reasonable effort to protect the remains and/or cultural items.

11. Grazing fee payments are due on the date specified on the billing notice and MUST be paid in full within 15 days of the due date, except as otherwise provided in the grazing permit or lease. If payment is not made within that time frame, a late fee (the greater of $25 or 10 percent of the amount owed but not more than $250) will be assessed.

12. No Member of, or Delegate to, Congress or Resident Commissioner, after his election of appointment, or either before or after he has qualified, and during his continuance in office, and no officer, agent, or employee of the Department of the Interior, other than members of Advisory committees appointed in accordance with the Federal Advisory Committee Act (5 U.S.C. App.1) and Sections 309 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.) shall be admitted to any share or part in a permit or lease, or derive any benefit to arise therefrom; and the provision of Section 3741 Revised Statutes (41 U.S.C. 22; 18 U.S.C. Sections 431-433, and 43 CFR Part 7), enter into and form a part of a grazing permit or lease, so far as the same may be applicable.

SIGNATURE OF PERMITTEE: Alan Swanson

DATE : NOV 18 14

Title 18, U.S.C., Section 1001 makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false ficticious, or fraudulent statements or representations as to any matter within its jurisdiction.

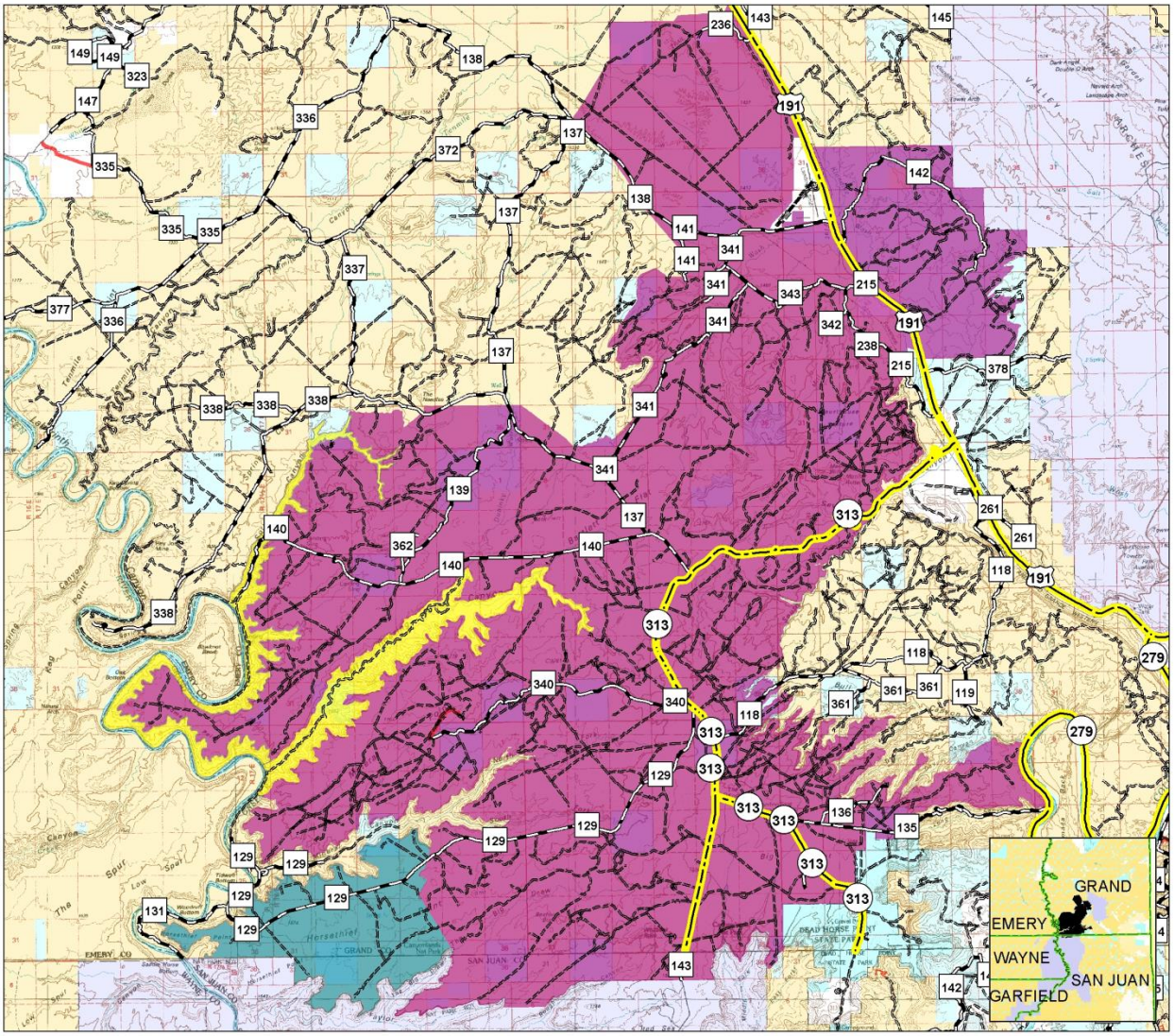
Appendix B: MAPS

Map #1: Big Flat Allotment, Horsethief Point Pasture and Spring Canyon Bottom Allotment Boundaries
Map #2: Proposed Pastures under the Proposed Action
Map #3: Proposed Action Proposed Range Improvement Locations

Map #1: Big Flat Allotment, Horsethief Point Pasture and Spring Canyon Bottom Allotment Boundaries

Moab Field Office, Canyon Country District

February 3, 2016



State and Federal Highways
B Roads (Maintained)
D Roads (Unmaintained)
City Roads
BLM Maintained Roads
San_Juan_a_roads
B Roads (Maintained)
San_Juan_d_roads
Big Flat
Horsethief Point
Spring Canyon Bottom

Land Status

Bureau of Land Management (BLM)
National Park Service (NPS)
Private
State
State Parks and Recreation

0 1.5 3 6 Miles

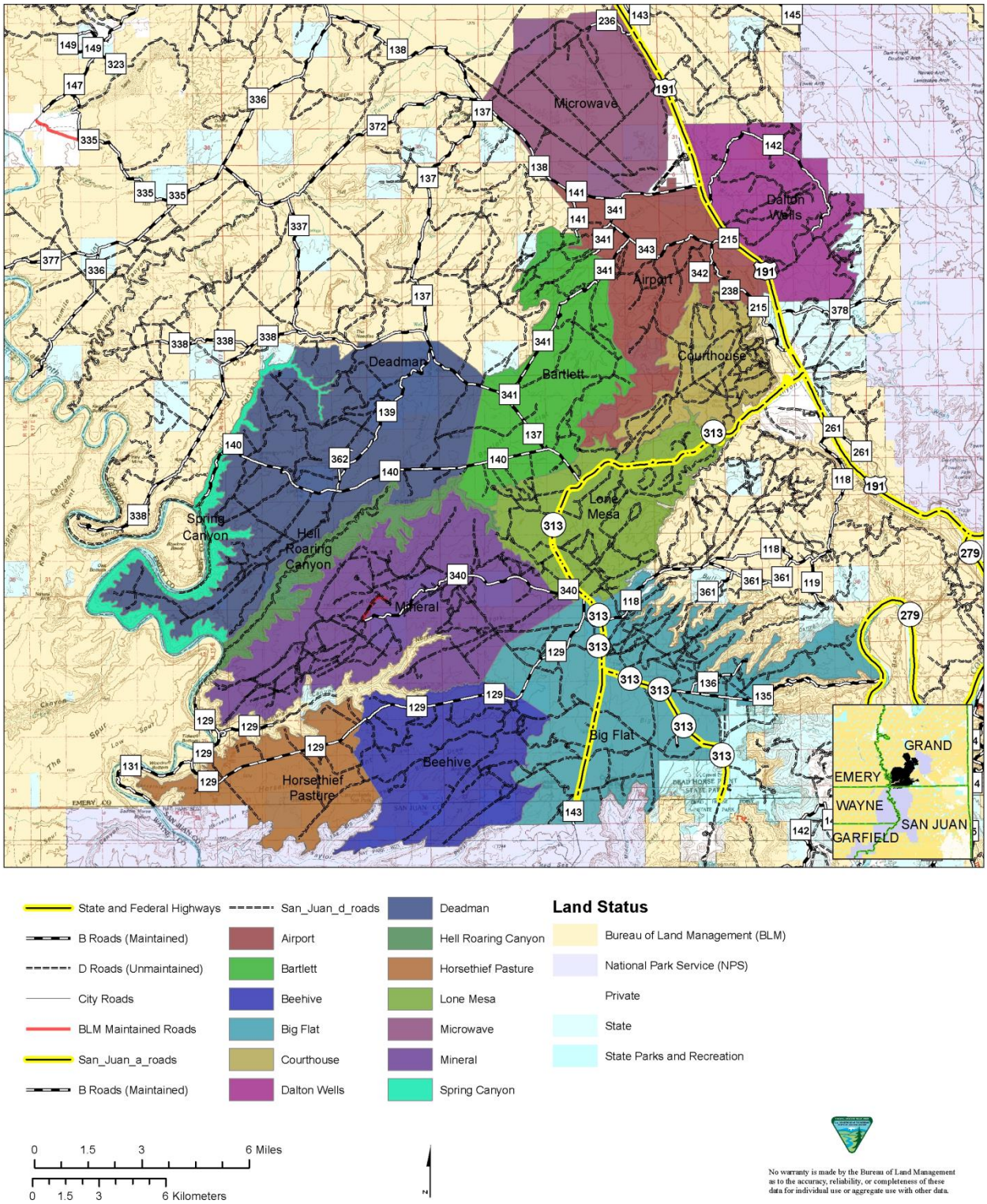
0 1.5 3 6 Kilometers

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

Map #2: Proposed Pastures under the Proposed Action

Moab Field Office, Canyon Country District

February 3, 2016



Map #3: Proposed Action Proposed Range Improvement Locations

Map #3 Proposed Action Proposed Range Improvemets for Big Flat, Horsethief Point, and Spring Canyon Bottom

Moab Field Office, Canyon Country District

February 3, 2016

New Fenceing

Big Flat Corral Road

Pipeine for Water Haul Tanks and Troughs

Cattleguard

Water Development

Allotment Boundary

Land Status

Bureau of Land Management (BLM)

National Park Service (NPS)

Private

State

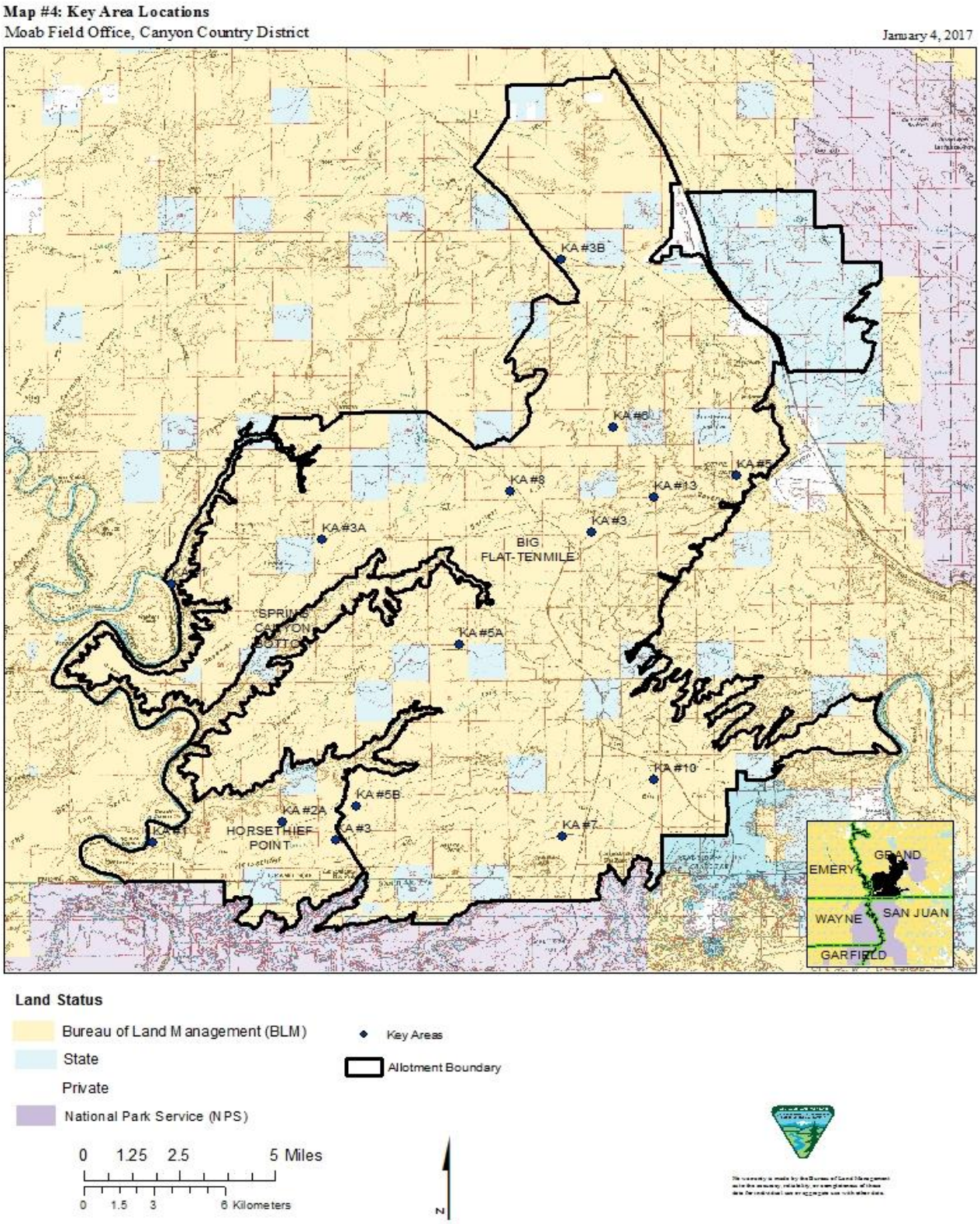
State Parks and Recreation

0 1.5 3 6 Miles

0 1.5 3 6 Kilometers

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

Map #4: Key Area Locations



Appendix C: Interdisciplinary Team Checklist

INTERDISCIPLINARY TEAM CHECKLIST

Project Title: Big Flat, Spring Canyon, and Horsethief Point Allotments Permit Renewal

NEPA Log Number: DOI-BLM-UTY010-2015-0197-EA

File/Serial Number: 4303228

Project Leader: Jordan Davis

DETERMINATION OF STAFF: ***(Choose one of the following abbreviated options for the left column)***

NP = not present in the area impacted by the proposed or alternative actions
NI = present, but not affected to a degree that detailed analysis is required
PI = present with potential for relevant impact that need to be analyzed in detail in the EA
NC = (DNAs only) actions and impacts not changed from those disclosed in the existing NEPA documents cited in Section D of the DNA form. The Rationale column may include NI and NP discussions.

The following elements are not present in the Moab Field Office and have been removed from the checklist: Farmlands (Prime or Unique), Wild Horses and Burros.

Determination	Resource		Rationale for Determination*	Specialist	Date
	RESOURCES AND ISSUES CONSIDERED (INCLUDES SUPPLEMENTAL AUTHORITIES APPENDIX 1 H-1790-1)				
NI	Air Quality Greenhouse Gas Emissions		The State of Utah National ambient Air Quality Standards Areas of Non-attainment and Maintenance shows Grand County as an attainment area. This proposal is not expected to affect air quality conditions, state standards or any air quality related values. The Moab Field Office Resource Management Plan and Environmental Impact Statement of August 2007 on pg. 4-11 defines what resources are impacted by livestock grazing decisions and the air quality resource was determined to not be impacted by grazing management decisions The Proposed Action would result in emissions from the operation of internal combustion engines and from the operation of vehicles on unpaved surfaces. These emissions would be temporary, would rapidly disperse, and are unlikely to cause or contribute to a violation of the National Ambient Air Quality Standards. For reasons outlined above, air quality will not be impacted to the degree that would require a detailed analysis in the EA.	David Pals	3/2/2016
NP	Areas of Critical Environmental Concern		The term "Area of Critical Environmental Concern" means areas within the public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or senic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards. The Moab RMP of 2008 did not make any decisions to designate ACEC's within the boundaries of the three allotments.	Katie Stevens	3/2/2016
NP	BLM Natural Areas		There are no BLM Natural Areas within the allotments, as defined in the 2008 Moab RMP.	Bill Stevens	3/2/2016
NI	Cultural Resources		The BLM followed IM UT 2010-026 and 36 CFR 800 to determine if permitting cattle on the allotment would impact cultural	M. Jared Lundell	3/2/2016

Determination	Resource		Rationale for Determination*	Specialist	Date
			resources. As per the IM, BLM monitored sites on the allotments and performed inventories at locations where livestock tend to congregate. The BLM identified 11 sites eligible to the National Register of Historic Places in congregation areas, but grazing was not affecting the integrity of 10 of the sites. One of the historic properties impacted by livestock grazing. The BLM will construct a fence at the site to prevent livestock access to the site. The BLM, therefore modified the undertaking to prevent adverse effects and made a finding of No Adverse Effect. Details of these findings are discussed in the cultural Resource Inventory Report U-15-BL-0764. BLM will include the report in the FONSI/Final EA. The BLM sent letters to the Utah SHPO with BLM's determinations of eligibility and effect in accordance with 36CFR800 on 04/22/2016. The Utah SHPO concurred with BLM's determinations on 04/27/2016. The BLM also sent consultation letters to the Hopi, Southern Ute, Ute Mountain Ute, Northern Ute, Zuni, Jemez, and Navajo tribes on 4/21/2016 to determine if livestock grazing might impact cultural resources not identified during fieldwork.		
NI	Environmental Justice		The Proposed Action and alternatives would not result in disproportionately high and adverse human health or environmental effects to minority or low income populations.	Bill Stevens	3/2/2016
PI	Fish and Wildlife Excluding USFW Designated Species		Will be analyzed in the EA as Fish and Wildlife Including USFWS Threatened and Endangered Species, State Sensitive Species and Migratory Birds.	Pamela Riddle	4/8/2016
NI	Floodplains		Floodplains would not be affected by this proposal.	Mark Grover	3/2/2016
NI	Fuels/Fire Management		When the Big Flat-Ten mile, Horse thief Point and Spring Canyon Bottom grazing allotments are overlaid with Fire Management Units (FMU) 8, 12, 14, 15 & 99 and the fire history GIS data layer, it shows that there have been 114 fires in the project area over the last 20 years. Two fires have been 100+ acres in size with the largest being the 121 acre Ranger Fire in 1999. Fuels in the area, are primarily grasses and PJ over story. Cheatgrass is present within the area and can be a contributor to fire spread depending on climatic conditions from year to year. Fuels reduction/restoration and Emergency Stabilization and Rehabilitation (ES&R) actions could preclude grazing for periods of time within the grazing allotment consistent with the Moab Resource Management plan (RMP, 2008 GRA-11 pg.69). The Proposed Actions would not result in substantial impacts to fuels/fire resources in this area, either singularly or cumulatively. No further analysis is needed.	Joshua Relph	4/1/2016
NP	Geology / Mineral Resources/Energy Production		No mineral resources or energy production activities are occurring within the allotments, therefore, there will be no impact to these resources as a result of grazing, nor would impacts to grazing be expected from mineral activities within the allotment.	David Pals	3/2/2016
PI	Invasive Species/Noxious Weeds		The Proposed Action is expected to spread noxious weeds as livestock concentrate around water developments and supplement locations. Will be analyzed in the EA document.	Jordan Davis	3/2/2016
NI	Lands/Access		Renewal of the grazing authorization would not affect existing access or rights-of-way within the allotments and is subject to valid and existing rights. There is no land use conflicts proposed as a result of the Proposed Action.	Jan Denney	4/8/2016
NI	Lands with Wilderness Characteristics		The Moab Field Office Resource Management Plan (2008) recognizes the allotments as having areas with wilderness characteristics totaling 9,053 acres. The 2008 Moab RMP, however, has chosen not to manage these lands primarily for wilderness characteristics; the Proposed Action would not be	Bill Stevens	3/2/2016

Determination	Resource		Rationale for Determination*	Specialist	Date
			expected to harm such characteristics as the continuation of grazing in the area would not likely alter the original findings.		
PI	Livestock Grazing		The permittee would likely benefit from having a grazing permit on the allotments. The changes to the grazing management program would likely add additional stress for the permittee as there is more movements and livestock management than what was previously on the allotments.	Jordan Davis	3/2/2016
PI	Migratory Birds		Will be analyzed in the EA as Fish and Wildlife Including USFWS Threatened and Endangered Species, State Sensitive Species and Migratory Birds.	Pamela Riddle	4/8/2016
NI	Native American Religious Concerns		BLM sent letters to the Hopi, Southern Ute, Ute Mountain Ute, Northern Ute, Zuni, Jemez, and Navajo tribes on 4/21/2016.	M. Jared Lundell	3/2/2016
NI	Paleontology		Paleo resources would be avoided and clearances will be done for all surface disturbing activities.	Rebecca Hunt Foster	4/11/2016
NI	Rangeland Health Standards		Rangeland Health will be addressed with the Soils and Vegetation Excluding USFW Designated Species.	Jordan Davis	3/2/2016
PI	Recreation		Heavy Rec. use in parts of the allotments. Will be addressed in the EA.	Katie Stevens	3/2/2016
NI	Socio-Economics		Livestock grazing is an important part of the local custom, culture, and economy of Grand and San Juan Counties and is supported in the County's Master Plan. The agriculture industry has declined dramatically in the last three decades. In 1970, total net income from farming and ranching in Grand County was $901,000. By 1985, that number had dropped to $88,000. In 2000 this number has dropped to -$830,000. Negative income means that expenses out weighted revenue for farming and ranching operations. Most agricultural income (approximately 80%) is from cash receipts from livestock and crops, while the remaining 20% is from government payments. Employment based on farming and agricultural services accounts for only 2.6% of people working in Grand County in 2000 and this percentage has decreased since 1970 when it was 3.6%. The composition of livestock and crops has also shifted in the last decade. In 1970, 73% of gross farm income was from livestock, while 95% was from crops. By 2000, 47% of gross income was from livestock and 32% from crops. Permit fees associated with AUMs generate revenue for the U.S. Treasury, of which 12.5 % is returned to the local State of Utah Grazing Advisory Board. This money is then disbursed to local permittees (a direct economic benefit), for use in range improvements and maintenance projects. An additional 25% of permit fees is returned to the BLM field office from which it was collected to be used in on-the-ground range improvements. Reduction in ranching-based income could make it more difficult for families to earn a living on ranching alone. Family members may have to get second jobs or work off the farm to bring in additional income. However, none of the alternatives analyzed in this EA proposes any changes in the authorized AUMs, or any other changes that would likely cause any more than minimal changes to the operating costs of the permit holder or local economy. Consequently, there would be no social or economic impacts to the livestock operators who graze these allotments, or to the local communities. This issue is therefore not addressed further in this EA.	Bill Stevens	3/2/2016
PI	Soils		Will be analyzed in the EA	Jordan Davis	3/2/2016

<table>
<tr><th>Determination</th><th>Resource</th><th></th><th>Rationale for Determination*</th><th>Specialist</th><th>Date</th></tr>
<tr><td>PI</td><td>Threatened, Endangered or Candidate Animal Species</td><td></td><td>Will be analyzed in the EA as Fish and Wildlife Including USFWS Threatened and Endangered Species, State Sensitive Species and Migratory Birds.</td><td>Pamela Riddle</td><td>4/8/2016</td></tr>
<tr><td>NI</td><td>Threatened, Endangered or Candidate Plant Species</td><td></td><td>The Jones Cycladenia Model show potential habitat within Big Flat Ten Mile, Horsethief Point and Spring Canyon Bottom Allotments. At present time there are no known populations of Jones Cycladenia within these allotments. All known populations of Jones Cycladenia found in the Moab Feld Office are located on very shallow soils to shallow soils on very steep slopes inaccessible to cattle. EEC field work currently shows that all known population occur in areas modeled as medium low to highest potential with surveys completed in low to lowest potential areas having negative results. Jones Cycladenia is restricted to soils with a narrow range of morphological and physical properties. Soils are shallow (<50 cm), have high rock fragment content (increases to almost 100% with depth), and are formed in shale that fractures angularly in situ. Soils that support Jones Cycladenia often occur on steep slopes (50%) with erosive surfaces.
Potential Habitat and Acres on BLM Lands
<table>
<tr><th>Allotment Name</th><th>Highest</th><th>Medium High</th><th>Medium Low</th><th>Low</th></tr>
<tr><td>Big Flat Ten Mile</td><td>29,360</td><td>5,730</td><td>11,635</td><td>0</td></tr>
<tr><td>Horsethief Point</td><td>5,370</td><td>0</td><td>1,280</td><td>1,430</td></tr>
<tr><td>Spring Canyon Bottom</td><td>110</td><td>0</td><td>1,822</td><td>1,470</td></tr>
</table>
Big Flat Ten Mile Allotment: There is approximately 29,360 acres of highest potential habitat within this allotment which 17,015 acres are in shallow soils. Out of these acres 14,275 acres are inaccessible to cattle grazing and/or is not used by cattle due lack of water and low forage for cattle. There is no evidence of cattle grazing within these acres. There was 2,740 acres that are accessible to cattle grazing and utilization was no grazing to slight use throughout the years. BLM surveyed 2,740 acres and no plants were found. There are 12,345 acres that was in deep sandy soils. Out of these acres 4,145 acres were inaccessible to cattle grazing. BLM survey 8,200 acres that were accessible to cattle and no plants were found.
There is approximately 5,730 acres of medium high potential habitat within this allotment. There are 3,870 acres within the shallow soils which are inaccessible to cattle grazing. There is no evidence of cattle grazing within these acres. BLM survey 990 acres and no plants were found. There are 1,860 acres in deep sandy soil and were accessible to cattle grazing and BLM survey 1,860 acres and no plants were found.
There is approximately 11,635 acres of medium low potential habitat within this allotment. There are 5,220 acres within the shallow soils which are inaccessible to cattle grazing. There is no evidence of cattle grazing within these acres. BLM survey 360 acres and no plants were found. There are 4,363 acres in deep</td><td>Dave Williams</td><td>3/2/2016</td></tr>
</table>

Determination	Resource		Rationale for Determination*	Specialist	Date
			sandy soil and 650 acres that were inaccessible to cattle grazing. There are 3,713 acres that were accessible to cattle grazing and BLM survey 1,368 acres and no plants were found. There were also 2,052 acres that are in moderately deep sandy soils and all these acres were survey by BLM. No plants were found. **Horsethief Point Allotment:** There is approximately 5,370 acres of highest potential habitat within this allotment which 2,150 acres are in shallow soils and are inaccessible to cattle grazing. There are 3,220 acres within deep sandy loam soils and are accessible to cattle grazing. BLM survey all of these acres and no plants were found. There are approximately 1,280 acres of medium low potential habitat within this allotment. There are 510 acres found in shallow soils and are inaccessible to cattle grazing. There are 390 acres in deep sandy soil. BLM survey these acres and no plants were found. There are 380 acres that are found in moderately deep soils. BLM survey these acres and no plants were found. There is approximately 1,430 acres of low potential habitat. These acres are accessible to cattle grazing. All survey done within this potential habitat class has found no plants within Utah. No survey was done. **Spring Canyon Bottom Allotment:** There is approximately 110 acres of highest potential habitat within this allotment which occur on shallow soils. All these acres are inaccessible to cattle grazing due to very rough and steep slopes. There is no evidence of cattle grazing within these acres. There are approximately 1,822 medium low potential habitats. There is 1,290 acres are within very shallow soils and are inaccessible to cattle grazing. There is no evidence of cattle grazing within these acres. There is 432 acres that are found in moderate to deep sandy soils and these acres are accessible to cattle. BLM survey these acres and no plants were found. There is approximately 1,470 acres of low potential habitat. These soils are sandy loam and deep to very deep soil depth. These acres are accessible to cattle grazing. BLM surveyed 570 acres and no plants were found within these acres. All survey done within this potential habitat class has found no plants within Utah. Majority of the habitat is inaccessible to livestock grazing and the areas that are accessible to livestock grazing surveys were done and no plants were found. The lack of Jones' Cycladenia plants within the survey acres there would be no impact to habitat or plants. See Big Flat Ten Mile, Horsethief Point and Spring Canyon Bottom Allotment staff Report for Jones Cycladenia dated July 2016 for more detail. BLM will do Section 7 consultation. **Navajo Sedge:** This plant is restricted to Navajo Sandstone seeps and springs pockets or hanging gardens in San Juan County. A small portion of Big Flat Ten Mile Allotment is found in San Juan County. Field trip was done and there are no seeps, springs pocket or hanging garden within this area of the allotment. There would be no habitat for this plant. Section 7 consultation will be done.		

<table>
<tr><th>Determination</th><th>Resource</th><th></th><th>Rationale for Determination*</th><th>Specialist</th><th>Date</th></tr>
<tr><td>PI</td><td>Utah BLM Sensitive Animal Species</td><td></td><td>Will be analyzed in the EA as Fish and Wildlife Including USFWS Threatened and Endangered Species, State Sensitive Species and Migratory Birds.</td><td>Pamela Riddle</td><td>4/8/2016</td></tr>
<tr><td>NI</td><td>Utah BLM Sensitive Plant Species</td><td></td><td>
<table>
<tr><th>Common Name</th><th>Scientific Name</th><th>Status</th></tr>
<tr><td>Stage station milkvetch</td><td>Astragalus sabulosus var. vehiculus</td><td>Utah State Sensitive</td></tr>
<tr><td>Canyonlands lomatium</td><td>Lomatium latilobum</td><td>Utah State Sensitive</td></tr>
<tr><td>Entrada rushpink</td><td>Lygodesmia entrada</td><td>Utah State Sensitive</td></tr>
<tr><td>Shultz Blazing Star</td><td>Mentzelia shultziorum</td><td>Utah State Sensitive</td></tr>
<tr><td>Trotter’s Oreoxis</td><td>Oreoxis trotter</td><td>Utah State Sensitive</td></tr>
<tr><td>Alcove rock daisy</td><td>Perityle specuicola</td><td>Utah State Sensitive</td></tr>
</table>
Stage station milkvetch: is found on Big Flat Ten Mile Allotment in Airport Pasture in the area around Stage Station, Mill Canyon and northeast of Courthouse Rock. This area is grazed by cattle but this plant is not palatable to livestock grazing but could be affected by trampling of livestock, though no evidence of it has been seen. This plant is growing in disturbed area (park lots, along the county roads and under the power line) and in not disturbed areas. It appears that livestock grazing is not impacting this plant.
Canyonlands lomatium: there is no known population within these allotments. All populations within Moab Field Office are found in slot canyon and/or very steep slopes which are inaccessible to cattle. The potential for impacts to this plant is very low.
Entrada rushpink: there are no known populations within these allotments. Entrada rushpink is difficult to inventory since their numbers and reproductive success can vary widely from year to year; therefore their population status and distribution are largely unknown.
Shultz Blazing Star: are found on very steep slope and are inaccessible to cattle. There are no known populations of this within this permit renewal area. This plant is not palatable to livestock grazing. There would be no known impacts to the plant population by livestock.
Trotter’s Oreoxis: known locations are found on steep slopes and habitat is inaccessible to recreation vehicles and livestock grazing (cattle). Less frequently it is located in alcoves, hanging gardens and along cliff bases that are moist and shaded. These locations are within the Court House Pasture of Big Flat Ten Mile Allotment. There are no potential impacts to this plant species by livestock.
Alcove rock daisy: The habitat is found in hanging garden communities and found on steep cliff faces. These plants are inaccessible to livestock grazing. There are no known populations of this plant within these allotments. There are no impacts to habitat or plants due to the terrain.
</td><td>David Williams</td><td>3/7/2017</td></tr>
<tr><td>PI</td><td>Vegetation Excluding USFW Designated Species</td><td></td><td>The Proposed Action has the potential to impact native perennial vegetation. Will be analyzed in the EA document.</td><td>Jordan Davis</td><td>3/2/2016</td></tr>
<tr><td>NI</td><td>Visual Resources</td><td></td><td>The Big Flat permit area has a Visual Resource Management (VRM) Class I, II, III and IV rating. The VRM Class I (31 acres) objective is to preserve the existing character of the landscape. This class does not preclude limited management activity. The VRM Class II (50,577 acres) rating is meant to retain the existing character of the landscape. The level of change to the landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes to the landscape must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the</td><td>Katie Stevens</td><td></td></tr>
</table>

Determination	Resource		Rationale for Determination*	Specialist	Date
			characteristic landscape. The VRM Class III (80,460 acres) rating allows contrasts to the basic visual elements to be seen by the casual observer, but they should not dominate the view of the casual observer. Changes to the characteristic landscape should not attract attention. The VRM Class IV (1,415 acres) is to provide for management activities that require major modifications to the existing character of the landscape. The level of change to the landscape can be high. The management activities may dominate the view and may be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repetition of the basic visual elements of form, line, color, and texture. The majority of the existing and the only new proposed range facilities for this permit are in the VRM III area. The use of neutral, non-reflective earth-tone colors on any above ground facilities along with reducing any unnecessary disturbance as requested by the BLM would reduce visual impacts of range improvement projects in the VRM II and III area. Any new proposed facilities in the VRM I would require a contrast rating to help the design to meet VRM I objectives. The potential visual impacts from the renewal would be allowable in VRM Classes. The Proposed Actions would not result in impacts to visual resources in VRM, either singularly or cumulatively. This analysis was completed from County Roads and State highways. Consequently, it has been determined that there would be no appreciable impacts to the visual resources under any of the alternatives, so they are not addressed further in this EA.		
NI	Wastes (hazardous or solid)		Grazing would not require or produce hazardous or solid wastes as defined by the Resource Conservation and Recovery Act (RCRA) or the Comprehensive Environmental Response Compensation and Liability Act (CERCLA).	David Pals	8/4/14
NI	Water Resources/Quality		Utah Rangeland Health Standard #4 requires "BLM to apply and comply with water quality standards established by the State of Utah (R.317-2) and the Federal Clean Water and Safe Drinking Water Acts. Activities on BLM lands will fully support the designated beneficial uses described in the Utah water quality standards (R.317-2) for surface and groundwater". Utah water quality standards do not apply to ephemeral drainages and the associated storm runoff flows. The available water quality data indicates that the Big Flat- Ten Mile Grazing Allotment is meeting Utah Rangeland Health Standard #4. The available water quality data indicates that the Spring Canyon Bottom Grazing Allotment is meeting Utah Rangeland Health Standard #4.	David Pals	3/2/2016
NI	Wetlands/Riparian Zones		There are no impacts to riparian resources expected from this proposal.	Mark Grover	3/2/2016
NP	Wild and Scenic Rivers		There were no Wild and Scenic River designations within the allotments (see 2008 Moab RMP).	Katie Stevens	3/2/2016
NP	Wilderness/WSA		In 1964 Congress passed the Wilderness Act, establishing a national system of lands for the purpose of preserving a representative sample of ecosystems in their natural condition for benefit of future generations. With the passage of FLPMA in 1976 Congress directed the BLM to inventory, study, and recommend which public lands under its administration should be designated wilderness.	Bill Stevens	3/2/2016

Determination	Resource		Rationale for Determination*	Specialist	Date
			Between 1979 and 1980, BLM inventoried approximately 22 million acres of public land in Utah for wilderness characteristics including the appearance of naturalness, outstanding opportunities for solitude or primitive, unconfined recreation, and adequate size. With the completion of the inventory and resolutions of appeals, the BLM designated about 3.3 million acres of wilderness study areas (WSAs) statewide. There are no Wilderness/WSA designations within the Big Flat-Tenmile, Horsethief Point, and Spring Canyon Bottom Allotments.		
NI	Woodland / Forestry		Livestock grazing actions would have negligible to minor impacts on woodland resources and will not be analyzed further in this EA. The impacts would be negligible because maintaining utilization levels and maintaining proper functioning condition on rangelands would neither reduce or enhance the opportunities for woodland harvesting nor inhibit the ability of the Moab FO to maintain a healthy, sustainable woodland ecosystem.	Jordan Davis	3/2/2016

FINAL REVIEW

Reviewer Title	Signature	Date	Comments
Environmental Coordinator			
Authorized Officer			

PUBLIC LANDS

BLM seeks comments on grazing renewals

Public scoping period closes on Feb. 15

STAFF REPORT
Moab Sun News

The Bureau of Land Management's (BLM's) Moab Field Office is seeking public input on three separate grazing permit renewal projects, each including one or more grazing allotments.

The three permit renewals being considered are the Scharf Mesa, Hotel Mesa, Sand Flats allotments; which total 77,671 acres in the Dolores Triangle area near the Utah-Colorado border; the Big Flat-Ten Mile and Spring Canyon Bottom allotments, which total 131,535 acres in the Big Flat area northwest of Moab; and the 76,289-acre Monument Wash allotment, which lies between Interstate 70 and Arches National Park.

Following the public scoping period, the BLM will prepare environmental assessments (EAs) to analyze potential impacts associated with the projects and inform decisions regarding range improvements, seasons of use and other permit conditions.

The public is encouraged to provide comments to help the BLM identify relevant issues that will influence the scope of the analysis and guide the development process for the EAs. The BLM will provide another opportunity for public review and comment on each EA, once they have been prepared.

General information about the proposed grazing permit renewals and location maps can be accessed using the ePlanning website which can be accessed at: www.blm.gov/epl-front-office/eplanning/nepa/nepa_register.do. Click on "text search," then "advanced search" and enter the project names listed below in the "Project Name" field:

"Sand Flats, Scharf Mesa, and Hotel Mesa Grazing Allotments Permit Renewal," "Big Flat and Spring Canyon Allotments Permit Renewal" and "Monument Wash Grazing Permit Renewal."

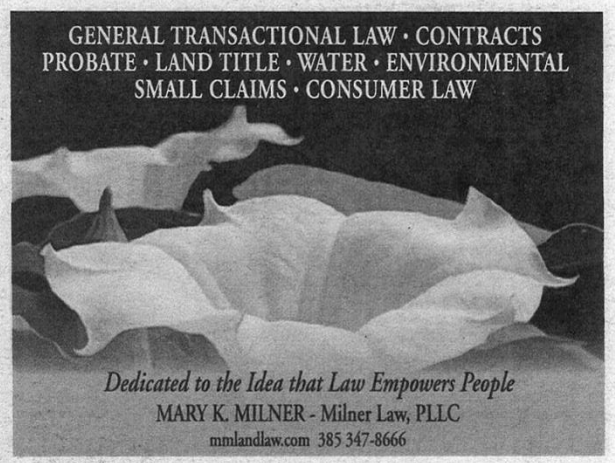
Comments may be submitted electronically through the ePlanning website. Open the project webpage and click on "Documents" in the left-hand menu. Select the "Comment on Document" button to provide a comment.

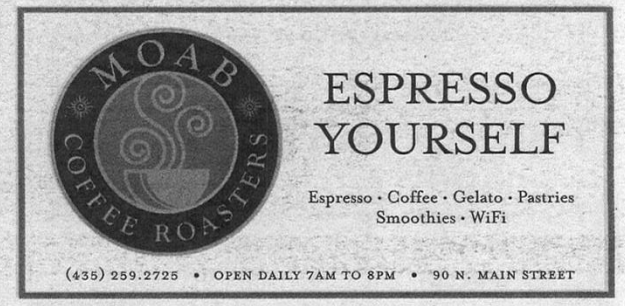
Written comments can also be mailed to: Bureau of Land Management, Moab Field Office, Attn: Grazing permit renewal (project name), 82 East Dogwood, Moab, Utah 84532.

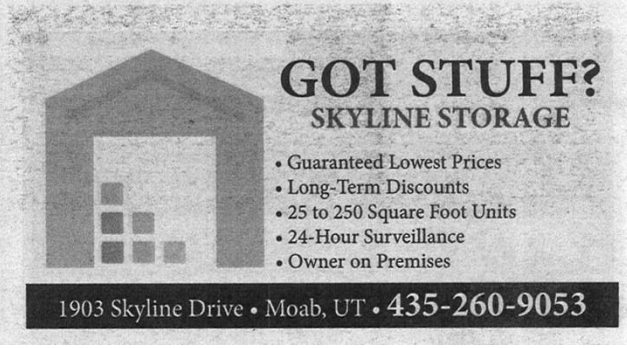
Comments will be accepted throughout the public scoping period, which closes on Feb. 15. The BLM says that the most useful comments are those that identify issues relevant to the proposed action. Comments which contain only opinions or preferences will not receive a formal response, but may be considered in the BLM planning process.

In addition to accepting public input on the proposed project's NEPA process, the BLM is also inviting interested parties to participate in the National Historic Preservation Act Section 106 process outlined at 36 CFR 800. More information about this process can be found in The Citizen's Guide to Section 106 Review, which is available from the Advisory Council of Historic Preservation. To become a consulting party in the Section 106 process, please submit your request to the Moab BLM Office explaining your interest in the project and/or concerns with potential effects related to historic properties from the project.

For more information, contact Lisa Bryant at 435-259-2100.







