UNITED STATES
DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Burns District Office
Three Rivers Resource Area
Finding of No Significant Impact

Chalk Hills Allotment Management Plan
Environmental Assessment
DOI-BLM-OR-B050-2010-0020-EA

INTRODUCTION

Three Rivers Resource Area, Burns District, has prepared an Environmental Assessment (EA) to analyze recommended management actions developed through an Interdisciplinary Team (IDT) and the 2006 evaluation process for Chalk Hills Allotment to aid in accomplishing resource objectives, Standards for Rangeland Health and Guidelines for Livestock Grazing Management, and land use plan objectives for Chalk Hills Allotment set forth in the 1992 Three Rivers Resource Management Plan/Record of Decision (RMP/ROD)/Rangeland Program Summary.

During the 2006 Chalk Hills Allotment Evaluation an IDT of Burns District Bureau of Land Management (BLM) staff determined that Standard 5 - Native, Threatened and Endangered (T&E) and Locally Important Species (sage-grouse) - is not being achieved. This was due to approximately 70 percent of the allotment being classified as historical habitat for sage-grouse but currently unsuitable due to juniper encroachment. A juniper cut was completed in 2006, and should be machine piled and burned in 2010. Once the juniper is burned and many of the available predator perches removed, this allotment will likely achieve Standard 5. Livestock was not a causal factor in this Standard not being achieved. Current grazing management is achieving Standard 1 – Watershed Function – Uplands, Standard 2 - Watershed Function - Riparian/Wetland Areas, Standard 3 – Ecological Processes, and Standard 4 – Water. See Table 1 in the attached EA for more information on Standards for Rangeland Health Determinations.

The evaluation also determined that the Guidelines for Livestock Management are not being achieved due to current grazing management not providing periodic growing season rest to forage plant species within the Chalk Hills Allotment. While four of the five standards are being achieved, they are at risk for not being achieved in the future due to years of consecutive grazing during the growing season. While effects of not providing periodic growing season rest were not seen in the 2006 Chalk Hills Allotment Evaluation, it should be noted that from 1991 to 2009, the average actual use on this allotment was 487 AUMs (52 percent of Permitted Active Use). This voluntary nonuse by the permittee minimized the effects of not providing periodic growing season rest. When there is no rest during the active plant growth period, the plant (usually) has little opportunity for regrowth and recovery due to the lack of sufficient moisture late in the season, making it unable to complete an annual life cycle. Plants that are unable to complete their annual life cycles periodically generally show a decrease in vigor and abundance.

Chalk Hills Allotment #05526 is located approximately 42 air miles northeast of Burns, Oregon, and approximately 6 miles due west of Drewsey, Oregon There are 8,935 acres of BLM-managed land plus 753 acres of private land within the allotment, for a total of 9,688 acres.

SUMMARY OF THE PROPOSED ACTION

The following would be the result of the Proposed Action.

1. Livestock Grazing Management

   a. Livestock grazing management is designed to provide periodic growing season rest for upland plant species. Livestock numbers may vary annually as outlined under Adaptive Management, (Chapter II, A. Actions Common to All Alternatives); however, total AUMs would not exceed 935.

   b. Current permitted season of use would be changed from April 16 through August 15 to May 1 through September 30 for Permit #3601627 to carry out the proposed grazing management. All pastures except Table Pasture would receive an annual defer treatment. Table Pasture would receive a graze treatment in year 1 and a defer treatment in year 2. If monitoring indicates a possible riparian issue with the deferred grazing within Iron Spring Pasture, the grazing rotation would be changed to an early/graze system until the fence to control or exclude livestock use from the riparian area could be completed.

2. Permit Renewal: One 10-year term grazing permit (#3601627) would be renewed with no changes in Active Use AUMs in Chalk Hills Allotment. The season of use would be changed from April 16 through August 15 to May 1 through September 30.

3. Range Improvement Projects

   Refer to attached Allotment Management Plan (AMP)/EA Map: Proposed Action Rangeland Improvements. General Project Design Elements for Proposed Range Improvements would be implemented as described in the AMP/EA.

   a. Spring Development

      The development of an unnamed spring, which currently feeds into Dead Cow Reservoir, located in Chimney Spring Pasture at T. 20 S., R. 37 E., Section 31, NE¼SW¼, would occur.

      The exclosure fence around Zinc Spring (T. 20 S., R. 37 E., Section 8, SW¼NE¼) in Zinc Spring Pasture would be expanded to protect the entire spring area and associated riparian vegetation.

b. Pipeline Construction

Approximately 5.3 miles of pipeline would be constructed within the Chalk Hills Allotment. Approximately 1.7 miles of pipeline would be piped east to the Juntura Cutoff Road and then south to a trough in Section 36, NE¼SE¼. Another 1.6 miles of pipeline would run north, to a trough placed at T. 20 S., R. 36 E., Section 24, SW¼SW¼ in Iron Spring Pasture.

The remaining 2.0 miles of pipeline would run from a well on private property in T. 20 S., R. 36 E., Section 13, NE¼NE¼. This pipeline would run south, following a road to the boundary fence separating Zinc and Chimney Spring Pastures. One bottomless trough would be located along the pipeline in Zinc Spring Pasture. A second trough would be located at the fence dividing Zinc Spring and Chimney Spring Pastures and would service both pastures.

c. Mill Gulch Riparian Exclosure Fence

If monitoring indicates the deferred grazing system in Iron Spring Pasture is not maintaining riparian function (e.g., downward trend in riparian condition, increased erosion, etc.) to the Mill Gulch riparian and water resources, a fence approximately 0.4-mile long would be constructed to create a riparian exclosure in the northwest corner of this allotment.

4. Monitoring: Monitoring by BLM staff, in coordination with the livestock operator, of the success in achieving allotment-specific resource objectives would take place following implementation.

FINDING OF NO SIGNIFICANT IMPACT

Consideration of the Council on Environmental Quality (CEQ) criteria for significance (40 CFR 1508.27), both with regard to context and intensity of impacts, is described below:

Context

The Proposed Action would occur in Chalk Hills Allotment and would have local impacts on affected interests, lands, and resources similar to and within the scope of those described and considered in the Three Rivers Proposed RMP/Final Environmental Impact Statement (PRMP/FEIS). There would be no substantial broad societal or regional impacts not previously considered in the PRMP/FEIS. The actions described represent anticipated program adjustments complying with the Three Rivers RMP/ROD, and implementing range management programs within the scope and context of this document.

Intensity

The CEQ's ten considerations for evaluating intensity (severity of effect):

1. Impacts that may be both beneficial and adverse. The EA considered potential beneficial and adverse effects. Project Design Features were incorporated to reduce impacts. None of the effects are beyond the range of effects analyzed in the Three Rivers PRMP/FEIS, to which the EA is tiered.

   Cultural Heritage: It is assumed that the range improvements would result in improving distribution across the allotment, which would diminish trampling affects allotmentwide. Trampling effects on cultural resources would then be lessened in areas grazed in the past and the impact of grazing in new areas would be at low levels. Grazing would not likely affect cultural resources to a greater extent than historic grazing effects. While surface impacts can cause artifact breakage and vertical and horizontal displacement of artifacts, generalized grazing is not anticipated to result in greater impacts than those already evident at cultural sites.

   Grazing Management/Rangelands: The Proposed Action would implement range improvement projects to aid grazing management, which would be adjusted to conform to Guidelines by periodically providing critical growing season rest and move toward achieving all Standards and Guidelines. The permitted season of use would be changed to May 1 through September 30. Livestock grazing rotations that provide periodic growing season rest to key forage plant species on all pastures would be implemented, allowing key forage species the opportunity to complete their life cycles.

   The proposed spring developments would help protect the riparian area from damage and reduce erosion and sedimentation caused by livestock. The construction of pipelines and placement of troughs and drain valves would enhance livestock distribution within the allotment and away from areas of historical heavy use, promoting more uniform utilization patterns, thus reducing forage competition between all grazers. Providing these additional water sources would facilitate livestock grazing rotations providing periodic growing season rest to key forage plant species.

   Migratory Birds: The proposed grazing strategy is expected to provide growth and cover of current year's herbaceous growth during the nesting period for migratory birds on 86 percent of the pasture acres every year, and the entire allotment every other year. Ground-nesting species would benefit from deferred grazing due to the reduced trampling and loss of screening cover around nests. Potential disturbance to all nesting birds from livestock and associated activities during the critical nesting period would be eliminated.