State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Office of the Governor
PUBLIC LANDS POLICY COORDINATING OFFICE

KATHLEEN CLARKE
Director

February 15, 2016

Sent via electronic mail: bransel@blm.gov

Beth Ransel
Moab Field Office Manager
Bureau of Land Management
82 East Dogwood
Moab, Utah 84532

Subject: **Big Flat-Ten and Spring Canyon Bottom Allotments**
RDCC Project No. 52383

Dear Ms. Ransel:

The State of Utah provides the following comments to help the BLM identify relevant issues that will influence the scope of the analysis and guide the development environmental assessment process for the Big Flat-ten Mile and Spring Canyon Bottom allotments located in the Big Flat area northwest of Moab in San Juan and Grand Counties. The State offers the following comments for your consideration. These comments have been prepared in consultation with the Utah Department of Agriculture and Food (UDAF).

For purposes of this environmental analysis, the BLM must consider an increase in animal unit months (AUM). The allotments are currently being managed to appropriate standards and guidelines that will lead to ecologically healthy allotment conditions. If the allotments are in good condition, the BLM should look to see if the allotments can sustain an increase in numbers.

Further, the BLM should conduct an analysis for common use of these allotments. Studies have shown that the combination of sheep and cattle grazing on the same allotment can improve range conditions compared to all sheep or all cattle allotments.[1] As these allotments are a mixture of cattle and sheep, the BLM must consider whether the allotments could be better managed through a common use.

[1] Responses of Vegetation and Livestock to Grazing Method and Combinations of Animal on Utah Summer Ranges, James E. Bowns and John C. Malechek, Utah State University, Utah Agricultural Experiment Station Report #214, *available at* http://uaes.usu.edu/htm/publications/research-reports/research-report-no-214/.

Finally, a significant concern of data quality has been raised concerning the methods by which federal land managing agencies acquire allotment forage assessments. In recent times, environmental organizations have volunteered their expertise and research to federal agencies on livestock grazing related planning. Advocacy organizations have a clear conflict of interest and must not be permitted to provide scientific research to be used in NEPA related analysis. The State expects our federal partners to be completely transparent and use the best available scientific and commercial data.

Thank you for the opportunity to provide scoping comments. Please direct any other written questions regarding this correspondence to the Public Lands Policy Coordinating Office at the address below, or call the phone number listed.

Sincerely,

Kathleen Clarke
Director

5110 State Offcie Building, POBox 141107, Salt Lake City, Utah 84114-1107 telephone 801-537-9801

Wyoming Office
PO Box 1160
Pinedale, WY 82941
Tel: (877) 746-3628
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Email: Wyoming@WesternWatersheds.org
Web site: www.WesternWatersheds.org

Working to protect and restore Western Watersheds

Western Watersheds Project

November 3rd, 2007

Mike Stiewig
Bureau of Land Management
Vernal Field Office
170 South 500 East
Vernal, UT 84078

Re: Scoping Notice for Winter Ridge AMP group of allotments

Dear Mike,

On behalf of the Western Watersheds Project (WWP) I appreciate the opportunity to offer comments to begin the process to analyze the Winter Ridge group of allotments under the National Environmental Policy Act (NEPA).

The BLM must prepare a pre-decisional Environmental Assessment (EA) that discloses impacts to resources in the project from an array of alternatives in compliance with NEPA. The EA should address the following issues:

Purpose and Need

Maintaining and improving wildlife habitat and restoring degraded range conditions should be reflected in the purpose and need for the EA in compliance with both the Taylor Grazing Act of 1934, the Federal Lands Policy Management Act (FLPMA) of 1976, the Clean Water Act and other laws that govern livestock management on public lands.

The Taylor Grazing Act was passed to "stop injury to public lands by preventing overgrazing and soil deterioration," and the Federal Land Policy and Management Act (FLPMA) requires the BLM to maintain and improve wildlife habitat. It also requires that "Allotment management plans shall be tailored to the specific range condition of the area to be covered by such plan, and shall be reviewed on a periodic basis to determine whether they have been effective in improving the range condition of the lands involved…" (43 U.S.C. § 1752(d) (emphasis added))

The requirement to focus on improvement of range condition is also explicit in the Public Rangeland Improvement Act (PRIA), which provides that the goal of public land range management is to improve range condition (emphasis added).(43 U.S.C. §§ 1901(b)(2), 1903(b)) "Range condition" as defined in PRIA means the "quality of the land" as reflected by the ability of specific areas to support the productivity sought by BLM. (See id. § 1902(d)).

Therefore, the purpose and need should reflect a need to improve wildlife habitat and range condition and the EA should reflect an analysis of alternatives aimed at meeting that purpose and need.

The purpose and need must reflect the BLM's legally mandated responsibility to protect, promote, and ensure that lands under its management are restored and function properly. The EA must show where lands are meeting the Fundamentals of Rangeland Health (FRH) and the standards to promote meeting the FRH and propose a variety of alternatives to restore degraded lands.

The regulations also require a site-specific review in which the agency determines whether grazing livestock is appropriate to particular areas, given the value of other uses diminished or foregone (e.g., wildlife, recreation, cultural, etc.). This analysis must be included in the EA.

Alternatives

The BLM must analyze a full range of alternatives. This includes an alternative which allows for ecosystem restoration following past livestock grazing but prohibits future grazing. A simple "no action" alternative, while essential to the analysis, is not sufficient to fulfill this obligation.

NEPA (40 CFR 1502.14) states that alternatives should "rigorously explore and objectively evaluate all reasonable alternatives…." Similarly, recent case law has established that consideration of alternatives which leads to similar results is not sufficient to meet the intent of NEPA Citizens of Environmental Quality v Lyng (87-F-1714); State of California v Block 690 F.2d 753 (9th Cir. 1982).

Any alternative must be measured against a benchmark of the current condition of the resources, generally the "No Action" alternative. However, if the current condition of the resource is not primarily pristine, it is reasonable to measure any proposed alternative against an alternative that would restore the resource to a primarily pristine condition. An array of alternatives that does not include an alternative to restore the resource does not include a reasonable range of alternatives. While the BLM is not required to supply an infinite number of alternatives, it must offer an array of alternatives that are representational of all possible alternatives (40 CFR 1502.14 and sec 65.11, ex. 1, 43 FR 55983). In order not to foreclose prematurely an option that might protect, restore and enhance the environment, the BLM is obligated under 40 CFR 1502.14 to offer an alternative that restores the resource to an environmentally preferred condition.

The known, or inferred, history of the landscape should be described in sufficient detail to determine what existed in the past and what changes have occurred that may affect current capabilities. These historic processes and elements provide a basis for identifying cause-effect relationships in the evaluation phase, and to understand the ability of the system to adjust to or recover from disturbances or adverse change. Significant changes in vegetation communities may indicate that a threshold has been exceeded, and that what was considered the Potential Natural Community for a particular ecological site is no longer achievable.

We request that the BLM analyze alternatives that propose stocking rates of 75%, 50%, and 25% of the current levels to show exactly how grazing at different levels will impact resources, as well as altered seasons of use.

Resource Management Plan Direction

As recent case law and appeals have documented, RMP direction must be validated at the project-specific and site-specific levels. Just because the RMP assumes the areas are capable for grazing does not necessarily mean that this is currently the case. As a consequence, the analysis team should validate the assumptions made in the RMP regarding the acres under consideration, and propose amendments of the RMP to remove unsuitable acres from areas that allow grazing; this would include areas that cannot be grazed in the near future due to damage from grazing. Please disclose the analysis data that show how the assumptions in the RMP relate to actual conditions on the ground. These assumptions include the number of animals that can be grazed on a sustainable basis, as well as suitability and capability for grazing at all.

Water Quality

The Clean Water Act (CWA), 33 U.S.C. Sec. 1251 et seq., requires the BLM to comply with all state water quality requirements ("Each department, agency, or instrumentality of the executive [branch] . . . shall be subject to, and comply with, all Federal, State, interstate, and local requirements, administrative authority, and process and sanctions respecting the control and abatement of water pollution"); 16 U.S.C. 1604(g)(3)(E)(iii)).

Furthermore, what is the condition of all watersheds and riparian areas in the analysis area, especially in regards to past management activities including livestock grazing? Please analyze the significance of the adverse impacts grazing has had upon fish and other aquatic organisms. The EA/EIS should disclose the results of up-to-date monitoring and surveys of fish habitat and watershed conditions.

Riparian studies should be undertaken and disclosed for all streams and wetlands on the allotments. Please disclose in the NEPA document each stream encroachment of forest habitat into the riparian zones, overall percentage of stream bank damage/shear, degree of water table lowering due to livestock grazing, and estimate of stream widening and water level lowering. Are there streams that are now dry or ephemeral due to livestock grazing that were once perennial? Compared to natural levels, please disclose the fine and bedload sediment increases, levels of fecal coli form bacteria, stream bank stability and stream flow rates of the streams in the area. Please disclose the locations of seeps, springs, bogs and other sensitive wet areas, and the effects on these areas of livestock grazing.

What are the impacts on water quality, temperature, stream channel morphology alone, and cumulatively with roads, natural and prescribed fire, logging and other management projects? How have stream flow quantities changed—do you have baseline information on this?

A number of the allotments in question contains streams on the current 303d list. From the data we have these streams are listed for habitat degradation. The BLM has failed in its duties to implement actions to restore water quality and recover hydrologic function. This issue must be addressed in both the S&G process as well as the NEPA process.

The NEPA document should show that the proposed alternatives would comply with the Clean Water Act and all state water quality laws and regulations. This includes stating the beneficial uses of the streams and how these beneficial uses have been impacted or

degraded by past management actions, and how these beneficial uses would be impacted by the various alternatives. The presence of 303(d) listed streams and impacts that may occur to them should also be disclosed.

Sensitive Species

The EA should include a discussion of direct, indirect, and cumulative impacts that may result sensitive species. The *BLM Sensitive Species Policy* states the following:

> "Bureau of Land Management (BLM) Manual 6840 establishes Special Status Species (SSS) policy for plant and animal species and the habitat on which they depend. This SSS policy refers not only to species protected under the Endangered Species Act (ESA), but also to those designated by the State Director as Sensitive. The manual states *" Sec. 06D - Sensitive Species: State Directors, usually in cooperation with the State wildlife agency, may designate sensitive species. By definition the sensitive species designation includes species that could easily become endangered or extinct in the state. Therefore, if sensitive species are designated by the State Director,* ***the protection provided by the policy for candidate species shall be used as the minimum level of protection****".*

The policy further sets out how the BLM is to manage sensitive species. It also notes the intent of the sensitive species designation is to ensure actions on BLM administered lands consider the welfare of these species and do not contribute to the need to list any other Special Status Species under the provisions of the ESA. Management requirements that apply to the species on the BLM Sensitive Species List are to avoid or minimize adverse impacts and maximize potential benefits to species whose viability has been identified as a concern by reviewing programs and activities to determine their potential effect on sensitive species. Requesting technical assistance from the FWS, and any other qualified source, on actions that may affect a sensitive species is recommended.

IM 97-118 continues by reiterating BLM policy to ensure actions authorized, funded, or carried out by BLM do not contribute to the need for any species to become listed as a candidate, or for any candidate species to become listed as threatened or endangered. Early identification of BLM sensitive species is advised in efforts to prevent species endangerment, and state directors are encouraged to collect information on species of concern to determine if BLM sensitive species designation and special management are needed.

Therefore, the EA should include an analysis of impacts to sensitive species.

The BLM's sensitive species manual requires the following from field office managers:

F. Field Office Managers are responsible for implementing the special status species program within their area of jurisdiction by:

> 1. Conducting and maintaining current inventories for special status species on public lands.
> 2. Providing for the conservation of special status species in the preparation and implementation of recovery plans with which BLM has concurred, interagency plans and conservation agreements.

3. Ensuring that all actions comply with the ESA, its implementing regulations, and other directives associated with conserving special status species.
4. Coordinating field office activities with Federal, State, and local groups to ensure the most effective program for special status species conservation.
5. Ensuring actions are evaluated to determine if special status species objectives are being met.
6. Ensuring all actions authorized, funded or carried out by BLM follow the interagency consultation procedures as outlined in 50 CFR Part 402- Interagency cooperation -Endangered Species Act of 1973, as amended.
7. Ensuring results of formal section 7 consultations, including terms and conditions in incidental take statements, are implemented.

Furthermore, the policy of the BLM is defined in that document as follows:

"The BLM shall conserve listed species and the ecosystems upon which they depend and shall use existing authority in furtherance of the purposes of the ESA. Specifically the BLM shall:

a. Determine, to the extent practicable, the occurrence, distribution, population dynamics and habitat condition of all listed species on lands administered by BLM, and evaluate the significance of lands administered by BLM in the conservation of those species.
b. Ensure management plans and programs provide for the conservation of designated critical habitat on lands administered by the BLM.
c. Develop and implement management plans and programs that will conserve listed species and their habitats.
d. Monitor and evaluate ongoing management activities to ensure conservation objectives for listed species are being met.
e. Ensure that all activities affecting the populations and habitats of listed species are designed to be consistent with recovery needs and objectives.
f. Implement mandatory terms and conditions and reasonable and prudent alternatives as outlined in final biological opinions.
g. Implement conservation recommendations included in biological opinions if they are consistent with BLM land use planning and policy and they are technologically and economically feasible.

The EA for the proposed project must evaluate the science pertaining to sensitive species and their habitat needs. This analysis must be done in order to provide the "hard look" and consideration of best available science required by NEPA. Under NEPA, these types of analyses are required for TE&S species such as migratory birds and others.

Cumulative Effects

We request that cumulative effects be a major focus of your analysis. Please disclose the significance of the impacts from past activities, including those on nearby state, federal, and private land. Please include in the effects analysis any and all reasonably foreseeable management activities in the general area, including but not limited to range "improvements" and other livestock developments such as troughs and constructed ponds. We are particularly concerned with the cumulative impacts of grazing and logging activities and motorized off-road travel.

An adequate cumulative effects analysis must also consider the cumulative effects of logging. Livestock tend to graze in areas that have been disturbed by logging and road building. Livestock grazing adds cumulative impacts to roadsides, cutting units, temporary

roads and skid trails. New logging activities will change grazing patterns, which must be considered in cumulative effects analyses.

Activity Areas can also be impacted by motorized vehicle use, including 4-wheel drive vehicles, machines designed for off-road use (ATVs), and even snowmobiles, which have been shown to impact soils. Please evaluate cumulative detrimental soil disturbance from these factors.

Predators

What has been the impact on predators because of these allotments? How many predators have been killed by the BLM, permittee, or Animal Damage Control? What has the expense been for predator control, and what are the potential costs to the taxpayer of doing further Animal Damage Control activities in the allotments? Please disclose the agreements the BLM has with Animal Damage Control that would pertain to the allotment areas. Please disclose the cumulative impacts of Animal Damage Control activities on all resources in the area. What are the potential costs to the taxpayers of doing control actions on wild animals in the area?

Economics

All grazing alternatives must include having the permittee rather than the taxpayers pay all the costs of administering the allotments and making any "improvements." This must be a part of all permits.

Please disclose how much money the BLM has received annually for each allotment since the present AMP was written. Please disclose how much has been spent by the BLM each year in administering each allotment (please itemize these costs).

The analysis should contain all costs and adequately discuss all current, in place benefits—the costs of past and proposed specific improvements should be fully disclosed. The analysis should include ongoing and future impacts to recreation, and all costs related to the project including costs of preparing the analysis, all specialist support and consultation, costs associated with travel management and administration, road maintenance, weed control, costs of doing fencing, water, predator control, and other related improvements.

The BLM insists that the economic system as it presently exists be a part of the equation for performing "ecosystem management." Although we disagree the way this is interpreted to mean that grazing permittees must be served first, the BLM should follow through and tell the full economic story of just what the impacts would be to all taxpayers, not just to the permittees.

We request an economic analysis that compares the expense of restoring these damaged areas, on a continuing basis, with a no-grazing scenario.

A common failing of grazing EAs is reliance on the unproven assumption that local economies depend on public lands grazing. Actual empirical evidence should be obtained and considered concerning the real extent of dependence. In analyzing the presumed benefits of the proposed grazing alternatives the BLM must base estimates on actual empirical data for jobs and revenue, not on standard formulae.

According to NEPA, the BLM must consider socio-economic benefits not only to permittees and local communities, but also to the entire public now and in future generations, who are the ultimate owners and inheritors of this land. In analyzing the full social and economic costs and benefits of the "no-grazing" alternative, the BLM must not under-estimate or fail to estimate the benefits of enhanced ecological services provided by livestock-free and fence-free wildlife habitat, and of enhanced income to local economies from greater visitation by hunters and recreational users.

An accurate projection must be made of enhanced hunting and recreational income and non-monetary ecological and social benefits arising from permanent retirement of all livestock use and devotion of the allotment to wildlife and other unique resources. The analysis must also consider the economic and ecological benefits of redirecting agency resources into habitat restoration.

The analysis must consider the possibly greater income under the no grazing alternative that the current permittee might gain by going into alternative forms of business, and the improvement in the local economy that might result from such a change.

The BLM should construct forms of the no-grazing alternative that might involve arranging assistance, transition, or retraining grants or employment preference to help the affected party adjust to the loss of grazing preference and maintain income. Many such programs already exist and analysis of the no-grazing alternative should take them into account as opportunities for permittees under no grazing decisions:

- National Forest Dependent Rural Communities grants
- Business and Industry Guaranteed Loans
- Business and Industry Guaranteed Disaster/Emergency Assistance
- Business and Industry Direct Loans
- Intermediary Relending Loan Program
- Rural Business Enterprise Grant
- Rural Economic Development Loan
- Rural Economic Development Grant
- Rural Business Opportunity Grant

Conversely, when estimating the costs of the grazing alternatives the BLM must factor in the opportunity cost of ecological services, habitat for listed species and hunting/recreation jobs and revenue to local communities that are partly or wholly foregone under the grazing alternatives. Such estimates must be founded in empirical data or published research not formulae.

The EA must include an accurate and complete accounting of the full financial cost to the public of the grazing alternatives including:

- State tax exemptions or rebates for agricultural businesses and products;
- State motor-vehicle registration and fuel subsidies;
- State tax credits and grants for water developments;
- State funded marketing and promotion of livestock products;
- Federal drought relief and emergency feed programs;
- Federal and State predator control services;
- USDA beef buybacks, price supports, and export-promotion programs;
- Federally funded research and extension for range livestock production;

- Full anticipated administrative and staff costs of conducting NEPA, implementing, monitoring policing and possibly litigating the proposed action and constructing range improvements over the life of the permit.

The BLM should develop an explicit budget for implementation, administration and compliance monitoring over the life of the permit for grazing alternatives, to ensure that legal responsibilities under NEPA, FLPMA and the ESA will be met. A budget for range improvements alone is inadequate.

Any consideration of the social aspects or "lifestyle and culture" of ranching must be balanced by consideration of the "lifestyle and culture" interests of the far more numerous hikers, hunters, fishers, and professional or amateur mycologists, ornithologists, entomologists, herpetologists, botanists, mammalogists and other zoologists, wilderness lovers and wildlife watchers that frequent and enjoy the biodiversity and landscape of these lands. These are the expressed interests of our members and financial supporters. Through appropriate social survey, the BLM should estimate the actual demand for these services, and how that might change if the allotments were to be freed of livestock operations and left to return to a natural state.

The analysis must be done in a timely and transparent manner, with regular postings of all survey and deliberative records on internet sites to ensure the maximum possible public awareness and involvement.

Soils

Compaction by livestock likely slows seedling growth rates, creates stress for any plant that is stepped on, and may impact roots of larger trees as well. Compacted soils on slopes don't retain moisture as well, and this can cause more runoff than uncompacted slopes, and impact riparian areas that typically absorb the water. Please analyze the effects of livestock on soils.

We are concerned that detrimental soil thresholds may already have been exceeded in the allotment areas. The EA/EIS should include disclosures of the amount of detrimental soil conditions due to past activities.

Application of RMP Standards for soil protections requires direct, on-the-ground surveys in areas affected by previous management activities in order to provide numerical percentages of existing detrimentally disturbed activity areas. Without taking this step, decisions resulting in any soil impacts will be made lacking the cumulative effects analysis that NEPA requires.

Vegetation

A baseline, historic analysis of native plants should be provided. This is necessary to compare historic levels with current condition in a quantitative manner as stated in FLPMA's biodiversity requirements. There must be areas that have had natural exclusion that could be studied as a reference point.

The EA/EIS should analyze the degree to which livestock grazing has affected the succession of forested stands in the area, and thus will continue to cumulatively impact the vegetation and wildlife species.

The EA must disclose what utilization levels are on sensitive native, perennial bunchgrasses such as bluebunch wheatgrass, Idaho fescue and Indian ricegrass. A review of the range science literature shows that the levels of use allowed by BLM on most allotments are not moderate, but include heavy use.

The BLM must disclose the amount of use it will allow. There must also be assurance that these levels of use and a deferred grazing system will provide the rest needed for restoration and maintenance of sensitive native perennial grasses such as bluebunch wheatgrass, Idaho fescue and Indian ricegrass. Failure to meet their needs is a violation of the intent of the FLPMA Fundamentals of Rangeland Health and Wyoming Standards and Guidelines. The following paragraphs address this topic at a level of detail that the EA should include in order to take into account best available science and take a "hard look" at the evidence.

Hormay [1](1961) wrote the original guidance for rest-rotation grazing based on intensive field studies. He stated, *"While the idea of incorporating rest in grazing management is not new, the concept of longer rest periods than have heretofore recommended, at least for mountain bunchgrass ranges, and of closer correlation of resting and grazing with plant growth requirements, is new."* Some points of interest from the study were that, even with the rest-rotation system, some areas were more heavily used than others, regrowth was minimal on clipped plants after the seed-in-milk phase and clipping during active growth reduced total herbage yield during that year. A single season of clipping reduced basal area of forbs and grasses the next year. Four consecutive seasons of clipping at the seed-in-milk phase reduced basal area of Idaho fescue 80%, bottlebrush squirreltail 62%, longspur lupine 91% and wooly wyethia 16%.

Hormay, also found that cool-season grasses such as Idaho fescue varied in production by a factor of three due to changes in annual precipitation, while the beginning of growth varied by up to a month with similar variations on time to flowering and seed ripening. In clipping studies, he found that a single clipping of Idaho fescue reduced the basal area of the plant by 49%, while four years of consecutive clipping at the seed in milk phase reduced basal area of Idaho fescue 80% and killed 20% of the plants. Four years' rest after four years' clipping resulted in little or no recovery of Idaho fescue, wooly wyethia and longspur lupine. The basic principle enunciated by Hormay, based on his quantitative research, was to require adequate years' of rest to allow the native plants to recover their vigor before again being grazed. This requires multiple years of rest between grazing periods. They also recommended that it is important to include adequate monitoring of each grazed unit or pasture to determine if these rest periods are sufficient to maintain or restore production.

As mentioned above, grazing and rest requirements for key species of grass can be critical. Native cool-season perennial bunchgrasses can be very sensitive to defoliation and growing season use. For example, Anderson (1991)[2] stated in regards to bluebunch wheatgrass, *"Effects of growing season defoliation injury are well documented: basal area, stem numbers and both root and forage yields are reduced and mortality can be high. ... Defoliation to very short stubble heights during the boot stage has been reported to essentially eliminate plants within as few as three years. ... Vigor recovery has been found to require most of a decade, even with complete protection from grazing."* The author went on to describe experiments in which a single clipping of the

[1] Hormay, A. L. and M. W. Talbot. 1961. Rest-rotation Grazing – A New Management System for Perennial Bunchgrass Ranges. USDA Forest Service Production Research Report No. 51.
[2] Anderson, Loren D. 1991. Bluebunch wheatgrass defoliation, effects and recovery – A Review. BLM Technical Bulletin 91-2, Bureau of Land Management, Idaho State Office.

grass during the growing season produced 43% less herbage and 95% fewer flower stalks the following year than unclipped plants. Under a deferred system in eastern Oregon, it was reported that bluebunch wheatgrass could not be maintained at 30 – 40% use in the boot stage (early June). A one time removal of 50% of the shoot system during active growth may require six years' rest even in an area with 17" precipitation.[3] Anderson (1991) also makes the point regarding bluebunch wheatgrass that, *"The belief that range improvement will occur after one or two years of rest following a single season of more than 'light' use during the growing season is erroneous."* Mueggler (1975) also determined that Idaho fescue of moderately low vigor required 3 years of rest for recovery and that plants of bluebunch wheatgrass and Idaho fescue in very low vigor may require 8 years and 6 years of rest, respectively for recovery. BLM must consider the recovery, growth and maintenance requirements for these sensitive native grasses in its current or proposed management.

Eckert and Spencer[4, 5] concluded that no management system appears to be satisfactory if that system results in overgrazing during the growing season in order to defer or rest vegetation in other grazing periods. They concluded that the amount of deferment and rest provided by the 3 pasture system was not sufficient to overcome the effects of periodic overuse. They recommend the use of utilization levels that allow plants of desirable species to respond to proper management by adjusting stocking rates to forage production levels. The research they conducted involved heavy grazing at levels similar to those on many allotments managed by the BLM.

Recovery Rates in Absence of Livestock Grazing. In studies at INEEL in Central Idaho following exclusion of livestock, Anderson and Holte[6] found recovery of perennial grasses was slow, but nevertheless it gradually occurred. Basal area of perennial grasses increased from 0.28% to 5.8% over 25 years. In a later publication, Anderson and Inouye[7] found that cheatgrass was less competitive and able to establish in areas where native perennial grasses were thriving. McLean and Tisdale[8] found it took 20 to 40 years for bunchgrasses to fully recover from poor to excellent condition under complete rest. Evanko and Peterson[9] found that 18 years of livestock exclusion of an area heavily grazed for 50 years resulted in a decrease in unpalatable forbs and shrubs, while grass cover, herbage yield, litter cover and water absorption were greater in the protected areas than in those areas that continued to be grazed. Orr[10] found that more than one complete season of rest was needed for significant soil recovery as measured by pore volume and infiltration. Bryant et al[11] found that under increasing trampling frequency, soil compaction increased and resulted in a significant decrease in forage production for

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[3] Mueggler, W.F. 1975. Rate and pattern of vigor recovery in Idaho fescue and Bluebunch wheatgrass. Journal of Range Management 28(3):198-204.
[4] Eckert Jr., Richard E. and John S. Spencer. 1986. Vegetation response on allotments grazed under rest-rotation management. Journal of Range Management 39(2):166-174.
[5] Eckert Jr., Richard E. and John S. Spencer. 1987. Growth and reproduction of grasses heavily grazed under rest-rotation management. Journal of Range Management 40(2):156-159
[6] Anderson, Jay E. and Karl E. Holte. 1981. Vegetation development over 25 years without grazing on sagebrush-dominated rangeland in southeastern Idaho. Journal of Range Management 34(1):25-29.
[7] Anderson, Jay E. and Richard S. Inouye. 2001. Landscape-scale changes in plant species abundance and biodiversity of a sagebrush steppe over45 years. Ecological Monographs 71(4):531-556.
[8] McLean, A. and E.W.Tisdale. 1971. Recovery rate of depleted range sites under protection from grazing. Journal of Range Management 25:178-184.
[9] Evanko, Anthony B., and Roald A. Peterson. 1955. Comparisons of protected and grazed mountain rangelands in southwestern Montana. Ecology 36(1):71-82.
[10] Orr, Howard K. 1975. Recovery from soil compaction on bluegrass range in the Black Hills. Transactions of the ASAE, 1076-1081.
[11] Bryant, H. T., R. E. Blaser and J. R. Peterson. 1972. Effect of trampling by cattle on bluegrass yield and soil compaction of a meadowville loam. Agronomy Journal 64:331-334.

tramplings in June and September. Kauffman et al[12] studied upland and wet meadow communities that had livestock excluded for 9 – 18 years. They found major differences between these ungrazed communities and those continuing to be grazed. In each case, the area without grazing had greater belowground plant biomass, lower soil bulk density and higher soil pore space. In dry meadows the infiltration rate was 13 times greater than those continuing to be grazed and in wet meadows, infiltration of rested areas was 2.33 times greater. Bohn and Buckhouse[13] found that grazing systems including season-long, rest-rotation and deferred grazing did little to enhance and sometimes hindered infiltration and beneficial soil properties. Grazing during wet periods such as spring and fall had negative impacts on these attributes.

The EA must consider this science.

Forage Consumption by Livestock

The EA should reflect current knowledge regarding the consumption of forage by livestock. The following discussion updates this information and shows that cattle weights have increased markedly over the past decades and this forage consumption is not being accounted for by BLM in its permits and billings.

The Society for Range Management (SRM) in 1974 defined an Animal Unit *"to be one mature (1000 lb.) cow or the equivalent based upon average daily forage consumption of 26 lbs. dry matter per day."*[14] SRM also defined an Animal Unit Month as *"The amount of feed or forage required by an animal-unit for one month."* NRCS defined the forage demand for a 1,000 pound cow as 26 pounds of oven-dry weight or 30 pounds air-dry weight of forage per day[15]. It is important to ensure that forage consumption rates by livestock are based on the size of animals present on the allotment and a reasoned estimate of their daily consumption rates. The following analysis provides some background and justifies a more current forage consumption rate for cow/calf pairs. When records from the permittees are made available, they can be used to determine the actual weights of cattle grazed on the allotment and the consumption rate proposed here can be adjusted to take that into account.

The University of Nevada Agricultural Experiment Station published a report on cattle production in 1943[16]. That report analyzed 14 years of ranch operation for eleven ranches in northeastern Nevada. At that time, a mature cow was considered one unit and a branded calf or weaner as ½ cow unit, for a combined total of 1.5 cow units per cow/calf pair. Bulls were considered 1.5 cow units. For the period 1938 – 1940, the average turnoff weight (when they left the range) of mature cows was 959 pounds, calves were 381 pounds and bulls were 1222 pounds. This means that in the 1930's, a cow/calf pair was 1340 pounds. With breeding, supplements and hormones, weights have increased over time, for example, Anderson et al (ca 2000) calculated a 35% increase in dressed weights per animal between 1975 and 1995[17].

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[12] Kauffman, J. Boone, Andrea S. Thorpe, and E. N. Jack Brookshire. 2004. Livestock exclusion and belowground ecosystem responses in riparian meadows of eastern Oregon. Ecological Applications 14(6):1671-1679.
[13] Bohn, C.C., and J.C. Buckhouse. 1985. Some responses of riparian soils to grazing management in northeastern Oregon. Journal of Range Management 38(4):378-381.
[14] Society for Range Management. 1974. A Glossary of Terms Used in Range Management.
[15] NRCS. 2002. National Range and Pasture Handbook.
[16] Brennan, C. A. and Fred B. Harris. 1943. Fourteen Years Cattle Production and Ranch Earning Power in Northeastern Nevada 1928 to 1941. University of Nevada Agricultural Experiment Station, Reno.
[17] http://agecon.uwyo.edu/RiskMgt/marketrisk/TheCattleCycle.pdf

USDA market statistics[18] give the average weights of slaughter cattle for the week ending August 14, 2004 as 1251 pounds. The estimate for the same week in 2005 for slaughter cattle average weight was 1260 pounds.

The USDA National Agricultural Statistics Service data for average live weight of cattle slaughtered in 2004 was 1242 pounds compared to 1187 pounds in 1995, or an increase of nearly 8.5% in those 10 years[19]. The Livestock Monitor is a newsletter produced by the North Dakota State University Extension Service Livestock Marketing Information Center in cooperation with USDA State Extension Services[20]. The Livestock Monitor shows for the week ending August 6, 2005, live weights of slaughter cattle averaged 1258 pounds.

The potential weights of mature cows can be even larger than these numbers. For example, NRCS in its National Range and Pasture Handbook, referenced above, defines body condition scores. A body condition score of 6 which is described as *"Good, smooth appearance throughout. Some fat deposits in brisket and over the tailhead. Ribs covered and back appears rounded."* This body condition score relates to a pregnancy percentage of 88%, which is important as a goal for cow/calf operations as dry cows are usually culled and replaced and the weight gain of calves is important for income. According to Dr. Larry W. Olson, Extension Animal Scientist at Clemson University, a medium frame cow in body condition score 6 could easily weigh 1300 – 1400 pounds[21].

Holechek et al (2001) summarized the weaning weights of calves grazed on various types of rangelands at different stocking rates. The data for the period since 1990 produced an average weaning weight of 430 pounds and a range of 382 – 475 pounds. Ray et al (2004) gave a weaning weight of 480 pounds for calves[22]. Using the current market statistics for slaughter cattle at about 1250 pounds and assuming a calf weight of 300 pounds to allow for weight gain during the grazing season, an estimate for the average weight of a cow/calf pair during the grazing season of 1,500 pounds seems reasonable.

As pointed out above, the NRCS used 26 lbs/day of oven dry weight for a 1,000 pound cow and stated this was equivalent to 30 pounds per day air-dry weight. The NRCS Range and Pasture Handbook value of 30 pounds air-dry weight would be 3% of body weight for a 1,000 pound cow. Applying this to the estimate of a current weight of 1,500 pounds for a cow/calf pair, the daily forage consumption would be 45 lbs of air-dry forage per day, or for a month (30.4 days), 1368 pounds of forage per AUM. BLM must update its forage consumption rate on these allotments to provide the forage needed for wildlife as required by its RMP and to ensure the public trust is not violated by undercharging for the actual weights of cattle and calves grazed.

Noxious Weeds

The invasion and spread of noxious weeds by livestock is widely known and accepted. Please analyze the site-specific and cumulative impacts in the allotments on both native and non-native plants. Many roads are open so that permittees can move livestock around, therefore the impacts of open roads on noxious weeds is a grazing problem as well.

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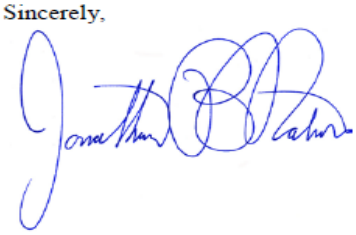
[18] http://www.ams.usda.gov/mnreports/SJ_LS712.txt
[19] http://www.usda.gov/nass/pubs/agr05/acro05.htm
[20] http://www.ag.ndsu.nodak.edu/aginfo/lsmkt/monitor.htm
[21] Email correspondence with Dr. Olson dated 8/18/05.
[22] Ray, D.E., A.M. Lane, C.B. Roubicek, and R.W. Rice. 2004. Range beef herd growth statistics. In: Arizona Rancher's Management Guide. Arizona Cooperative Extension, College of Agriculture, University of Arizona.

What new invaders are present and how will these be controlled when wandering livestock eat seed or carry it to new sites? For existing weed sites, effective management would involve yearly follow-up and monitoring of each noxious weed site and closure of affected main roads to prevent vehicular spreading to even more areas.

In conclusion, we appreciate the opportunity to comment on this proposal, and we look forward to reviewing the NEPA document when it is complete. Please feel free to contact me with any questions you may have in regards to these comments.

We incorporate by reference the attached documents into our comments.

Sincerely,



Jonathan B. Ratner
Director – Wyoming Office

RECEIVED
MOAB FIELD OFFICE
2016 FEB 16 PM 1:46

February 15, 2016

Bureau of Land Management
Moab Field Office
Attn: Grazing permit renewal
1) Sand Flats, Scharf Mesa, and Hotel Mesa Grazing Allotments Permit Renewal
2) Big Flat and Spring Canyon Allotments Permit Renewal
3) Monument Wash Grazing Permit Renewal
82 East Dogwood
Moab, Utah 84532

Dear Sirs,

Because of the need to follow best management practices as advocated by "range" or grazing scientists, please incorporate the five key benchmarks of sustainable grazing and restoration cited below in your forthcoming EA for these three grazing permits renewals. They are:

1. **80% Rule of Thumb -** Grazed sites must maintain conditions that are at least 80% as good as conditions in non-grazed reference areas.

2. **Desired Conditions** for sagebrush, aspen, riparian areas, springs, and wildlife habitat will determine how much livestock consumption will be allowed.

3. **30% Utilization -** A reduction from the currently authorized "heavy grazing" (60% utilization) to "conservative grazing" (30% utilization) wherever Desired Conditions aren't being met (and 40% utilization where Desired Conditions are being met).

4. **25% Drought Utilization -** A reduction to 25% utilization during years of drought, which is now more common with global warming.

5. **Accountability -** Specified reduction in days grazed if utilization limits are exceeded 2 years out of 5.

These sustainable grazing and restoration benchmarks are recommended not only by grazing scientists, but are also a part of a recent BLM term permit in western Colorado and the consensus opinion of the Tushar Allotments Collaboration here in Utah. For the sake of our area's streams, vegetation, and wild life habitats, I would love to see them adhered to here.