Range improvements would help address poor distribution of livestock. Vegetation in areas subject to heavier use would respond with increased vigor and growth, providing more ground cover and improved habitat. Fencing the two springs would protect and maintain hydric vegetation around the small riparian areas for grouse and other species, but would increase the potential risk of collision to flying birds. The increased hydric vegetation would provide more quality insect habitat and improve forage potential for migratory birds.

Noxious Weeds: The grazing management being proposed should promote vigorous, productive plant communities, which would better utilize the resources of the site, lessening opportunities for noxious weed introduction and spread. Short-term disturbances during construction of some of the range improvements would occur; however, Design Elements and follow-up monitoring and treatments would occur. Therefore, over the long term (5+ years) potential for persistent weed issues in the allotment would be considerably less than the No Action Alternative.

Recreation/Visual Resources: Effects to recreation and visual resources would only be minimal as livestock numbers may vary annually and the permitted season would slightly change in response to adaptive management. The proposed grazing defer treatments may result in increased conflict between livestock and bow hunters (whose general season is usually the end of August to the end of September). Temporary disturbances would occur during construction of the proposed projects; however, effects to recreation are expected to be undetectable for the allotment as a whole, given their short term and localized nature. Overall, recreational opportunities, such as hunting, would likely be enhanced by improvements in rangeland conditions.

Riparian Zones, Wetlands, and Water Quality: The Proposed Action would change livestock use along Mill Gulch in Iron Spring Pasture from early use annually to a defer treatment, which may cause livestock to concentrate in riparian areas. If monitoring indicates a downward trend in riparian function from livestock management, an exclosure fence would be constructed to eliminate any livestock grazing from this section of Mill Gulch. Riparian/wetland conditions at Zinc Spring and Dead Cow Spring/Reservoir would improve as hoof-shearing would no longer modify hydrologic flow patterns in riparian areas. Hydric herbaceous vegetation would be allowed to complete their growing and reproductive cycles without utilization by livestock. As later seral, deeper rooted plant species are established, several components of a functioning wetland would materialize such as the capture of sediment and debris.

Social and Economic Values: Developments would provide periodic rest to upland vegetation and improve cattle distribution resulting in improved rangeland conditions. The Proposed Action would increase economic opportunities for the livestock operation, help sustain livelihoods for the multiple families employed by the ranching operation, and foster more desirable social opportunities. The Proposed Action could generate approximately $100,000 through purchase of supplies and labor for range improvements and provide economic opportunities to the local communities.

Soils and Biological Soil Crusts: Additional water resources would enlarge livestock and wildlife range, improve distribution of livestock and help to attain acceptable levels and patterns of utilization. Proposed management practices would reduce erosion and loss of Biological Soil Crust (BSC) cover in areas formerly receiving concentrated grazing due to limited water sources and limited increases in erosion and loss of BSC cover in those areas receiving increased use due to enhanced distribution. Soil horizons would be modified in the area of proposed trenching. Adjacent soil horizons would be intact and would mediate impacts. Some soil movement would be expected between modified and unmodified adjacent soils and would result in more similar soil chemistry over time.

Special Status Species: The proposed grazing strategy is expected to provide maximum growth and cover of current year's herbaceous growth during the nesting and brood-rearing period for sage-grouse on 86 percent of the pasture every year, and the entire allotment every other year. Deferring grazing until August in most pastures would also eliminate potential disturbance from livestock and associated activities during the critical nesting period. Fencing the two springs would protect and maintain hydric vegetation around the small riparian areas for grouse and other species, but would increase the potential risk of collision to flying birds.

Upland Vegetation: Periodic growing season rest from livestock grazing for key forage species across Chalk Hills Allotment would allow for improved plant vigor and diversity, improved plant community composition, age class distribution and overall production within the allotment. However, since the use of antelope bitterbrush increases as growing season progresses and plants become dormant, the bitterbrush plants that are in heavy bitterbrush use areas may show a reduction in vigor. The proposed spring developments would protect the herbaceous riparian plant species within the wetland area while providing additional water sources for livestock. Current carrying capacity for all demands (wildlife and livestock) would be maintained or improved as plant communities would remain in stable to upward trend in rangeland condition.

Wildlife: Grazing when most herbaceous plants are dormant would promote healthy rangeland conditions, and enhance productivity and sustainability of wildlife habitat. Competition and disturbance from livestock for spring vegetation would be eliminated on all pastures except the Table Pasture, providing greater distribution of habitat structure for hiding and escape cover and forage availability. Fencing around the springs and adjacent areas would reduce trampling and grazing impacts, and allow more natural hydric vegetation to establish, providing critical habitat for many wildlife species. However, fencing may alter movements or cause injury or even death for some wildlife. Antelope bitterbrush, an important winter habitat component for mule deer, may be utilized heavily by livestock during deferred grazing. Loss of antelope bitterbrush would reduce high quality winter forage and negatively affect winter habitat on over 3,000 acres of the allotment and would affect 3 percent of mule deer winter range within the cumulative effects area.

2. Degree to which the Proposed Action affects public health and safety. No aspect of the Proposed Action or alternatives would have an effect on public health and safety.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas. There are no unique characteristics within or around the Chalk Hills Allotment.

4. The degree to which effects on the quality of the human environment are likely to be highly controversial. Controversy in this context means disagreement about the nature of the effects, not expressions of opposition to the Proposed Action or preference among the alternatives. No unique or appreciable scientific controversy has been identified regarding the effects of the Proposed Action or alternatives.

5. Degree to which possible effects on the human environment are highly uncertain or involve unique or unknown risks. The analysis has not shown there would be any unique or unknown risks to the human environment nor were any identified in the Three Rivers PRMP/FEIS to which this proposal is tiered.

6. Degree to which the action may establish a precedent for future actions with significant impacts or represents a decision in principle about a future consideration. This project neither establishes a precedent nor represents a decision in principle about future actions. No long-term commitment of resources causing significant impacts was noted in the EA or RMP.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. The environmental analysis did not reveal any cumulative effects beyond those already analyzed in the Three Rivers PRMP/FEIS which encompasses the Chalk Hills Allotment. The EA described the current state of the environment (Affected Environment by Resource, Chapter III) which included the effects of past actions. Continued livestock grazing, weed treatments, road maintenance, recreation activities including hunting, machine pile and burning of 966 acres of previously cut juniper, and the possible Eagle Pitcher Mine expansion are known Reasonably Foreseeable Future Actions and were also addressed under Chapter III of the EA by resource.

8. Degree to which the action may adversely affect districts, sites, highways, structures or objects listed in or eligible for listing in the National Register of Historic Places. There are no features within the Project Area listed or eligible for listing in the National Register of Historic Places.

9. The degree to which the action may adversely affect an endangered or threatened species or its habitat. There are no known T&E species or their habitat affected by the Proposed Action or alternatives.

10. Whether an action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment. The Proposed Action and alternatives do not threaten to violate any law. The Proposed Action is in compliance with the Three Rivers RMP, which provides direction for the protection of the environment on public lands.

On the basis of the information contained in the EA and all other information available to me, it is my determination that:

1. The implementation of the Proposed Action or alternatives will not have significant environmental impacts beyond those already addressed in the Three Rivers PRMP/FEIS (September 1991);

2. The Proposed Action and alternatives are in conformance with the Three Rivers RMP/ROD;

3. There would be no adverse societal or regional impacts and no adverse impacts to affected interests; and

4. The environmental effects, together with the proposed Project Design Features, against the tests of significance found at 40 CFR 1508.27 do not constitute a major Federal action having a significant effect on the human environment.

Therefore, an EIS is not necessary and will not be prepared.