Sincerely,
Marc Thomas

827 Palisade Ave.
Moab, UT 84532

Appendix E: Proposed Action's Proposed Grazing System

Allotment	Year	November	December	January	February	March	April	May
Spring Canyon	All	Graze						
Airport	1	Graze						
	2			Graze				
	3					Graze		
Beehive	1			Graze				
	2							
	3							
Dalton Wells	1							
	2							
	3							
Horsethief Point	1							
	2							
	3							
Microwave	1							
	2							
	3							
Mineral Point	1							
	2							
	3							
Bartlett	1							
	2							
	3							
	4							
	5							
	6							
Big Flat	1							
	2							
	3							
	4							
	5							
	6							
Courthouse	1							
	2							
	3							
	4							
	5							

Allotment	Year	November	December	January	February	March	April	May
	6							
Deadman Point	1							
	2							
	3							
	4							
	5							
	6							
Lone Mesa	1							
	2							
	3							
	4							
	5							
	6							

Appendix F: Proposed Action Proposed Range Improvements

Project Name	Meridian	Township	Range	Section	Subdivision	UTM Zone 12 North
Airport #1 Water Haul	SLM	24 South	20 East	17	NE ¼ NW ¼	609534 4287214
Airport #2 Water Haul	SLM	24 South	19 East	11	NE ¼ NE ¼	606033 4289041
Airport Corral Water Haul	SLM	24 South	19 East	10	NE ¼ NW ¼	603687 4288957
Airport SITLA #1 Water Haul	SLM	24 South	20 East	6	SW ¼ SW ¼	607828 4289386
Bartlett Flat #1 Water Haul	SLM	25 South	19 East	9	NE ¼ SE ¼	602696 4277976
Bartlett Flat #2 Water Haul	SLM	25 South	19 East	4	NW ¼ SE ¼	602034 4279276
Bartlett Flat #3 Water Haul	SLM	25 South	19 East	5	SW ¼ SW ¼	599831 4278839
Bartlett Flat #4 Water Haul	SLM	25 South	19 East	8	SW ¼ SW ¼	599866 4277149
Beehive #1 Water Haul	SLM	26 South	19 East	10	NW ¼ NE ¼	603645 4268841
Beehive #2 Water Haul	SLM	26 South	19 East	9	NW ¼ SE ¼	6022202 4268028
Beehive Cattleguard	SLM	26 South	19 East	16	SW ¼ NW ¼	601516 4266645
Beehive Gap Fences	SLM	26 South	19 East	16, 17, 21, 28, and 29		602006 4266322
Big Flat #1 Water Haul	SLM	26 South	19 East	13	SE ¼ SE ¼	607543 4266070
Big Flat #2 Water Haul	SLM	26 South	20 East	18	SW ¼ NE ¼	608616 4266806
Big Flat #3 Water Haul	SLM	26 South	20 East	17	NE ¼ SE ¼	610747 4266600
Big Flat #4 Water Haul	SLM	26 South	20 East	7	SW ¼ SE ¼	608722 4267605
Big Flat #5 Water Haul	SLM	26 South	20 East	19	SW ¼ NE ¼	608731 4265052
Big Flat Corral Road	SLM	26 South	19 East	14	S ½	605340 4265971
Big Flat Corral Water Haul	SLM	26 South	19 East	14	SW ¼ SE ¼	605604 4265844
Blue Hills Cattleguard	SLM	24 South	19 East	3	NW ¼ SW ¼	603309 4289714
Blue Hills Fence	SLM	24 South	19 East	1, 2, 3, 4, and 11		605097 4289133
Deadman Point #1 Water Haul	SLM	25 South	18 East	2	NW ¼ SW ¼	599147 4280583
Deadman Point #2 Water Haul	SLM	25 South	18 East	10	SE ¼ SW ¼	593816 4277176
Deadman Point #3 Water Haul	SLM	25 South	18 East	15	NW ¼ SW ¼	593305 4275974
Deadman Point #4 Water Haul	SLM	25 South	18 East	19	NW ¼ NE ¼	599069 4277041

Project Name	Meridian	Township	Range	Section	Subdivision	UTM Zone 12 North
Deadman Point Corral Water Haul	SLM	25 South	18 East	12	SE ¼ SW ¼	597061 4277109
Deadman Point SITLA #1 Water Haul	SLM	25 South	18 East	2	NE ¼ NE ¼	596159 4280895
Deadman Point SITLA #2 Water Haul	SLM	25 South	18 East	2	NW ¼ SW ¼	594978 4279464
Deadman Point SITLA #3 Water Haul	SLM	25 South	19 East	16	NE ¼ SW ¼	592053 4275838
Horsethief Point #1 Water Haul	SLM	26 South	18 East	13	NE ¼ SW ¼	597006 4266179
Horsethief Point #2 Water Haul	SLM	26 South	18 East	15	SE ¼ SE ¼	594624 4265659
Horsethief Point #3 Water Haul	SLM	26 South	18 East	21	NE ¼ SE ¼	593237 4264642
Jug Rock Cultural Fence	SLM	25 South	19 East	7	NW ¼ NE ¼	598818 4278236
Lone Mesa #1 Water Haul	SLM	25 South	19 East	27	NW ¼ SE ¼	603806 4273130
Lone Mesa #2 Water Haul	SLM	25 South	19 East	21	SE ¼ NE ¼	602709 4275022
Lone Mesa #3 Water Haul	SLM	25 South	19 East	13	SW ¼ NW ¼	606106 4276526
Lone Mesa #4 Water Haul	SLM	25 South	19 East	15	NW ¼ NE ¼	603794 4276895
Lone Mesa #5 Water Haul	SLM	25 South	20 East	7	NE ¼ SE ¼	609031 4277905
Lone Mesa #6 Water Haul	SLM	25 South	20 East	7	NW ¼ SW ¼	607623 4277702
Lone Mesa Cattleguard	SLM	25 South	19 East	15	NW ¼ NE ¼	603769 4276993
Lone Mesa Gap Fences	SLM	25 South	19 East	10, 15, 16, 17, 20, 33, and 34		600525 4275570
Microwave #1 Water Haul	SLM	23 South	19 East	33	NW ¼ SE ¼	602085 4291237
Microwave #2 Water Haul	SLM	23 South	19 East	13	SW ¼ NW ¼	606263 4296559
Microwave #3 Water Haul	SLM	23 South	19 East	14	NE ¼ NE ¼	605750 4297175
Microwave #4 Water Haul	SLM	24 South	19 East	1	SE ¼ SW ¼	606663 4289336
Mill Canyon Rock Pond	SLM	24 South	20 East	29	SE ¼ NW ¼	609542 4283716
Mineral Point #1 Water Haul	SLM	25 South	19 East	31	NE ¼ NW ¼	598631 4272135
Mineral Point #2 Water Haul	SLM	25 South	18 East	35	SE ¼ SE ¼	596357 4270676
Mineral Point Cattleguard	SLM	25 South	19 East	34	NW ¼ SW ¼	602983 4271363
Mineral Point SITLA #1 Water Haul	SLM	25 South	19 East	32	SW ¼ NE ¼	600501 4271833
Mineral Point SITLA #2 Water Haul	SLM	26 South	18 East	2	NW ¼ NW ¼	594979 4270334

Project Name	Meridian	Township	Range	Section	Subdivision	UTM Zone 12 North
“S” Curve Rock Pond	SLM	25 South	20 East	6	NE ¼ SW ¼	608181 4279793
Sunburst Well Pad Water Haul	SLM	26 South	19 East	14	SW ¼ SW ¼	604720 4265999
Tombstone Water Haul	SLM	24 South	18 East	24	NW ¼ NE ¼	594171 4282319
Whitbeck Rock #1 Water Haul	SLM	26 South	19 East	26	SE ¼ SW ¼	605013 4262568
Whitbeck Rock #2 Water Haul	SLM	26 South	19 East	34	NE ¼ NW ¼	603565 4262256
Whitbeck Rock #3 Water Haul	SLM	26 South	19 East	27	NW ¼ NE ¼	603874 4263922

Appendix G: Existing Range Improvements

Project Number	Project Name	Authorization Type	Meridian	Township	Range	Section	Subdivison
005265	Deadman Point Rock Pond	Cooperative Agreement	Salt Lake	025 S	018 E	030	SESE
005273	Courthouse Cattleguard	BLM, no agreement	Salt Lake	024 S	020 E	016	NWNW
005274	Mineral Point Rock Pond	Cooperative Agreement	Salt Lake	026 S	018 E	004	NWSW
005285	Dan's Rock Pond	Cooperative Agreement	Salt Lake	025 S	019 E	015	NENW
005286	Bartlett Flat Reservoir #2	Cooperative Agreement	Salt Lake	025 S	019 E	008	NWSE
005287	Horsethief East Allotment Boundary Fence	Cooperative Agreement	Salt Lake	026 S	018 E	027	
013366	Mineral Canyon Rock CCC Dam	BLM, no agreement	Salt Lake	026 S	019 E	003	SWNESENW
013867	Shinarump Cattleguard	BLM, no agreement	Salt Lake	024 S	020 E	027	
019726	Jug Rock Fence Cattleguard	BLM, no agreement	Salt Lake	025 S	019 E	005	N 1/2 W 1/2 N 1/2
850006	Big Flat West Reservoir	Maintenance Agreement	Salt Lake	026 S	019 E	023	SWSE
854038	Horsethief Reservoir	Cooperative Agreement	Salt Lake	026 S	018 E	027	NESW
854153	Tenmile Microwave Pond	Cooperative Agreement	Salt Lake	023 S	019 E	022	SENW
854327	Klondike Cattleguard	BLM, no agreement	Salt Lake	024 S	020 E	005	SWSW
854449	PASTURES 1&2 DIV FENCE	Cooperative Agreement	Salt Lake	024 S	018 E	034	
854456	Knoll Division Fence	BLM, no agreement	Salt Lake	025 S	019 E	034	NESE
854772	ARTHS PAST W FENCE	Cooperative Agreement	Salt Lake	025 S	019 E	036	NE
854841	DRIPPING SPRING FENCE	Cooperative Agreement	Salt Lake	024 S	018 E	003	
854948	Tusher Canyon Pipeline	Cooperative Agreement	Salt Lake	024 S	020 E	019	
854960	Deadman Reservoir	Cooperative Agreement	Salt Lake	025 S	018 E	009	SESE

Project Number	Project Name	Authorization Type	Meridian	Township	Range	Section	Subdivison
855124	SHINARUMP FENCE	BLM, no agreement	Salt Lake	024 S	020 E	027	NWNW
855125	SEVEN MILE FENCE		Salt Lake	025 S	020 E	008	NENE
855413	Stone Pond	Cooperative Agreement	Salt Lake	025 S	019 E	010	NESW
855414	Klondike #1 Reservoir	Cooperative Agreement	Salt Lake	023 S	019 E	027	NENE
855418	Highway Reservoir	Cooperative Agreement	Salt Lake	025 S	019 E	022	SESW
855419	Myers Reservoir	Cooperative Agreement	Salt Lake	025 S	019 E	003	SWSW
855420	Mineral Point Reservoir	Cooperative Agreement	Salt Lake	025 S	018 E	035	NWSE
855421	Pasture #3 Reservoir	Cooperative Agreement	Salt Lake	026 S	019 E	017	SESE
855422	Pasture #4 Reservoir	Cooperative Agreement	Salt Lake	026 S	019 E	017	SESE
855423	Deadman Point #2 Pond	Cooperative Agreement	Salt Lake	025 S	018 E	017	NESE
855424	Jug Rock Reservoir	Cooperative Agreement	Salt Lake	025 S	018 E	012	NENE
855425	Merrimac Butte Reservoir	Cooperative Agreement	Salt Lake	025 S	020 E	005	SENW
855426	Little Valley Reservoir #2	Cooperative Agreement	Salt Lake	026 S	020 E	008	SWSW
855431	Shinarump Reservoir	Cooperative Agreement	Salt Lake	024 S	020 E	021	SWNE
855432	Drill Pad Reservoir	Cooperative Agreement	Salt Lake	025 S	019 E	023	SWSE
855433	Long Valley Reservoir	Cooperative Agreement	Salt Lake	026 S	020 E	008	SESW
855434	The Knolls Reservoir	Cooperative Agreement	Salt Lake	026 S	019 E	012	SESW
855435	Big Flat #3 Reservoir	Cooperative Agreement	Salt Lake	026 S	019 E	026	SWSE
855436	Mineral Point Reservoir #2	Cooperative Agreement	Salt Lake	026 S	018 E	004	NENE
855439	Dubinky Driveway Reservoir	Cooperative Agreement	Salt Lake	024 S	019 E	031	SESW

Project Number	Project Name	Authorization Type	Meridian	Township	Range	Section	Subdivison
855440	Little Valley Pond #1	Cooperative Agreement	Salt Lake	026 S	020 E	008	SESE
855575	Big Flat East Reservoir	Cooperative Agreement	Salt Lake	026 S	019 E	024	NESE
855576	Deadman Point Reservoir #1	Cooperative Agreement	Salt Lake	025 S	018 E	021	NWNE
855577	South Little Mountain Reservoir	Cooperative Agreement	Salt Lake	024 S	018 E	035	NESE
855578	Bartlett Flat Rock Tank	Cooperative Agreement	Salt Lake	025 S	019 E	004	NWSE
855633	DIVISION PASTURE 3&5 FENCE	Cooperative Agreement	Salt Lake	025 S	019 E	022	SESE
855636	PASTURE 2&5 DIVISION FENCE	Cooperative Agreement	Salt Lake	025 S	019 E	005	
855680	MICROWAVE CATTLEGUAR	BLM, no agreement	Salt Lake	023 S	019 E	011	SESE
855682	Bartlett Flat Cattleguard	BLM, no agreement	Salt Lake	025 S	019 E	007	NESW
855684	Knolls Cattleguard	BLM, no agreement	Salt Lake	025 S	019 E	034	SWSE
855691	Hell Roaring Cattleguard	BLM, no agreement	Salt Lake	025 S	019 E	022	SENW
855692	Levi Cattleguard	BLM, no agreement	Salt Lake	023 S	019 E	032	NENE
855693	Brink Spring Cattleguard	BLM, no agreement	Salt Lake	024 S	019 E	010	SESE
856013	COURTHOUSE GAP FENCES	Cooperative Agreement	Salt Lake	024 S	020 E	030	SWSW
856014	LOWER BARTLETT GAP FENCE	Cooperative Agreement	Salt Lake	024 S	019 E	014	SWSE
856538	BIG FLAT CORRAL	Cooperative Agreement	Salt Lake	025 S	019 E	014	SWSE
856539	Deadman Point Corral	Cooperative Agreement	Salt Lake	025 S	018 E	012	SESW
856736	ARTHS PASTURE WEST FENCE CATTLEGUARD	BLM, no agreement	Salt Lake	025 S	019 E	036	NENE
856767	Bartlett Rock Tank	Cooperative Agreement	Salt Lake	025 S	019 E	002	NWNW

Project Number	Project Name	Authorization Type	Meridian	Township	Range	Section	Subdivison
856852	Blue Hills Corral	Cooperative Agreement	Salt Lake	024 S	019 E	010	
018251	Spring Canyon Dugway Fence	Cooperative Agreement	Salt Lake	025 S	018 E	007	SENW
855753	Hell Roaring Gap Fence	Cooperative Agreement	Salt Lake	026 S	017 E	012	SWSW
002625	Horsethief East Cattleguard	BLM, no agreement	Salt Lake	026 S	018 E	022	NENWNE
005288	Horsethief Spring and Trough	Cooperative Agreement	Salt Lake	026 S	018 E	028	
005289	Dugway Fence	Cooperative Agreement	Salt Lake	026 S	017 E	025	SENESW
854844	Savarnon Spring	Cooperative Agreement	Salt Lake	026 S	018 E	022	SESW
855695	Dugway Cattleguard	BLM, no agreement	Salt Lake	026 S	017 E	025	NENE
856514	Mineral Bottom Cattleguard	BLM, no agreement	Salt Lake	026 S	017 E	034	
854020	BIG FLAT FENCES	Cooperative Agreement	Salt Lake	000 S	000 E	000	
855109	ARTHS PASTURE GAP FENCE	Cooperative Agreement	Salt Lake	025 S	020 E	035	SWSE
850161	CRESCENT WASH FENCE	Cooperative Agreement	Salt Lake	022 S	019 E	008	
850218	SALT VALLEY DIVISION FENCE	Cooperative Agreement	Salt Lake	022 S	016 E	028	
850278	BRINK SPRING STORAGE	Cooperative Agreement	Salt Lake	024 S	019 E	010	SWSE
853506	Klondike Fence	Cooperative Agreement	Salt Lake	024 S	020 E	005	

Appendix H: No Action, Big Flat – Tenmile Allotment Management Plan

DEPARTMENT

OF

INTERIOR

BUREAU OF LAND MANAGEMENT

MOAB DISTRICT

BIG FLAT - TEN MILE

ALLOTMENT MANAGEMENT PLAN

SECTION I

A. Location
B. Topography

1. General Relief Characteristics
2. Elevational Difference
3. Mountain and Valley Structures
4. Outstanding Topographical Features

C. Resource Data

1. Soil types
2. Erosion Condition Class
3. Vegetative Association
4. Precipitation
5. Recreation
6. Wildlife
7. Minerals
8. Watershed

D. Livestock Management Items

1. Grazing Qualifications
2. Existing Improvements

SECTION II

A. Objectives (General)

B. Objectives (Specific)

C. Phenology

SECTION III

A. Grazing Systems
B. Normal Operation
C. Flexibility
D. Billing Procedures

SECTION IV

Evaluation

SECTION V

Needed Improvements

BIG FLAT - TEN MILE

ALLOTMENT MANAGEMENT PLAN

SECTION I

A. Location

The Big Flat - Ten Mile AMP area is situated in an area 12 miles west of the city of Moab and is bordered on the west by the Green River, Ten Mile Canyon, Duma Point on north to Highway I-70, which is the northernmost boundary. The AMP area is bounded on the east by a fenceline south of Highway I-70, 3.5 miles south of Thompson to the east rim of Salt Valley where said boundary runs approximately 8 miles in a southeasterly direction, wherein the vicinity of Klondike Bluffs said boundary turns west approximately 5 miles to Highway 163, whence boundary runs south up Seven Mile Canyon down Long Canyon over to Dead Horse point. The AMP area is bounded on the south by Dead Horse Point State Park and Canyonlands National Park.

B. Topography

1. General Relief Characteristics: The planning unit is part of the Colorado Plateau, a large physiographic province lying in Southeastern Utah, Western Colorado, Northern Arizona and Northwestern New Mexico. The unit has a general west exposure with about 75 percent of the area draining into the Green River. The remaining 25 percent, located in the southeast part of the unit, drains into the Colorado River.

2. Elevational Difference: The area has a relief of 2,316 feet. The elevation extremes vary from 4,000 feet where the Colorado River enters the Canyonlands National Park to 6,316 feet at "The Knoll". The mean elevation is approximately 4,700 feet.

3. Mountain and Valley Structures: The north part of the planning unit is characterized by rolling mancos shale hills. Drainages are prominent, but deep canyons are lacking. The south portion is dominated by nigh mesas dissected by deep canyons. The extreme elevation differences of the planning unit occur within a short distance of 10 air miles. Dead Horse Point, an extended mesa point, rises 1,900 feet above the Colorado River abruptly below.

   The major canyons in the unit are Ten-Mile, Spring, Hell Roaring, Mineral, Long, Courthouse and Seven-mile Canyon. Ten-Mile Canyon is the longest and drains the largest area.

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Plan Revised 6/89

4. Outstanding Topographical Features: Perhaps the most outstanding topographic feature is the large anticlinal plateau in which the "Big Flat" is centrally located. This is one large mesa almost divided in half by the Colorado and Green River sub-basins. It is dissected by several long, deep canyons. Likewise, the canyons are separated by long points which are indirectly connected at the mesa center. These points are Ten-Mile, Spring Canyon, Deadman, Mineral, Horsethief, and others.

According to geologists, under this anticline lies an extensive layer of potash in the Paradox formation. Texas Gulf Sulphur Company is presently mining this vein of ore.

C. Resource Data

1. Soil Types

The highest portion of the planning unit is characterized by deep sandy soils formed from wind deposits from the Kayenta, Morrison and Entrada formations. This soil type covers approximately 15% of the planning unit. The soils on the rocky points are a shallow sandy soil which are mostly sandy loam, but may be quite silty, shaley, or gravely. This soil type covers about 25% of the AMP area.

The mancos shale soils are found in the northern portion of the planning unit. These soils are base eroding shale, mudstone, and some sandstone from the mancos shale and Morrison Formations. There is very little soil development as the shales are eroding faster than soil is being formed. This soil type covers approxmiately 40% of the planning unit.

2. Erosion Condition Class (Determined by Phase I Studies)

	Percent
Stable	0
Slight	2
Moderate	61
*Critical	34
Severe	3

*The above data was obtained from the 1973 Watershed Conservation and Development System Phase I Inventory. The above data does not appear factual, as a very high percent of the planning unit appears to be in a slight to stable condition class.

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3. Vegetative Association

There are six general vegetation types within the Big Flat - Tenmile Unit. These are Salt Brush, Pinyon-Juniper, Desert Shrub, Greasewood, Sagebrush and annual weeds.

	Acres	Percent
Salt Brush: Shadscale (Atco, Mat Saltbrush (Atcor), Nuttallii Saltbrush (Atnu), Fourwing Saltbrush (Atca), Indian ricegrass (Orhy) and Curleygrass (Hija)	43,017	21%
Desert Shrub: Blackbrush)Cora), Mormon tea (Epne), Green ephedra (Epvi), Juniper (Juos), Curleygrass (Hija),Indian ricegrass (Orhy), Sand drop-seed (Spcr), Mupa and Bogr	61,456	30%
Pinon-Juniper: (Pied, Juos, Cora, Epne, Epvi, Hija, Orhy, and Cost)	61,453	30%
Greasewood: Greasewood (Save), Fourwing Saltbrush (Atca), Curleygrass (Hija), and Saltgrass (Dist).	2,048	01%
Sagebrush: Big Sage (Artr), Mormon Tea (Epne, Green ephedra (Epvi), Curleygrass (Hija) and Indian ricegrass (Orhy)	2,048	01%
Annuals: Cheatgrass (Brtc), Six Week Fescue (Feoc), Halogeton (Hagl), and Annual forbs (Annu)	16,387	08%
Waste:	18,435	09%
Total	204,844	100%

The Salt Brush type has limited productive capacity due to the low rainfall and the Mancos soil type. This vegetative type produces forage for cattle during the fall, winter, and early spring months.

The Pinyon-Juniper type is the largest vegetative type in the allotment; however it produces little forage for either livestock or wildlife. Much of the type is located on shallow, rocky soils which have limited production potential. The more productive sites have such dense stands of the above species that the more palatable species cannot compete for either light or water.

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The Desert Shrub type produces most of the available forage for livestock within the AMP area. It is expected that this type will show the most dramatic improvement when the AMP is placed in effect.

The Greasewood type exists primarily along the upper Ten=Mile drainage which has been heavily utilized by livestrock in the past. This is an area of high productive potential and should show improvement once the AMP is in effect.

Sagebrush (Artr) comprises less than 1% of the vegetative types in the AMP area.

The Annual types exist in the upper Ten-Mile drainage and the Crescent Dike Flats. Production is high on these sites when moisture is adequate; on dry years these flats produce small amounts of forage. Approximately 9% of the area is made up of slick rock and less inaccessible to livestock. They produce no useable forage.

4. Precipitation

Ranges from 6" in the Green River area to 10" near the Knoll. The major portion of the planning unit falls in the 8" rainfall belt. Approximately 30% of this moisture is received during August, September and October, while May, June, and July are low for 20%.

5. Recreation

Recreation over the Management Plan is generally limited to rock-hounding. The main access road to the Canyonlands National Park and Dead Horse Point State Park is within the Management Plan area. Initiation of this management plan does not present any conflicts with this access. Aesthetic values within the area will be protected. There is a possibility of constructing recreation facilities along this access road. If such facilities are constructed, this plan will not interfere with their development. Livestock will not detract from the aesthetic quality of the area if the AMP is properly implemented.

6. Wildlife

Wildlife is not abundant in the AMP area. A few resident deer are present, but they offer no competition to livestock grazing. The rims and canyons provide important habitat for the deer herd the entire year, with the major vegetative species being Cliffrose (Cost), Blackbrush (Cora), Brignam tea (Epvi and Epne), and numerous forbs. Bighorn sheep are found at the head of major

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canyons and rims, dropping off to the Green River; and in the rim area near Dead Horse Point State Park, and further north near Day, Long, and Bull Canyons, and Little Valley. Bobcats, coyotes and kit fox inhabit the area along with reptiles, small mammals and song birds. Golden eagles also inhabit the entire AMP area during the winter months.

7. Minerals

There is some oil production within the Big Flat Management Plan. This is at the Salt Wash Oil Field. The Big Flat-Long Canyon area itself has seen a considerable amount of oil prodiction in the past. However, at the present there is only a small amount of production in that area. There is a good potential for uranium in this management plan area. There is presently one active uranium mine. The potential for other uranium deposits is very good. Recently there has been a lot of uranium exploration.

The only other mineral of importance in this area is potash. There is an active potash mill on the Colorado River which is the soutnern boundary of the area. The potential for potash in this area seems to be good. It is not expected that the above activities will have a significant impact on livestock grazing other than the denuding of small areas of vegetation caused by access roads and on the site construction. Livestock grazing may be disrupted slightly when those areas being grazed are invaded by man and equipment.

8. Watershed

Approximately 88% of the entire AMP is in a stable or slight erosion condition class. The remaining 12% is broken down by condition class as follows:

Moderate	Jug Rock 1% Big Flat 2%
Critical	Salt Valley 2% Lower Courthouse 1% Upper Tenmile 2%
Severe	Upper Tenmile 4%

In most of the above areas, desirable native grasses and shrubs are still prevalent though in a decadent condition. Through the proper implementation of this AMP, which includes fencing, it is expected that these sites will make a dramatic recovery.

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D. Livestock Management Items

1. Qualifications

Cattle	Fed. AUM's	Exchange of Use	% F.R.
Canyonlands Cattle Co.	5,500	651	89%
Dan Jorgensen	4,174*	287	94%
	9,674	938	

* includes Crescent Jct. allotment.

2. Existing Improvements (BLM & Section 4)

See Appendix #1

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SECTION II

A. Management Objectives

1. Improve livestock distribution in all pastures through new water developments, maintenance of old water developments, and water hauling.

2. Protect plants from continual spring grazing through increased management to provide periodic spring rest.

3. Protect the critical watershed (focusing on the control of salinity and sedimentation which occur during the spring time). Allow periodic spring rest on the allotment.

4. Protect riparian areas by having periodic rest on the allotment.

5.

Permittee	Season of Use	Fed. AUMs	Exchange of Use	% F.R.
Canyonlands Cattle Co.	Nov. 1 to May 30	5,500	651	89%
Dan Jorgensen	Nov. 1 to May 15	3,966	---	100%
		*208	287	42%

* Crescent Junction allotment

6. Maintain or improve the present ecological condition of the range on the allotment.

7. Provide a period of rest in the potential bighorn sheep habitat. There will be no conversions of cattle to sheep due to the problem of the transfer of disease between domestic sheep and bighorn sheep.

B. Key Area Objectives

These objectives are designed to measure the attainment of the management objectives. The key area objectives and key species objectives are located in the monitoring files. Key species can be changed by mutual agreement of operator and BLM manager.

C. Phenology

Key Species	Code	Forage Value	Start Growth	Flowering	Peak Flowering	Seed Ripe
Galleta grass	HIJA	Good	5/01	6/15	7/15	8/01
Indian ricegrass	ORHY	Exlnt	3/15	4/15	5/01	7/01
Mat saltbusn	ATCO4	Fair	3/15	4/15	5/01	7/01
Nuttall saltbush	ATNUC	Good	3/15	4/15	5/01	7/01
Fourwing saltbusn	ATCA2	Exlnt.	4/15	6/01	7/01	9/30
Winterfat	CELA5	Exlnt.	4/15	6/01	7/01	9/30
Sand dropseed	SPCR	Fair	4/10	6/15	6/26	7/11
Shadscale	ATCO	Good	3/05	5/20	6/16	7/15

Plan Written 6/69
Plan Revised 6/75
Plan Revised 7/83
Plan Revised 6/89

SECTION III

A. Grazing Systems

In the past, there has been substantial cattle and sheep non-use taken in the AMP area which in part results in the good to excellent range condition which exists over the major portion of the AMP area. The early grazing system was a five pasture (spring, summer, fall, winter) rest rotation system for cattle and a three pasture (winter) rest rotation system for sheep. In July of 1983 the season of use for cattle was changed to a fall, winter, and spring rest rotation system. In October of 1988 there was a conversion of sheep AUM's to cattle AUM's. With this new conversion a new grazing system had to be developed. The objectives previously stated can be achieved through the implementation of two separate (fall, winter, spring) deferred rest rotation systems.

Future monitoring studies will reveal whether actual forage production equals the privileges and if so, adjustments in cattle numbers will be made at that time. As a large portion of the AMP area is inadequately watered, it is essential that livestock water be hauled when needed during all use periods.

Grazing Schedule

The allotment is divided into ten pastures and will be used under two set rotation systems.

The system incorporating the northern pastures is as follows:

Grazing year 1993-1994 (odd years)

Pastures	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
*Salt Valley	//////	///					
Dubinky		///	//////				
Little Grand Wash				//////	//////	//////	
Queens Well							//////

Grazing year 1994-1995 (even years)

Pastures	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Little Grand Wash	//////	//////	///				
Dubinky			///	//////			
Queens Well					//////		
*Salt Valley						//////	//////

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* Includes Crescent Junction Allotment

Plan Written 6/69, Plan Revised 6/75, 7/83, 6/89 and 12/93

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A pasture fence to split Little Grand Wash Pasture is proposed. When this is constructed, the rotation scheme will be revised to provide periodic rest to one end or the other. This would prevent use being made late in the spring and early in the fall on the same area. Less than one mile of fence would do the same for the Salt Valley\Crescent Junction area.

The system incorporating the southern pastures is as follows:

Grazing year 1993-1994

Pastures	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
*Big Flat	//////	//////	//////				
**Mineral Point				///			
Bartlett Flat				///	//////		
Deadman Point						//////	//////

Grazing year 1994-1995

Pastures	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Deadman Point	//////	//////					
Bartlett Flat			//////	///			
**Mineral Point				///			
Big Flat					//////	//////	//////

Grazing year 1995-1996

Pastures	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Deadman Point	//////	//////					
Bartlett Flat			//////	///			
**Mineral Point				///			
*Big Flat					//////	//////	//////

* This includes use by 150 head of cattle for 1 month on Horsethief Point Allotment (one year spring use (March only), the following year winter use, the following year rested).

** A portion of the herd will be able to graze Mineral Point Pasture in February; and it will also be used as a drift thru pasture with the total herd.

Airport Pasture and Courthouse Pasture will not be part of the rotation system, but will be used each year to some degree - usually by the first-calf heifers.

Plan Written 6/69, Plan Revised 6/75, 7/83, and 6/89

B. Normal Operation (Cattle) Canyonlands Cattle Company

This allotment is used for winter/spring forage. The permittee trucks his cattle from Oakley, Utah approximately November 1st. They remain on Federal Ranges and State lands around Dalton Well until May 30.

* 878 cattle 11/1 to 05/30	100% F.R.	5,500 AUM's	
		651 AUM's	Exchange of Use
	Total	6,151 AUM's	

* Includes Exchange of Use AUM's

Normal Operation (Cattle) Jorgensen

This allotment is used for winter/spring forage. The permittee trucks his cattle from Salina, Utah approximately November 1st. They remain on Federal Ranges and the state blocks of land near Crescent Junction until May 15th.

* 686 cattle 11/01 to 05/15	100% F.R.	3,966 AUM's	Big Flat Ten Mile Allotment
	100% F.R.	208 AUM's	Crescent Junction Allotment
		287 AUM's	Exchange of Use
	Total AUM's	4,461	

* Includes Exchange of Use AUM's

C. Flexibility

1. The Area Manager may make adjustments in the grazing system during periods of drought or other emergencies, and when in the interest of accomplishing the objectives of this plan. The livestock operator will be notified in writing at least seven (7) days in advance of a change in authorized grazing use.

   Changes in use requested by the livestock operator, which are outside the limits of flexibility specified in this plan, must be applied for and approved in advance of the grazing period. Grazing use outside the limits of flexibility and without prior authorization will be considered trespass.

   The regular season for Canyonlands Cattle Company is Nov. 1st to May 30th. The regular season for Dan Jorgensen is Nov. 1st to May 15th. Flexibility of opening and closing dates will be allowed of not more than 15 days before or after the regular season opening and closing date. Also, there will be 15 days flexibility for cattle to move from one pasture to another.

Plan Written 6/69
Plan Revised 6/75
Plan Revised 7/83
Plan Revised 6/89

2. Operator Flexibility

The number of cattle may be adjusted throughout the grazing season, but the consumption of AUM's will not exceed the number of AUM's specified in Section III, Part B.

D. Billing Procedures

A term permit will be issued as the authorizing document for the grazing use to be made under this plan. Therefore, an annual grazing application will not be required. A 10-year permit will be issued for each livestock operator, and will specify that grazing use is to be made in accordance with this AMP.

Billing for this operation will be based on the actual use records supplied by the livestock operator. These records will show the pastures used, the periods of use and the number and kinds of animals grazed. Billings will be issued once each grazing year.

The livestock operator(s) will submit actual use records to the BLM within 15 days after the end of the grazing season. In the event the actual use records are not submitted within the specified time, a billing will be issued based on the normal operation.

Non-use must be requested in writing and approved by BLM.

All billings are due and payable within 15 days from the date of issuance.

Plan Written 6/69
Plan Revised 6/75
Plan Revised 7/83
Plan Revised 6/89

SECTION IV.

Evaluation

The following studies will be made and the information collected will be used in the evaluation of this plan.

A. Livestock Operator's Responsibility

1. Actual Use - the users agree to collect and submit actual use information as outlined in Section III (D) of this plan.

B. BLM Responsibility

1. Trend - Trend plots have been established on key areas within each pasture of the A.M.P. area following the guidelines outlined in the Bureau Manual (4412.22c). Studies will be conducted every three (3) years. Photos will be taken at that time.

2. Utilization - Utilization studies will be conducted on key areas at the termination of grazing each year. The key forage plant method will be used. Utilization patterns will also be mapped.

3. Climate Analysis - Rain gauges have been established on the allotment and are read monthly. Data from these guages will be used to indicate the amount and season of rainfall.

Plan Written 6/69
Plan Revised 6/75
Plan Revised 7/83
Plan Revised 6/89

SECTION V

Needed Improvements

1. Salt Valley Fence
   T.22S., R.19E., Section 26, 27

2. Pasture 7 Drift Fence
   T.23S., R.18E., Section 1
   T.22S., R.18E., Section 28, 29, 34, 35

3. Mineral Point Drift Fence
   Unsurveyed land

4. Salt Valley Water Wells
   T.23S., R.20E., Section 5 NW (well number 8 & 9)

5. Buttes Potash Well
   T.24S., R.18E., Section 12

Plan Written 6/69
Plan Revised 6/75
Plan Revised 7/83
Plan Revised 6/89

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SECTION VI

AGREEMENT

WE, THE UNDERSIGNED, CONCUR in the management objectives set forth in this plan and will restrict the livestock grazing as provided herein to meet these objectives.

WE, THE UNDERSIGNED, UNDERSTAND that privileges so allowed herein remain subject to the applicable regulations.

This Allotment Management Plan will remain in effect, as written, until such time that studies determine a modification or change is required. Modifications will be made with the concurrence of the parties concerned.

WE, THE UNDERSIGNED, UNDERSTAND that the areas of use described in this A.M.P. supersede all previous allotment line agreements.

WE HEREBY AGREE:

X _____ for Canyonlands Cattle Company — Sept 11, 1989 Date

_____ Area Manager — 10/12/89 Date

Plan Written 6/69
Plan Revised 6/75
Plan Revised 7/83
Plan Revised 6/89

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SECTION VI

AGREEMENT

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WE, THE UNDERSIGNED, UNDERSTAND that the areas of use described in this A.M.P. supersede all previous allotment line agreements.

WE HEREBY AGREE:

Dan Jorgensen

Dec 29, 1993
Date

Area Manager

2/2/94
Date

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RANGE IMPROVEMENT INDEX

R.A. Grand
Allot. Big Flat Ten Mile
Permittee Canyonland Cattle/Jorgensen

Project No.	Type	4/CA	Year Const.	Project Name	Maintenance Responsibility	Location
5634	Fence	CA		Brink Spring Fence	Canyonland Cattle	T24S, R19E, Sec. 9,10
4786	Fence	CA		Athena Allotment Fence	Jorgensen	T22S, R18E, Sec. 20,29,31
0533	Fence	CA		Ten Mile Pasture Fence	Jorgensen	T23S, R18E, Sec, 13,24,25 R19E, sec. 18,19,30
4449	Fence	CA	1981	Pasture #1 & 2	Canyonland Cattle/ Jorgensen	T24S, R18E, Sec. 34,35,36 T25S, R19E, Sec. 5
4456	Fence	CA	1981	Knoll Division Fence	Canyonland Cattle	T26S, R19E, Sec. 3,4,8,18 T25S, R19E, Sec. 34,35
0026	Fence	CA	1962	Crescent Drive Fence	Jorgensen	T24S, R20E, T22S, R19E, Sec. 5,8
1506	Fence	CA	1968	Klondike Fence 5.3 mile	Canyonland Cattle	T24S, R20E, Sec. 5,8,16
	Fence	CA	1968	Klondike Fence 5.3 mile	Canyonlands Cattle	T23S, R19E, Sec. 13,24 R20E, Sec. 19,30,31
[illegible]	Fence	CA		Fence (Spring Canyon Boundary)	Canyonland Cattle	T25S, R18E, Sec. 7 SENW
554	Fence	CA	1957	Queen's Well Fence 15.9 mile	Jorgensen	T23S, R18E, Sec. 1,12,13 T22S, R19E, Sec. 31,32,33,34
161	Fence	CA	1953	Crescent Wash Fence 9.3 mile	Jorgensen	T22S, R19E, Sec. 8,9,16,13, 19,20,21,22, 29,30,31
5638	Fence	CA	1970	Needle Fence	Canyonland Cattle	T24S, R18E, Sec. 34,33
5633	Fence	CA		Pasture 3/5 Div. Fence 2.5 mi.	Canyonland Cattle	T25S, R19E, Sec. 20,21,22
5636	Fence	CA		Pasture 2&5 Div. Fence 1.5 mi.	Canyonland Cattle	T25S, R19E, Sec. 5,7,9,18
				Pasture 6&7 Levi Div. Fence 2.5 mile	Canyonland Cattle	T24S, R19E, Sec. 3,4,10, T23S, R19E, Sec. 29,33
4841	Fence	CA		Dripping Spring Fence	Jorgensen	T24S, R18E, Sec. 5,4,3
5635	Fence	CA		Highway Fence	Jorgensen	T22S, R19E, Sec. 33,34 T23S, R19E, Sec. 2,3,11

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Project No.	Type	4/CA	Year Const.	Project Name	Maintenance Responsibility	Location
120	Fence	CA		Big Flat Reservoir Fence	Canyonland Cattle	T26S, R19E, Sec. 23 & 24
218	Fence	CA	1965	Salt Wash Division Fence	Dunham	T22S, R16E, Sec. 26 T22S, R17E, Sec. 26
218	Fence	CA		Salt Wash Division Fence	Dunham	T23S, R17E, Sec. 1,12
	Fence	CA		Fence	Dunham	T23S, R18E, Sec. 30,29,28,33,37
4783	Fence	CA		Horse Thief Boundary Fence	Behrendt	T26S, R18E, Sec. 15,22,27,36
169	Fence	CA		Horse Thief Fence	Behrendt	T26S, R17 1/2E, Sec. 25
4947	Fence	CA	1985	Athena-Pasture 7 Fence	Vetere/Jorgensen	T22S, R18E, Sec. 3,10,15,16,21
5124	Fence	CA		Shinarump Fence	Canyonland Cattle	T24S, R20E, Sec. 27 NWNW
5125	Fence	CA		Seven Mile Fence	Canyonland Cattle	T25S, R20E, Sec. 8 NENE
5109	Fence	CA	1986	Arth's Pasture Gap Fence	Canyonland Cattle	T29S, R20E, Sec. 29 SWSW
5838	Fence		1989	Monument Wash Allotment Northern Boundary Fence	Jorgensen	T22S, R20E, Sec. 6, 29,32
	Fence			Courthouse Gap Fences	Canyonland Cattle	T24S, R20E, Sec. 20, 28, 30
	Fence			Lower Bartlett Gap Fence	Canyonland Cattle	T24S, R19E, Sec. 14, SWSE

RANGE IMPROVEMENT INDEX

R.A. Grand
Allot. Big Flat Ten Mile
Permittee Canyonland Cattle/Jorgensen

Project No.	Type	4/CA	Year Const.	Project Name	Maintenance Responsibility	Location
4949	Well	CA	1983	Duma Point Well	Jorgensen	T.23S., R.18E., Sec. 20 SWSE
188	Well	CA		Dubinky Well	Jorgensen	T.24S., R.19E., Sec. 25 NWSE
0419	Well	CA		Queens Well	Jorgensen	T.23S., R.19E., Sec. 18 SESE
0355	Well	CA		Levi Well	Jorgensen	T.23S., R.18E., Sec. 25 NE
	Cabin	CA		Dee Pass Cabin	Jorgensen/Dunham	T.23S., R.17E., Sec. 12 NENE
5736	Corral	CA		Bartlet Wash Corral	Canyonland Cattle	T.24S., R.19E., Sec. 11
6203	Corral	CA		Rock Corral #2	Jorgensen	T.23S., R.19E., Sec. 12 NWNW
	Corral	CA		Mineral Point Corral	Stateland	T.25S., R.19E., Sec. 32 SWNE
0278	Spring	CA		Brinks Spring Storage	Canyonland Cattle	T.24S., R.19E., Sec. 10 SWSE
4938	Spring	CA		Buds Spring	Jorgensen	T.23S., R.18E., Sec. 8 NENE
160	Spring	CA		Little Mtn. Spring	Jorgensen	T.24S., R.18E., Sec. 12 SWSE
126	Spring	CA		Horsethief Spring	Behrendt	T.26S., R.18E., Sec. 28
4948	Pipeline and Spring	CA	1985	Tusher Canyon Pipeline	Canyonland Cattle	T.24S., R.20E., Sec. 19 NWSW
**	Exclosure			Salt Valley Exclosure	BLM	T.22S., R.19E., Sec. 25 NE

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RANGE IMPROVEMENT INDEX

R.A. Grand
Allot. Big Flat Ten Mile
Permittee Canyonland Cattle/Jorgensen

Project No.	Type	4/CA	Year Const.	Project Name	Maintenance Responsibility	Location
5431	Reservoir	CA		Shinarump Reservoir	Canyonland Cattle	T.24S., R.20E., Sec. 21 SWNE
5428	Reservoir	CA		Crescent Wash Reservoir	Jorgensen	T.23S., R.18E., Sec. 5 NENE
5429	Reservoir	CA		Sulfur Canyon Reservoir	Jorgensen	T.23S., R.18E., Sec. 15 NWSW
6157	Reservoir	CA		Dee Pass Reservoir	Jorgensen	T.22S., R.18E., Sec. 31
5418	Reservoir	CA		Highway Reservoir	Canyonland Cattle	T.25S., R.19E., Sec. 22 SESW
5416	Reservoir	CA		Salt Valley #3 Reservoir	Jorgensen	T.23S., R.20E., Sec. 9 SESW
5417	Reservoir	CA		Salt Valley #2 Res.	Jorgensen	T.23S., R.20E., Sec. 9 SWSE
5415	Reservoir	CA		Pasture #6 Reservoir	Jorgensen	T.23S., R.19E., Sec. 4
5414	Reservoir	CA		Klondike #1 Reservoir	Canyonland Cattle	T.23S., R.19E., Sec. 21
0006	Reservoir	CA		Big Flat West Reservoir	Canyonland Cattle	T.26S., R.19E., Sec. 23 SWSE
5439	Reservoir	CA		Dubinky Driveway Reservoir	Canyonland Cattle	T.24S., R.19E., Sec. 31 SESW
5420	Reservoir	CA		Mineral Point Reservoir	Canyonland Cattle	T.25S., R.18E., Sec. 35 NWSE
5425	Rock Tank	CA		Merrimac Butte Rock Tank	Canyonland Cattle	T.25S., R.20E., Sec. 5
5438	Reservoir	CA		Valley City Driveway Res.	Jorgensen	T.22S., R.19E., Sec. 34 NESE
0456	Reservoir	CA		Blue Flat Reservoir	Jorgensen	T.22S., R.18E., Sec. 13 SENE
4038	Reservoir	CA		Horsethief Reservoir	Canyonland Cattle	T.26S., R.19E., Sec. 20 SWNE
4153	Reservoir	CA		Ten Mile (Microwave) Res.	Canyonland Cattle	T.23S., R.19E., Sec. 22 NENW
4151	Pit Reser.	CA		Crescent Wash Pit Res. #1, #2	Jorgensen	T.22S., R.19E., Sec. 29
4152	Reservoir	CA		Grassey Waterhole Res.	Jorgensen	T.22S., R.18E., Sec. 35 SESW
5576	Reservoir	CA		Deadman Point Res. #1	Canyonland Cattle	T.25S., R.18E., Sec. 21 NWNE
35	Reservoir	CA		Adobe Flat	Jorgensen	T.23S., R.18E., Sec. 1 SWNE
77	Reservoir	CA		So. Little Mtn. Reservoir	Canyonland Cattle	T.24S., R.18E., Sec. 36 NWSW