_____ _____

Richard Roy Date
Three Rivers Resource Area Field Manager

CHALK HILLS ALLOTMENT MANAGEMENT PLAN

ENVIRONMENTAL ASSESSMENT
DOI-BLM-OR-B050-2010-0020-EA

Three Rivers Resource Area
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May 25, 2010

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CHALK HILLS ALLOTMENT MANAGEMENT PLAN
ENVIRONMENTAL ASSESSMENT
DOI-BLM-OR-B050-2010-0020-EA

CHAPTER I: INTRODUCTION: PURPOSE OF AND NEED FOR ACTION

A. Background

Chalk Hills Allotment #05526 is located approximately 42 air miles northeast of Burns, Oregon (Map A – Vicinity Map). The town of Drewsey, Oregon, is approximately 6 miles due west of the allotment. There are 8,935 acres of Bureau of Land Management (BLM)-managed land plus 753 acres of private land within the allotment, for a total of 9,688 acres. Chalk Hills Allotment is a "Maintain" category allotment, which means that a moderate level of effort in order to maintain condition and/or affect change should be given. The allotment is divided into five pastures: Iron Spring, Zinc Spring, Chimney Spring, Table, and Three C's (Map B – Land Status). One grazing permit, #3601627, exists for this allotment. Under this grazing permit, the current season of use for the allotment is from April 16 through August 15 with 233 cattle, which is the equivalent of 935 Animal Unit Months (AUMs) of active use.

In 2006, grazing management within Chalk Hills Allotment from 1994 to 2005 was analyzed through a formal interdisciplinary evaluation process. This evaluation identified a static or improving trend throughout the allotment. The allotment is also meeting the objective to "Maintain browse on at least 85 percent of the winter range currently supporting browse." The evaluation also included an analysis of the allotment to determine if current management was in conformance with Oregon and Washington Standards for Rangeland Health (further referred to as Standards) and Guidelines for Livestock Grazing Management (August 12, 1997) (further referred to as Guidelines; Standards and Guidelines together are referred to as S&Gs).

Native, Threatened or Endangered (T/E), and Locally Important Species (Standard 5) is not being achieved due to historical sage-grouse habitat being currently unsuitable on approximately 70 percent of the allotment, mainly due to western juniper (*Juniperus* occidentalis) encroachment (with power lines, previous fires, and seedings being other causes of unsuitable habitat). In 2006 a juniper cut project was completed on 966 acres within the allotment, showing improvement of the habitat. However, due to the extent the juniper has impacted the sagebrush and understory, cutting juniper was not enough to achieve this standard. With burning and piling (scheduled to occur in 2010 under the Chalk Hills Habitat Improvement Project, which would remove perch sites and open areas for grass, forb, and sagebrush growth, this allotment should move toward becoming suitable sage-grouse habitat. Livestock grazing was not a causal factor in Standard 5 not being achieved. This Allotment Management Plan/Environmental Assessment (AMP/EA) will only address issues/concerns relating to livestock; juniper management for the Chalk Hills Habitat Improvement Project was documented in Categorical Exclusion OR-2007-025-054. Standards achieved include Watershed Function – Uplands, Watershed Function – Riparian/Wetland Areas, Ecological Processes, and Water Quality.

While these Standards are being achieved, the evaluation determined they are at risk for not being achieved in the future due to poor livestock distribution caused by limited water sources. Current grazing management is not conforming to Guidelines due to pastures being grazed in consecutive years with a graze treatment. See Table 1 below for further detail on the Determination of Standards for Rangeland Health from the 2006 Allotment Evaluation.

This AMP/EA analyzes the recommended management actions developed through the 2006 Chalk Hills Allotment Evaluation process, subsequent Interdisciplinary Team (IDT) recommendations, public comments, and coordination with the livestock permittees to aid in accomplishing allotment resource objectives and achieving all S&Gs.

Table 1: 2006 Allotment Evaluation Standards for Rangeland Health Determinations

Standard	Achieved	Not Achieved	Causal Factors	Comments
1. Watershed Function - Uplands	X	---	---	Plant composition, community structure, and distribution of bare ground are within the range of variability expected for the ecological sites found on the allotment. Organic matter is accumulating and being incorporated into the soil and biological activity is at a level which is expected across the allotment.
2. Watershed Function - Riparian/Wetland Areas	X	---	---	Field observations indicate that conditions have remained static on the 0.4-mile of intermittent stream channel along Mill Gulch since the creek was rated as Properly Functioning Condition (PFC) in 1998.
3. Ecological Processes	X	---	---	Monitoring studies suggest a static or upward trend in upland plant communities within the allotment. All pastures are functioning to the extent of sustaining plant communities appropriate to soil, climate, and landform. Plant roots appear to be occupying the soil profile, and there is good plant composition and community structure throughout the allotment.
4. Water Quality	X	---	---	Although no formal water quality monitoring has occurred on this allotment, an interdisciplinary assessment determined that Mill Gulch was in PFC.
5. Native, T/E, and Locally Important Species	---	X	Juniper Encroachment	Approximately 30 percent of the allotment is classified as either yearlong habitat or probable habitat for sage-grouse with uncertain usage. The remainder is classified as historical habitat but currently unsuitable due to juniper encroachment. A juniper cut was completed in 2006, and should be machine piled and burned in 2010.

B. Purpose and Need

The purpose of the Action is to:

1. Consider the permittee's request to adjust mandatory terms and conditions on the grazing permit and issue a new 10-year term grazing permit (#3601627) under 43 Code of Federal Regulations (CFR) 4130;

2. Modify current grazing practices to ensure Standards currently achieved continue to be achieved, and conform to Guidelines.

The need for the Action is:

BLM's responsibility to respond to an external request to adjust the Term Grazing Permit associated with Chalk Hills Allotment, and issue a grazing permit within the Chalk Hills Allotment consistent with grazing regulations at 43 CFR 4100, manage the public lands for multiple-use and sustained yield under the Taylor Grazing Act (43 U.S.C 315, 1934), the *Federal Land Policy and Management Act (FLPMA) of 1976*, and the *Public Rangelands Improvement Act of 1978*, and the Three Rivers Resource Management Plan (RMP). Livestock grazing is identified as a use of the public land and is to be conducted in a manner which will meet multiple-use and sustained yield objectives.

Specifically, the regulations implementing these Acts call for rangeland management strategies that provide forage for economic use as well as for maintenance or restoration of watershed function, nutrient cycling, water quality, and habitat quality for Special Status Species (SSS) and native plants and animals (43 CFR 4180.1). These management strategies have been supported and implemented by development of national policies and the *Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration* (S&Gs).

Applicable Standards are currently being achieved; however, they are at the risk of not being achieved in the future due to poor livestock distribution across the allotment. Current grazing management is not conforming to Guidelines due to pastures being grazed in consecutive years with a graze treatment. While negative effects of not providing periodic growing season rest have not been seen to this point (2006 Chalk Hills Allotment Evaluation), it should be noted that 1991-2009, the average actual use on this allotment was 487 AUMs (52 percent of Permitted Active Use).

Due to the lack of reliable water in much of this allotment, livestock are limited in most years to areas containing reliable water. This results in poor grazing distribution, repeat defoliation, and heavy utilization within these service areas; utilization decreases as distance from water increases (Roath and Krueger 1982, Miller and Krueger 1976, and Cook 1966). Over time, heavy utilization will result in stable to downward trend in rangeland condition in areas experiencing continuous seasonal grazing, as seen by decreases in production, abundance, and nutrients (Milchunas et al. 1995, Milchunas et al. 1994, Klipple and Costello 1960). See Map C – Range Improvements for current water sources. Reservoirs that have been constructed, but do not hold water consistently, and are often dry, are also shown in Map C.

C. <u>Resource Objectives</u>

The following management objectives are from the September 1992 Three Rivers RMP/Record of Decision (ROD)/Rangeland Program Summary.

1. Improve or maintain erosion condition in moderate or better erosion condition (Appendix 9, pg. Appendices 87).

2. Adjust allotment capacities and management system, as needed, to address minerals development impact (Appendix 9, pg. Appendices 87).

3. Utilize rangeland improvements, as needed, to support achievement of multiple-use management objectives for each allotment as shown in Appendix 9. Range improvements will be constrained by the Standard Procedures and Design Elements shown in Appendix 12 (GM 1.3, pg. 2-36).

4. Adjust overall grazing management practices as necessary to protect SSS and to maintain or enhance their habitat (SSS 2.1, pg. 2-57). Currently, sage-grouse, or their habitat, are known to exist within the allotment.

5. Fence overflow area at all spring developments to provide meadow habitat for sage-grouse (SSS 3.3, pg. 2-60).

6. Implement a rotation or deferred grazing system on all allotments within big game ranges (WL1.2, pg. 2-66).

7. Maintain browse on at least 85 percent of the acreage in deer winter range currently supporting browse (WL1.3, pg. 2-67). Approximately 71 percent (6,873 acres) and 100 percent (9,688 acres) of Chalk Hills Allotment is classified as deer winter and summer range, respectively.