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RANGE IMPROVEMENT INDEX

R.A. Grand
Allot. Big Flat Ten Mile
Permittee Canyonland Cattle/Jorgensen

Project No.	Type	4/CA	Year Const.	Project Name	Maintenance Responsibility	Location
5431	Reservoir	CA		Shinarump Reservoir	Canyonland Cattle	T.24S., R.20E., Sec. 21 SWNE
5428	Reservoir	CA		Crescent Wash Reservoir	Jorgensen	T.23S., R.18E., Sec. 5 NENE
5429	Reservoir	CA		Sulfur Canyon Reservoir	Jorgensen	T.23S., R.18E., Sec. 15 NWSW
6157	Reservoir	CA		Dee Pass Reservoir	Jorgensen	T.22S., R.18E., Sec. 31
5418	Reservoir	CA		Highway Reservoir	Canyonland Cattle	T.25S., R.19E., Sec. 22 SESW
5416	Reservoir	CA		Salt Valley #3 Reservoir	Jorgensen	T.23S., R.20E., Sec. 9 SESW
5417	Reservoir	CA		Salt Valley #2 Res.	Jorgensen	T.23S., R.20E., Sec. 9 SWSE
5415	Reservoir	CA		Pasture #6 Reservoir	Jorgensen	T.23S., R.19E., Sec. 4
5414	Reservoir	CA		Klondike #1 Reservoir	Canyonland Cattle	T.23S., R.19E., Sec. 21
0006	Reservoir	CA		Big Flat West Reservoir	Canyonland Cattle	T.26S., R.19E., Sec. 23 SWSE
5439	Reservoir	CA		Dubinky Driveway Reservoir	Canyonland Cattle	T.24S., R.19E., Sec. 31 SESW
5420	Reservoir	CA		Mineral Point Reservoir	Canyonland Cattle	T.25S., R.18E., Sec. 35 NWSE
5425	Rock Tank	CA		Merrimac Butte Rock Tank	Canyonland Cattle	T.25S., R.20E., Sec. 5
5438	Reservoir	CA		Valley City Driveway Res.	Jorgensen	T.22S., R.19E., Sec. 34 NESE
0456	Reservoir	CA		Blue Flat Reservoir	Jorgensen	T.22S., R.18E., Sec. 13 SENE
4038	Reservoir	CA		Horsethief Reservoir	Canyonland Cattle	T.26S., R.19E., Sec. 20 SWNE
4153	Reservoir	CA		Ten Mile (Microwave) Res.	Canyonland Cattle	T.23S., R.19E., Sec. 22 NENW
4151	Pit Reser.	CA		Crescent Wash Pit Res. #1, #2	Jorgensen	T.22S., R.19E., Sec. 29
4152	Reservoir	CA		Grassey Waterhole Res.	Jorgensen	T.22S., R.18E., Sec. 35 SESW
5576	Reservoir	CA		Deadman Point Res. #1	Canyonland Cattle	T.25S., R.18E., Sec. 21 NWNE
35	Reservoir	CA		Adobe Flat	Jorgensen	T.23S., R.18E., Sec. 1 SWNE
77	Reservoir	CA		So. Little Mtn. Reservoir	Canyonland Cattle	T.24S., R.18E., Sec. 36 NWSW

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RANGE IMPROVEMENT INDEX

R.A. Grand
Allot. Big Flat Ten Mile
Permittee Canyonland Cattle/Jorgensen

ject o.	Type	4/CA	Year Const.	Project Name	Maintenance Responsibility	Location
2	Reservoir			Valley City Reservoir	State land	T.22S., R.19E., Sec. 27, NENE
60	Reservoir	CA		Deadman Reservoir	Canyonland Cattle	T.25S., R.18E., Sec. 9, SESE
2	Reservoir	CA		Bartlett Flat Reservoir #2	Canyonland Cattle	T.25S., R.19E., Sec. 8, NWSE
	Reservoir			Reservoir	State land	T.26S., R.19E., Sec. 2, NENW
	Reservoir			Seep Reservoir	State land	T.24S., R.18E., Sec. 36, NESE
430	Reservoir	CA		Rock Corral Reservoir	Jorgensen	T.23S., R.19E., Sec. 1, SESE
5575	Reservoir	CA		Big Flat East Reservoir	Canyonland Cattle	T.26S., R.19E., Sec. 24, NESE
5422	Reservoir	CA		Pasture #4 Reservoir	Canyonland Cattle	T.26S., R.19E., Sec. 17, SESE
	Reservoir	CA		Pasture #3 Reservoir	Canyonland Cattle	T.26S., R.19E., Sec. 17, SESE
5434	Reservoir	CA		The Knolls Reservoir	Canyonland Cattle	T.26S., R.19E., Sec. 12, NWNW
4944	Reservoir	CA	1985	Dan's Rock Tank	Canyonland Cattle	T.25S., R.19E., Sec. 15, NENW
5419	Reservoir	CA		Myers Reservoir	Canyonland Cattle	T.25S., R.19E., Sec. 3, SWSW
5625	Reservoir	CA		Clay Reservoir	Jorgensen	T.23S., R.20E., Sec. 12, SESE

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RANGE IMPROVEMENT INDEX

R.A. Grand
Allot. Big Flat Ten Mile
Permittee Canyonland Cattle/Jorgensen

Project No.	Type	4/CA	Year Const.	Project Name	Maintenance Responsibility	Location
5690	Cattleguard			Athena Cattleguard	County	T.22S., R.18E., Sec. 20, SWNE
5687	Cattleguard			Dripping Spring Fence	County	T.24S., R.18E., Sec. 4, SWNE
5688	Cattleguard			Crescent Jct. Cattleguard	County	T.22S., R.19E., Sec. 27, SENW
5718	Cattleguard			Ruby Ranch Cattleguard	County	T.23S., R.17E., Sec. 1, SWSE
5680	Cattleguard			Micro wave Cattleguard	County	T.13S., R.19E., Sec. 11, SESE
4947	Cattleguard		1985	Athena - Pasture 7 C. Guard	County	T.22S., R.18E., Sec. 10, SWNE
6155	Cattleguard			Jug Rock Fence C. Guard	County	T.25S., R.19E., Sec. 5, SENW
5694	Cattleguard			Courthouse Cattleguard	County	T.24S., R.20E., Sec. 16, NWNW
	Cattleguard			Knoll Cattleguard	County	T.25S., R.19E., Sec. 34, SWSE
0230	Cattleguard			Seven Mile Cyn. C. Guard	County	T.25S., R.20E., Sec. 8, NWNE
4781	Cattleguard			Horse Thief Cattleguard	County	T.26S., R.19E., Sec. 22, SWNE
5695	Cattleguard			Horse Thief #2 Mineral Bottom Cattleguard	County	T.26S., R.171/2E., Sec. 25
4507	Cattleguard			Pasture 1 Cattleguard	County	T.24S., R.18E., Sec. 26, SWSW
5682	Cattleguard			Bartlett Flats C. Guard	County	T.25S., R.19E., Sec. 7
4508	Cattleguard		1980	Pasture land 2 C. Guard	County	T.24S., R.18E., Sec. 25, SWSE
5692	Cattleguard			Levi division fence C. Guard	County	T.23S, R.19E, Sec. 33/32, NWNW
4327	Cattleguard			Klondike Cattleguard	County	T.24S., R.20E., Sec. 5, SWSW

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RANGE IMPROVEMENT INDEX

R.A. Grand
Allot. Big Flat Ten Mile
Permittee Canyonland Cattle/Jorgensen

Project No.	Type	4/CA	Year Const.	Project Name	Maintenance Responsibility	Location
5681	Cattleguard			Needles Cattleguard	County	T.24S., R.18E., Sec. 34
5685	Cattleguard			Queen Well cattleguard	County	T.23S., R.19E., Sec. 18/13
5693	Cattleguard			Brink Spring Cattleguard	County	T.24S., R.19E., Sec. 10 SE
5683	Cattleguard			Duma Point cattleguard	County	T/23S., R18E., Sec. 30/20
5686	Cattleguard			Corral Cattleguard	County	T.23S., R.19E., Sec. 13, SENW
5691	Cattleguard			Hells Roaring cattleguard	County	T.25S., R.19E., Sec. 22, SENW
5679	Cattleguard			Ten Mile Cattleguard	County	T.23S., R.19E., Sec. 29
0335	Cattleguard			Arths Pasture W. Fence c.guard		T.25S., R.19E., Sec. 36, NE
[illegible]	Water Spreading			Ten Mile Water Spreading	BLM	T.23S., R.18E., Sec. 25,24,13, 18,19,30
197/551	Reseeding			Crescent Reseeding #2	BLM	T.22S., R.19E., Sec. 8,9,16,17, 20,21,31,32
U-9-R-6	Rehabilitation			Valley City Fire Scar	BLM	T.22S., R.19E., Sec. 20
185	Dikes			Ten Mile	BLM	T.23S., R.19E., Sec. 19,30 R.18E., 24,25
G-42-9-4	Dam & Dikes			Ten Mile Spreading	BLM	T.23S., R.19E., NW
G-42-9-4	Dam & Dikes			Crescent Wash Dam	BLM	T.22S., R.19E., NW
	Control Fence		1957	Valley City Sand Fence	BLM	T.22S., R.19E., Sec. 34, NW
160	Road			Little Mtn. Spring Road	BLM	T.24S., R.18E., Sec. 12. SWSE
0485	Dam & Dikes			Crescent Wash Dam and Spreader Dikes	BLM	T.22S., R.19E., Sec. 8, 9, 16, 28,17, 20, 21, 29

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RANGE IMPROVEMENT INDEX

R.A. Grand
Allot. Big Flat Ten Mile
Permittee Canyonland Cattle/Jorgensen

Project No.	Type	4/CA	Year Const.	Project Name	Maintenance Responsibility	Location
210	Dam & Dike			Rock Corral & Thompson Wash Water (spreading dikes)	BLM	T.23S., R.19E., Sec, 3,4
211	Dikes			Crescent Dikes Repair	BLM	T.22S., R.19E.,

25

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Little Grand Wash PASTURE
Crescent Junction Allotment
BIG FLAT — TEN MILE Allotment
Salt Valley PASTURE
Queens Well PASTURE
Dubinky PASTURE
AIRPORT PASTURE
Deadman Point PASTURE
COURTHOUSE PASTURE
BARTLETT FLAT PASTURE
ARTH PASTURE
Mineral Point PASTURE
Big Flat PASTURE
Thompson
Crescent Junction
Floy Sta
Solitude Siding
Vista Station
SAGERS FLAT
WHIPSAW FLAT
Valley City
ARCHES NATIONAL MONUMENT
DUMA POINT
THE NEEDLES
Dalton Well
Cedar Ridge Well
THE WINDOWS SECTION
MERRIMAC BUTTE
EMERY CO
GRAND CO
SAN JUAN CO
WAYNE CO
THE KNOLL
Big Flat Reservoir
WHITBACK ROCK
DEAD HORSE POINT
Moab
GREEN R.
HORSETHIEF POINT
MINERAL POINT
DEADMAN POINT
SPRING CANYON POINT
BUCK MESA
UPHEAVAL DOME
STEER MESA
AZTEC BUTTE
PRITCHETT NATURAL BRIDGE
Jackson Hole
Bowknot Bend

Appendix I: No Action, Spring Canyon Bottom Allotment Management Plan

SPRING CANYON BOTTOM
ALLOTMENT MANAGEMENT PLAN

I. General Information

A. Location and Topography

The allotment is located 12 miles northwest of Dead Horse Point State Park in Grand County, Utah. Areas involved are Spring Canyon, Hell Roaring Canyon, and the east side of the Green River. Elevation ranges from 4,000' to 5,000'. All of the grazeable portions of the allotment are canyon or river bottoms. Spring Canyon and Hell Roaring Canyon are long and narrow.

B. Land Status

Land Status	Acres	Percent
Public	4,972	88
State	690	12
Private	0	0
	5,662	100%

II. Constraints and Resource Problems to be Addressed by This Plan

A. This allotment has one area that is considered to be critical (a riparian zone on the Green River bottom).

B. This allotment has bighorn sheep and livestock conflicts during the breeding season (October 1 to December 31) and lambing season (April 1 to June 30).

III. Objectives

A. Management Objectives

1. Maintain or improve the present ecological condition of the range.

2. Provide rest in the riparian zone along the Green River.

3. Provide rest in the canyon bottoms by having a rest rotation grazing system.

B. Key Area Objectives

These objectives are designed to measure the attainment of the management objectives.

Monitoring Transect #1

This transect is in a salty stream bottom ecological site. The objectives for the transect are as follows;

1. Maintain the number of normal, mature and vigorous alkali sacaton plants at a minimum of 70 plants in the transect.

2. Establish mature, normal, and vigorous saltgrass plants on the site.

3. Decrease the number of mature, normal and vigorous rubber rabbitbrush plants to a total of 15 in the transect.

C. Key Species and Phenology

Transect	Key Species	Composition*	Forage Value	Start Growth	Peak Flowering	Seed Ripe
#1	SPAI	51%	Good	4/10	6/15	7/11
#1	DIST	5%	Fair	4/10	6/25	8/01
#1	CHNA2	10%	Poor	3/25	8/25	10/24

* Composition percent taken from Range Inventory done in 1980.

Key
SPAI (Alkali sacation)
DIST (Saltgrass)
CHNA2 (Rubber rabbitbrush)

IV. Planned Action

A. Grazing System

1. The allotment will be divided into two pastures and a set rotation system initiated. The grazing periods are as follows:

Treatment
A - Graze January 1 through February 28
B - Rest

Year	Treatment	January 1	February 28
1	A	//////////////////////////////////////	
2	B	R E S T	

Graze //// Rest /____/

Pasture Schedule

Pasture	1st Year	2nd Year
Hell Roaring Canyon	A	B
Spring Canyon	B	A

2. The grazing season will be changed from March 16th through April 15th to January 1st through February 28th.

B. Flexibility in Livestock Operation

1. Operator Flexibility

The range user may, without approval or prior knowledge of the area manager, make the following adjustments in his normal operation:

a. The beginning and ending dates of grazing on the allotment may be varied by as much as 15 days, but the consumption of AUM's will not exceed the number of AUM's specified in part C (Grazing Use Authorizations).

b. Numbers of cattle may be adjusted throughout the grazing season, but the consumption of AUMs will not exceed the number of AUMs specified in part C (Grazing Use Authorization).

c. If the operator decided to use both pastures in one year, then the following year the whole allotment is rested.

The purpose of the above flexibility is to allow the livestock operator to tailor his use of the Federal range to more exactly fit his need, while still obtaining objectives.

2. Flexibility Requiring Approval of the Area Manager

The need for flexibility beyond that authorized above may occur. Such changes may be either approved by, or required by the Area Manager. Reasons for such change may include:

a. Fire damage to grazing area or facilities.

b. Flood damage to fences and/or facilities.

c. Poisonous plant occurrences.

d. Drought.

e. Adjustment in herd numbers and/or grazing season beyond that authorized under operator flexibility.

C. Grazing Use Authorization

1. Authorized Use

Cattle grazing from January 1st to February 28th.

Grazing preference is 200 AUMs and there are 19 AUMs Exchange of Use (state land), making a total of 219 AUMs on the allotment. The allowable grazing AUM's for the grazing system is 100 AUM's with 19 AUM's exchange of use, making a total of 119 AUM's for the grazing system.

2. Licensing

The range user will, within 15 days after the end of the grazing year, submit to BLM accurate actual use figures for the past grazing year. Billing will be on an after-the-fact basis, and will be based on the actual use figures submitted.

V. Studies and Evaluations

A. Key Areas

A key area has been or will be established in each pasture (see Allotment Base map).

1. Trend Studies have been, or will be established on each key area. These will be read every 4 years.

2. Utilization Studies will be conducted on key areas at the termination of grazing each year. The key forage plant method will be used. Utilization patterns will also be mapped.

B. Other Studies

1. Actual Use: Records of actual grazing use will be maintained by the livestock operator on forms furnished annually by the BLM. These will be submitted to the BLM.

2. Climate Analysis: A rain gauge has been established on Big Flat Ten Mile Allotment (Whitback Rock area) and is read monthly. Data from this gauge will be used to indicate the amount and season of rainfall on the allotment.

VI. Agreement

We, the undersigned, hereby accept this allotment management plan as the authorized grazing operation on the Spring Canyon Bottom Allotment.

It is understood that the grazing privileges specified in this plan are subject to all provisions of the grazing regulations (43 CFR 4100).

The Allotment Management Plan will remain in effect until such time as it is determined that the management objectives are not being met, or that the need arises for additional management objectives. Modifications or revisions of this plan will not be made without consultation with all concerned parties.

Accepted:

x Gerald E. Young — Nov 1, 1989

Livestock Permittee — Date

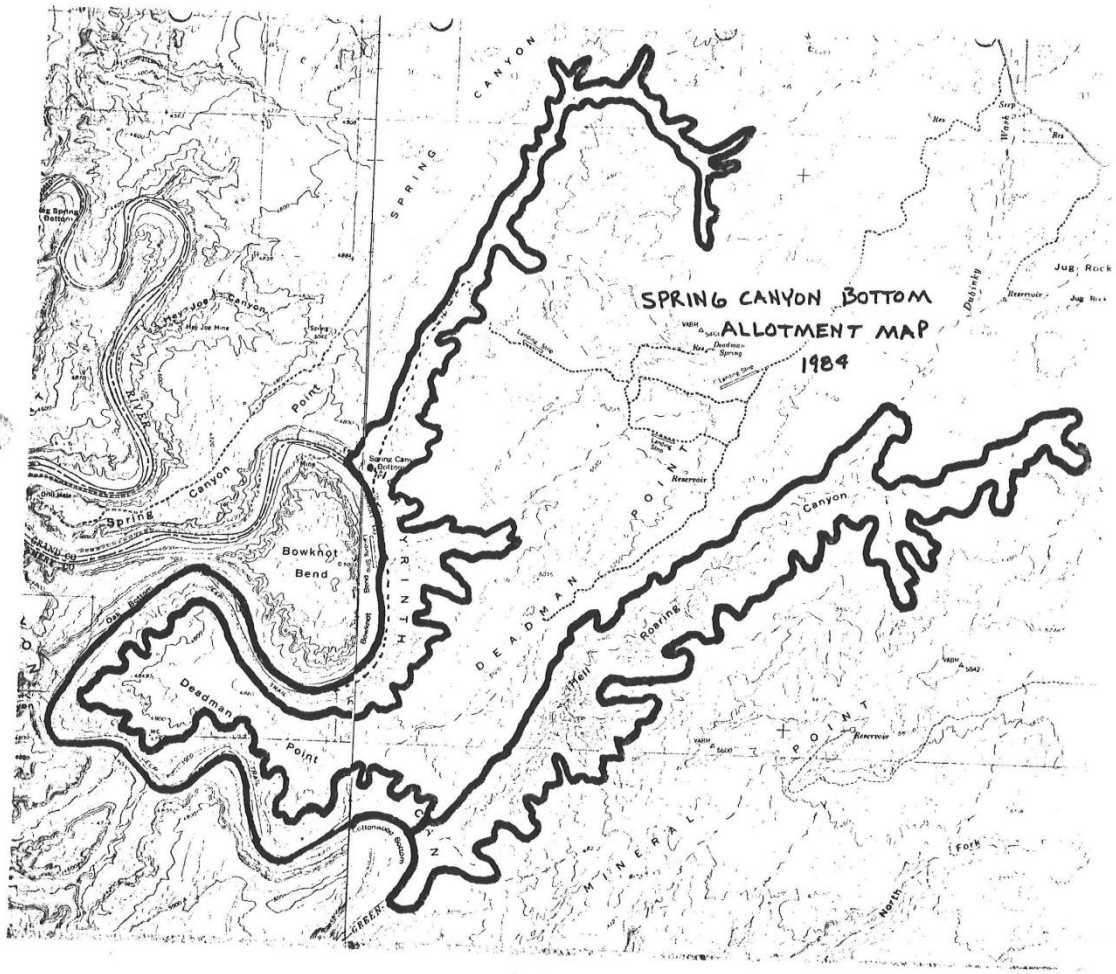
Approved:

[illegible signature] — 11/6/89

Grand Resource Area Manager — Date

EXISTING PROJECTS

Project #	Project Name	Location
5641	Spring Canyon Boundary Fence	T.25S., R.17E., Sec. 13 SWSW
5642	Green River Bottom Fence	T.25S., R.18E., Sec. 7 SENW
	Hell Roaring Gap Fence	T.26S., R.17E., Sec. 12


SPRING CANYON BOTTOM
ALLOTMENT MAP
1984
SPRING CANYON
Spring Canyon
Point
Bowknot Bend
Deadman Point
DEADMAN POINT
Roaring Canyon
MINERAL POINT
Jug Rock
Reservoir

Appendix J: Alternative C Proposed Grazing Schedule

Table J-1: Alternative C proposed Grazing Schedule

Allotment	Year	November	December	January	February	March	April	May	June
Spring Canyon	All	Graze							
Airport	1	Graze							
	2	Graze							
Dalton Wells	1						Graze		
	2						Graze		
Horsethief Point	1								
	2								
Mineral Point	1								
	2								
Bartlett	1								
	2								
Big Flat	1								
	2								
Courthouse	1								
	2								
Deadman Point	1								
	2								

Appendix K: Alternative C Proposed Range Improvements for the Big Flat Permit Renewal

Project Name	Meridian	Township	Range	Section	Subdivision	UTM Zone 12 North
Airport #1 Water Haul	SLM	24 South	20 East	17	NE ¼ NW ¼	609534 4287214
Airport #2 Water Haul	SLM	24 South	19 East	11	NE ¼ NE ¼	606033 4289041
Airport Corral Water Haul	SLM	24 South	19 East	10	NE ¼ NW ¼	603687 4288957
Airport SITLA #1 Water Haul	SLM	24 South	20 East	6	SW ¼ SW ¼	607828 4289386
Bartlett Flat #1 Water Haul	SLM	25 South	19 East	9	NE ¼ SE ¼	602696 4277976
Bartlett Flat #2 Water Haul	SLM	25 South	19 East	4	NW ¼ SE ¼	602034 4279276
Bartlett Flat #3 Water Haul	SLM	25 South	19 East	5	SW ¼ SW ¼	599831 4278839
Bartlett Flat #4 Water Haul	SLM	25 South	19 East	8	SW ¼ SW ¼	599866 4277149
Beehive #1 Water Haul	SLM	26 South	19 East	10	NW ¼ NE ¼	603645 4268841
Beehive #2 Water Haul	SLM	26 South	19 East	9	NW ¼ SE ¼	6022202 4268028
Beehive Cattleguard	SLM	26 South	19 East	16	SW ¼ NW ¼	601516 4266645
Beehive Gap Fences	SLM	26 South	19 East	16, 17, 21, 28, and 29		602006 4266322
Big Flat #1 Water Haul	SLM	26 South	19 East	13	SE ¼ SE ¼	607543 4266070
Big Flat #2 Water Haul	SLM	26 South	20 East	18	SW ¼ NE ¼	608616 4266806
Big Flat #3 Water Haul	SLM	26 South	20 East	17	NE ¼ SE ¼	610747 4266600
Big Flat #4 Water Haul	SLM	26 South	20 East	7	SW ¼ SE ¼	608722 4267605
Big Flat #5 Water Haul	SLM	26 South	20 East	19	SW ¼ NE ¼	608731 4265052
Big Flat Corral Road	SLM	26 South	19 East	14	S ½	605340 4265971
Big Flat Corral Water Haul	SLM	26 South	19 East	14	SW ¼ SE ¼	605604 4265844
Deadman Point #1 Water Haul	SLM	25 South	18 East	2	NW ¼ SW ¼	599147 4280583
Deadman Point #2 Water Haul	SLM	25 South	18 East	11	NW ¼ NW ¼	595042 4278399
Deadman Point #3 Water Haul	SLM	25 South	18 East	15	NW ¼ NW ¼	593256 4276576
Deadman Point #4 Water Haul	SLM	25 South	18 East	19	NW ¼ NE ¼	599069 4277041
Deadman Point Corral Water Haul	SLM	25 South	18 East	12	SE ¼ SW ¼	597061 4277109
Deadman Point SITLA #1 Water Haul	SLM	25 South	18 East	2	NE ¼ NE ¼	596159 4280895

Project Name	Meridian	Township	Range	Section	Subdivision	UTM Zone 12 North
Deadman Point SITLA #2 Water Haul	SLM	25 South	18 East	2	NW ¼ SW ¼	594978 4279464
Deadman Point SITLA #3 Water Haul	SLM	25 South	19 East	16	NE ¼ SW ¼	592053 4275838
Horsethief Point #1 Water Haul	SLM	26 South	18 East	13	NE ¼ SW ¼	597006 4266179
Horsethief Point #2 Water Haul	SLM	26 South	18 East	15	SE ¼ SE ¼	594624 4265659
Horsethief Point #3 Water Haul	SLM	26 South	18 East	21	NE ¼ SE ¼	593237 4264642
Lone Mesa #1 Water Haul	SLM	25 South	19 East	27	NW ¼ SE ¼	603806 4273130
Lone Mesa #2 Water Haul	SLM	25 South	19 East	22	SE ¼ NW ¼	603129 4274883
Lone Mesa #3 Water Haul	SLM	25 South	19 East	13	SW ¼ NW ¼	606106 4276526
Lone Mesa #4 Water Haul	SLM	25 South	19 East	15	NW ¼ NE ¼	603794 4276895
Lone Mesa #5 Water Haul	SLM	25 South	20 East	7	NE ¼ SE ¼	609031 4277905
Lone Mesa Cattleguard	SLM	25 South	19 East	15	NW ¼ NE ¼	603769 4276993
Lone Mesa Gap Fences	SLM	25 South	19 East	10, 15, 16, 17, and 20		600525 4275570
Microwave #1 Water Haul	SLM	23 South	19 East	33	NW ¼ SE ¼	602085 4291237
Microwave #4 Water Haul	SLM	24 South	19 East	1	SE ¼ SW ¼	606663 4289336
Mineral Point #1 Water Haul	SLM	25 South	19 East	31	NE ¼ NW ¼	598631 4272135
Mineral Point #2 Water Haul	SLM	25 South	18 East	35	SE ¼ SE ¼	596357 4270676
Mineral Point SITLA #1 Water Haul	SLM	25 South	19 East	32	SW ¼ NE ¼	600501 4271833
Mineral Point SITLA #2 Water Haul	SLM	26 South	18 East	2	NW ¼ NW ¼	594979 4270334
Sunburst Well Pad Water Haul	SLM	26 South	19 East	14	SW ¼ SW ¼	604720 4265999
Whitbeck Rock #1 Water Haul	SLM	26 South	19 East	26	SE ¼ SW ¼	605013 4262568
Whitbeck Rock #2 Water Haul	SLM	26 South	19 East	34	NE ¼ NW ¼	603565 4262256
Whitbeck Rock #3 Water Haul	SLM	26 South	19 East	27	NW ¼ NE ¼	603874 4263922

Appendix L: Actual Use Summary

Table L-1: Big Flat Actual Use		
Year	AUMs	Percentage Used
2016	3800	80
2015	3716	79
2014	3106	66
2013	2682	57
2012	4207	89
2011	4514	96
2010	3824	81
2009	4851	103
2008	3115	66
2007	*0	0

Table L-2: Horsethief Point Actual Use		
Year	AUMs	Percentage Used
2016	231	63
2015	258	70
2014	222	60
2013	192	52
2012	261	71
2011	340	93
2010	161	44
2009	20	5
2008	*0	0
2007	*22	6

Table L-3: Spring Canyon Bottom Actual Use		
Year	AUMs	Percentage Used
2016	174	101
2015	0	0
2014	243	140
2013	68	39
2012	46	27
2011	60	35
2010	*0	0
2009	*0	0
2008	*0	0
2007	*0	0

*Data collected from grazing applications or bills

Appendix M: Big Flat to Tenmile Rangeland Health Evaluation

BIG FLAT-TENMILE ALLOTMENT RANGELAND HEALTH EVALUATION

December 2016

Site/Area: Big Flat-Tenmile Allotment

BLM Acres: 124,996 acres

Season of Use: November 15th to May 31st

The Big Flat Tenmile Allotment is located east of Island in the Sky portion of Canyonlands National Park, North of Dead Horse Point State Park, and 25 miles northwest of Moab UT. The allotment is divided into six pastures Airport (20,716 acres), Bartlett Flat (19,808 acres), Big Flat (30,565 acres), Courthouse (5,731 acres), Deadman Point (19,942 acres), Horsethief Point (7,630 acres), and Mineral Point (20,604).

Historically, the Big Flat-Tenmile Allotment was grazed by sheep and cattle. The cattle would graze from May 1st through Feb. 28th and the sheep would graze from Nov. 1st through May 31st. In 1981, the Bureau of Land Management (BLM) Moab Field Office changed the season of use for the cattle to Nov. 1st through May 31st. By the beginning of the early 1990's the sheep preference was changed to cattle. In 2002, the old Big Flat-Tenmile Allotment was split into two allotments (Big Flat-Tenmile and Little Grand Allotments) with different permittees and animal unit months (AUMs) were divided between these allotments. An AUM means the amount of forage necessary for the sustenance of one cow or its equivalent for a period of one month.

After the split, the Big Flat-Tenmile Allotment retained 5,504 AUMs. In 2003, a permittee sold their base property and failed to notify BLM of the sale. During this period, the new owner of the base property did not file for the use of the grazing preference and the grazing preference of 803 AUMs. Because no application was made the 803 AUMs were no longer allocated on the permit. The Moab Field Office did not make available the grazing preference of 803 AUMs. In May of 2014, the BLM completed the recreational land exchange with the State Institutional Trust Lands Administration (SITLA). The BLM exchanged out 252 acres within the Big Flat-Tenmile Allotment to SITLA ownership. These changes effectively brought the number of AUMs for the Big Flat-Tenmile Allotment down to 4,691 BLM AUMs. See table 1 for more information on the permitted use for the Big Flat-Tenmile Allotment.

Table 1: Current Grazing Use Authorization

Allotment Name and Number	Grazing Authorization Number	Livestock			Land Status	Acres	Active Permitted Use (AUMs)
		No.	Kind	Season			
Big Flat-Tenmile	4303228	853	Cattle	11/15 to 05/31	BLM State lands Private land	124,996 13,014 1,566	4,691 863.9 0

Within the Big Flat-Tenmile Allotment boundary there are 5,554.9 AUMs permitted collectively with BLM, SITLA, and Forestry Fire and State Lands (FFSL). Of the permitted AUMs BLM has 4,691 AUMs, which is 84 percent of the permitted AUMs within the allotment and the additional 863.9 AUMs, the remaining 16 percent are allocated on the SITLA and FFSL managed lands.

Rangeland health assessments were conducted on the Big Flat Allotment in 2009. The 17 Indicators of Rangeland Health were used to assess the health of the allotment and are available at the Moab Field Office. The indicators are primarily a qualitative assessment with several areas that are quantitative, which focuses on individual indicators and later combines several indicators to help in assessing the soils, hydrology, and vegetation. Riparian assessments were conducted using proper functioning condition methodology.

Assessment sites were selected because they were already an area of study or because the soil map units (SMU) made up a large portion of the allotment. Each SMU includes a complex of several different ecological sites; these sites are different in vegetation composition, soil type, and texture. Within several of the ecological sites, the BLM has established monitoring sites.

Within the Airport Pasture assessments were conducted on SMUs 10, 11, 35, 40, and 56 (refer to the USDA, Soil Survey of Canyonlands Area, Utah, Parts of Grand and San Juan Counties, 1991); the assessments are named KA 3A (SMU 40), T 2 (SMU 11), T 7 (SMU 35), SMU 10, and SMU 56. Within the Bartlett Flat Pasture assessments were conducted on SMUs 4, 6, and 34; the assessments are named KA 3 (SMU 6), KA 6 (SMU 34), KA 8 (SMU 4), and T 7 (SMU 34). Within the Big Flat Pasture assessments were conducted on SMUs 4, 6, 51, 71, and 78; the assessments are named KA 5 (SMU 6), KA 7 (SMU4), T 12 (SMU 4), SMU 51, SMU 71, and SMU 78. Within the Courthouse Pasture assessments were conducted on SMUs 4 and 5; the assessments are named KA 5 (SMU 5), KA 13 (SMU 4) and T 4 (SMU 4). Within the Deadman Point Pasture assessments were conducted on SMUs 4, and 54; these assessments are named KA 3a (SMU 4), T 1 (SMU 4), T 2 (SMU 4), and SMU 54. Within the Horsethief Point Pasture assessments were conducted on SMUs 4, and 6; these assessments are named KA 1 (SMU 4), KA 3A (SMU 4), KA 4 (SMU 6), and SMU 6. Within the Mineral Point Pasture assessments were conducted on SMUs 4, 6, and 51; these assessments are named KA 5 (SMU 6), T 1 SMU 51), T 6 (SMU 51), and SMU 4. Riparian proper functioning condition assessments were conducted at Bartlett Wash, Deadman Spring, Halfway Stage Station, Mill Canyon, Sevenmile Canyon, and Tusher Canyon.

The BLM monitors the plant community using methods that detect change in the plant community or the trend of the vegetative community. The trend is expressed as either upward (desired plants increasing and/or undesired plants are decreasing), downward (desired plants are decreasing and/or undesired plants are increasing), or static/not apparent (no noticeable changes in the plant community). The trend is used to track the changes to the plant community over time.

Monitoring data has been collected throughout the allotment using different methods of data collection. Plant density data was collected from 1987 to 2011. The density data was collected using one to three plots per KA or T. The plot sizes are three feet or five feet squared. The data was collected using the number of counting units per unit area or the number of plants within the frame. For the Moab Field Office the data collected was for the number of individual plants separated out by the plants level of maturity (seedling, young plant, vigorous reproducing plant or non-vigorous reproducing plant) for the bunch grasses and forbs. The sod grasses were expressed as percent cover of the trend plot. A 1/200 acre chain plot was used to collect units of trees and shrubs from 1987 to 2011. In 2010, a nested frequency method was implemented and is currently being used to collect data for the allotment. The data collected by nested frequency can be defined as the percentage of possible plots within a sampled area occupied by or occurrence of a target plant. With the frequency, the BLM also collects vegetative cover that

captures the abundance of plant species at the KAs. Repeat photography is used to visualize the changes to the community and has been collected over the years. The photos are taken at the KA or T from the same place and direction each time the trend data is collected.

The data collected from these trend methods has been put through a statistical analysis to see if the change from one data collection period to another is statistically significant. For the density study the grass plants were lumped into two categories, the bunch grasses and sod grasses, the forbs were lumped together, and the shrubs were lumped together. The bunch grasses consists of Indian ricegrass, sand dropseed, needle-and-thread, spike dropseed, and three awn. The sod grasses consist of James' galletta and blue gramma. The forbs consisted of tansy aster, roseheath, and globe mallow. The shrubs consists of matt saltbrush, winterfat, Morman tea, and four-winged saltbrush. The nested frequency has been analyzed by monitoring site and by individual plant groupings.

BLM Utah has adopted standards of rangeland health pursuant to regulations found at 43 Code of Federal Regulations Part 4100 Subpart 4180. BLM Utah has four standards of rangeland health that focus on upland soils, riparian and wetlands to be in proper functioning condition, desired species that include native, threatened, endangered, and special status species, and water quality to meet the Federal Clean Water Act and the State of Utah water quality standards.

Utah's rangeland health standards:

Standard 1. Upland soils exhibit permeability and infiltration rates that sustain or improve site productivity, considering the soil type, climate, and landform.

a.) Sufficient cover and litter to protect the soil surface from excessive water and wind erosion, promote infiltration, detain surface flow, and retard soil moisture loss by evaporation.

b.) The absence of indicators of excessive erosion such as rills, soil pedestals, and actively eroding gullies.

c.) The appropriate amount, type, and distribution of vegetation reflecting the presence of (1) the Desired Plant Community (DPC), where identified in a land use plan conforming to these Standards, or (2) where the DPC is not identified, a community that equally sustains the desired level of productivity and properly functioning ecological conditions.

Standard 2. Riparian and wetland areas are in properly functioning condition. Stream channel morphology and functions are appropriate to soil type, climate and landform.

a.) Stream bank vegetation consisting of, or showing a trend toward, species with root masses capable of withstanding high stream flow events. Vegetative cover adequate to protect stream banks and dissipate stream flow energy associated with high-water flows, protect against accelerated erosion, capture sediment, and provide for groundwater recharge.

b.) Vegetation reflecting: Desired Plant Community, maintenance of riparian and wetland soil moisture characteristics, diverse age structure and composition, high vigor, large woody debris when site potential allows, and providing food, cover, and other habitat needs for dependent animal species.

c.) Revegetating point bars; lateral stream movement associated with natural sinuosity; channel width, depth, pool frequency and roughness appropriate to landscape position.

d.) Active floodplain.

Standard 3. Desired species, including native, threatened, endangered, and special-status species, are maintained at a level appropriate for the site and species involved.

a.) Frequency, diversity, density, age classes, and productivity of desired native species necessary to ensure reproductive capability and survival.

b.) Habitats connected at a level to enhance species survival.

c.) Native species re-occupy habitat niches and voids caused by disturbances unless management objectives call for introduction or maintenance of non-native species.

d.) Habitats for threatened, endangered, and special-status species managed to provide for recovery and move species toward de-listing.

e.) Appropriate amount, type, and distribution of vegetation reflecting the presence of (1) the Desired Plant Community, where identified in a land use plan conforming to these Standards, or (2) where the DPC is not identified a community that equally sustains the desired level of productivity and properly functioning ecological processes.

Standard 4. BLM will apply and comply with water quality standards established by the State of Utah (R.317-2) and the Federal Clean Water and Safe Drinking Water Acts. Activities on BLM lands will fully support the designated beneficial uses described in the Utah water quality standards (R.317-2) for surface and groundwater. BLM will continue to coordinate monitoring water quality activities with other Federal, State, and technical agencies.

a.) Measurement of nutrient loads, total dissolved solids, chemical constituents, fecal coliform, water temperature and other water quality parameters.

b.) Macro invertebrate communities that indicate water quality meets aquatic objectives.

Standard #1 Upland Soils: Upland soils exhibit permeability and infiltration rates that sustain or improve site productivity, considering the soil type, climate, and landform:

a) Sufficient cover and litter to protect the soil surface from excessive water and wind erosion, promote infiltration, detain surface flow, and retard soil moisture loss by evaporation.

Airport Pasture:

There is sufficient cover and litter at KA 3A and SMU 10 to protect the soils from excessive erosion caused by wind or water (the absence of rills, extensive water flow patterns, pedestals and/or terracettes, gullies, and wind scours and/or depositional areas). The sites have sufficient cover to reduce overland flow and to promote infiltration and retard soil moisture loss.

At T 2 there is slightly less perennial plant cover than expected. This reduced amount of cover has not contributed to an increased amount of excessive wind and or water erosion (rills, water flow patterns, pedestals, gullies and wind scours and/or depositional areas) were what was

expected. Infiltration at the site has little to do with the vegetation. Shallow clay that is throughout the area is what determines the amount of infiltration into the soils. Clay soils have very small pore sizes, these pores limit the speed with which water infiltrates (soaks into the ground). The vegetation could only slow the precipitation to a limit but runoff is inevitable during periods of intense precipitation at the site. The cover and litter are detaining some surface flow. Soil moisture loss by evaporation is slightly more due to the slight decrease in cover.

At T 7 there is a slight reduction in the amount of cover. This reduction in cover has reduced the amount of surface flow being detained. The sites loss of cover has slightly reduced the amount of infiltration and slightly increased the amount of surface flow (indicated by an increase in water flow patterns).

At SMU 56 there is sufficient cover to protect soils from excessive erosion (wind and/or water). This is evident by the absence of indicators of excessive erosion (no rills, extensive water flow patterns, no pedestals, no gullies, and no wind scours and/or depositional areas). Cover is there to promote infiltration and detain surface flow. A compaction layer moderately restricts root penetration and water infiltration.

At SMU 78 cover appears to be sufficient but indicators of soil erosion is present, water flow patterns are long and connected, there is an increase in pedestalling. Both indicators have a moderate to extreme departure from the expected where the flow patterns should be short, stable, less than three feet in length and rarely connected. Pedestals should be few and if present, should be less than one inch. Water erosion is not evident at KA 2, KA 3A, SMU 10, and SMU 56, rill formation matches what is expected and water flow patterns are short and stable. KA 7 had a moderate departure from what is expected with the water flow patterns no rill formations were evident.

Bartlett Flat Pasture:

There is sufficient cover at KA 3 and 8, to protect the soils from excessive water and wind erosion, promote infiltration, detain surface flow, and retard soil moisture loss by evaporation. The sites have a lack of wind scours and blowout areas, rills and gullies are absent, water flow patterns are mostly absent and were observed to be short and stable (less than three feet and vegetation growing in the patterns). The soils at the site are naturally coarse and allow for rapid infiltration.