The following resource objectives are from the 1994 Cottonwood Creek/Chalk Hills Allotment Evaluation:

A. Maintain a stable or upward trend.

B. Maintain browse in at least 85 percent of the winter range currently supporting browse.

The following resource objectives are from the 2006 Chalk Hills Allotment Evaluation:

1. Provide for a stable to upward trend in vegetation composition and cover, and continue to provide habitat and forage for big game and livestock in the following amounts over the next 10 years: 54 AUMs for mule deer and 936 AUMs for livestock.

2. Maintain the availability of upland forbs for sage-grouse from May to mid-July each year in the Table Pasture during the next evaluation period.

Additional goals and objectives for this AMP; these are grazing management objectives. Therefore, determinations of success or failure in achieving the objectives should not be dependent on phenomena outside management's control (i.e., fire, drought, insect infestations, etc.):

1. Maintain or increase the percent composition and ground cover of key forage plant species at key areas of Chalk Hills Allotment, increasing resistance to noxious weed introduction and spread, over the next 10 years. Progress toward meeting this objective would be measured by the change in relative frequency of occurrence of key forage plant species as compared with total ground cover at established Pace 180° trend plots in key areas in the allotment. Upland trend data collected in previous years from key areas of the allotment shall serve as a baseline for determining progress toward achieving this objective.

2. Maintain or increase the percent composition of native perennial forbs on all sagebrush ecological sites to maintain sage-grouse brood-rearing habitat over the next 5 years. Progress toward meeting this objective would be measured by the change in relative frequency of occurrence of forb species as compared with total ground cover at established Pace 180° trend plots in key areas in the allotment. Upland trend data collected in 2008 from key areas of the allotment shall serve as a baseline for determining progress toward achieving this objective.

3. Maintain vigor and ground cover of existing stands of bitterbrush at all key areas of the allotment. Progress toward meeting this objective would be measured by ocular estimates and repeat photo monitoring at existing Pace 180° trend plots in key areas in the allotment, as well as at Cole Browse transects that will be established in 2010.

D. Decision Factors

Decision factors are additional questions or statements used by the decision maker to choose between alternatives that best meet project goals and resource objectives. These factors generally do not include satisfying legal mandates, including requirements under the National Environmental Policy Act (NEPA), which must occur under all alternatives. Rather, decision factors assess, for example, the comparative cost, applicability, or adaptability of the alternatives considered. Would the alternative:

1. Improve livestock distribution across the allotment and encourage more uniform utilization patterns?
2. Promote economic stability for the local and rural economy dependent upon public land grazing and public lands uses?
3. Provide rangeland resources to grazing permittees, and other users of the public land?
4. Employ adaptive management strategies in order to assure success in achieving project objectives?
5. Promote resistance to noxious weed invasion and establishment by encouraging diverse, productive, vigorous plant communities?

E. Decision to be Made

The BLM will decide whether or not to accept, reject, or accept with modifications the permittees request to issue a new 10-year grazing permit with specific terms and conditions. In addition, the authorized officer will determine whether or not to construct range improvements within the allotment and modify the grazing system.

F. Compliance with Land Use Plans

The Proposed Action and alternatives are in conformance with the Three Rivers RMP/ROD, dated September 1992, even though they are not specifically provided for, because they are clearly consistent with the RMP decisions outlined above under Section C. Resource Objectives.

G. Consistency with Other Authorities

The Proposed Action has been designed to conform to the following documents, which direct and provide the framework for management of BLM lands within Burns District:

- Taylor Grazing Act (43 U.S.C. 315), 1934
- The National Environmental Policy Act (42 U.S.C. 4320-4347), 1970
- Federal Land Policy and Management Act (43 U.S.C. 1701), 1976
- Public Rangelands Improvement Act (43 U.S.C. 1901), 1978
- August 12, 1997 Standards for Rangeland Health and Guidelines for Livestock Management for Public Lands Administered by the BLM in the States of Oregon and Washington
- 1998 Burns District Noxious Weed Management Program EA (OR-020-98-05)
- Greater Sage-grouse and Sagebrush-steppe Ecosystems Management Guidelines (BLM-2000)
- BLM National Sage-grouse Habitat Conservation Strategy (2004)
- Greater Sage-grouse Conservation Assessment and Strategy for Oregon, August 2005
- State, local, and Tribal laws, regulations, and land use plans