At KA 6 and T 7 there is insufficient cover to protect the soils from excessive wind erosion, promote infiltration, detain surface flow, and retard soil moisture loss. The sites have excessive wind erosion and deposition, there is a lack of indications of excessive water erosion (no rill or gully formation); this lack of excessive water erosion is due to the texture of the soils being coarse and allowing for rapid infiltration rates.

Big Flat Pasture:

There is sufficient cover at KA 5, KA 7, T 12, SMUs 51, and SMU 71 to protect the soils from excessive erosion. This was determined by looking at indicators of erosion (rills, water flow patterns, wind scours and depositional areas, gullies, pedestals, terracettes, and actively eroding gullies). The sites did not show departure from the reference state. The sites had short and stable water flow patterns, no wind scouring but some minor deposition of soil under shrubs, pedestals were primarily absent and when present they appeared to be old and found within the

flow patterns. No gulling was observed, rills were absent from KA 5 and SMU 71. At SMU 51 there was an actively eroding rill; it is not apparent why the rill has formed because the vegetation seems to be adequate. KA 7 lacks the indicators of water erosion (rills, excessive water flow patterns and pedestaling, and gullies), the site has a sandy loam soil with little to no slope (0-3 percent) these factors promote infiltration of water at the site. T 12 is the same as KA 7 with the exception that water flow patterns have departed moderately from expected, these flow patterns could be a result of a slight compaction layer (plant roots are penetrating the layer) on the site.

Courthouse Pasture:

There is sufficient cover at KA 13 to promote infiltration to protect the soil surface from erosion, to promote infiltration, detain surface flow and retard soil moisture loss. There is slight to moderately less litter at KA 13 more likely related to drought conditions than a change in the plant community. At T 4 and KA 5 there has been a reduction in the shrub community with a slight to moderate reduction in the amount of litter at KA 5. However, there is an overall lack of indications of excessive erosion due to the lack of rill formation, extended water flow patterns and gullies. There is some indication of wind erosion evident as there is coppice mounding in and around the shrub canopies. Some pedestaled plants observed at T 4 and one at KA 13 would indicate some erosion has occurred within the water flow patterns.

Deadman Point Pasture:

At T 1 and T 2 there has been a departure in the plant community allowing for an increase in runoff and decrease in infiltration. There is a lack of evidence of water erosion at T 1 as there were no rills, water flow patterns are short and stable, no pedestals or terracettes, and no gullies were found throughout the site. At T 2 there is a lack of rills, pedestals or terracettes, and gullies throughout the site. The water flow patterns at T 2 are long and interconnected throughout the site. The amount of litter at T 1 and T 2 is what is expected for the site and site potential. There is some soil deposition occurring within the canopy of the shrubs at both sites.

At KA 3A and SMU 54 there is sufficient cover to allow for infiltration and runoff. Litter at the sites is within the range of expected variability with slightly more litter being at KA 3A. There were not any indications of excessive water erosion at KA 3A or SMU 54; this is evident through the overall lack of rill formation, water flow patterns being short and stable, and no gullies. There is some indication of wind erosion happening at the sites. There is coppice mounding occurring at SMU 54. There is wind scouring and deposition occurring at KA 3A. There is sufficient cover at the sites to protect the soils from excessive erosion but excessive wind erosion is occurring at KA 3A. Wind erosion would account for the few pedestaled plants observed at KA 3A as water erosion does not appear to be a factor.

Horsethief Point Pasture:

See the evaluation for the Horsethief Point Allotment.

Mineral Point Pasture:

There has been a departure in the plant community at T 6 where the grass and forb components are reduced. The shrub component is expected for the site. There was a lack of indications of excessive water erosion. Wind erosion at the site is excessive, during the assessment wind

scours and deposition was common throughout the site. There is more bare ground than expected and could allow for an increase in the loss of moisture through evaporation. At T 1, had departure in the plant community as there is slightly higher bare ground than what is expected. There is currently a lack of indicators of excessive water erosion. There is slightly more bare ground at T 1 and slightly more than expected deposition occurring at the site. The slight increase in the expected bare ground at T 1 could allow for an increase in soil moisture loss through evaporation.

There is sufficient cover and litter to protect the soil surface from excessive erosion, promote infiltration, detain surface flows, and retard soil moisture loss by evaporation at KA 5 and SMU 4. These are evident in the lack of evidence of excessive water and wind erosion at the locations during the assessment.

b) The absence of indicators of excessive erosion such as rills, soil pedestals, and actively eroding gullies.

Airport Pasture:

The rills at T 2 matches (rills common and less than 3" deep) what is expected, KA 3A matches (none were observed) what is expected, T 7 matches what is expected, SMU 10 matches what is expected, and SMU 56 matches what is expected.

The pedestals at T 2 matches what is expected, KA 3A matches what is expected, T 7 matches what is expected, SMU 10 matches what is expected, and SMU 56 matches what is expected.

There were no gullies at any of the sites.

Bartlett Flat Pasture:

The rills match what is expected for KA 3, KA 6, KA 8 and T7 (very few rills were observed).

The pedestals at KA 3, KA 6, KA 8, and T 7matches what is expected, there were some pedestals present but very few and less than 1" deep.

There were no gullies observed at any of the sites.

Big Flat Pasture:

The rills at KA 5, KA 7, T 12, SMU 71 and SMU 78 match what is expected for the site. Very few rills were observed. SMU 51 has had a moderate departure from what is expected with more rills than would be expected.

The pedestals at KA 5, KA 7, KA 12, and SMU 71 match what is expected for the site. SMU 51 shows slightly more pedestalled plants than expected. SMU 78 showed moderately to extremely more pedestalled plants than is expected for the site.

There were no gullies observed at any of the sites.

Courthouse Pasture:

The rills at T 4, KA 5, and SMU 4 match what is expected for the site.

The pedestals at T 4, KA 5, and SMU 4 match what is expected for the site

There were no gullies observed at any of the sites

Deadman Point Pasture:

The rills at T 1, T 2, KA 3a, and SMU 54 match what is expected for the site.

The pedestals at T 1 and T 2 match what is expected for the site. There are slightly more pedestals than expected at KA 3a and SMU 54.

There were no gullies observed at any of the sites

Horsethief Point Pasture:

See the evaluation for the Horsethief Point Allotment.

Mineral Point Pasture:

Rills at KA 5, T 1, T 6, and SMU 54 match what is expected for the site.

The pedestals at KA 5, T 1, T 6, and SMU 54 match what is expected for the site.

There were no gullies observed at any of the sites

c) The appropriate amount, type, and distribution of vegetation reflecting the presence of (1) the desired plant community (DPC), where identified in a land use plan, conforming to these Standards or (2) where the DPC is not identified, a plant community that equally sustains the desired level of productivity and properly functioning ecological conditions.

Airport Pasture:

During the assessments, the team identified plant communities composition distribution relative to infiltration and runoff at: T 2 had a slight to moderate departure from what would be expected, the ATCO4 decreased with no shift in dominance. KA 3A had a slight to moderate departure in the DPC as grasses and shrubs have declined the grasses are dominant with shrubs being a sub-dominant. T 7 had a moderate departure. The grasses are reduced to a minor component while the expected is a sub-dominant component. SMU 10 had a slight to moderate departure. The shrubs are at the expected amount while grasses have declined from what is expected. SMU 56 had an extreme to total departure from what is expected. The plant community has changed into an annual grassland with few perennial plants.

The team also identified invasive plants across the pasture varies by site as: T 2 matches (0 percent) what is expected (0-5 percent). KA 3A slightly higher (0-6 percent) than expected (0-5 percent). T 7 matches (0 percent) what is expected (0-5 percent). SMU 10 there is a slight to moderate departure (0-6 percent) from the expected amount (0-5 percent). SMU 56 had an extreme to total departure (10-40 percent cover of SOIB and ERTR) from the expected (0-5 percent) for the amount of invasive plants.

The productivity of the sites is close to what would be expected for the sites with the exception of SMU 56. SMU 56 had a departure in the plant community to where perennials are lacking in the system and annual forbs and grasses are dominating. Annual plants produce less biomass than perennial grasses and shrubs.

The density trend for bunch grasses in the Airport Pasture is currently in a static state where there has not been a significant change in the short-term. The long-term trend of the pasture is downward (see figure 1).

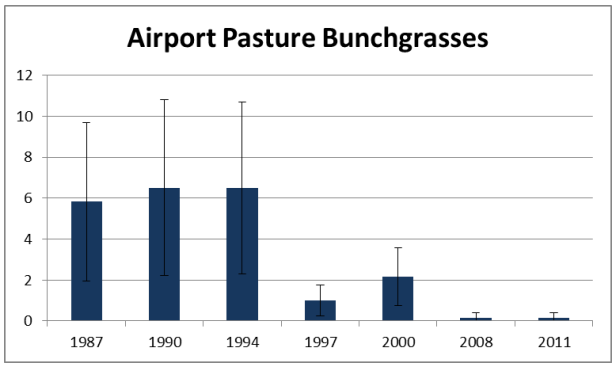


Figure 1: the graph to the right depicts averages across the years and the standard error in the density trend data collected for bunchgrasses. The data shows between the years of 1994 and 1997 there was a significant change in the trend resulting in a downward trend of bunchgrasses. In 2008, the data shows another significant change between 2000 and 2008 resulting in another downward trend. Starting in 2008 the short-term trend shows no change or a static trend for bunchgrasses in the Airport Pasture.

The density trend for sod grasses in the Airport Pasture is currently in a static trend. The long-term trend is downward (see figure 2).

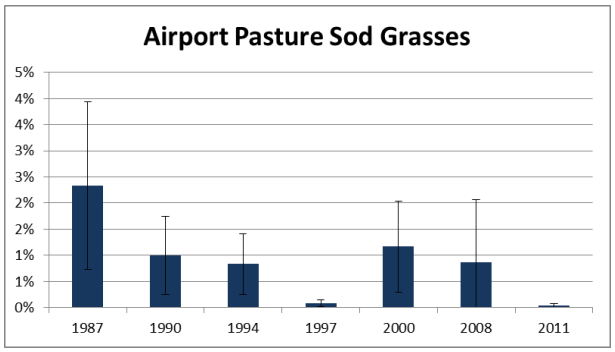


Figure 2: the graph depicts the averages across the years and the standard error in the density trend data collected for the sod grasses. There was a significant downward trend between the years of 1994 and 1997. There was a significant upward trend between the years 1997 and 2000. There was a significant downward trend between the years of 2000 and 2011. There is no statically significant difference between the data collected in 2008 and 2011 resulting in a static trend.

The density trend for forbs in the Airport Pasture is currently in a static trend. The long-term trend is static.

The density trend for shrubs in the Airport Pasture is currently in a static trend. The long-term trend is static.

The frequency trend for Airport Pasture plant species is not apparent for most of the plant species. For two the trend has changed. For globemallow the trend is up meaning the plant is more frequent and for Indian ricegrass the trend is downward meaning it is less frequent.

The cover transects for the pasture indicates the overall cover between 2010 and 2014 shows the trend for vegetative cover is down.

In summary, sites T 2, KA 3A, and T 7 and SMU 10 are showing an overall lack of desired grass plant species when visited by the team. This is apparent in the density data collected as shown in Figure 1: and 2 as the pasture had significant downward trends with a current static or no change since the downward trend. The frequency data also shows there are still some changes to the plant community as Indian ricegrass is becoming less frequent while globemallow is becoming more frequent. The shrub community seems to be doing well as the trend is static in the long term. SMU 56 had a substantial change to the plant community and it would need managerial inputs to return the site to a favorable condition.

Bartlett Flat Pasture:

During the assessments the team identified the plant communities composition distribution relative to infiltration and runoff at: KA 3 there has been a slight departure from what the DPC would be expected. There has been a decline in shrubs but the niches has been filled with native perennial grasses. KA 6 had a slight to moderate departure from what is expected. There has been a decrease in cover of grasses and shrubs with no shift in dominance. T 7 had a moderate departure from what is expected. The perennial plants decreased throughout the site. KA 8 had a moderate departure from what is expected. The perennial plants declined and BRTE is filling the open niches.

The team also identified invasive plants across the pasture vary by site as: KA 3 \ had a slight departure (4-8 percent) from what is expected (0-5 percent). KA 6 matches (0-2 percent) what is expected (0-5 percent). T 7 matches (2-4 percent) what is expected (0-5 percent). KA 8 had a moderate departure (12-18 percent) from what is expected (0-5 percent).

The productivity of the sites are what is to be expected for the sites.

The density trend for bunchgrasses in the Bartlett Flat Pasture is currently in a static trend. The long-term trend for the pasture is downward (see Figure 3).

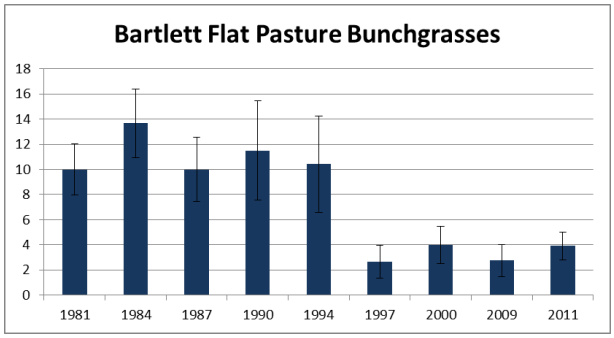


Figure 3: the graph depicts averages across the years and the standard error in the density trend data collected for bunchgrasses. Data shows that between the years of 1994 and 1997 there was a significant change in the trend resulting in a downward trend of bunchgrasses as the standard errors do not overlap. In 2000, the data shows another significant change between 1997 and 2000 resulting in an upward trend. Between 2000-2011 the short-term trend showed no change or a static trend for bunchgrasses in the Bartlett Flat Pasture.

The density trend for t sod grasses in the Bartlett Flat Pasture is currently in a static trend. The long-term trend is static.

The density trend for shrubs in the Bartlett Flat Pasture is currently in a downward trend. The long-term trend is static.

The density trend for forbs in the Bartlett Flat Pasture is currently in a static trend. The long-term trend is static.

The frequency trend for Bartlett Flat Pasture plant species is not apparent for most of the plant species. The trend changed at KA 3 for Indian ricegrass and sand dropseed the trend is down meaning the plants are less frequent than previous data collection. At KA 6 the majority of the plants frequency remains not apparent. The vegetative change at KA 6 is in the Indian ricegrass with a downward trend, sand dropseed with and upward trend, and globemallow with an upward trend. At KA 8 the frequency for the majority of the plants remains unchanged. The vegetative change at KA 8 is in the Mormon tea with a downward trend and globemallow with an upward trend.

The cover trend for Bartlett Flat Pasture for the majority of the plant species is not apparent. The collective plant cover for KA 3 and KA 8 has changed as there is less vegetative cover and more bare ground. At KA 6 the bare ground is in an upward trend meaning the amount of bare ground has decreased with the total ground cover in an upward trend.

In summary, the Bartlett Flat Pasture had some changes to the plant community; most have been only slight changes with the largest change reflected in KA 8. The shrub component across the pasture is relatively unchanged with a downward trend for the Mormon tea at KA 8. Indian ricegrass has become less frequent at KA 3 and 6. The KA all experienced an upward trend for globemallow. This shows even though there has been some vegetative changes to the community in the recent years the native plants are filling the niche.

Big Flat Pasture:

During the assessments, the team had identified plant community's composition distribution relative to infiltration and runoff at: KA 5 matches what is expected for the site. KA 7 had a slight departure from what is expected the plant community has been slightly reduced. T 12 had a moderate departure from what is expected the plant community has been reduced. SMU 51 the plant community matches what is expected for the site. SMU 71 there has been a slight to moderate departure from what is expected; the shrub component is the dominant but the cool season grasses have declined. SMU 78 there has been a slight departure from the expected amount of perennial plants.

The team also identified invasive plants across the pasture vary by site as: KA 5, KA 7, SMU 51, SMU 71 matches (0 percent) what is expected (0-5 percent) for the sites. T 12 matches (0-2 percent) what is expected (0-5 percent). SMU 78 has slightly departed (6-10 percent) from what is expected (0-5 percent).

The productivity of the sites is close to what would be expected for the sites.

The density trend for bunchgrasses in the Big Flat Pasture is currently in a static trend. The long-term trend for the pasture is downward (see Figure 4).

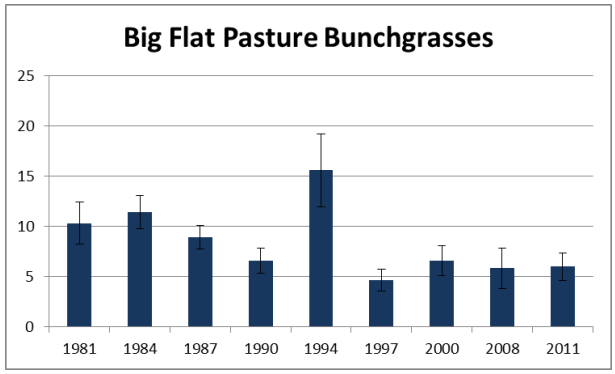
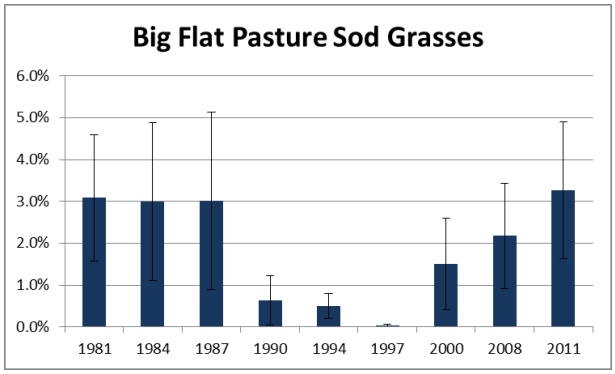


Figure 4: the graph depicts the averages across the years and the standard error in the density trend data collected for the bunchgrasses. The data shows between the years of 1990 and 1994 there was a significant changeresulting in an upward trend. In 1994 and 1997, there was a significant change that resulted in a downward trend of the bunchgrasses. In 2000, the data shows a significant change between 1997 and 2000 resulting in an upward trend. Between 2000-2011, the short-term trend has shown no change or a static trend for the bunchgrasses in the Big Flat Pasture.

The density trend for sod grasses in the Big Flat Pasture is currently in an upward trend. The long-term trend is upward (see Figure 5).

Figure 5: the graph depicts the averages across the years and the standard error in the density trend data collected for the sod grasses. The data shows between the years of 1987 and 1990 there was a significant change that resulted in a downward trend. In 1994 and 1997, there was a significant change that resulted in a downward trend of the bunchgrasses. In 1997 and 2000, the data shows a significant change resulting in an upward trend. In 2008 and 2011, the data shows a significant change that resulted in an upward trend.



The density trend for shrubs in the Big Flat Pasture is currently in a static trend. The long-term trend is static.

The density trend for forbs in the Big Flat Pasture is currently in an upward trend. The long-term trend is static.

The frequency trend for the Big Flat Pasture plant species is not apparent for most of the plant species in KA 5 and 7. The trend changed at KA 5 for Indian ricegrass, needle-and-thread, and sand dropseed. The trend is down for Indian ricegrass and sand dropseed meaning the plants are less frequent than previous data collection. The trend is up for needle-and-thread. The trend changed at KA 7 for Indian ricegrass and needle-and-thread. The trend is down for Indian ricegrass and needle-and-thread.

The cover trend for the Big Flat Pasture for the majority of the plant species is not apparent at KA's 5, and 7. The collective plant cover for KA 5 is down and the litter cover is up. There has not been any significant change in the cover data at KA 7.

In summary, the Big Flat Pasture has had some changes to the plant community, most of them have been only slight changes. The shrub component across the pasture is unchanged. The Indian ricegrass has become less frequent at KA 5 and 7. The needle-and-thread has become less frequent at KA 7 and more frequent at KA 5. The sand dropseed has become less frequent at KA 5.

Courthouse Pasture:

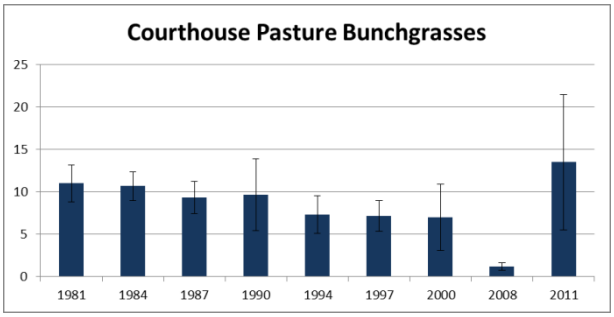
During the assessments, the team identified the plant community's composition distribution relative to infiltration and runoff at: KA 4 had a moderate departure from what the DPC would be expected as there has been a decline in shrubs and perennial grasses. KA 5 had a slight to moderate departure from what is expected as there has been a decrease in cover of shrubs there has not been a shift in dominance. KA 13 has had no changes from what is expected.

The team also identified invasive plants across the pasture vary by site as: T 4 had a slight to moderate departure (0-10 percent) from what is expected (0-5 percent). KA 5 departed slightly (6 percent) from what is expected (0-5 percent). KA 13 departed slightly (4-6 percent) what is expected (0-5 percent).

The productivity of the sites is close to what would be expected for the sites with T 4 and KA 5 having a slight to moderate departure from what is expected. KA 13 matches what is expected for the site and site potential.

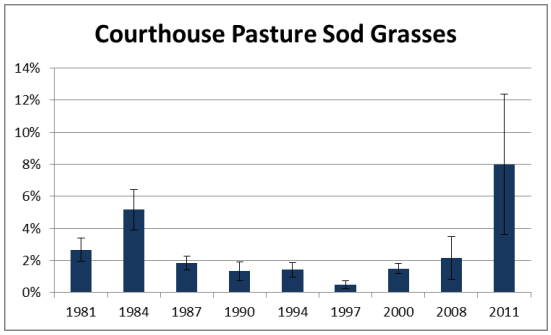
The density trend for bunchgrasses in the Courthouse Pasture is currently in an upward trend. The long-term trend for the pasture is static (see Figure 6).

Figure 6: the graph depicts the averages across the years and the standard error in the density trend data collected for the bunchgrasses. The data shows between the years of 2000 and 2008 there was a significant change in the trend that resulted in a downward trend of the bunchgrasses. The data shows another significant change between 2008 and 2011 resulting in an upward trend.



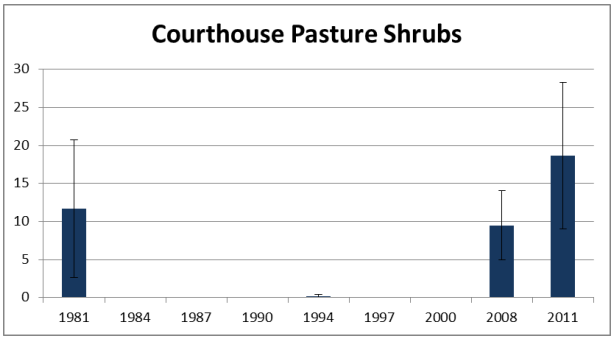
The density trend for sod grasses in the Courthouse Pasture are currently in an upward trend. The long-term trend is up (see Figure 7).

Figure 7: the graph depicts the averages across the years and the standard error for the density trend data collected for the sod grasses. The data shows variability over the years were there was a steady decline from 1984 to 1997. It also shows a steady incline from 1997 to 2011. Between the years of 1984 and 1997 there was a significant change in the trend that resulted in a downward trend of the sod grasses. The data shows another significant change between 1997 and 2011 resulting in an upward trend.



The density trend for shrubs in the Courthouse Pasture is currently in an upward trend. The long-term trend is up (see Figure 8).

Figure 8: the graph depicts the averages across the years and the standard error for the density trend data collected for the shrubs. The data shows between the years of 1981and 1984 there was a significant change in the trend that resulted in a downward trend of the shrubs. Between the years 1984 and 2000 there was no statical significance in the data or a static trend. A significant change between 2000 and 2008 resulting in an upward trend. The data shows a significant change between 2008 and 2011 resulting in an upward trend.



The density trend for forbs in the Courthouse Pasture is currently in a static trend. The long-term trend is static.

The frequency trend for the Courthouse Pasture plant species is not apparent for most of the plant species. The trend changed at KA 5 for Indian ricegrass, sand dropseed, Mormon tea, and globemallow. The trend for Indian ricegrass and Mormon tea is down meaning the plants are less frequent than previous data collection and the trend for sand dropseed and globemallow is

up meaning the plants occur more frequently. The majority of the plants at KA 13 remains not apparent. The vegetative change at KA 13 is in the Indian ricegrass with a downward trend, sand dropseed with and upward trend, and globemallow with an upward trend.

The cover trend for the Courthouse Pasture for the majority of the plant species is not apparent. The collective plant cover for KA 5 has changed, as there is less vegetative cover in the sand dropseed and more bare ground. At KA 13 the litter is in an upward trend meaning the amount of litter has increased with the total vegetation cover in a downward trend.

In summary, the Courthouse Pasture had some changes to the plant community most of them have only been slight changes with the largest change reflected in T 4. The shrub component across the pasture has increased but there was a downward trend for the Mormon tea at KA 5. The Indian ricegrass has become less frequent at KAs 5 and 13. The KA's all experienced an upward trend for the sand dropseed and globemallow. This shows even though there has been some vegetative changes to the community in the recent years the native plants are filling the niche.

Deadman Point Pasture:

During the assessments, the team identified plant community's composition distribution relative to infiltration and runoff at: T 1 had a slight to moderate departure from what the DPC would be expected. T 2 had a moderate departure from what is expected. KA 3a and SMU 54 had no changes from what is expected.

The team also identified the invasive plants across the pasture vary by site as: T 1 had a slight to moderate departure (4-6 percent) from what is expected (0-5 percent). T 2 departed moderate to extremely from what is expected (0-5 percent). KA 3a matches (0-2 percent) what is expected (0-5 percent). SMU 54 departed slight to moderately (2-6 percent) from what is expected (0-5 percent).

The productivity of sites T 1, KA 3a, and SMU 54 is what would be expected for the sites. T 2 has departed moderately from what is expected.

The density trend for bunchgrasses in the Deadman Point Pasture is currently in a static trend. The long-term trend for the pasture is static.

The density trend for sod grasses in the Deadman Point Pasture is currently in a static trend. The long-term trend is static.

The density trend for shrubs in the Deadman Point Pasture is currently in static trend. The long-term trend is down (see Figure 9).

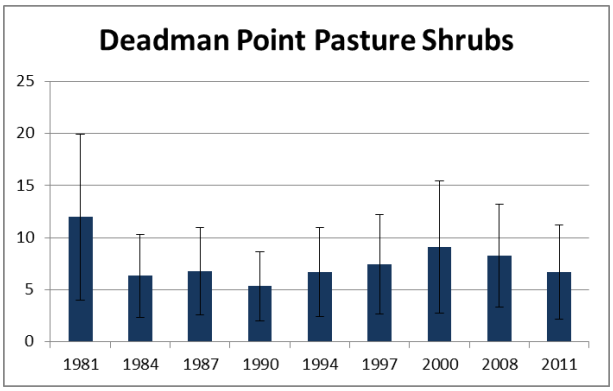


Figure 9: the graph depicts the averages across the years and the standard error for the density trend data collected for the shrubs. The data shows between the years of 1981and 1984 there was a significant change in the trend that resulted in a downward trend of the shrubs. The data shows between the years 1984 and 2011 there was no statical significance in the data or a static trend.

The density trend for the forbs in the Deadman Point Pasture is currently in a static trend. The long-term trend is static.

The frequency trend for t Deadman Point Pasture plant species is not apparent for most of the plant species. The trend has changed at KA 3a for Indian ricegrass, needle-and-threadgrass, sand dropseed, and spike dropseed. The trend for Indian ricegrass, needle-and-threadgrass and spike dropseed is down meaning the plants are less frequent than the previous data collection and the trend for sand dropseed is up meaning the plants occur more frequently.

The cover trend for Deadman Point Pasture for the majority of the plant species is not apparent. The collective plant cover for KA 3a has changed, as there is less vegetative cover and an increase in litter.

In summary, the Deadman Point Pasture had changes to the plant community most of them have only been slight changes with the largest change reflected in T 2. Where the niche left by perennial vegetation is being filled with non-native invasive annuals.

Horsethief Point Pasture:

See the Horsethief Point Allotment Evaluation.

Mineral Point Pasture:

During the assessments, the team identified the plant community's composition distribution relative to infiltration and runoff at KA 5, T 1 and SMU 4 had no change in the plant community from what is expected and T 6 had a slight to moderate departure from what is expected.

The team also identified invasive plants across the pasture vary by site: KA 5 has not departed (0 percent) from what is expected (0-5 percent). T 1 has not departed (0 percent) from what is expected (0-5 percent). T 6 matches (0-2 percent) what is expected (0-5 percent). SMU 4 has not departed (2-6 percent) from what is expected (0-5 percent).

The productivity of the sites T 1, T 6, and SMU 4 is what would be expected for the sites. KA 5 has departed slight to moderately from what is expected.

The density trend for the bunchgrasses in the Mineral Point Pasture is currently in a static trend. The long-term trend for the pasture is down (see Figure 10).

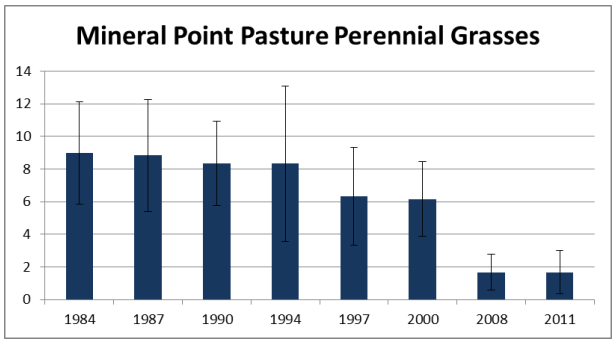
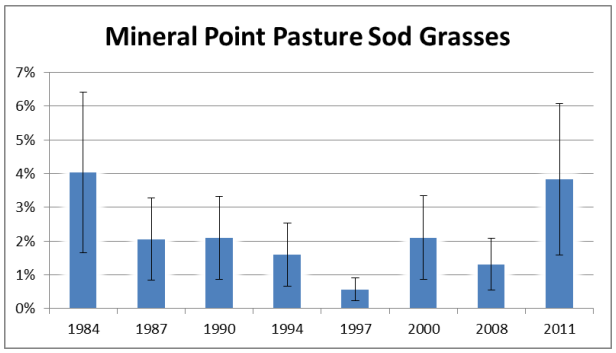


Figure 10: the graph depicts averages across the years and the standard error for the density trend data collected for the perennial grasses. It also shows a static trend from 1984 to 1994. The data shows between the years of 1984 and 1997 there was a significant change in the trend that resulted in a downward trend. The data shows trends being static between 1997 and 2000. The data shows another significant change occurred between 2000 and 2008 resulting in a downward trend. There is no statistical significance in the data collected in 2008 and 2011 or current trend as static (see Figure 11).

The density trend for the sod grasses in the Mineral Point Pasture is currently in an upward trend. The long-term trend is static.

Figure 11: the graph depicts the averages across the years and the standard error for the density trend data collected for the sod grasses. The data shows variability over the years were there was a downward trend from 1984 to 1997. It also shows an upward trend from 1997 to 2011. The data shows between the years of 1984 and 1997 there was a significant change in the trend that resulted in a downward trend of the sod grasses. The data shows another significant change between 1997 and 2011 resulting in an upward trend. There is no statistically significant difference in the data collected in 1984 and that collected in 2011 which results in a static trend.



The density trend for the shrubs in the Mineral Point Pasture is currently in static trend. The long-term trend is static.

The density trend for the forbs in the Mineral Point Pasture is currently in a static trend. The long-term trend is static.

The frequency trend for the Mineral Point Pasture plant species is not apparent for most of the plant species. The trend has changed at KA 5 for James' galletta. The James' galletta is in a downward trend meaning that the galletta is less frequent than the previously collected data.

The cover trend for the Mineral Point Pasture for the majority of the plant species is not apparent. The collective plant cover for KA 5 has changed; there is less vegetative cover, more bare ground and an increase in litter.

In summary, the Mineral Point Pasture has had some changes to the plant community most of them have only been slight changes with the largest change reflected in T 6. There is an overall lack of herbaceous understory in the blackbrush community, causing there to be more bareground than would be expected for the site.

Table 2: Rating for Rangeland Health's Standard #1Upland Soils

Assessment Sites (KA and SMU sites)	Standards			Trend	Rating By Pasture
	A	b	c		
Airport T 2	Met	Met	Met	Not Apparent	Meeting
Airport KA 3A	Met	Met	Bmet		
Airport T 7	Bmet	Met	Bmet		
Airport SMU 10	Met	Met	Met		
Airport SMU 56	Met	Met	Not Met		
Bartlett KA 3	Met	Met	Met	Not Apparent	Meeting
Bartlett KA 6	Not Met	Met	Met		
Bartlett T 7	Not Met	Met	Bmet		
Bartlett KA 8	Met	Met	Not Met		
Big Flat KA 5	Met	Met	Met	Not Apparent	Meeting
Big Flat KA 7	Met	Met	Met		
Big Flat T 12	Bmet	Met	Not Met		
Big Flat SMU 51	Met	Bmet	Met		

Table 2: Rating for Rangeland Health's Standard #1Upland Soils					
Assessment Sites (KA and SMU sites)	**Standards**			**Trend**	**Rating By Pasture**
	A	**b**	**c**		
Big Flat SMU 71	Met	Met	Met		
Big Flat SMU 78	Not Met	Bmet	Met		
Courthouse T 4	Met	Met	Bmet	Not Apparent	Meeting
Courthouse KA 5	Met	Met	Met		
Courthouse KA 13	Bmet	Met	Met		
Deadman T 1	Bmet	Met	Met	Not Apparent	Meeting
Deadman T 2	Bmet	Met	Not Met		
Deadman KA 3a	Met	Met	Met		
Deadman SMU 54	Met	Met	Met		
Horsethief Point KA 1	See Horsethief Point Allotment's Evaluation				
Horsethief Point KA 3a					
Horsethief Point KA 4					
Horsethief Point SMU 6					
Mineral Point KA 5	Met	Met	Met	Not Apparent	Meeting
Mineral Point T 1	Met	Met	Met		
Mineral Point T 6	Not Met	Met	Not Met		
Mineral Point SMU 4	Met	Met	Met		
Overall Rating of Standards	Bmet	Met	Bmet	Not Apparent	Meeting

Standard #2 Riparian and Wetland areas: Riparian and wetland areas are in properly functioning condition. Stream channel morphology and functions are appropriate to soil type, climate and landform.

Riparian areas were assessed using the "Riparian Area Management (TR1737-15 1998 and TR1727-16 1999 revised in 2003). A User Guide to Assessing Proper Functioning Condition (PFC) and the Supporting Science for Lotic and Lentic Areas". PFC assessed three separate categories of riparian areas, hydrology, vegetation and erosion/deposition.

The InterdisciplinaryTteam visited the riparian areas within Big Flat – Tenmile Allotment and assigned a rating of properly functioning condition (PFC) or functioning at risk (FAR) or not functioning (NF).

Table 3: Riparian Areas Within the Big Flat-Tenmile Allotment					
Name	**Size**	**Location**	**Pasture**	**Rating**	**Type of Riparian**
Bartlett Wash	1 mile	T.24S.,R.19E., Sec. 14	Bartlett Flat	FAR	Perennial
Deadman Spring	0.25 mile	T.25S.,R.18E., Sec 9	Deadman Point	PFC	Perennial

Table 3: Riparian Areas Within the Big Flat-Tenmile Allotment					
Name	**Size**	**Location**	**Pasture**	**Rating**	**Type of Riparian**
Halfway Stage Station	0.25 mile	T.24S., R.20E., Sec 20	Airport	PFC with an upward trend	Perennial
Mill Canyon Lower Stretch	0.25 mile	T.24S., R.20E., Sec 20	Courthouse	FAR	Perennial
Mill Canyon Upper Stretch	0.25 mile	T.24S., R.20E., Sec 29	Courthouse	PFC	Perennial
Sevenmile Canyon	2.5 miles	T.25S., R.20E., Sec 6, 7, and 8 and T.25S., R.19E., Sec 12	Bartlett Flat	PFC	Perennial
Tusher Canyon	0.25 miles	T.24S., R.19E., Sec 24 and 23 and T.24S., R.20E., Sec 24	Airport	NF	Perennial

a) Stream bank vegetation consisting of or showing a trend toward, species with root masses capable of withstanding high stream flow events. Vegetative cover adequate to protect stream banks and dissipate stream flow energy associated with high-water flows, protect against accelerated erosion, capture sediment, and provide for groundwater recharge.

There are approximately 4.75 miles of lotic riparian system (streams) within the allotment. The majority of the lotic riparian system or approximately 3.25 miles are at PFC where they are meeting this standard. Two areas are FAR, which is 1 mile at Bartlett Wash and 0.25 mile of the lower stretch of Mill Canyon. There is one area rated as NF the 0.25 mile at Tusher Canyon.

Bartlett Wash has a network of roads and user created trails that continue to force the vegetation to the sides of the wash preventing the area from having adequate vegetation that can withstand the high flow events. Mill Canyon had the same issue as Bartlett Wash but vehicle traffic is no longer allowed within the canyon under the current land use plan. Even though the traffic has ceased, the riparian area is still recovering and the vegetation is not adequate to with stand the high flow events and was evident as the stream was not vertically stable.

Tusher Canyon also has vehicle traffic that has caused the system to cut down to bedrock where little vegetation grows on the sides of the road. The bedrock does little to slow the flow of water and the area continues to not dissipate energy flow, capture sediment, protect against erosion, and provide for ground water recharge.

b) Vegetation reflecting: Desired Plant Community (DPC), maintenance of riparian and wetland soil moisture characteristics, diverse age structure and composition, high vigor, large woody debris when site potential allows, and providing food, cover, and other habitat needs for dependent animal species.

There are approximately 4.75 miles of lotic riparian system (streams) within the allotment. The majority of the lotic riparian system or approximately 3.25 miles are at PFC where they are meeting this standard. There are two areas that are FAR; one mile at Bartlett Wash and 0.25 mile of the lower stretch of Mill Canyon. One area is rated as NF the 0.25 mile of riparian in Tusher Canyon.

The Bartlett Wash and the lower stretch of Mill Canyon are lacking adequate riparian vegetation cover to protect the banks and dissipate energy during high flows. This is due to road disturbance and use of the are, throughout the majority of the year making it difficult to support more DPC riparian vegetation. This riparian area is not widening or it has not achieved potential. This area has a diverse age-class of vegetation and a diverse composition of riparian vegetation (for maintenance and recovery). During the growing season, the riparian vegetation has recruitment that helps maintain the soils moisture characteristic. The DPC is exhibiting high vigor.

Tusher Canyon is lacking adequate riparian vegetation to provide for the DPC, maintenance of riparian soil moisture characteristics, diverse age classes and composition of vegetation, are not a source of large woody debris, and are not an adequate source of food, cover or habitat for wildlife species. The riparian vegetation present was showing high vigor and is capable of recovery.

c) Revegetating point bars; lateral stream movement associated with natural sinuousity; channel width, depth, pool frequency and roughness appropriate to landscape position.

There are approximately 4.75 miles of lotic riparian system (streams) within the allotment. The majority of the lotic riparian system or approximately 3.25 miles are at PFC where they are meeting this standard. Two areas are FAR, which is 1 mile at Bartlett Wash and 0.25 mile of the lower stretch of Mill Canyon. There is one area rated as NF the 0.25 mile of riparian in Tusher Canyon.

Bartlett Wash is not capable of having the point bars re-vegetate as they are in the bottom of the wash along the designated road. The channel width and sinuosity, width to depth ratio, and gradient are in balance with the landscape setting. The lateral stream movement is following the course of the road as it moves through the system.

Bartlett Wash is not capable of having the point bars re-vegetate as they are in the bottom of the wash where the road travels through. The channel width and sinuosity, width/depth ratio, and gradient are in balance with the landscape setting. The lateral stream movement is following the course of the road as it moves through the system.

The lower stretch of Mill Canyon is not having the point bars re-vegetate. The channel width and sinuosity, width/depth ratio, and gradient are not in balance as there is some active down cutting that is still occurring. In Mill Canyon, it shows a lateral stream movement that is in balance and is following the geology of the area.

Tusher Canyon does not show point bars, lateral stream movement associated with natural sinuosity, channel width, depth, pool frequency and roughness appropriate to landscape position is removed by the course of the road. The stream channel is a straight channel that incises with every flood and continues to have accelerated erosion.

d) Active floodplain

There are approximately 4.75 miles of lotic riparian system (streams) within the allotment. The majority of the lotic riparian system or approximately 3.25 miles are at PFC where they are meeting this standard. There are two areas that are FAR, which is 1 mile at Bartlett Wash and 0.25 mile of the lower stretch of Mill Canyon. There is one area rated as NF the 0.25 mile of riparian in Tusher Canyon.

Bartlett Wash has a floodplain above bankfull that is inundated on relatively frequent events. The riparian area has not achieved its potential extent nor does it appear to be widening.

The lower stretch of Mill Canyon has a floodplain above bankfull that is inundated on relatively frequent events. The riparian area has not achieved its potential extent but appears to be widening.

Tusher Canyon is not accessing the floodplain above bankfull. The riparian area is not widening or achieved its potential.

Standard #3 Desired Species: Desired species, including native, threatened, endangered, and special-status species, are maintained at a level appropriate for the site and species involved.

a) Frequency, diversity, density, age classes, and productivity of desired native species necessary to ensure reproductive capability and survival.

Airport Pasture:

T 2 has a plant community rated as slight to moderate. The plant mortality and/or decadence rated as none to slight departure. The annual production rated as none to slight. Invasive plants rated as none to slight departure. For the reproductive capability of the perennial plants rated as none to slight. T 2 is meeting this standard.

KA 3A has a plant community rated as a slight to moderate departure. The plant mortality and/or decadence rated as none to slight. The annual production of the site rated as a none to slight departure. The invasive plants rated as slight to moderate as there is slightly more Russian thistle than expected for the site. The reproductive capability of the perennial plants was rated as slight to moderate as the appeared to have a slight reduction in the amount of recruitment. This site is meeting this standard.

T 7 has a plant community that has moderately departed from what is expected. The grasses should be a sub-dominant component and they are currently a minor component. The plant mortality and/or decadence rated as a none to slight departure. The annual production rated as a none to slight departure. The invasive plants rated as a none to slight departure. The reproductive capability of perennial plants rated as none to slight departure. It is expected t this site is meeting this standard. The plant community has been reduced in the amount of grass cover but the shrub dominance is still at the site and the grasses are still there. The invasive plants are what is expected and not filling the niche.

SMU 10 the plant community has departed slight to moderately from the expected. The grasses have been slightly reduced at the site. The plant mortality and/or decadence is rated as slight to moderate as there is slightly higher mortality/decadence on the site. The annual production for the site is rated as none to slight departure. The invasive plants on the site is slight to moderately higher than expected as the BRTE cover is between 0-6 percent. The reproductive capability of the site is rated as none to slight departure. It is expected that the site is meeting this standard.

SMU 56 has a plant community was rated as an extreme to total departure from what is expected as the DPC has been replaced by an annual wheatgrass and Russian thistle. The plant mortality and/or decadence at the site was rated as none to slight. The annual production of the site was rated as a moderate to extreme departure because the annual production of the invasive plants is less and varies from year to year. The reproductive capability of the perennial plants was

rated as extreme to total because of the lack of perennial plants. This site is not meeting this standard.

Bartlett Flat Pasture:

KA 3 has a plant community was rated having a slight to moderate departure. The grasses at the site have increased and the shrubs have decreased with no shift in dominance. The plant mortality and/or decadence was rated as none to slight departure. The annual production was rated as a none to slight departure. The invasive plants was rated as a slight to moderate departure. The reproductive capability of perennial plants was rated as a none to slight departure. This site is meeting this standard.

KA 6 has a plant community that was rated as a slight to moderate departure. The grasses have been reduced on the site. The plant mortality and/or decadence was rated as none to slight. The annual production was rated as slight to moderate. The invasive plants was rated as none to slight. The reproductive capability of perennial plants was rated as slight to moderate. This site is meeting this standard.

T 7 has a plant community has shifted moderately from the expected amount. The plant groups have decreased throughout the site with no shift in dominance. The plant mortality and/or decadence was rated as having a slight to moderate departure. The annual production was rated as having a none to slight departure. The invasive plants was rated as having a none to slight departure. The reproductive capability of perennial plants was rated as having a moderate departure because it appeared that there was slightly less seed production at the site. The grasses were producing but the shrubs were lacking seed production. This site is meeting this standard even though there has been a decrease in the plants, they are still recovering and adding seed to the site. The plants appeared to have been more drought stressed.

KA 8 has a plant community has had a moderate departure from what is expected as the minor component grasses has been reduced and the dominate component shrubs has been reduced (due to drought impacts). The plant mortality and/or decadence was rated as having a none to slight departure. The annual production was rated as having a slight to moderate departure. The invasive plants was rated as having a moderate departure. The reproductive capability of perennial plants was rated as having a none to slight departure. This site is meeting this standard as the perennial plants are reproducing and are capable of surviving.

Big Flat Pasture:

KA 5 has a plant community rated as having a none to slight departure. The plant mortality and decadence rated as none to slight. The annual production rated as none to slight departure. The invasive plants rated as none to slight departure. The reproductive capability of perennial plants \rated as none to slight. This site is meeting this standard.

KA 7 has a plant community rated as having a slight to moderate the plant community was what was expected the soil crusts is lacking reducing the plant community slightly. The plant mortality and/or decadence was rated as having a none to slight departure. The annual production of the site was rated as having a none to slight departure. The invasive plants rated as having a none to slight departure. The reproductive capability of perennial plants rated as having a none to slight departure. This site is meeting this standard.

T 12 has a plant community rated as having a moderate departure. The grasses have decreased, the soil crusts are lacking and the shrubs have increased. The plant mortality and/or decadence

was rated as having a slight to moderate departure. The annual production of the site was rated as having a none to slight departure. The invasive plants was rated as having a none to slight departure. The reproductive capability of perennial plants was rated as none to slight departure. This site is meeting this standard. The decrease in grass cover was met with an increase in shrub cover and has the capability to reproduce to see the DPC survival.

SMU 51 has a plant community rated as having a none to slight departure. The plant mortality and decadence was rated as none to slight. The annual production was rated as none to slight departure. The invasive plants was rated as none to slight departure. The reproductive capability of perennial plants was rated as none to slight. This site is meeting this standard.

SMU 71 has a plant community that was rated as having a slight to moderate departure. The plant mortality and decadence was rated as none to slight. The annual production was rated as none to slight departure. The invasive plants was rated as none to slight departure. The reproductive capability of perennial plants was rated as none to slight. This site is meeting this standard.

SUM 78 has a plant community rated as having a slight to moderate departure. The plant mortality and/or decadence was rated as having a moderate departure. The sage brush at the site is made up of primarily old plants that has increased the amount of decadence in the community. The annual production of the site was rated as having a none to slight departure. The invasive plants was rated as having a none to slight departure. The reproductive capability of perennial plants was rated as having a none to slight departure. This site is meeting this standard.

Courthouse Pasture:

T 4 has a plant community rated as having a moderate departure. There are less grasses and shrubs at the site. The plant mortality and/or decadence was rated as having a none to slight departure. The annual production of the site was rated as having a slight to moderate departure. The invasive plants was rated as having a slight to moderate departure. The reproductive capability of perennial plants was rated as none to slight departure. This site is meeting this standard. The site has the capability to reproduce to see the DPC survival.

KA 5 has a plant community rated as having a slight to moderate departure. There are less shrubs at the site, the grasses closely matches. The plant mortality and/or decadence was rated as having a none to slight departure. The annual production of the site was rated as having a slight to moderate departure. The invasive plants was rated as having a slight to moderate departure. The reproductive capability of perennial plants was rated as none to slight departure. This site is meeting this standard. The site has the capability to reproduce to see the DPC survival.

KA 13 has a plant community rated as having a none to slight departure. The plant mortality and decadence was rated as none to slight. The annual production was rated as none to slight departure. The invasive plants was rated as none to slight departure. The reproductive capability of perennial plants was rated as none to slight. This site is meeting this standard.

Deadman Point Pasture:

T 1 has a plant community rated as having a slight to moderate departure. There are less grasses at the site, the shrubs closely matches. The plant mortality and/or decadence was rated as having a none to slight departure. The annual production of the site was rated as having a none to slight departure. The invasive plants was rated as having a slight to moderate departure. The

reproductive capability of perennial plants was rated as none to slight departure. This site is meeting this standard. The site has the capability to reproduce to see the DPC survival.

T 2 has a plant community rated as a moderate departure from what is expected as the DPC has been reduced and the niche is filling in with Russian thistle. The plant mortality and/or decadence at the site was rated as none to slight. The annual production of the site was rated as having a moderate departure. The annual production of the invasive plants is less and varies from year to year and the perennial plants are reduced. The invasive plants are moderate to extremely more than expected. The Russian thistle is common throughout the site. The reproductive capability of the perennial plants was rated as slight to moderate. The reduction of the perennial plants has caused the shift. This site is not meeting this standard.

KA 3a has a plant community rated as having a slight to moderate departure. There are less shrubs at the site, the grasses closely matches. The plant mortality and/or decadence was rated as having a none to slight departure. The annual production of the site was rated as having a slight to moderate departure. The invasive plants was rated as having a none to slight departure. The reproductive capability of perennial plants was rated as having a none to slight departure. This site is meeting this standard. The site has the capability to reproduce to see the DPC survival.

SMU 54 has a plant community rated as having a none to slight departure. The plant mortality and decadence was rated as none to slight. The annual production was rated as none to slight departure. The invasive plants was rated as having a slight to moderate departure. The reproductive capability of perennial plants was rated as none to slight. This site is meeting this standard.

Horsethief Point Pasture:

See the Horsethief Point Allotment Evaluation.

Mineral Point Pasture:

KA 5 has a plant community rated as having a slight to moderate departure. The plant mortality and/or decadence was rated as having a none to slight departure. The annual production of the site was rated as having a slight to moderate departure. The invasive plants was rated as having a none to slight departure. The reproductive capability of perennial plants was rated as none to slight departure. This site is meeting this standard. The site has the capability to reproduce to see the DPC survival.

T 1 has a plant community rated as having a none to slight departure. The plant mortality and decadence was rated as none to slight. The annual production was rated as none to slight departure. The invasive plants was rated as having a none to slight departure. The reproductive capability of perennial plants was rated as none to slight. This site is meeting this standard.

T 6 has a plant community rated as having a slight to moderate departure. The plant mortality and/or decadence was rated as having a none to slight departure. The annual production of the site was rated as having a none to slight departure. The invasive plants was rated as having a none to slight departure. The reproductive capability of perennial plants was rated as none to slight departure. This site is meeting this standard. The site has the capability to reproduce to see the DPC survival.

SMU 4 has a plant community rated as having a none to slight departure. The plant mortality and decadence was rated as none to slight. The annual production was rated as none to slight departure. The invasive plants was rated as having a none to slight departure. The reproductive capability of perennial plants was rated as none to slight. This site is meeting this standard.

b) Habitats connected at a level to enhance species survival.

Within this allotment there are seven main county roads that are maintained yearly which includes county road numbers 118, 129, 135, 137, 138, 140, and state highway 313 which have approximately 62 miles of road surface. These county roads receive recreational and mineral uses throughout the year. There are many non-maintained roads traversing throughout the allotment but these roads receive low use and low speed. Traffic may alter some wildlife movement but this would be temporary and short term.

There are approximately 39.4 miles of 4-strand barbed wire fences. The majority of the fences were installed in the 1970's and 1980's. In pronghorn habitat approximately 4miles of the fences has had the bottom wire replaced with barbless wire and raised up to an average of 18 inches from the ground to allow the pronghorn to pass under the fence. The fencing in bighorn habitat is completed with utilizing gap fencing. Where the bighorn could skirt around the fence while the cattle would be restricted.

The habitats on the allotment are connected at a level to allow for spread of native vegetation and survival of species from site to site.

c) Native species re-occupy habitat niches and voids caused by disturbances unless management objectives call for introduction or maintenance of non-native species.

Airport Pasture:

T 2 upland site shows the desired plant community, where the functional/structural group are slight to moderately less than expected. There are no noxious weeds or invasive plants observed within this site. The site shows the native plant community has sufficient vigor and reproductive capability for the perennial plant species within this site to reestablish filling the niches and voids left after a disturbance.

KA 3A upland site had a reduction in the grasses and shrubs but still shows the desired plant community. There are no noxious weeds and the Russian thistle is slightly higher than expected within this site. This site showed the native plant community has sufficient vigor and reproductive capability for the perennial plant species within this site to reestablish filling the niches and voids left after a disturbance.

T 7 upland site had a moderate reduction in the grasses and is below what is expected for this site. The shrubs and forbs matches what is expected for this site and is rated as moderate. Even though this site has some reduction in grasses, it still has the ability to allow for functionality of the plant community. There are no noxious or invasive weeds observed within this site. This site showed the native plant community has sufficient vigor and reproductive capability for the perennial plant species within this site to reestablish filling the niches and voids left after a disturbance.

SMU 10 upland site had a reduction in the grasses and shrubs but still shows the desired plant community. There are no noxious weeds and the cheatgrass is slightly higher than expected within this site.

SMU 56 upland site has changed dramatically as the perennial vegetation is absent on the site. The invasive plant annual wheatgrass has become dominant on the site. Because of the lack of desirable vegetation and the increase in invasive plants, this site is not expected to have native vegetation reoccupy the site following a disturbance. It is expected that the annual wheatgrass would fill in behind a disturbance.

Bartlett Flat:

KA 3 upland site had an increase in the expected amount of perennial grass with the shrubs being a subdominant. There is an increase in the expected amount of invasive species at the site, it is expected to have some invasive plants present between zero and five percent but the site had between four and eight percent cover. There were no noxious weeds found at the site. The site showed the native grasses were filling the niche in the decrease in shrubs. This site showed the native plant community has sufficient vigor and reproductive capability for the perennial plant species within this site to reestablish filling the niches and voids left after a disturbance.

KA 6 there has been a slight to moderate decrease in the expected amount of perennial grass at the site. There has been no change in the dominance of plants on the site. There were little invasive plants present and is within the expected range of acceptance of zero to five percent. No noxious weeds found at the site. The grasses appeared to be able to fill the niche as they were producing plenty of seed. This site showed the native plant community has sufficient vigor and reproductive capability for the perennial plant species within this site to reestablish filling the niches and voids left after a disturbance.

T 7 has had a moderate shift in the functional/structural groups where the desired grass and shrub species were decreased. The invasive plants were present but made up less than two percent of the plant community. No noxious weeds were present. The grass plants have the ability to respond if sufficient precipitation falls within the growing season. This site showed the native plant community has sufficient vigor and reproductive capability for the perennial plant species within this site to reestablish filling the niches and voids left after a disturbance.

KA-8 the site has had a moderate shift from what is expected within the plant community and has cheatgrass that has become dominant at the site. The site has the ability to recover as the desired plants were producing plenty of seed; however, the overabundance of cheatgrass could fill the niche increasing its dominance. No noxious weeds found at the site. This site showed the native plant community has sufficient vigor and reproductive capability for the perennial plant species within this site to reestablish filling the niches and voids left after a disturbance.

Big Flat:

KA 5 the plant community matched what was expected for the site having the grasses dominant with a sub-dominant shrub community. There are some invasive plants present but they were within the expected range for the site having less than five percent cover. This site showed the native plant community has sufficient vigor and reproductive capability for the perennial plant species within this site to reestablish filling the niches and voids left after a disturbance.

KA 7 has had a slight to moderate departure from the expected plant community the grasses are dominant with the shrubs being sub-dominant; the change is in the expected soil microbe component. There are some invasive plants present at the site but they are within the expected range of having less than five percent cover. There were no noxious weeds found at the site. This site showed the native plant community has sufficient vigor and reproductive capability

for the perennial plant species within this site to reestablish filling the niches and voids left after a disturbance.

T 12 this site has had a moderate shift in the plant community, however there has been no change in the dominance of the functional structural groups. The grasses, even though reduced are still dominant with a sub-dominant shrub community. The soil microbes are relatively absent from the site. The invasive plant community is within the expected range of making up less than five percent of the plant community. There were no noxious weeds found at the site. This site showed the native plant community has sufficient vigor and reproductive capability for the perennial plant species within this site to reestablish filling the niches and voids left after a disturbance.

SMU 51 the plant community is within the desired range and abundance with the shrubs being dominant with grasses being sub-dominant and a trace amount of soil microbes showing on the surface. There were no invasive or noxious plants observed on the site. This site showed the native plant community has sufficient vigor and reproductive capability for the perennial plant species within this site to reestablish filling the niches and voids left after a disturbance.

SMU 71 the plant community is what is expected for the site, the shrubs being dominant with the soil microbes being a sub-dominant. There were no invasive or noxious plants observed. It is expected the site would recover from a disturbance with the desired plants filling the niche. This site showed the native plant community has sufficient vigor and reproductive capability for the perennial plant species within this site to reestablish filling the niches and voids left after a disturbance.

SMU 78 this site has the ability to recover following a disturbance because there is a lack of annual invasive plants and no noxious plants are present. The desired plant community has the ability to recover as the sagebrush is producing seed that is keeping the seed bank going. This site is on the lower end of the precipitation zone where the big sage is found and if disturbed would take a long time to recover, as the climatic conditions would need to be right to reestablish the sage.

Courthouse:

T 4 this site would be at risk if a large disturbance were to affect the site. There is slight to moderately more invasive plants present and no noxious weeds present. There is less desired grass and shrub species than is expected. There has been no shift in dominance of the plant community. There is a lack of soil microbes at the site. The plants present show slightly less reproductive capability as some of the plants present were not producing seed.

KA 5 there is a slight reduction in the shrub component at the site but there has not been a shift of dominance for the plants. The plants are showing signs of the prolonged drought conditions. There were no invasive and noxious plants present at the site. This site showed the native plant community has sufficient vigor and reproductive capability for the perennial plant species within this site to reestablish filling the niches and voids left after a disturbance.

KA 13 is expected to recover from a disturbance because the DPC is what is expected. The grasses are dominant, there was a trace amount of invasive plants present, and no noxious weeds. This site showed the native plant community has sufficient vigor and reproductive capability for the perennial plant species within this site to reestablish filling the niches and voids left after a disturbance.

Deadman:

T 1 is expected to recover following a disturbance as the shrub component is still dominant with a slight reduction in the sub-dominant grasses. The prickly pear cactus is slightly higher than expected with no noxious plants present. This site showed the native plant community has sufficient vigor and reproductive capability for the perennial plant species within this site to reestablish filling the niches and voids left after a disturbance.

T 2 has a plant community that would not be expected to recover following a disturbance. The plant community has shifted from a shrub dominant plant community to an invasive dominant plant community. The desired plant community has changed and would require a seeding to recover. With the invasive plants dominating the site, it is likely they would be the plants filling the niche following a disturbance.

KA 3a has the ability to recover following a disturbance because the DPC plant community is capable of reestablishing. There has been a reduction in the amount of shrubs on the site but grasses have responded and filled the niche. There is a trace amount of invasive plants and no noxious weeds were found at the site. The DPC is producing seed that would be expected to respond following a disturbance. This site showed the native plant community has sufficient vigor and reproductive capability for the perennial plant species within this site to reestablish filling the niches and voids left after a disturbance.

SMU 54 has the ability to recover following a disturbance. The plant community is at the DPC with the shrubs being dominant and grasses sub-dominant. There is slightly more prickly pear on the site than expected and no noxious weeds found on the site. The DPC is producing seed and has the ability to recover following a disturbance. This site showed the native plant community has sufficient vigor and reproductive capability for the perennial plant species within the site to reestablish filling the niches and voids left after a disturbance.

Horsethief Point:

See the Horsethief Point Allotment Evaluation.

Mineral Point:

KA 5 upland site shows the desired plant community with the shrubs being dominant and grasses sub-dominant. No noxious weeds or invasive plants observed within this site. This site showed the native plant community has sufficient vigor and reproductive capability for the perennial plant species within this site to reestablish disturbed areas filling the niches and voids left after a disturbance.

T 1 upland site shows the desired plant community. There are no noxious weeds or invasive plants observed within this site. This site showed the native plant community has sufficient vigor and reproductive capability for the perennial plant species within this site to reestablish disturbed areas filling the niches and voids left after a disturbance.

T 6 upland site has lost the sub-dominant grass group and is slightly below what is expected for the site and cheatgrass is a trace amount on the site. There are no noxious weeds observed within this site. Even though this site has some reduction in grasses, it still has the ability to allow for functionality of the plant communities. This site showed the native plant community has sufficient vigor and reproductive capability for the perennial plant species within this site to reestablish disturbed areas filling the niches and voids left after a disturbance. However, with

cheatgrass present it would be expected to take advantage of any open niche left following a disturbance.

SMU 4 upland site shows the DPC. No noxious weeds or invasive plants were observed within this site. This site showed the native plant community has sufficient vigor and reproductive capability for the perennial plant species within this site to reestablish disturbed areas filling the niches and voids left after a disturbance.

d) Habitats for threatened endangered and special-status species managed to provide for recovery and move species toward recovery and move species toward de-listing.

The Big Flat to Tenmile Allotment contains a variety of habitats for both Federally Listed species and locally important wildlife.

Federally Listed Species Habitat and Concerns:

South Western Williowfly Catcher (SWFL) & Yellow Billed CUCU (YBCU)

The Big Flat to Tenmile allotment does not offer suitable SWFL or YBCU nesting habitat. This sprawling allotment has a mostly mesa-top habitat with a few isolated riparian stretches along washes, in particular the upper portion of Sevenmile, and Bartlett Wash. The riparian zones consist of scattered cottonwoods, tamarisks, and low willows. The vegetation is not dense or continuous along any of the washes, however, and would offer only limited migratory habitat due to the isolation of the riparian sections.

Mexican Spotted Owl (MSO)

The Big Flat/10-mile allotment contains the upland foraging habitats adjacent to potentially prime breeding habitat found in Mineral, Hell Roaring, Shafer, Long, and Day Canyons. Additionally there is an active MSO nesting site east of Long Canyon and adjacent to the southeastern border of the Big Flat Pasture, making the canyons in this area prime expansion habitat for MSO fledglings. The most southerly portions of the Big Flat Pasture the United States Fish and Wildlife Service's (USFWS) has identified it as critical habitat for MSO.

Utah BLM Sensitive Species:

There is potential habitat for Townsends's big-eared bats, spotted bats, big free-tailed bats and Western red bats based on the Utah Natural Heritage database. Burrowing owls may occur in this allotment, as there is one documented nest site. There is no documented prairie dog occupancy within this allotment. Kit fox are known to occupy the allotment. The Green River offers habitat for three species of state sensitive fish, the blue-headed sucker, the flannel mouthed sucker and the round-tailed chub.

Special Status Animal Species in Utah:

On the Big Flat to Tenmile Allotment, there is potential habitat for Special Status Animal Species. Table 4 below lists all the potential species with potential habitat on the allotment.

Table 4: Special Status Animal Species in Utah having Potential Habitat within the Big Flat to Tenmile Allotment

Common Name	Scientific Name	Status	Critical Habitat
BIRDS			
Mexican Spotted Owl	Strix occidentalis lucida	Federal Threatened	No

Table 4: Special Status Animal Species in Utah having Potential Habitat within the Big Flat to Tenmile Allotment			
Common Name	Scientific Name	Status	Critical Habitat
Southwestern willow flycatcher	Empidonax traillii extimus	Federal Endangered	No
Bald Eagle	Halieaeetus leucocephalus	Utah State Sensitive	No
MAMMALS			
Townsend's big-eared bat	Corynorhinus townsendii	Utah State Sensitive	No
Spotted bat	Euderma maculatum	Utah State Sensitive	No
Big free-tailed bat	Nyctinomops macrotis	Utah State Sensitive	No
Western red bat	Lasiurus blossevillii	Utah State Sensitive	No
Kit Fox	Vulpes macrotis	Utah State Sensitive	No

Migratory Birds:

The Migratory Bird Treaty Act, as amended, was enacted for the protection of migratory birds. All raptors observed in Utah, are protected by the Migratory Bird Treaty Act. Some birds are also protected by the Endangered Species Act (ESA), the Bald and Golden Eagle Protection Act, and/or are included in the Utah Natural Heritage Program Species of Greatest Conservation Need (UDWR, 2005). A draft Memorandum of Understanding between the Forest Service, the BLM and the United States Fish and Wildlife Service (USFWS) provides direction for the management of migratory birds to promote their conservation (USFWS, 2002e). The direction includes identifying species listed in the USFWS Birds of Conservation Concern (BCC) that are likely to be present in the area of a Proposed Action. The Utah Partners in Flight (UPIF) working group completed a statewide avian conservation strategy identifying "priority species" for conservation due to declining abundance distribution, or vulnerability to various local and/or range-wide risk factors. One application of the strategy and priority list is to give these birds specific consideration when analyzing effects of proposed management actions and to implement recommended conservation measures where appropriate.

The UPIF Priority Species List and the Utah Conservation Data Center database were used to identify potential habitat for priority species that could utilize habitat within the allotment. The Brewer's Sparrow has a high habitat value according the Division of Wildlife Resources with breeding and winter migration habitat falling within the shrub-steppe vegetation type.

Big Game:

Bighorn Sheep

Some of the best and most remote bighorn sheep habitat in the Moab Field Office is located within and near the Big Flat to Tenmile Allotment. In 2005, 15 of 123 sheep were counted within Mineral Canyon during aerial surveys. Two types of collars are used to track the sheep movements; the globally harmonized system and very high frequency collars were used on several of the sheep in the area. Monitoring of the sheep movements both aerial and global positioning system indicated the Mineral Bottom area was used for lambing, rearing and rutting grounds.

Pronghorn Antelope

The Big Flat to Tenmile Allotment contains antelope habitat with a growing population of antelope. There is one working guzzler for antelope near the Moab Airport.

Other Wildlife

Raptors such as golden eagles, wintering bald eagle, red tail hawks, peregrine and prairie falcons and other raptors may forage and nest in this area. There are currently no known nesting sites for these raptors. Predators such as mountain lions, coyotes and fox can also be found on the allotment.

e) Appropriate amount, type, and distribution of vegetation reflecting the presence of (1) the Desired Plant Community (DPC), where identified in a land use plan, conforming to these Standards, or (2) where the DPC is identified a community that equally sustains the desired level of productivity and properly functioning ecologic conditions.

Airport Pasture:

During the assessments, the team identified the functional/structural groups at: T 2 had a slight to moderate departure from what would be expected, the ATCO4 has decreased with no shift in dominance. KA 3A had a slight to moderate departure in the DPC as grasses and shrubs have declined, the grasses are dominant with shrubs being a sub-dominant. T 7 had a moderate departure, the grasses are reduced to a minor component while the expected is a sub-dominant component. SMU 10 had a slight to moderate departure the shrubs are at the expected amount while grasses have declined from what is expected. SMU 56 had an extreme to total departure from what is expected the plant community has changed into an annual grassland with few perennial plants.

The team also identified the invasive plants across the pasture varies by site as: T 2 matches (0 percent) what is expected (0-5 percent). KA 3A has slightly higher (0-6 percent) than expected (0-5 percent). T 7 matches (0 percent) what is expected (0-5 percent). SMU 10 there is a slight to moderate departure (0-6 percent) from the expected amount (0-5 percent). SMU 56 has had an extreme to total departure (10-40 percent cover of SOIB and ERTR) from the expected (0-5 percent) for the amount of invasive plants.

The reproductive capability of the sites is close to what would be expected for the sites with the exception of SMU 56. SMU 56 had a departure in the plant community to where perennials are lacking in the system and annual forbs and grasses are dominating. Annual plants are producing seed but it is not the DPC.

The density trend for the bunch grasses in the Airport Pasture is currently in a static state where there has not had a significant change in the short-term. The long-term trend of the pasture is downward (see figure 1 above).

The density trend for the sod grasses in the Airport Pasture is currently in a static trend. The long-term trend is downward (see figure 2 above).

The density trend for the forbs in the Airport Pasture is currently in a static trend. The long-term trend is static.

The density trend for the shrubs in the Airport Pasture is currently in a static trend. The long-term trend is static.

The frequency trend for the Airport Pasture plant species is not apparent for most of the plant species. For two the trend has changed. For globemallow the trend is up meaning the plant is more frequent. For Indian ricegrass the trend is downward meaning it is less frequent.

The cover transects for the pasture indicates the overall cover between 2010 and 2014 shows the trend for vegetative cover is down.

In summary, sites T 2, KA 3A, and T 7 and SMU 10 are showing an overall lack of desired grass plant species when visited by the team. This is apparent in the density data collected as shown in Figures 1 and 2 as the pasture had significant downward trends with a current static or no change since the downward trend. The frequency data also shows that there are still some changes to the plant community as the Indian ricegrass is becoming less frequent while the globemallow is becoming more frequent. The shrub community seems to be doing well as the trend is static in the long term. SMU 56 had a substantial change to the plant community and it would need managerial inputs to return the site to a favorable condition.

Bartlett Flat Pasture:

During the assessments, the team identified the functional/structural groups at: KA 3 there has been a slight to moderate departure from what the DPC would be expected; there has been a decline in shrubs but the niches has been filled with native perennial grasses. KA 6 had a slight to moderate departure from what is expected; there has been a decrease in cover of grasses and shrubs there has not been a shift in dominance. T 7 had a moderate departure from what is expected; the perennial plants have decreased throughout the site. KA 8 had a moderate departure from what is expected; the perennial plants have declined and BRTE is filling the open niches.

The team also identified the invasive plants across the pasture vary by site as: KA 3 had a slight departure (4-8 percent) from what is expected (0-5 percent). KA 6 matches (0-2 percent) what is expected (0-5 percent). T 7 matches (2-4 percent) what is expected (0-5 percent). KA 8 had a moderate departure (12-18 percent) from what is expected (0-5 percent).

The reproductive capability varies slightly by site as: KA 3 had a none to slight departure. KA 6 had a slight to moderate departure. T 7 had a moderate departure. KA 8 has had none to slight departure.

The density trend for the bunchgrasses in the Bartlett Flat Pasture is currently in a static trend. The long-term trend for the pasture is downward (see Figure 3 above).

The density trend for the sod grasses in the Bartlett Flat Pasture is currently in a static trend. The long-term trend is static.

The density trend for the shrubs in the Bartlett Flat Pasture is currently in a downward trend. The long-term trend is static.

The density trend for the forbs in the Bartlett Flat Pasture is currently in a static trend. The long-term trend is static.

The frequency trend for the Bartlett Flat Pasture plant species is not apparent for most of the plant species. The trend has changed at KA 3 for Indian ricegrass and sand dropseed. The trend is down meaning the plants are less frequent than the previous data collection. At KA 6 the majority of the plants frequency remains not apparent. The vegetative change at KA 6 is in the Indian ricegrass with a downward trend, sand dropseed with and upward trend, and globemallow with an upward trend. At KA 8 the frequency for the majority of the plants remains unchanged. The vegetative change at KA 8 is in the Mormon tea with a downward trend and globemallow with an upward trend.

The cover trend for the Bartlett Flat Pasture for the majority of the plant species is not apparent. The collective plant cover for KA 3 and KA 8 has changed, as there is less vegetative cover and more bare ground. At KA 6 the bare ground is in an upward trend meaning the amount of bare ground has decreased with the total ground cover in an upward trend.

In summary, the Bartlett Flat Pasture had some changes to the plant community. Most of them have been only slight changes with the largest change reflected in KA 8. The shrub component across the pasture is relatively unchanged with a downward trend for the Mormon tea at KA 8. The Indian ricegrass has become less frequent at KA 3 and 6. The KA all experienced an upward trend for the globemallow. This would show that even though there has been some vegetative changes to the community in the recent years the native plants are filling the niche.

Big Flat Pasture:

During the assessments, the team identified the functional/structural groups at: KA 5 matches what is expected for the site. KA 7 has had a slight to moderate departure from what is expected; the plant community has been slightly reduced. T 12 has had a moderate departure from what is expected; the plant community has been reduced. SMU 51 the plant community matches what is expected for the site. SMU 71 there has been a slight to moderate departure from what is expected; the shrub component is the dominant but the cool season grasses have declined. SMU 78 there has been a slight to moderate departure from the expected amount of perennial plants.

The team also identified the invasive plants across the pasture vary by site as: KA 5, KA 7, SMU 51, SMU 71 matches (0 percent) what is expected (0-5 percent) for the sites. T 12 matches (0-2 percent) what is expected (0-5 percent). SMU 78 has slightly departed (6-10 percent) from what is expected (0-5 percent).

The reproductive capability of the sites was rated as none to slight departure matching what is expected for the sites.

The density trend for the bunchgrasses in the Big Flat Pasture is currently in a static trend. The long-term trend for the pasture is downward (see Figure 4 above).

The density trend for the sod grasses in the Big Flat Pasture is currently in an upward trend. The long-term trend is upward (see Figure 5 above).

The density trend for the shrubs in the Big Flat Pasture is currently in a static trend. The long-term trend is static.

The density trend for the forbs in the Big Flat Pasture is currently in an upward trend. The long-term trend is static.

The frequency trend for the Big Flat Pasture plant species is not apparent for most of the plant species in KA 5 and 7. The trend has changed at KA 5 for Indian ricegrass, needle-and-thread, and sand dropseed. The trend is down for the Indian ricegrass and sand dropseed meaning the plants are less frequent than the previous data collection. The trend is up for the needle-and-thread. The trend has changed at KA 7 for Indian ricegrass and needle-and-thread. The trend is down for the Indian ricegrass and needle-and-thread.

The cover trend for the Big Flat Pasture for the majority of the plant species is not apparent at KA's 5, and 7. The collective plant cover for KA 5 is down and the litter cover is up. There has not been any significant change in the cover data at KA 7.

In summary, the Big Flat Pasture had some changes to the plant community most of them have been only slight changes. The shrub component across the pasture is unchanged. The Indian ricegrass has become less frequent at KA 5 and 7. The needle-and-thread has become less frequent at KA 7 and more frequent at KA 5. The sand dropseed has become less frequent at KA 5.

Courthouse Pasture:

During the assessments, the team identified the functional/structural groups at: T 4 has had a moderate departure from what the DPC would be expected as there has been a decline in shrubs and perennial grasses. KA 5 has had a slight to moderate departure from what is expected as there has been a decrease in cover of shrubs there has not been a shift in dominance. KA 13 has had no changes from what is expected.

The team also identified the invasive plants across the pasture vary by site as: T 4 has had a slight to moderate departure (0-10 percent) from what is expected (0-5 percent). KA 5 has departed slightly (6 percent) from what is expected (0-5 percent). KA 13 has departed slightly (4-6 percent) what is expected (0-5 percent).

The reproductive capability of T 4 was rated as slight to moderate and KA 5 and KA 13 was rated as none to slight departure.

The density trend for the bunchgrasses in the Courthouse Pasture is currently in an upward trend. The long-term trend for the pasture is static (see Figure 6 above).

The density trend for the sod grasses in the Courthouse Pasture is currently in an upward trend. The long-term trend is up (see Figure 7 above).

The density trend for the shrubs in the Courthouse Pasture is currently in an upward trend. The long-term trend is up (see Figure 8 above).

The density trend for the forbs in the Courthouse Pasture is currently in a static trend. The long-term trend is static.

The frequency trend for the Courthouse Pasture plant species is not apparent for most of the plant species. The trend has changed at KA 5 for Indian ricegrass, sand dropseed, Mormon tea, and globemallow. The trend for Indian ricegrass and Morman tea is down meaning the plants are less frequent than the previous data collection and the trend for sand dropseed and globemallow is up meaning the plants occur more frequently. The majority of the plants at KA 13 remains not apparent. The vegetative change at KA 13 is in the Indian ricegrass with a downward trend, sand dropseed with and upward trend, and globemallow with an upward trend.

The cover trend for the Courthouse Pasture for the majority of the plant species is not apparent. The collective plant cover for KA 5 has changed, as there is less vegetative cover in the sand dropseed and more bare ground. At KA 13 the litter is in an upward trend meaning the amount of litter has increased with the total vegetation cover in a downward trend.

In summary, the Courthouse Pasture had some changes to the plant community most of them have been only slight changes with the largest change reflected in T 4. The shrub component across the pasture has increased but there was a downward trend for the Mormon tea at KA 5. The Indian ricegrass has become less frequent at KAs 5 and 13. The KA's all experienced an upward trend for the sand dropseed and globemallow. This would show that even though there

has been some vegetative changes to the community in the recent years the native plants are filling the niche.

Deadman Point Pasture:

During the assessments, the team identified the functional/structural groups at: T 1 had a slight to moderate departure from what the DPC would be expected. T 2 had a moderate departure from what is expected. KA 3a had a slight to moderate departure from what is expected. SMU 54 had no changes from what is expected.

The team also identified that the invasive plants across the pasture vary by site as: T 1 has had a slight to moderate departure (4-6 percent) from what is expected (0-5 percent). T 2 has departed moderate to extremely from what is expected (0-5 percent). KA 3a matches (0-2 percent) what is expected (0-5 percent). SMU 54 has departed slight to moderately (2-6 percent) from what is expected (0-5 percent).

The reproductive capability of sites T 1, KA 3a, and SMU 54 is what would be expected for the sites. T 2 has departed slight to moderately from what is expected.

The density trend for the bunchgrasses in the Deadman Point Pasture is currently in a static trend. The long-term trend for the pasture is static.

The density trend for the sod grasses in the Deadman Point Pasture is currently in a static trend. The long-term trend is static.

The density trend for the shrubs in the Deadman Point Pasture is currently in static trend. The long-term trend is down (see Figure 9 above).

The density trend for the forbs in the Deadman Point Pasture is currently in a static trend. The long-term trend is static.

The frequency trend for the Deadman Point Pasture plant species is not apparent for most of the plant species. The trend has changed at KA 3a for Indian ricegrass, needle-and-threadgrass, sand dropseed, and spike dropseed. The trend for Indian ricegrass, needle-and-threadgrass and spike dropseed is down meaning the plants are less frequent than the previous data collection and the trend for sand dropseed is up meaning the plants occur more frequently.

The cover trend for the Deadman Point Pasture for the majority of the plant species is not apparent. The collective plant cover for KA 3a has changed, as there is less vegetative cover and an increase in litter.

In summary, the Deadman Point Pasture had some changes to the plant community most of them have been only slight changes with the largest change reflected in T 2. Where the niche left by perennial vegetation is being filled with non-native invasive annuals. T1, KA 3a and SMU 54 are meeting this standard because the DPC is present and able to reproduce the sites have little to no invasive species present. T 2 is not expected to be meeting this standard as the invasive plants are more prevalent and filling any niche opened up by a disturbance.

Horsethief Point Pasture:

See the Horsethief Point Allotment Evaluation.

Mineral Point Pasture:

During the assessments, the team had identified that the functional/structural groups at: T 1 was rated as having a none to slight departure. KA 5 was rated as having a slight to moderate departure. T 6 has had a slight to moderate departure from what is expected. SMU 4 was rated as having a none to slight departure.

The team also identified the invasive plants across the pasture vary by site: KA 5 has not departed (0 percent) from what is expected (0-5 percent). T 1 has not departed (0 percent) from what is expected (0-5 percent). T 6 matches (0-2 percent) what is expected (0-5 percent). SMU 4 has not departed (2-6 percent) from what is expected (0-5 percent).

The reproductive capability of the sites T 1, KA 5, T 6, and SMU 4 is what would be expected for the sites.

The density trend for the bunchgrasses in the Mineral Point Pasture is currently in a static trend. The long-term trend for the pasture is down (see Figure 10).

The data shows another significant change occurred between 2000 and 2008 resulting in a downward trend. There is no statistical significance in the data collected in 2008 and 2011 or current trend as static (see Figure 11).

The density trend for the sod grasses in the Mineral Point Pasture is currently in an upward trend. The long-term trend is static.

The density trend for the shrubs in the Mineral Point Pasture is currently in static trend. The long-term trend is static.

The density trend for the forbs in the Mineral Point Pasture is currently in a static trend. The long-term trend is static.

The frequency trend for the Mineral Point Pasture plant species is not apparent for most of the plant species. The trend has changed at KA 5 for James' galletta. The James' galletta is in a downward trend meaning that the galletta is less frequent than the previously collected data.

The cover trend for the Mineral Point Pasture for the majority of the plant species is not apparent. The collective plant cover for KA 5 has changed; there is less vegetative cover, more bare ground and an increase in litter.

In summary, the Mineral Point Pasture has had some changes to the plant community most of them have been only slight changes with the largest change reflected in T 6. There is an overall lack of herbaceous understory in the blackbrush community causing there to be more bareground than would be expected for the site. These sites are meeting this standard, as there is no significant infestation of invasive plants and only slight changes in the plant community. The community structure has an equally sustainable plant community to see the proper amount of productivity for the site.

Table 5: Rating for Rangeland Health's Standard #3 Desired Species

Assessment Sites (KA and SMU sites)	Standards					Trend	Rating By Pasture
	a	b	c	d	e		
Airport KA 2	Met	Met	Met	Met	Met		Meeting

Table 5: Rating for Rangeland Health's Standard #3 Desired Species							
Assessment Sites (KA and SMU sites)	**Standards**					**Trend**	**Rating By Pasture**
	a	**b**	**c**	**d**	**e**		
Airport KA 3A	Met	Met	Met	Met	Met	Not Apparent	Meeting
Airport KA 7	Bmet	Met	Bmet	Met	Bmet		
Airport SMU 10	Met	Met	Met	Met	Met		
Airport SMU 56	Not Met	Met	Not Met	Met	Not Met		
Bartlett KA 3	Met	Met	Met	Met	Met	Not Apparent	Meeting
Bartlett KA 6	Bmet	Met	Bmet	Met	Met		
Bartlett KA 7	Bmet	Met	Bmet	Met	Bmet		
Bartlett KA 8	Bmet	Met	Bmet	Met	Not Met		
Big Flat KA 5	Met	Met	Met	Met	Met	Not Apparent	Meeting
Big Flat KA 7	Met	Met	Met	Met	Met		
Big Flat KA 12	Met	Met	Bmet	Met	Bmet		
Big Flat SMU 51	Met	Met	Met	Met	Met		
Big Flat SMU 71	Met	Met	Met	Met	Met		
Big Flat SMU 78	Met	Met	Met	Met	Met		
Courthouse KA 4	Met	Met	Bmet	Met	Bmet	Not Apparent	Meeting
Courthouse KA 5	Met	Met	Met	Met	Met		
Courthouse SMU 4	Met	Met	Met	Met	Met		
Deadman KA 1	Met	Met	Met	Met	Met	Not Apparent	Meeting
Deadman KA 2	Not Met	Met	Not Met	Met	Not Met		
Deadman KA 3a	Met	Met	Met	Met	Met		
Deadman SMU 54	Met	Met	Met	Met	Met		
Horsethief Point KA 1	See Horsethief Point Allotment's Evaluation						
Horsethief Point KA 3a							
Horsethief Point KA 4							
Horsethief Point SMU 6							
Mineral Point KA 5	Met	Met	Met	Met	Met	Not Apparent	Meeting
Mineral Point T 1	Met	Met	Met	Met	Met		
Mineral Point T 6	Bmet	Met	Bmet	Met	Bmet		
Mineral Point SMU 4	Met	Met	Met	Met	Met		
Overall Rating of Standards	Bmet	Met	Bmet	Met	Bmet	Not Apparent	Meeting

Standard #4 Clean Water:

Utah Rangeland Health Standard #4 requires "BLM will apply and comply with water quality standards established by the State of Utah (R.317-2) and the Federal Clean Water and Safe Drinking Water Acts. Activities on BLM lands will fully support the designated beneficial uses described in the Utah water quality standards (R.317-2) for surface and groundwater." Utah water quality standards do not apply to ephemeral drainages and the associated storm runoff flows.

The available water quality data indicates that the Big Flat-Tenmile grazing allotment is meeting Utah Rangeland Health Standard #4.

Appendix N: Horsethief Point Rangeland Health Determination

RANGELAND HEALTH STANDARDS EVALUATION

Site/Area: Horsethief Point Allotment **BLM Acres:** 11,706

Compliance with Rangeland Health Standards:

Standard	Standard Met ?	Progress Towards Meeting?	Rationale:
# 1 Upland Soils	Yes	N/A	Rangeland Health Assessments were conducted at five upland sites on the Horsethief Point Allotment. Four of the sites were key areas and one was an additional site in soil map unit (SMU) 6. Indicators used to determine that the upland soils standard was met include 1 through 9, and 11. Sites are discussed in more detail below. **Key area 2a, and SMU 6** Observation of the 10 indicators used to assess rangeland health were all determined to be what was expected for the site. All indicators fell within the lowest category of none to slight. There are very few rills present on the site and no gullies. There is very little evidence of past or current soil deposition or erosion. There were no terrocettes and or pedestalled plants. Bare ground was what was expected for key area 2a and is a lot less than what is expected for SMU 6, due to the density of biological soil crusts. There were no wind scoured blowouts or depositional areas. Litter was distributed in a uniform pattern. Although the soil stability test showed lower numbers than what would have been expected the density of biological crusts and uniform distribution have increased the soil surface resistance to erosion. No loss of soil or degradation was observed. No compaction layer exists. **Key area 1** Observations showed eight (1-5, 8, 9, and 11) out of ten indicators were determined to be what was expected for the site, falling in the lowest category of none to slight. There are very few rills and no gullies present on the site. The uniform distribution of biological soil crusts and the density of plant species reduces the risk of water flowing excessively from the site. There were no terrocettes and very few pedestalled plants. Bare ground is lower than what is expected for the site due to the density of biological soil crusts. The soil stability test showed 3.83 all samples, 4.44 protected samples, and 3.77 unprotected samples which is in the mid range of stability. No loss of soil or degradation was observed. No compaction layer exists.

			Indicators 6 and 7 were rated slight to moderate due to the presence of some wind scouring, and more small sized litter movement than what was expected. **Key area 4** Observations showed eight (1, 2, 4, 5, 7-9, and 11) out of ten indicators were determined to be what was expected for the site, falling in the lowest category of none to slight. There are very few rills and no gullies present on the site. There is very little evidence of past or current soil deposition or erosion. Bare ground is what is expected for the site. Litter was distributed in a uniform pattern. Although the soil stability test showed lower numbers than what would have been expected (3.22 all samples, 3.16 protected samples, and 3.25 unprotected samples), the density of biological crusts and uniform distribution have increased the soil surface resistance to erosion. No loss of soil or degradation was observed. No compaction layer exists. Indicator 3 and 7 were rated in the slight to moderate category, showing some evidence of pedestalled plants, but no terrocettes, and a few wind scoured blowouts. **Key area 3a** Observations showed seven (1, 2, 4, 5, 8, 9, and 11) out of the ten indicators rated in the none to slight category. There were very few rills and no gullies present. There were no terrocettes. Bare ground is what is expected for the site. . The soil stability test showed 3.83 all samples, 4.44 protected samples, and 3.77 unprotected samples. The density and uniform distribution of biological crusts has increased the soil surface resistance to erosion and there was no observed soil surface loss or degradation. No compaction layer exists. Indicator 3 showed a slight to moderate amount of pedestalled plants but no terrocettes. Indicator 6 showed a moderate amount of wind scouring and deposition. Indicator 7 showed small sized litter movement is moderately more than what was expected with litter loosely concentrated against plants. Overall the abundance and overall health of the native plant community and biological soil crusts greatly increases the stability of the soil and reduces the risks of erosion. The only site that showed concerns was key area 3a where observations noted above, indicate that this area is less stable and may be moving in a downward trend.
# 2 Riparian Areas	No	N/A	There is a small spring in the southeast portion of the allotment that has less than an acre of tamarisk infestation. There are approximately 9 miles of riparian habitat on the Green river that are functioning at risk due to the invasion of tamarisk. Currently the tamarisk is being affected by the tamarisk eating beetle which has only recently moved into this area. It is unclear whether the beetle alone can eradicate tamarisk, but the Moab Field Office has an aggressive program for tamarisk removal and this area will receive additional treatments as the schedule and funding allows.

# 3 (Desired plant and wildlife species, special status species and habitats)	No	No	Rangeland Health Assessments were conducted at five upland sites on the Horsethief Point Allotment. Four of the sites were key areas and one was an additional site in soil map unit (SMU) 6. Indicators used to determine that the desired species standard was not met include 8, 9, and 11 through 17. Sites SMU 6, and key areas 2a, 4, and 1 were determined to be meeting Standard 3 (Desired Species), although the key areas did show some problems associated with current and past drought conditions. Key area 3a has been determined to not be meeting Standard 3 (Desired Species) attributed to past and current drought conditions and a lack of available water which has resulted in unacceptable impacts to the vegetative community due to a lack of proper distribution of livestock on the allotment. Each Site is discussed in more detail below. **SMU 6** Observation of the 9 indicators used to assess rangeland health were all determined to be what was expected for the site. All indicators fell within the lowest category of none to slight. Although the soil stability test showed lower numbers than what would have been expected (3.22 all samples, 3.16 protected samples, and 3.25 unprotected samples), the density of biological crusts and uniform distribution have increased the soil surface resistance to erosion. No loss of soil or degradation was observed. No compaction layer exists. Functional structure groups and number of species in each group closely match what is expected for the site. There has been some plant mortality, consisting mostly of dead grass species. The amount of litter is what is expected for the sight and the current drought conditions. Annual production exceeds what is expected for the site. The non-native/invasive species cheatgrass is present in a very low density, which is expected for the site and current climatic conditions. **Key area 2a** This key area is in the pasture located along the Green river and is separated from the upper pasture by a fence and cattle guard. Observations showed eight (8, 9, 11-15, and 17) out of the nine indicators in the none to slight rating. The soil stability test showed 3.77 all samples, 3.20 protected samples, and 3.92 unprotected samples. The density of biological crusts and uniform distribution have increased the soil surface resistance to erosion and no loss of soil or degradation was observed. No compaction layer exists. Trend data shows a significant decrease in indian ricegrass, and four-wing saltbush. However their has been observed an increase in Galleta grass which was one of the management goals for this key area. There has also been a beneficial decline in prickly pear cactus density. There has been some plant mortality, consisting mostly of dead grass species. The amount of litter is what is expected for the sight and the current drought conditions. Annual production exceeds what is expected for the site considering the recent drought conditions. The reproductive capability of the native plant community has not been reduced. Both grass and shrub species were observed to produce flowers and seed this year.

			Indicator 16 was rated as moderate due to cheatgrass and Russian thistle being scattered throughout the site. **Key area 4** This key area is located in the far eastern portion of the allotment. Observations showed six (8, 9, 11, 14, 16, and 17) out of the nine indicators rated in the none to slight category. Although the soil stability test showed lower numbers than what would have been expected (3.22 all samples, 3.16 protected samples, and 3.25 unprotected samples), the density of biological crusts and uniform distribution have increased the soil surface resistance to erosion and no loss of soil or degradation was observed. No compaction layer exists. The amount of litter is what is expected for the sight and the current drought conditions. There were no invasive/noxious plants observed. Reproductive capability of the native plant community has not been reduced. Both grass and shrub species were observed to produce flowers and seed this year. Indicators 12, 13, and 15 were rated in the slight to moderate category, showing there have been slight changes in the plant species composition due to the past and current drought conditions, including some mortality, and a slight reduction in the perennial grass species with a corresponding slight decrease in the dominance of perennial grass species.. Trend data shows a slight decrease in the perennial grass species. However there has also been a beneficial decline in prickly pear cactus density. **Key area 1** This key area is located in the central portion of the allotment. Observations showed seven (8-12, 14, 15, and 17) out of the nine indicators rated in the none to slight category. The soil stability test showed 3.83 all samples, 4.44 protected samples, and 3.77 unprotected samples. The density of biological crusts and uniform distribution have increased the soil surface resistance to erosion and no loss of soil or degradation was observed. No compaction layer exists. Functional structure groups and number of species in each group closely match what is expected for the site. There is more Bromus tectorum than what is expected for the site. There is slightly more litter than what is expected due to the mortality of grasses, and the increase of Bromus tectorum on the site. Annual production exceeds what is expected for the site. Reproductive capability of the native plant community has not been reduced. Both grass and shrub species were producing flowers and seed this year. Indicator 13 was rated moderate showing plant mortality particularly perennial grass species being common due to the drought conditions for the last 5 years. Indicator 16 was rated in the slight to moderate category due to the presence of cheatgrass and russian thistle in disturbed areas. **Key area 3a**

			This key area is located in the central portion of the allotment. Observations showed only four (8, 9, 11, and 16) out of the nine indicators rated in the none to slight category. The soil stability test showed 3.83 all samples, 4.44 protected samples, and 3.77 unprotected samples. The density of biological crusts and uniform distribution have increased the soil surface resistance to erosion and no loss of soil or degradation was observed. No compaction layer exists. There is some non-native/invasive cheatgrass but not at a density that is a problem. There are three indicator (14, 15, and 17) that rated slight to moderate, but they were closer to moderate than slight. There is more litter than what is expected due to the mortality of grasses. Annual production has been reduced by drought conditions and by the grazing of horses. Due to the current drought conditions and grazing by horses the reproductive capability of plants is slightly to moderately limited. There are two indicators (12, and 13) that rated moderate. The site should be dominated by the perennial grasses, with shrub species being a sub dominant. The shrub species have increased in density and the grass species are decreasing in density. Plant mortality is more common in this area than in the other areas assessed on the allotment. Most of the mortality is perennial grass species. Trend data shows key perennial grass species have been decreasing from 1983 through the present, and prickly pear cactus has been increasing. The monitoring studies did not measure Mormon tea, but observations during the Rangeland Health Assessments noted an increase in Mormon tea in the area. The determination that this standard is not being met is based on observations and trend data at key area 3a. Key area 3a is located closest to the private land where the only functioning water source for allotment is located. The water source is a little less than a mile from key area 3a. As you move away from the water source the impacts to desired species decrease. Key area 1 is located approximately 1.25 miles west of key area 3a and received a none to slight rating, however this site is showing some impacts from grazing. The impacts to the perennial grass species were much less than those observed at key area 3a. As you move to the assessment site SMU 6 which is approximately a half mile west from key area 1 and 1.5 miles west from key area 3a observations show all indicators in the lowest category of none to slight. There are three water developments that are non functional on the allotment. **Wildlife Species:** **MSO:** Horsethief contains suitable breeding habitat within Mineral Canyon. All suitable habitats have been surveyed according to USFWS protocol in 2001/2002 and again in 2005/2006 and are current for no occupancy status.

			The MSO Recovery Plan recognizes grazing activities to have the potential to influence habitat composition and structure and affect the food availability for the owl. The intensity of the grazing and the density of cover in areas that may support a prey base for the owls should be taken into consideration when planning grazing management plans. Adequate vegetative cover and seed is needed to sustain a rodent prey base. Excessive grazing, sustained for long periods of time may reduce the areas ability to produce habitat needed to sustain the owl's prey base. **SWFL:** Within the Horsethief Allotment, riparian habitat that may offer suitable SWFL is found along the Green River and in portions of Mineral Canyon. In 2005 the riparian portions of Mineral Canyon that could offer SWFL habitat were surveyed according to USFWS protocol and no SWFLs were documented. The Technical Subgroup for the Final Recovery Plan for the Southwestern Willow Flycatcher concluded that excessive grazing is deleterious to SWFL habitat, as grazing reduces dense deciduous vegetation. They recommended against growing season grazing in SWFL habitat and found that winter grazing and lighter grazing intensities had a lesser negative effects then heavier, summer or year round grazing. Similarly, riparian habitats rehabilitated most quickly and/or completely with no grazing. The riparian regions along the Green River may offer suitable and migratory SWFL habitat. Adjusting the season of use in riparian areas to remove livestock during the growing season would improve vegetative cover and reduce livestock conflicts during breeding and nesting season (5/1-8/15). **Colorado River Endangered Fish:** The backwaters of the Green River provide spawning and nursery habitat for the Endangered Colorado River fish and other native and state sensitive fish. Spawning, post-spawning, incubation, and fry stages of the Endangered Colorado River fish is typical May through August. Critical Habitat for the Colorado pike minnow, razorback sucker, humpback chub and the bonytail chub can be found in waters associated with the Green River. **Utah BLM Sensitive Species:** There is potential habitat within this allotment for Townsends's big-eared bats, spotted bats and big free-tailed bats, based on the Utah Natural Heritage database. Kit fox may also be present within this allotment. **Bighorn Sheep:** Some of the best and most remote bighorn sheep habitat in the Moab Field Office is located within the Horsethief Point Allotment. In 2005, 15 of 123 sheep were counted within Mineral Canyon during aerial surveys. GHS and VHS collars are on several of the sheep in the area. On the ground, aerial and GPS monitoring indicate this area to be lambing, rearing and rutting grounds. Two out of ten guzzlers installed for bighorn are located in this Mineral Canyon. Recreational pressures and grazing competition in this area are minimal compared to other allotments with bighorn habitat. Most areas may benefit from grazing practices that remove livestock during the growing season to improve vegetative vigor and provide adequate seed sources for seedling recruitment. An increase in native forbs and shrubs would also benefit both the MSO and bighorn.

			Other Wildlife: Raptor such as golden eagles, wintering bald eagle, red tail hawks, peregrine falcons and other raptors may forage and nest in this area, though there currently there are no known nest sites. Predators such as mountain lions, coyotes and fox can also be found here.
#4 Clean Water	Yes	N/A	Utah Rangeland Health Standard #4 requires "BLM to apply and comply with water quality standards established by the State of Utah(R.317-2) and the Federal Clean Water and Safe Drinking Water Acts". Water quality within the Green River is within state water quality standards as measured within the allotment.

Determination of Causal Factors

Consider the following questions regarding livestock grazing as a Causal Factor:

1) Is it more likely than not that existing grazing management practices or levels of grazing use are significant factors in failing to achieve the Standards or conform to the guidelines? Standard #2: NO, Standard #3: YES

2) Is it more likely than not that existing grazing management needs to be modified to ensure that the Fundamentals of rangeland health are met, or making significant progress toward being met? Standard #2: NO, Standard #3: YES

For those Standards not being met, identify the causal factors and the evidence used to reach a conclusion regarding causal factors:

Standard #1: N/A
Causal Factor(s):
Evidence Used:

Standard #2:
Causal Factors(s): It is not known how tamarisk was first introduced to this portion of the Green River and the small spring located on the Horsethief Point Allotment. Grazing by livestock may or may not have played a role in the initial introduction of tamarisk, but current livestock use is not affecting or contributing to an increase in tamarisk at the present time.

Evidence Used: Riparian assessment of Proper Functioning Condition 2003, Staff report from Moab Field Office Hydrologist, and site visits.

Standard #3:

Causal Factor(s): Livestock grazing is a casual factor contributing to this standard not being met. There is not adequate water in the west pasture to properly distribute cattle or horses on the allotment.

Evidence Used: Rangeland Health assessments conducted in 2007, and long term trend monitoring data collected from 1983 through 2003 at key areas.

Standard #4: N/A
Causal Factor(s):

Evidence Used:

Conformance with Guidelines for Grazing Management

Existing grazing management **does not Conform with** Utah's Guidelines for Grazing Management.

Guidelines not currently being followed are:

1. Grazing management practices will be implemented that:
   a. Maintain sufficient residual vegetation and litter on both upland and riparian sites to protect the soil from wind and water erosion and support ecological functions;
   c. Meet the physiological requirements of desired plants and facilitate reproduction and maintenance of desired plants to the extent natural conditions allow;
   d. Maintain viable and diverse populations of plants and animals appropriate for the site,
   h. Give priority to rangeland improvement projects and land treatments that offer the best opportunity for achieving the Standards.

Determination Summary

Management Strategy:

In order to make progress towards meeting Standard 3 Desired Species, the following strategy has been proposed;

1. The three non-functional water developments on the allotment will be repaired and maintained in a functional capacity (Two stock ponds and one pipeline with troughs at Horsethief Spring). This will allow proper distribution of horses and cattle on the allotment.

2. There will be no year round grazing authorized on the Horsethief Point Allotment for five years. This will allow the desired species, particularly the native plant community in the west pasture to have periodic rest.

3. The season of use on the Horsethief Point Allotment will be restricted to June 15 through February 28 in the west pasture for a minimum of three years. This will allow desired native plant species the opportunity to achieve maximum growth, and reproduce without the pressure of grazing. After the three year period the allotment will be re-evaluated and any necessary adjustments will be implemented.

Recommendations:

1. Although Standard #1 Upland Soils was determined to be met, there were several indicators at Key areas 1 and 3a that were rated in the slight to moderate category. Approximately 30% of the Horsethief Point Allotment includes sensitive soils. Both of the environmental assessments that will be completed to renew the permits for horse and cattle grazing will analyze terms and conditions to protect the sensitive soils.

Based on my review of the Assessment Team's recommendation, Evaluation of Rangeland Health Standards and other relevant information, and as indicated in this document I have determined that the Horsethief Point Allotment _____ **Meets** _X_ **Fails to Meet but is making progress toward meeting** _X_ **Fails to Meet and is not making significant progress toward meeting** Utah's Standards for Rangeland Health and that current grazing practices _X_ **are** _____ **are not** in conformance with Utah's Guidelines for Grazing Management. I have also determined that livestock grazing management practices _X_ **are** _____ **are not** a significant factor in failing to achieve the Standards.

Signature: _____ **Date:** 10/24/07

Title: Assoc FM / AFM Resources

Appendix O: Spring Canyon Bottom Rangeland Health Evaluation

RANGELAND HEALTH EVALUATION

Site/Area: Spring Canyon Bottom Allotment

BLM Acres: 6,940 acres

Dates of Range Assessments/Visits: July 14, 2009 , May 4, 2010, April 12, 2011, April 18, 2013, and September 17, 2013

Compliance with Rangeland Health Standards:

Spring Canyon Bottom Allotment is confined by rugged cliff walls and the Green River. The allotment has two major canyons, Spring Canyon and Hell Roaring Canyon. Spring Canyon has a trend study site on a Saline Stream Bank range site. The location of the assessment was at key area (KA) 1; a KA is where the BLM has established a permanent monitoring site. Monitoring at the site includes plant density plots, range utilization, frequency, and apparent trend.

KA 1 is in soil map unit (SMU) 47-Redbank-Flatnose family association; a family association within soils is made up of a soil that has a lot of diversity in the texture, color, and depth. This KA is expected to be representative of the allotment.

Standard	Standard Met?	Progress Towards Meeting?	Rationale:
#1 Upland Soils	Yes	N/A	
a) Sufficient cover and litter to protect the soil surface from excessive water and wind erosion, promote infiltration, detain surface flow, and retard soil moisture loss by evaporation.	Yes	N/A	At KA 1 there is sufficient cover and litter to protect the soils from excessive erosion. There was a lack of the indicators of excessive water/wind erosion, no rills, no pedestals or teracettes, no gullies, and no wind scours or blow out areas. The litter accumulation is within expected ranges (30-32%), the plant community closely matches what is expected. The plants present would permit infiltration. The site is detaining surface flows (there is accumulation of sediment around the plants. Plant cover is sufficient to retard soil moisture loss by evaporation.
b) The absence of indicators of excessive erosion such as rills, soil pedestals, and actively eroding gullies.	Yes	N/A	KA 1 did not have rills, pedestals, teracettes, and gullies at the site.
c) The appropriate amount, type, and distribution of vegetation reflecting the presence of (1) the desired plant community (DPC), where identified in a land use plan, conforming to these	Yes	N/A	KA 1 has a DPC that closely matches what is expected for the site. The primary vegetation is alkali sacaton with black greasewood and some scattered willows and cottonwoods. These plants sustain the system to a desired level of productivity and properly functioning ecological conditions. There is an invasion of salt cedar and it is prominent within the riparian along the Green River.

Standards or (2) where the DPC is not identified, a plant community that equally sustains the desired level of productivity and properly functioning ecological conditions.			
# 2 Riparian	Yes	N/A	Riparian areas were assessed using the "Riparian Area Management (TR 1737-15 1998). A User Guide to Assessing Proper Functioning Condition (PFC) and the Supporting Science for Lotic Areas". PFC assesses three separate categories of riparian areas, hydrology, vegetation, and erosion/deposition. An interdisciplinary team visited three riparian areas within the allotment. The Green River was rated in two section from Spring Canyon to the downstream roads end and from the Hell Roaring Canyon to Mineral Canyon. The upper portion of Hell Roaring Canyon riparian was rated. Spring Canyon was rated in three places from the road crossing down, from the road crossing up canyon two miles, and two miles to the beginning of the canyon. The riparian assessed are perennial. Other washes throughout the allotment are ephemeral desert washes. At the present time, Hell Roaring Canyon, Spring Canyon and the Green River (Hell Roaring to Mineral Canyons) riparian was rated as Properly Functioning Condition (PFC). The Green River (Spring Canyon to downstream road closure) riparian was rated as Functioning at Risk (FAR). The trend of the riparian is currently not apparent within this allotment.
a) Streambank vegetation consisting of, or showing a trend toward, species with root masses capable of withstanding high streamflow events. Vegetative cover adequate to protect stream banks and dissipate streamflow energy associated with high-water flows, protect against accelerated erosion, capture sediment, and provide for	Yes	N/A	Green River: The present vegetation within riparian area in relation to the abiotic and biotic characteristics of the landscape (natural potential) is adequate to capture sediment, protect against accelerated erosion and provide for ground water discharge. Exotic tamarisk trees are common within portions of the riparian segment and compete for resources with native vegetation. The tamarisk leaf beetle was released on private land along the Colorado River and has spread into this system. Currently the tamarisk is showing signs of low vigor as the beetle is defoliating the trees as the larva consume the leaves. The Riparian vegetation (cottonwood tree, tamarisk trees, coyote willows, yellow willow, phragmites, rushes and salt grass) along the river has root masses capable of withstanding high stream flow events. In areas where the tamarisk is thick there is signs of the system being entrenched especially in the upstream end on the allotment. The riparian area has not achieved potential extent yet. The trend is not apparent. The Flaming Gorge Reservoir

groundwater recharge.			upstream controls most of the water being supplied and the amount of sediment allowed to flow down the river. Hell Roaring Canyon: The present vegetation within riparian area in relation to the abiotic and biotic characteristics of the landscape (natural potential) is adequate to capture sediment, protect against accelerated erosion and provide for ground water discharge. The Riparian vegetation (cottonwood tree, coyote willows, phragmites, and Boxelder Trees) along the riparian has root masses capable of withstanding high stream flow events. The riparian area has achieved its potential extent and appears to still be widening. The trend is not apparent. Spring Canyon: The present vegetation within riparian area in relation to the abiotic and biotic characteristics of the landscape (natural potential) is adequate to capture sediment, protect against accelerated erosion and provide for ground water discharge. The Riparian vegetation (cottonwood tree, coyote willows, black willow, cattails, phragmites, rushes, saltgrass, horsetail, sedges, and tamarisk Trees) along the riparian has root masses capable of withstanding high stream flow events. The riparian area has achieved its potential extent and appears to still be widening. The trend is not apparent.
b) Vegetation reflecting: DPC, maintenance of riparian and wetland soil moisture characteristics, diverse age structure and composition, high vigor, large woody debris when site potential allows, and providing food, cover, and other habitat needs for dependent animal species.	Yes	N/A	Green River: This riparian area is along a major river in Utah and the vegetation is made of coyote willows, yellow willows, tamarisk trees, salt grass, cottonwood trees, bull rushes and other rushes. The vegetative community for the Green River riparian area provide for adequate species diversity; proper age class distribution; or maintenance of riparian and wetland soil moisture characteristics. All riparian plant species show high plant vigor, except for the tamarisk trees has low vigor due to a tamarisk leaf beetle, which was introduced. This riparian area is meeting the habitat needs of local wildlife and migratory birds. This riparian area contains habitat for the Southwestern Willow Fly Catcher (SWFL) and for Yellow Billed Cucu (YBCU). The backwaters of the Green provide spawning and nursery habitat for the Endangered Colorado River fish and other native and state sensitive fish. Spawning, post-spawning, incubation, and fry stages of the Endangered Colorado River fish is typical May through August. Critical Habitat for the Colorado pikeminnow, razorback sucker, humpback chub and the bonytail chub can be found. Hell Roaring Canyon: This riparian area consists of vegetation of cottonwoods, coyote willows, phragmites, and Boxelder Trees. The vegetative community for Hell Roaring Canyons riparian area provide for adequate species diversity; proper age class distribution; or maintenance of riparian and

			wetland soil moisture characteristics. All riparian plant species show high plant vigor. This riparian area is meeting the habitat needs of local wildlife and migratory birds. Spring Canyon: This riparian area consists of vegetation of cottonwood tree, coyote willows, black willow, cattails, phragmites, rushes, saltgrass, horsetail, sedges, and tamarisk Trees. The vegetative community for Spring Canyons riparian area provide for adequate species diversity; proper age class distribution; or maintenance of riparian and wetland soil moisture characteristics. All riparian plant species show high plant vigor, except for the tamarisk trees which has low vigor due to a tamarisk leaf beetle, which was introduced. This riparian area is meeting the habitat needs of local wildlife and migratory birds.
c) Revegetating point bars; lateral stream movement associated with natural sinuosity; channel width, depth, pool frequency and roughness appropriate to landscape position.	Yes	N/A	Green River: The majority of the point bars have vegetation and becoming stabilized. The vegetation is capturing recent deposition on point bars and maintaining this balance during high flow periods. This site is in balance with the natural ecosystem and lateral stream movement associated with the natural sinuosity is in balance with the confinement of the canyon. The system is vertically stable with some bank cutting that is occurring in areas of high tamarisk density, but no head cutting. There are signs of erosion at the bank cutting sites especially near dense stands of tamarisk and on bends in the river. The river has very few erosion spots and is associated with the tamarisk. The banks are healing with willows and rushes where the tamarisk trees are dying back. Hell Roaring Canyon: This type of system is having small flows for the majority of the year and when it rains the area receives a great deal of water in the confined space of the canyon. The bedrock and boulders slow and dissipate the energy but it is not in an area that is conducive to capturing large amounts of sediment and point bars are not really a part of this type of system. The vegetation is capturing some recent deposition and maintaining this balance during periods of flooding. This site is in balance with the natural ecosystem and lateral stream movement associated with the natural sinuosity is in balance with the confinement of the canyon. The system is vertically stable and no head cutting. Spring Canyon: This type of system is having small flows for the majority of the year and when it rains the area receives a great deal of water in the confined space of the canyon. The bedrock and boulders slow and dissipate the energy and the vegetation is capturing the sediment and stabilizing the point bars. The vegetation is capturing the

			recent deposition and maintaining balance during the periods of flooding. This site is in balance with the natural ecosystem and lateral stream movement associated with the natural sinuosity is in balance with the confinement of the canyon. The system is vertically stable and no head cutting.
d) Active floodplain.	Yes	N/A	Green River: The floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy. The majority of the spring run-off (snow melt) is captured by the Flaming Gorge Reservoir and the majority of the runoff is from the Price River when the floodplain becomes active. However, the dam upstream controls the major flooding events except for what comes down the Price River. This has caused a very week flood plain that is not distinguishable in many places as the canyon walls restrict a lot of out ward movement from bankfull. Hell Roaring and Spring Canyons: The floodplain and channel characteristics (i.e., rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy. The floodplain is inundated with peak flows.
# 3 Biotic Component: **Desired Plant, Wildlife Species, Special Status Species and Habitats**	Yes	N/A	Indicators of Rangeland Health, long term trend monitoring data and wildlife movements:12) Functional/structural groups, 13) Plant mortality and decadence, 15) Annual production, 16) Invasive/noxious weeds and 17) Reproductive capability of perennial plants
a) Frequency, diversity, density, age classes, and productivity of desired native species necessary to ensure reproductive capability and survival.	Yes	N/A	a) The frequency, diversity, density, age classes, and productivity of the upland plants are at levels to ensure the reproductive capability and survival of the native plant species. The functional structural groups match what is expected for the site (grasses dominant, shrubs and trees are a minor component). The structural groups are what the site needs to function properly and are at proper frequency and diversity levels for those plants. Plant mortality and decadence is within normal ranges, less than 10% of perennial plants are dead and or decadent. The dead/decadence shows that the plants are not all of one age class, the lack of too many old plants shows that they are reproducing. The plants are reproducing, all the grasses, trees, shrubs, and forbs had seed production; the seeds are what the system needs to allow the plants to survive any future disturbances.
b) Habitats connected at a level to enhance species survival.	Yes	N/A	Within this allotment there are no restrictive barriers that may impede wildlife movement. Thereares two non-maintained jeep roads that traverse throughout the allotment but these roads receive low use and low speed. Traffic may

			alter some wildlife movement but this would be very temporary and short term. There are approximately 74 feet of boundary line fences which were installed in the 1970's which the barbed wire is less than 38 inches high. Bighorn pass around the fence with minimal issues and there has been no evidence of any mortality along the fence lines. The habitats on the allotment are connected at a level to allow for spread of native vegetation and survival of key species from site to site.
c) Native species re-occupy habitat niches and voids caused by disturbances unless management objectives call for introduction or maintenance of non-native species.	Yes	N/A	KA 1 shows a plant community that matches what is expected with the exception of the non-native tamarisk being present. This suggests that the native species are not fully establishing in the disturbed areas. The native plants are competing with the tamarisk to fill the vacant niches and voids but are not filling them fully as the leaf beetle is reducing the vigor of the noxious tree species.
d) Habitats for threatened, endangered, and special-status species managed to provide for recovery and move species toward recovery and move species toward de-listing.	Yes	N/A	**Federally Listed Species Habitat and Concerns** SWFL & YBCU Much of the Spring Canyon Bottom allotment is bounded by the Green River along its west side and offers abundant SWFL habitat and potential YBCU habitats for most of its length of approximately 14 river miles. Dense tamarisk and willow line the banks, offering a canopied and continuous growth. Spring Canyon, although having numerous pools of water, cottonwoods, and scattered shrubby tamarisks and willows, is non-habitat due to not being dense, continuous, or canopied. Most of the remainder of the allotment lies below the cliff line of the Big Flat allotment and is non-habitat. Mexican Spotted Owl (MSO) The Spring Canyon Bottom allotment encompasses the canyon bottoms of two canyons, Spring and Hell Roaring and both are considered excellent MSO nesting habitat. All suitable habitats in and adjacent to the two allotments have been surveyed at least twice according to the two year United States Fish and Wildlife Service (USFWS) protocol and are current for no occupancy status. Colorado River Endangered Fish The backwaters of the Green River provide spawning and nursery habitat for the Endangered Colorado River fish and other native and state sensitive fish. The habitat consists of spawning, post-spawning, incubation, and fry stages of the

			Endangered Colorado River fish (Colorado pike minnow, razorback sucker, humpback chub and the bony tail chub). **Utah BLM Sensitive Species** The Green River offers habitat for three species of state sensitive fish, the blue-headed sucker, the flannel mouthed sucker and the round-tailed chub. **Migratory Birds** The Migratory Bird Treaty Act, as amended, was enacted for the protection of migratory birds. All raptors observed in Utah are protected by the Migratory Bird Treaty Act and some birds are also protected by the Endangered Species Act (ESA), the Bald and Golden Eagle Protection Act, and/or are included in the Utah Natural Heritage Program Species of Greatest Conservation. A draft Memorandum of Understanding between the Forest Service, the BLM and USFWS provides direction for the management of migratory birds to promote their conservation. The direction includes identifying species listed in the FWS Birds of Conservation Concern (BCC) that are likely to be present in the area of a Proposed Action. The Utah Partners in Flight (UPIF) working group completed a statewide avian conservation strategy identifying "priority species" for conservation due to declining abundance distribution, or vulnerability to various local and/or range-wide risk factors. One application of the strategy and priority list is to give these birds specific consideration when analyzing effects of proposed management actions and to implement recommended conservation measures where appropriate. The UPIF Priority Species List and the Utah Conservation Data Center database were used to identify potential habitat for priority species that could utilize habitat within the project area. There is potential for the Brewers sparrow to have breeding and winter migrant habitat within the shrub-steppe vegetation types on the allotment. **Big Game** Bighorn Sheep Some of the best and most remote bighorn sheep habitat in the Moab Field Office is located within the Spring Canyon Allotment. On the ground, aerial and GPS monitoring indicate that the allotment contains lambing, rearing and rutting grounds. One guzzler was installed in Hell Roaring Canyon. Recreational pressures and grazing competition in this area are minimal compared to other allotments with bighorn habitat. Most areas may benefit from grazing practices that remove livestock during the growing season to improve vegetative vigor and provide adequate seed sources for seedling recruitment. An increase in native forbs and shrubs would also benefit the bighorn. **Other Wildlife** Raptor such as golden eagles, wintering bald eagle, red tail hawks, peregrine and prairie falcons and other raptors may

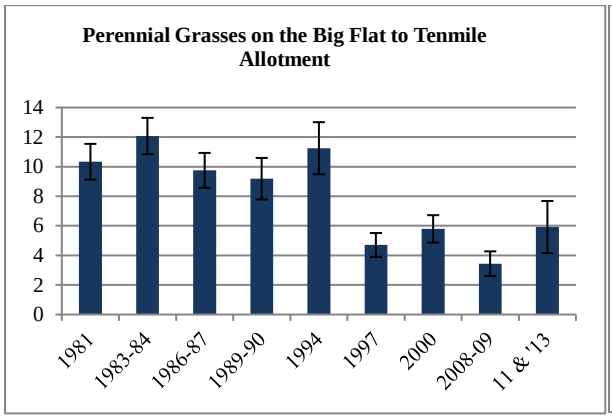
			forage and nest in this area, though there currently there are no known nest sites. Predator such as mountain lions, coyotes and fox can also be found on the allotment.
e) Appropriate amount, type, and distribution of vegetation reflecting the presence of (1) the desired plant community (DPC), where identified in a land use plan, conforming to these Standards or (2) where the DPC is not identified, a plant community that equally sustains the desired level of productivity and properly functioning ecological conditions.	Yes	N/A	KA 1 has the appropriate amount, type and distribution of the native vegetation. The grasses, shrubs and trees are healthy with little to no decadence. The distribution of plants across the flat is small patches of open grassy meadows surrounded by shrubs and trees.
# 4 Clean Water			Utah Rangeland Health Standard #4 requires "BLM to apply and comply with water quality standards established by the State of Utah (R.317-2) and the Federal Clean Water and Safe Drinking Water Acts. Activities on BLM lands will fully support the designated beneficial uses described in the Utah water quality standards (R.317-2) for surface and groundwater". Utah water quality standards do not apply to ephemeral drainages and the associated storm runoff flows. The available water quality data indicates that the Spring Canyon Bottom Grazing Allotment is meeting Utah Rangeland Health Standard #4.

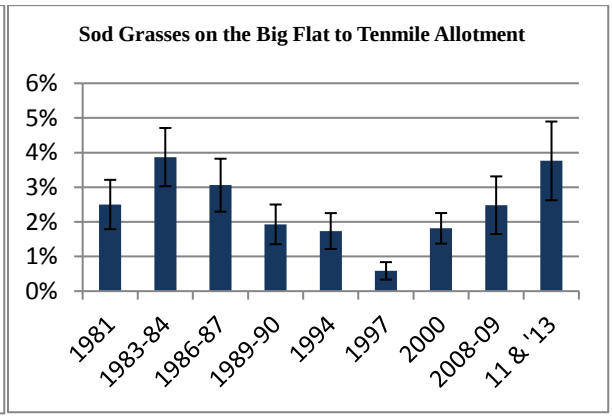
Appendix P: Vegetative Trend on the Big Flat to Tenmile, Horsethief Point, and Spring Canyon Bottom Allotments

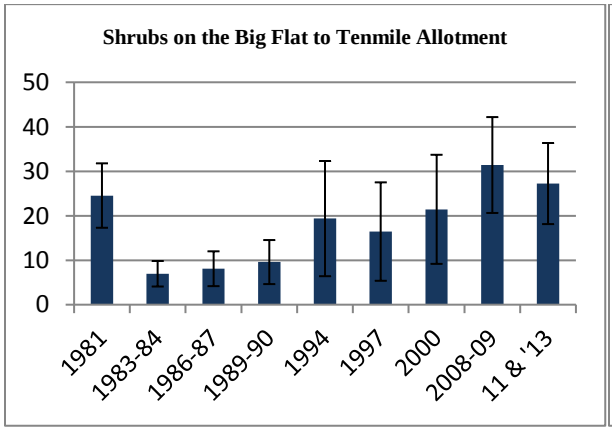
Density trend on the allotments was collected using a three foot by three foot and five foot by five foot frame and plants were counted or the cover of the plants was estimated. The grasses and forbs were counted within the frame and documented over time. Shrubs were counted using a 1/200 meter quadrat and documented over time. The sod grasses were estimated in the percent cover within the frame and documented over time.

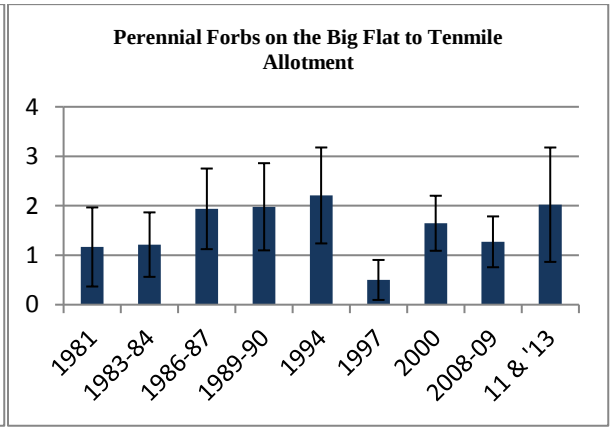
The Sod Grasses graph is comprised of two native grasses; blue gramma (*Bouteloua gracilis*) and James' galleta (*Pleuraphis jamesii*). The Perennial Grasses graph is comprised of Indian ricegrass (*Achnatherum hymenoides*), needle and thread, and sand dropseed (*Sporobolus cryptandrus*). The forbs are comprised of native perennial forbs; various aster species, desert globemallow (*Sphaeralcea ambigua*), *Eriogonum* species, and rose heath (*Chaetopappa ericoides*). The Shrubs graph is comprised of blackbrush (*Coleogyne ramosissima*), fourwing saltbrush (*Atriplex canescens*), Mormon tea (*Ephedra viridis*), sagebrush (*Artemisia tridentata*), and winterfat (*Krascheninnikovia lanata*).

The graphs depict the means and confidence intervals of the data collected across the allotment. These graphs can offer a quick glance to see if there are significant statistical differences in the change to the vegetative community over the years. The Horsethief Point Allotments Horsethief Point Pastures desnity data is analyzed with the Big Flat to Tenmile allotments data.









The BLM analyzed the data further using a T-test with an 85% confidence interval. A T-test assesses whether the means (averages) of two different groups are statistically different from

one another. The analysis was completed comparing data collected over the years and was compared to each individual year (see T-test results for 1981 below for an example) and as long as the value (known as a p value) is less than 0.15, then the change is significant. If the value is above 0.15, then the change is not apparent or there is no statistically significant difference in the data between the two years. The significant change would result in either an upward (plants are increasing) or downward (plants are decreasing) change.

T-test results for 1981:

	1981							
	83-84	86-87	89-90	1994	1997	2000	08-'09	11 & '13
Perennial Grasses	0.1514	0.6208	0.3762	0.5384	0.0000	0.0001	0.0000	0.0040
Sod Grasses	0.0782	0.4449	0.3702	0.2153	0.0008	0.2428	0.9789	0.1806
Perennial Forbs	0.9472	0.3342	0.3286	0.2365	0.2898	0.4817	0.8752	0.3843
Shrubs	0.0024	0.0061	0.0173	0.6169	0.3809	0.7552	0.4492	0.7394

In looking at the T-test results for 1981, there were nine significant changes that have happened over the years. There were four significant changes in the Perennial Grasses between 1981 and 1997, 2000, 08-’09, and 11 & ’13. In looking at the graphs above noting the position of the column, these changes for the Perennial grasses resulted in a downward trend between those years. There were two significant changes to the Sod Grasses between 1981 and the 83-84 and 1997. These changes resulted in an upward trend between 1981 and 83-84 and a downward trend between 1981 and 1997s data. There were three significant changes to the shrub community between 1981 and 83-84, 86-87, and 89-90. Looking at the graphs above shows the resulted in a downward trend between those years. The forbs T-test in 1981 showed no significant change throughout the years.

In contrast, looking at the rest of the data for 1981, where the p-value is above 0.15, all resulted in a no statistically significant difference as compared to the data collected in 1981. There is no inherent difference in the data collected between those years or it is said the trend is not apparent or a static trend. For example, in 1994 the shrub graph for Big Flat shows a possible downward trend in the shrubs as compared to 1981. In looking at the T-test results, it shows there is no statistically significant difference in the data collected in 1994 and that collected in 1981, which results in a trend that is not apparent.

Below are the remaining T-test results for the Big Flat to Tenmile Allotments data for all of the subsequent year’s comparisons. The significant data are bolded and highlighted for an easier visual display or to listen to alternate text.

	83-84						
	86-87	89-90	1994	1997	2000	08-'09	11 & 13
Perennial Grasses	0.0530	0.0286	0.5831	0.0000	0.0000	0.0000	0.0001
Sod Grasses	0.3073	0.0076	0.0027	0.0000	0.0034	0.0946	0.9120
Perennial Forbs	0.3212	0.3179	0.2243	0.1844	0.4388	0.9221	0.3844
Shrubs	0.7380	0.5101	0.1842	0.2374	0.1927	0.0026	0.0035

	86-87					
	89-90	1994	1997	2000	08-'09	11 & 13
Perennial Grasses	0.6597	0.3110	0.0000	0.0004	0.0000	0.0110
Sod Grasses	0.0920	0.0422	0.0000	0.0535	0.4635	0.4626
Perennial Forbs	0.9602	0.7589	0.0260	0.7105	0.3222	0.9323
Shrubs	0.7330	0.2355	0.3096	0.2792	0.0049	0.0072

	89-90				
	1994	1997	2000	08-'09	11 & 13
Perennial Grasses	0.1904	0.0002	0.0064	0.0000	0.0394
Sod Grasses	0.7193	0.0030	0.8802	0.4328	0.0419
Perennial Forbs	0.8018	0.0316	0.6828	0.3206	0.9668
Shrubs	0.3144	0.4185	0.4148	0.0101	0.0168

	1994			
	1997	2000	08-'09	11 & 13
Perennial Grasses	0.0000	0.0002	0.0000	0.0027
Sod Grasses	0.0050	0.8064	0.2757	0.0226
Perennial Forbs	0.0214	0.5028	0.2219	0.8588
Shrubs	0.8058	0.7029	0.3062	0.4758

	1997		
	2000	08-'09	11 & 13
Perennial Grasses	0.1609	0.1182	0.3733
Sod Grasses	0.0006	0.0023	0.0003
Perennial Forbs	0.0161	0.0930	0.0791
Shrubs	0.9002	0.1665	0.2812

	2000	
	08-'09	11 & 13
Perennial Grasses	0.0053	1.0000
Sod Grasses	0.3429	0.0281
Perennial Forbs	0.4416	0.7047
Shrubs	0.0946	0.1696

	08-'09
	11 & 13
Perennial Grasses	0.0720
Sod Grasses	0.1943
Perennial Forbs	0.3965
Shrubs	0.6723

Frequency Trend on the allotment was collected using a nested frequency. Nested frequency is a monitoring method is used to collect changes in occurrences of plant species where the quadrats are nested together consisting of different sizes; where an occurrence of a plant in one smaller quadrat equals the occurrence of the plant in all of the larger quadrats. There are 11

frequency key areas on the Big Flat Allotment, three on the Horsethief Point Allotment, and one on the Spring Canyon Bottom Allotment. The key plant species used to detect change are Indian ricegrass, fourwinged saltbrush, blue gramma, Douglas rabbitbrush, blackbrush, mormon tea, needle and thread, sandhill muhly, winterfat, James' galleta, gooseberryleaf globemallow, scarlet globmallow, spike dropseed, and sand dropseed. Increaser plant species are also used to detect change as they are less palatable and more likely to increase in abundance with increased grazing pressure. The increaser plants used in tracking are threeawn, Utah juniper, and plains pricklypear (UMMUR, 2010).

Table P-1: Big Flat Allotment Key Area 3 Frequency Data Summary

Species	Percent Frequency/Year											
	6x6 in			12x12 in			24x12 in			24x24 in		
	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend
Gooseberryleaf globemallow		3	Up		7	Up		10	Up		15	Up
Indian ricegrass	6	2	Down	14	6	Down	23	9	Down	36	11	Down
James' galleta	1	2	NA	4	4	NA	6	6	NA	9	11	NA
Morman tea	1	1	NA	3	1	NA	3	2	NA	4	2	NA
Needle and thread	3	3	NA	8	5	NA	10	8	NA	12	10	NA
Pricklypear cactus	2	1	NA	3	1	Up	3	1	Up	4	3	NA
Sand dropseed	10	10	NA	25	20	Down	38	30	Down	58	47	Down
Scarlet globemallow					1	NA		2	NA		5	NA
Winterfat	1		NA	1		NA	1		NA	1		NA

Table P-2: Big Flat Allotment Key Area 3A Frequency Data Summary

Species	Percent Frequency/Year											
	6x6 in			12x12 in			24x12 in			24x24 in		
	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend
Gooseberryleaf globemallow					2	Up		3	Up		4	Up
Indian ricegrass	19	12	Down	40	27	Down	62	37	Down	75	56	Down
James' galleta	8	10	NA	12	17	NA	18	22	NA	23	26	NA
Morman tea	24	18	NA	34	29	NA	38	35	NA	42	40	NA
Needle and thread	14	7	Down	34	19	Down	50	34	Down	70	47	Down
Pricklypear cactus	1	1	NA	1	1	NA	1	1	NA	1	2	NA
Sand dropseed	8	20	Up	26	39	Up	40	59	Up	52	74	Up
Spike dropseed	7	1	Down	18	1	Down	35	2	Down	47	2	Down
Threeawn				2		Up	2	1	NA	2	2	NA

Table P-3: Big Flat Allotment Key Area 3B Frequency Data Summary

Species	Percent Frequency/Year											
	6x6 in			12x12 in			24x12 in			24x24 in		
	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend
Fourwinged Saltbrush	3	2	NA	5	2	Down	6	3	Down	7	4	Down

Table P-3: Big Flat Allotment Key Area 3B Frequency Data Summary												
Species	Percent Frequency/Year											
	6x6 in			12x12 in			24x12 in			24x24 in		
	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend
Gooseberryleaf globemallow		4	Up		20	Up		36	Up		51	Up
Indian ricegrass	16	11	NA	42	32	Down	62	52	NA	81	75	NA
James' galleta	28	31	NA	50	50	NA	67	64	NA	79	74	NA
Morman tea											1	NA
Pricklypear cactus								1	NA	1	1	NA
Sand dropseed	2	2	NA	5	4	NA	10	8	NA	17	14	NA
Winterfat	2	2	NA	2	3	NA	3	4	NA	5	6	NA

Table P-4: Big Flat Allotment Key Area 5 Frequency Data Summary												
Species	Percent Frequency/Year											
	6x6 in			12x12 in			24x12 in			24x24 in		
	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend
Blackbrush	1	1	NA	1	1	NA	2	1	NA	2	1	NA
Gooseberryleaf globemallow		1	NA		2	NA		2	NA		3	NA
Indian ricegrass	3	1	Down	5	3	NA	11	7	NA	17	11	NA
James' galleta	39	24	Down	67	60	NA	77	75	NA	82	88	NA
Morman tea	57	46	NA	70	65	NA	75	74	NA	81	79	NA
Needle and thread				1	1	NA	1	1	NA	2	3	NA
Pricklypear cactus	1		NA	2		Up	4		Up	4		Up
Sand dropseed	12	4	Down	24	17	NA	33	21	Down	43	28	Down
Threeawn		2	NA	1	2	NA	2	3	NA	2	3	NA
Utah juniper	1	1	NA	1	1	NA	1	1	NA	1	2	NA

Table P-5: Big Flat Allotment Key Area 5A Frequency Data Summary												
Species	Percent Frequency/Year											
	6x6 in			12x12 in			24x12 in			24x24 in		
	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend
Blue gramma	2		Down	2		Down	5		Down	7		Down
Gooseberryleaf globemallow								1	NA		1	NA
Indian ricegrass	12	6	Down	34	21	Down	53	41	Down	70	57	Down
James' galleta	20	22	NA	40	38	NA	50	50	NA	63	65	NA
Morman tea	37	34	NA	52	50	NA	63	62	NA	74	70	NA
Needle and thread	3	5	NA	7	13	Up	11	25	Up	21	37	Up
Pricklypear cactus	2	2	NA	2	2	NA	2	2	NA	3	3	NA
Sand dropseed	4	3	NA	11	8	NA	15	11	NA	26	18	Down
Spike dropseed				1		NA	2		NA	3		NA
Threeawn		1	NA		1	NA		1	NA		1	NA

Table P-5: Big Flat Allotment Key Area 5A Frequency Data Summary												
Species	Percent Frequency/Year											
	6x6 in			12x12 in			24x12 in			24x24 in		
	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend
Utah juniper	1		NA	1	1	NA	1	1	NA	1	1	NA

Table P-6: Big Flat Allotment Key Area 5B Frequency Data Summary												
Species	Percent Frequency/Year											
	6x6 in			12x12 in			24x12 in			24x24 in		
	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend
Blackbrush	1	1	NA	1	1	NA	1	1	NA	2	2	NA
Gooseberryleaf globmallow		18	Up		39	Up		49	Up		58	Up
Indian ricegrass	18	5	Down	40	21	Down	59	32	Down	71	50	Down
James' galleta	7	7	NA	17	18	NA	24	26	NA	34	35	NA
Morman tea	32	25	Down	42	35	Down	47	41	Down	51	44	Down
Needle and thread							1		NA	1		NA
Pricklypear cactus	5	3	NA	6	7	NA	7	7	NA	8	9	NA
Sand dropseed	24	55	Up	37	74	Up	48	86	Up	61	90	Up
Scarlet globemallow		4	Up		9	Up		16	Up		19	Up
Spike dropseed	3		Down	5	1	Down	8	3	Down	11	8	NA
Winterfat								1	NA		1	NA

Table P-7: Big Flat Allotment Key Area 6 Frequency Data Summary												
Species	Percent Frequency/Year											
	6x6 in			12x12 in			24x12 in			24x24 in		
	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend
Blackbrush	1	1	NA	1	1	NA	1	1	NA	2	1	NA
Gooseberryleaf globmallow	0	3	Up	2	3	NA		16	Up		26	Up
Indian ricegrass	7	4	NA	17	10	Down	26	14	Down	36	24	Down
Morman tea	14	15	NA			NA	23	20	NA	25	22	NA
Needle and thread								1	NA		2	NA
Pricklypear cactus	1	1	NA	1		NA	4	4	NA	5	7	NA
Sand dropseed	8	11	NA	21	34	Up	33	52	Up	46	64	Up
Sandhill muhly	1		NA	21	19	NA	1	1	NA	1	2	NA
Scarlet globemallow					12	Up			NA			NA
Spike dropseed	1	3	NA	3	8	Up	5	14	Up	5	23	Up
Threeawn	1		NA	1		NA	1	1	NA	1	1	NA

Table P-8: Big Flat Allotment Key Area 7 Frequency Data Summary												
Species	Percent Frequency/Year											
	6x6 in			12x12 in			24x12 in			24x24 in		
	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend
Blue gramma	2	2	NA	3	2	NA	4	2	NA	4	3	NA
Douglas rabbitbrush	1	1	NA	1	1	NA	1	1	NA	1	1	NA
Gooseberryleaf globemallow		1	NA		6	Up		11	Up		18	Up
Indian ricegrass	8	13	NA	33	27	NA	58	39	Down	84	54	Down
James' galleta	16	15	NA	23	25	NA	27	33	NA	34	40	NA
Morman tea	38	38	NA	50	51	NA	59	60	NA	69	65	NA
Needle and thread	12	9	NA	38	24	Down	53	39	Down	71	56	Down
Pricklypear cactus	4	Up	NA	6	3	NA	7	4	NA	9	6	NA
Sand dropseed	1	1	NA	3	5	NA	5	6	NA	5	11	Up
Threeawn				1	1	NA	1	1	NA	1	2	NA
Utah juniper		1	NA	1	2	NA	1	2	NA	2	3	NA
Winterfat	1		NA	1	1	NA	1	1	NA	1	1	NA

Table P-9: Big Flat Allotment Key Area 8 Frequency Data Summary												
Species	Percent Frequency/Year											
	6x6 in			12x12 in			24x12 in			24x24 in		
	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend
Gooseberryleaf globemallow		11	Up		22	Up		35	Up		56	Up
Indian ricegrass	5	6	NA	17	19	NA	27	30	NA	42	46	NA
James' galleta	12	16	Up	25	24	NA	33	31	NA	41	39	NA
Morman tea	23	20	NA	30	27	NA	36	31	Down	41	37	Down
Pricklypear cactus	2	2	NA	3	2	NA	3	2	NA	4	3	NA
Sand dropseed	4	3	NA	9	9	NA	16	16	NA	24	23	NA

Table P-10: Big Flat Allotment Key Area 10 Frequency Data Summary												
Species	Percent Frequency/Year											
	6x6 in			12x12 in			24x12 in			24x24 in		
	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend
Blue gramma	20	23	NA	29	32	NA	37	37	NA	43	44	NA
Douglas rabbitbrush	1		NA	1		NA	1		NA	1		NA
Gooseberryleaf globmallow		12	Up		37	Up		50	Up		63	Up
Indian ricegrass	4	9	Up	17	21	NA	33	35	NA	52	52	NA
Morman tea	35	35	NA	53	52	NA	60	62	NA	68	66	NA
Needle and thread	22	15	Down	47	32	Down	58	57	NA	70	72	NA
Pricklypear cactus	1		NA	1		NA	1	1	NA	1	1	NA
Sand dropseed	1	7	Up	1	11	Up	3	16	Up	5	19	Up
Scarlet globemallow					1	NA		1	NA		1	NA

Table P-10: Big Flat Allotment Key Area 10 Frequency Data Summary												
Species	Percent Frequency/Year											
	6x6 in			12x12 in			24x12 in			24x24 in		
	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend
Threeawn				1	1	NA	2	1	NA	3	1	NA
Winterfat	1		NA	1		NA	1	1	NA	2	1	NA

Table P-11: Big Flat Allotment Key Area 13 Frequency Data Summary												
Species	Percent Frequency/Year											
	6x6 in			12x12 in			24x12 in			24x24 in		
	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend	2010	2014	Trend
Gooseberryleaf globmallow		7	Up		17	Up		36	Up		52	Up
Indian ricegrass	14	1	Down	34	5	Down	52	9	Donw	68	18	Down
James' galleta	13	21	Up	23	34	Up	31	38	NA	39	45	NA
Morman tea	19	13	NA	24	19	NA	29	24	NA	33	28	NA
Needle and thread	1		NA	9	1	Down	15	1	Down	19	3	Down
Pricklypear cactus	1	1	NA	1	1	NA	1	1	NA	1	2	NA
Sand dropseed	10	18	Up	26	36	Up	44	51	NA	59	64	NA
Scarlet globemallow		3	Up		6	Up		8	Up		11	Up
Winterfat	1		NA	2		NA	2		NA	3		NA

Table P-12: Horsethief Point Allotment Key Area 1 Frequency Data Summary												
Species	Percent Frequency/Year											
	6x6 in			12x12 in			24x12 in			24x24 in		
	2013	2016	Trend	2013	2016	Trend	2013	2016	Trend	2013	2016	Trend
Buckwheat	1		NA	1		NA	3		Down	7		Down
Fishook cactus							1		NA	1		NA
Fourwinged saltbrush	1	1	NA	2	1	NA	2	1	NA	4	1	NA
Gooseberryleaf globemallow	3	16	Up	13	45	Up	27	64	Up	41	83	Up
Hedgehog cactus								1	NA		1	NA
Indian ricegrass	2	2	NA	5	4	NA	8	6	NA	13	7	Down
James' galleta	3	3	NA	6	6	NA	8	8	NA	9	10	NA
Morman tea	4	1	Down	5	3	NA	7	5	NA	7	6	NA
Pricklypear cactus	8	9	NA	13	17	NA	18	23	NA	24	30	NA
Sand dropseed	16	10	NA	29	22	NA	46	33	Down	61	49	Down
Shadscale saltbrush	1	1	NA	1	1	NA	2	2	NA	3	2	NA

Table P-13: Horsethief Point Allotment Key Area 2A Frequency Data Summary												
Species	Percent Frequency/Year											
	6x6 in			12x12 in			24x12 in			24x24 in		
	2013	2016	Trend	2013	2016	Trend	2013	2016	Trend	2013	2016	Trend
Gooseberryleaf globemallow		6	Up		19	Up		34	Up		53	Up
Indain ricegrass	1	3	NA	4	7	NA	10	13	NA	16	19	NA
James' galleta	26	25	NA	37	41	NA	45	53	NA	56	63	NA
Morman tea	32	35	NA	53	50	NA	64	58	NA	69	67	NA
Needle and thread	1	3	Up	1	9	Up	1	15	Up	2	25	Up
Pricklypear cactus	2	1	NA	3	2	NA	4	3	NA	4	3	NA
Sand dropseed	16	21	NA	32	39	Up	49	55	NA	66	74	NA
Threeawn	3	4	NA	4	8	NA	6	16	Down	8	22	Down

Table P-14: Horsethief Point Allotment Key Area 3 Frequency Data Summary												
Species	Percent Frequency/Year											
	6x6 in			12x12 in			24x12 in			24x24 in		
	2013	2016	Trend	2013	2016	Trend	2013	2016	Trend	2013	2016	Trend
Blackbrush	2	2	NA	2	2	NA	2	2	NA	3	4	NA
Gooseberry leaf globemallow		5	Up		14	Up		23	Up		33	Up
Indian ricegrass	8	5	NA	20	15	Down	33	30	NA	49	50	NA
James' galleta	34	40	NA	55	63	NA	74	75	NA	83	87	NA
Morman tea	28	34	NA	47	50	NA	57	58	NA	64	65	NA
Needle and thread	1	2	NA	3	9	Up	5	15	Up	8	26	Up
Pricklypear cactus				1	1	NA	1	2	NA	1	2	NA
Sand dropseed	9	28	Up	20	55	Up	31	68	Up	45	76	Up
Threeawn	1	4	NA	2	7	Down	3	10	Down	7	13	Down
Woolly plantain								1	NA		1	NA

Table P-15: Spring Canyon Bottom Allotment Key Area 1 Frequency Data Summary												
Species	Percent Frequency/Year											
	6x6 in			12x12 in			24x12 in			24x24 in		
	2010	2015	Trend	2010	2015	Trend	2010	2015	Trend	2010	2015	Trend
Alkali sacaton	66	71	NA	75	75	NA	79	80	NA	82	82	NA
Biglow Sagebrush										1		NA
Fremont cottonwood	5	6	NA	5	6	NA	5	6	NA	5	6	NA
Gooseberryleaf globemallow					1	NA		1	NA		1	NA
Greasewood	3	5	NA	5	7	NA	6	9	NA	7	9	NA
Indian ricegrass							1		NA	1		NA
Inland saltgrass	2	2	NA	3	4	NA	3	4	NA	3	5	NA
Nuttals saltbrush	1	1	NA	1	1	NA	1	1	NA	1	1	NA
Pricklypear cactus	1	1	NA	1	1	NA	1	1	NA	1	1	NA

Table P-15: Spring Canyon Bottom Allotment Key Area 1 Frequency Data Summary												
Species	Percent Frequency/Year											
	6x6 in			12x12 in			24x12 in			24x24 in		
	2010	2015	Trend	2010	2015	Trend	2010	2015	Trend	2010	2015	Trend
Rubber rabbitbrush	4	1	Down	4	1	Down	5	2	Down	6	2	Down
Sand dropseed		1	NA		1	NA		1	NA		1	NA
Seepweed		2	NA		3	Up		4	Up		5	Up
Shadscale saltbrush		1	NA		2	NA	1	4	NA	1	5	NA
Tamarisk	3	2	NA	4	2	NA	4	2	NA	4	3	NA

The Point Intercept Monitoring Method will be used to capture most of the quantitative, long-term trend indicators. Most of these quantitative trend indicators have been identified in the Utah Standards and Guidelines for Rangeland Health and in Volume II of Monitoring Manual for Grassland, Shrubland and Savanna Ecosystems, version 2005. The Point Intercept Method will be used in conjunction with the Nested Plot Frequency Method. There are many long-term trend indicators that can be calculated using data gathered by the Point Intercept Method data (UMMUR, 2010).

Vegetation cover is highly variable due to annual weather variations. The two values of the vegetation component that are least variable are basal cover of all perennial species and shrub and tree canopy (foliar) cover. Using these two values, canopy hits on trees and shrubs combined with basal hits on all species, an Adjusted Vegetation Cover can be calculated. The Adjusted Vegetation Cover is a more stable cover indicator for measuring individual species cover and calculating species composition by cover (UMMUR, 2010). The tables below show the adjusted cover for the data collected on the allotments and are used to gauge the meeting of vegetation goals and objectives.

Table P-16: Big Flat Allotment Key Area 3 Adjusted Cover Data Summary		
Species	Percent Cover by Year	
	2010	2014
Cheatgrass	0.38	3.75
Goosberryleaf globemallow	2.13	0
Indian ricegrass	0.5	0.13
James' galleta	0.13	0.63
Morman tea	0.38	0
Mountain pepperweed	0	5.38
Needle and thread	0	0.25
Pricklypear cactus	0.63	0.38
Ragweed	0.13	0
Sand dropseed	0.75	1.25
Woolly plantain	0	4

Table P-17: Big Flat Allotment Key Area 3A Adjusted Cover Data Summary		
Species	Percent Cover by Year	
	2010	2014
Goosberryleaf globemallow	0.38	0.13
Indian ricegrass	1.25	0.25
James' galleta	0.5	0.63
Morman tea	9.25	5.5
Needle and thread	1.75	0.38
Pricklypear cactus	0	0.13
Ragweed	0	0.13
Russian thistle	0.25	0
Sand dropseed	1.38	1.88
Sixweeks fescue	0	0.13
Spike dropseed	1.25	0.25
Threeawn	0	0.13

Table P-16: Big Flat Allotment Key Area 3 Adjusted Cover Data Summary		
Species	Percent Cover by Year	
	2010	2014

Table P-17: Big Flat Allotment Key Area 3A Adjusted Cover Data Summary		
Species	Percent Cover by Year	
	2010	2014
Wooly plaintain	0	1.38

Table P-18: Big Flat Allotment Key Area 3B Adjusted Cover Data Summary		
Species	Percent Cover by Year	
	2010	2014
Cheatgrass	0	0.25
Fourwinged saltbrush	1.88	0.75
Gooseberryleaf globemallow	4.88	0.25
Indian ricegrass	0.13	1.5
James' galleta	1.38	1.5
Pricklypear cactus	0	0.25
Russian thistle	1	0.75
Sand dropseed	0	0.13
Sixweeks fescue	0	1.38
Tansy aster	0	0.25
Winterfat	0.75	0.25
Woolly plantain	0	0.13

Table P-19: Big Flat Allotment Key Area 5 Adjusted Cover Data Summary		
Species	Percent Cover by Year	
	2010	2014
Annual buckwheat	0.63	0
Blackbrush	0.63	0.38
Common sunflower	0.13	0
Gooseberryleaf globemallow	0.13	0
Indian ricegrass	0.25	0
James' galleta	5	1.13
Morman tea	14.5	7.63
Pricklypear cactus	0.38	0
Rose heath	4	1.5
Sand dropseed	1.13	0.38
Utah juniper	0.75	0.75
Woolly plantain	0	1.63

Table P-20: Big Flat Allotment Key Area 5A Adjusted Cover Data Summary		
Species	Percent Cover by Year	
	2010	2014
Blue gramma	0.25	0
Broom snakeweed	2.13	0
Common sunflower	0.13	0
Indian ricegrass	1.63	0.38
James' galleta	2.5	0.88
Morman tea	9.5	6.25
Needle and thread	0.13	0.13
Pricklypear cactus	0.38	0.25
Sand dropseed	0.25	0.5
Sixweeks fescue	0	0.5

Table P-21: Big Flat Allotment Key Area 5B Adjusted Cover Data Summary		
Species	Percent Cover by Year	
	2010	2014
Blackbrush	0.38	0.13
Broom snakeweed	0.38	0
Goosberryleaf globemallow	1.88	1
Indian ricegrass	0.5	0.5
James' galleta	0.5	1.13
Morman tea	15.88	6.88
Pricklypear cactus	0.25	0.25
Russian thistle	0.13	0
Sand dropseed	1.38	2
Sixweeks fescue	0	0.25

Table P-20: Big Flat Allotment Key Area 5A Adjusted Cover Data Summary		
Species	**Percent Cover by Year**	
	2010	**2014**
Threeawn	0	0.25
Utah juniper	0.63	0.5
Woolly plantain	0	1.75

Table P-21: Big Flat Allotment Key Area 5B Adjusted Cover Data Summary		
Species	**Percent Cover by Year**	
	2010	**2014**
Spike dropseed	0.13	0
Winterfat	0	0.13
Woolly plantain	0	0.38

Table P-22: Big Flat Allotment Key Area 6 Adjusted Cover Data Summary		
Species	**Percent Cover by Year**	
	2010	**2014**
Blackbrush	0.38	0.38
Common sunflower	0.25	0
Gooseberryleaf globemallow	1.13	0.63
Indian ricegrass	0.5	0.5
Morman tea	8.63	5.88
Pricklypear cactus	0.25	0.38
Pussytoes	0.13	0
Sand dropseed	0.88	1
Sandhill muhly	0	0.38
Spike dropseed	0.13	0.75
Woolly plantain	0	0.63

Table P-23: Big Flat Allotment Key Area 7 Adjusted Cover Data Summary		
Species	**Percent Cover by Year**	
	2010	**2014**
Annual buckwheat	0.38	0
Blue gramma	0.13	0.38
Broom snakeweed	0.75	1.25
Douglas' rabbitbrush	0	0.13
Gooseberryleaf globemallow	0	0.38
Indian ricegrass	0.88	0.38
James' galleta	1.5	1.13
Morman tea	11	10.25
Needle and thread	0.63	0.63
Pricklypear cactus	0.63	0.25
Rose heath	0.25	0
Sand dropseed	0.5	0
Threeawn	0	0.13
Utah juniper	0.63	1.25
Winterfat	0.25	0

Table P-24: Big Flat Allotment Key Area 8 Adjusted Cover Data Summary		
Species	**Percent Cover by Year**	
	2010	**2014**
Broom snakeweed	0.88	0.13
Cheatgrass	0.25	1.25
Common sunflower	0.13	0
Gooseberryleaf globemallow	1	0.5

Table P-25: Big Flat Allotment Key Area 10 Adjusted Cover Data Summary		
Species	**Percent Cover by Year**	
	2010	**2014**
Blue gramma	4.25	1.5
Broom snakeweed	1.88	0.75
Buckwheat shrub	0.13	0
Cheatgrass	0.25	0.13

Table P-24: Big Flat Allotment Key Area 8 Adjusted Cover Data Summary		
Species	**Percent Cover by Year**	
	2010	**2014**
Indian ricegrass	0.38	0.5
James' galleta	1.38	0.88
Morman tea	5.63	3.5
Pricklypear cactus	0.38	0.38
Ragweed	0.13	0
Russian thistle	0.63	0.13
Sand dropseed	0.13	0
Woolly plantain	0.63	1.63

Table P-25: Big Flat Allotment Key Area 10 Adjusted Cover Data Summary		
Species	**Percent Cover by Year**	
	2010	**2014**
Gooseberryleaf globemallow	0.13	0.63
Indian ricegrass	0	0.5
Milk vetch	0	0.13
Morman tea	10.75	9
Mountain pepperweed	0.13	0
Needle and thread	1	0.5
Rose heath	0.25	0.13
Russian thistle	0	0.63
Sand dropseed	0.13	0.13
Sixweeks fescue	0	0.5
Threeawn	0.13	0
Winterfat	0	0.13
Woolly plantain	0	0.13

Table P-26: Big Flat Allotment Key Area 13 Adjusted Cover Data Summary		
Species	**Percent Cover by Year**	
	2010	**2014**
Common sunflower	0.25	0
Gooseberryleaf globemallow		0.75
Indian ricegrass	0.88	0.5
James' galleta	1.63	3.25
Morman tea	7	2.38
Needle and thread	0.13	0
Russian thistle	0.25	0.63
Sand dropseed	0.63	1
Scarlet globemallow		0.13
Sixweeks fescue		0.38
Woolly plantain		0.25

Table P-27: Horsethief Point Allotment Key Area 1 Adjusted Cover Data Summary		
Species	**Percent Cover by Year**	
	2013	**2016**
Buckwheat	0.38	0
Cheatgrass	0	0.13
Deathcamas	0.25	0.75
Desert evening primrose	0.13	0.38
Fourwinged saltbrush	0.5	0
Gooseberryleaf Globemallow	1	4.13
Indian ricegrass	0.13	0.5
James' galleta	0	0.38
Milk Vetch	0	0.38
Morman tea	3	1.38
Pricklypear cactus	1.25	2.13
Rocky mountain stickweed	0	0.25
Rose heath	0	0.13
Sand dropseed	2.25	2.75
Shadscale saltbrush	0.88	0.5

Table P-26: Big Flat Allotment Key Area 13 Adjusted Cover Data Summary		
Species	Percent Cover by Year	
	2010	2014

Table P-27: Horsethief Point Allotment Key Area 1 Adjusted Cover Data Summary		
Species	Percent Cover by Year	
	2013	2016
Woolly plantain	0	0.13

Table P-28: Horsethief Point Allotment Key Area 2A Adjusted Cover Data Summary		
Species	Percent Cover by Year	
	2013	2016
Broom snakeweed	0	1.25
Gooseberryleaf globemallow	0	0.25
Indian ricegrass	0.38	0.13
James' galleta	1.25	2
Morman tea	6.5	5.63
Needle and thread	0.13	0.13
Pricklypear cactus	0.25	0
Rocky mountain stickweed	0	0.13
Sand dropseed	1.38	2.13
Threeawn	0	0.38
Woolly plantain	0	6.5

Table P-29: Horsethief Point Allotment Key Area 3 Adjusted Cover Data Summary		
Species	Percent Cover by Year	
	2013	2016
Blackbrush	1	1.38
Broom snakeweed	0.25	3.5
Gooseberryleaf globemallow	0	0.63
Indain ricegrass	0.63	0
James' galleta	2.88	3.25
Morman tea	4.88	6
Needle and thread	0	0.25
Rocky mountain stickweed	0	0.38
Sand dropseed	1	1.88
Sand dropseed	0	1.88
Sixweeks fescue	0	0.13
Woolly plantain	0	0.5

Table P-30: Spring Canyon Bottom Allotment Key Area 1 Adjusted Cover Data Summary		
Species	Percent Cover by Year	
	2010	2014
Alkali sacaton	11.38	9.63
Broom snakeweed	0	0.13
Douglas' rabbitbrush	0.63	0
Fremont cottonwood	0.13	0.13
Greasewood	2.5	2.75
Inland saltgrass	0	0.25
Nuttal's saltbrush	0	0.13
Pricklypear cactus	0	0.38
Rubber rabbitbrush	0	0.38

Table P-30: Spring Canyon Bottom Allotment Key Area 1 Adjusted Cover Data Summary		
Species	**Percent Cover by Year**	
	2010	**2014**
Tamarisk	1.75	1.25

Appendix Q: Summary of Utilization

Utilization Class Levels

Herbaceous Utilization Classes: Seven utilization classes are used to show relative degrees of use of key herbaceous species (grasses and forbs). Each class represents a numerical range of percent utilization. Utilization estimates must be placed in one of the seven classes. **Utilization classes are:**

(0-5%) The key species show no evidence of grazing use or negligible use.

(6-20%) The key species has the appearance of very light grazing. Plants may be topped or slightly used. Current seedstalks and young plants are little disturbed.

(21-40%) The key species may be topped, skimmed, or grazed in patches; between 60 and 80 percent of current seedstalks remain intact. Most young plants are undamaged.

(41-60%) Half of the available forage (by weight) on key species appears to have been utilized. Fifteen to 25 percent of current seedstalks remain intact.

(61-80%) More than half of the available forage on key species appears to have been utilized. Less than 10 percent of the current seedstalks remain. Shoots of rhizomatous grasses are missing.

(81-94%) The key species appears to have been heavily utilized and there are indications of repeated use. There is no evidence of reproduction or current seedstalks.

(95-100%) The key species appears to have been completely utilized. The remaining stubble is utilized to the soil surface.

Browse Utilization Classes: If a browse species is one of the key plants that will be included in the sample, follow the same steps as above but clipping would be done on the un-grazed leader of current year's growth. The seven utilization classes are described below. Each class interval represents a numerical range of percent utilization. Utilization classes are as follows:

(0-5%) The key browse plants show no evidence of grazing use or only negligible use.

(6-20%) The key browse plants have the appearance of very light use. The available leaders are little disturbed.

(21-40%) There is obvious evidence of leader use. The available leaders appear cropped or browsed in patches and 60 to 80 percent of the available leader growth remains intact.

(41-60%) Key browse plants appear rather uniformly utilized and 40 to 60 percent of the available leader growth remains intact.

(61-80%) The key browse plants are hedged and some plant clumps may be slightly broken. Nearly all available leaders are used and few terminal buds remain. Between 20 and 40 percent of the available leader growth remains intact.

(81-94%) There are indications the key browse species have been utilized repeatedly. There is no evidence of terminal buds and usually less than 20 percent of available leader growth

remains intact. Some, and often much, of the second and third year's growth has been utilized. Hedging is readily apparent. Key browse plants frequently have broken branches.

(95-100%) Less than five percent of the available leader growth on the key browse plants remains intact. Most of the second and third year's growth has been utilized. All key browse plants have major portions broken.

Utilization is the proportion or degree, expressed as a percent, of the current year's growth that is consumed or destroyed by foraging animals (including insects).

Table Q-1: Summary of Utilization for the Past 10 Years on the Big Flat to Tenmile Allotment

Key Area	Species	Percent Utilization				
		2009	2010	2011	2014	Utilization Class By Species
3	Indian ricegrass	47	31	47	54	Moderate Use
	James' galleta	13	31	4	27	Slight Use
	Sand dropseed	47	62	-	35	Light Use
	Needle and thread	50	50	-	41	Moderate Use
	Winterfat	70	85	-	-	Heavy Use
3A	Indian ricegrass	66	52	7	10	Light Use
	James' galleta	35	28	33	9	Slight Use
	Sand dropseed	63	39	27	13	Slight Use
	Needle and thread	70	77	-	19	Light Use
	Spike dropseed	-	-	-	14	Slight Use
3B	Indian ricegrass	75	47	59	33	Moderate Use
	James' galleta	37	22	7	11	Slight Use
	Sand dropseed	-	-	-	19	Slight Use
	Winterfat	-	37	29	61	Light Use
	Fourwinged saltbrush	40	37	5	58	Light Use
5	Indian ricegrass	44	62	6	30	Light Use
	James' galleta	20	13	3	8	Slight Use
	Sand dropseed	38	35	-	29	Light Use
	Needle and thread	47	58	3	23	Slight Use
5A	Indian ricegrass	54	15	18	38	Light Use
	James' galleta	13	13	3	6	Slight Use
	Sand dropseed	-	-	8	27	Slight Use
	Needle and thread	45	14	15	45	Light Use
	Fourwinged saltbrush	-	13	-	-	Slight Use
	Spike dropseed	-	-	-	12	Slight Use
5B	Indian ricegrass	13	19	-	54	Moderate Use
	James' galleta	13	15	-	27	Light Use
	Sand dropseed	36	13	-	35	Light Use
	Needle and thread	-	13	-	41	Light Use
6	Indian ricegrass	44	63	19	17	Light Use
	James' galleta	-	20	4	-	Slight Use
	Sand dropseed	28	30	-	13	Slight Use
	Needle and thread	24	57	25	-	Light Use
	Spike dropseed	-	-	-	7	Slight Use
7	Indian ricegrass	37	70	38	56	Moderate Use
	James' galleta	13	27	4	13	Slight Use
	Sand dropseed	-	-	-	24	Light Use
	Needle and thread	35	58	22	62	Moderate Use
	Winterfat	46	44	-	-	Moderate Use
	Fourwinged saltbrush	72	20	71	-	Moderate Use
	Blue gramma	-	-	-	15	Slight Use

Table Q-1: Summary of Utilization for the Past 10 Years on the Big Flat to Tenmile Allotment						
Key Area	Species	Percent Utilization				
		2009	2010	2011	2014	Utilization Class By Species
8	Indian ricegrass	52	72	12	39	Light Use
	James' galleta	23	20	3	14	Slight Use
	Sand dropseed	37	24	-	48	Light Use
	Morman tea	16	37	-	-	Light Use
10	Indian ricegrass	51	51	30	46	Light Use
	James' galleta	19	19	3	-	Slight Use
	Sand dropseed	-	-	-	8	Slight Use
	Needle and thread	52	49	17	36	Light Use
	Winterfat	50	51	-	-	Moderate Use
	Fourwinged saltbrush	64	25	80	-	Heavy Use
	Blue gramma	-	-	-	8	Slight Use
13	Indian ricegrass	-	-	-	7	Slight Use
	James' galleta	-	-	-	3	Slight Use
	Sand dropseed	-	-	-	3	Slight Use
	Needle and thread	-	-	-	10	Slight Use
Average Utilization By Year		42	38	17	26	

- Utilization was not completed for the species for the given year.

Table Q-2: Summary of Utilization for the Past 10 Years on the Horsethief Point Allotment							
Key Area	Species	Percent Utilization					
		2008	2009	2010	2011	2014	Utilization Class By Species
1	Indian ricegrass	13	16	13	3	13	Slight Use
	James' galleta	-	-	-	3	-	Slight Use
	Sand dropseed	15	13	13	3	16	Slight Use
	Needle and thread	-	16	13	3	15	Slight Use
	Fourwinged saltbrush	13	51	13	-	22	Slight Use
	Morman tea	13	-	-	-	-	Slight Use
	Shadscale saltbrush	13	-	-	-	-	Slight Use
2A	Indian ricegrass	46	34	66	35	54	Moderate Use
	James' galleta	34	15	13	9	36	Slight Use
	Sand dropseed	46	18	48	22	43	Light Use
	Needle and thread	42	31	75	47	59	Moderate Use
	Winterfat	52	-	-	-	-	Moderate Use
	Fourwinged saltbrush	60	-	-	-	-	Moderate Use
3	Indian ricegrass	13	34	36	42	42	Light Use
	James' galleta	13	18	15	7	10	Slight Use
	Sand dropseed	20	20	45	15	58	Light Use
	Needle and thread	13	29	48	54	54	Moderate Use
	Morman tea	13	-	-	-	-	Slight Use
Average Utilization by Year		27	24	33	14	35	

- Utilization was not completed for the species for the given year.

Table Q-3: Summary of Utilization on the Spring Canyon Bottom Allotment						
Key Area	**Species**	**Percent Utilization**				
		1983	**1990**	**1994**	**2015**	**Utilization Class By Species**
1	Alkali sacaton	17	46	60	55	Moderate Use
	Inland saltgrass	13	-	-	29	Light Use
	Nuttal's saltbrush	13	-	-	26	Light Use
	Greasewood	-	-	-	10	Slight Use
	Shadscale saltbrush	-	-	-	3	No Use
Average Utilization by Year		17	46	60	26	

- Utilization was not completed for the species for the given year.