H. Issues Considered but not Analyzed in Detail

Wilderness characteristics (or values) will not be analyzed in this EA for two reasons:

1. In 2009 BLM did Wilderness Inventory Maintenance (WIM) on this area and determined that no substantive changes in conditions had occurred that would warrant reversal of the original wilderness inventory's findings that wilderness characteristics were not present in the area.

   The BLM's 1979 wilderness inventory found wilderness character not present on BLM-administered lands within the Chalk Hills Allotment.

In 2009, a WIM assessment was completed by a BLM IDT that included the lands in the Project Area. The IDT used current field data and determined that no substantive changes in conditions had occurred that would warrant reversal of the original wilderness inventory's finding that wilderness characteristics were not present in the area.

The Chalk Hills Allotment lies within eight WIM units: Drinkwater Unit (west of the Juntura Cutoff Road) and Rocky Basin WIM units, as well as six additional units that do not meet the size requirement of being over 5,000 acres.

The Drinkwater Unit WIM unit met the sufficient size requirement (6,044 acres) and the naturalness criteria, but did not meet the criterion for outstanding opportunities for solitude, and primitive and unconfined recreation. The unit is approximately 2 miles long by 4 miles wide; the small size of this unit and its location adjacent to Highway 20 prevent it from providing an outstanding opportunity for solitude, and primitive and unconfined recreation.

The Rocky Basin WIM unit met the sufficient size requirement (11,360 acres); however, only about 8 acres are within the Chalk Hills Allotment (Map D – Wilderness Inventory). The unit was found to meet the naturalness, outstanding opportunities for solitude, and supplemental values criteria. The unit as a whole did not meet the criterion for outstanding primitive and unconfined recreation. This is due to the diversity and quality of the recreational opportunities present are not unique and do not present characteristics that would result in these activities being outstanding. Overall, it was determined that this unit area, or a portion of the area, has wilderness characteristics. While the rest of the Rocky Basin WIM unit lies within the Citizen Proposed Cottonwood Wilderness Study Area (WSA), the Citizen Proposed WSA boundary stops at the Chalk Hills Allotment boundary and these 8 acres are not within the Citizen Proposed WSA. There is no proposed road, or other improvement within these 8 acres. Therefore, the Proposed Action or the alternatives would have no effect to the wilderness characteristics. This issue will not be analyzed further.

CHAPTER II: ALTERNATIVES INCLUDING THE PROPOSED ACTION

Alternatives A through E have been fully analyzed in Chapter III of this AMP/EA. Following the public review period for this document a proposed decision would be made by the Field Manager that may choose to proceed with any one of the alternatives analyzed or a combination of portions of multiple alternatives.

A. Actions Common to All Alternatives

1. Adaptive Management and Flexibility

Adaptive management is a system of management practices based on clearly identified outcomes and monitoring to determine if management actions are meeting desired outcomes; and, if not, facilitating management changes that would best ensure outcomes are met or reevaluated. Adaptive management recognizes that knowledge about natural resource systems is sometimes uncertain and, in this context, adaptive management affords an opportunity for improved understanding. Knowing uncertainties exist in managing for sustainable ecosystems, changes to the proposal may be authorized for reasons such as, but not limited to:

- Adjust the rotation/timing of grazing based on previous year's monitoring and current year's climatic conditions.
- Adjust the rotation/season of use of grazing based on previous year's monitoring of bitterbrush utilization and Cole Browse Transects to ensure at least 85 percent of existing deer winter range within this allotment remains intact.
- Drought causing lack of available water in certain areas originally scheduled to be used.
- Changes in use periods to balance utilization levels per pasture.
- Damages to the riparian and water resources.

Flexibility in grazing management would be authorized and changes in rotations would continue to meet resource objectives. Flexibility is dependent upon the demonstrated stewardship and cooperation of the lessee. Rangeland monitoring is a key component of adaptive management. As monitoring indicates changes in grazing management are needed to meet resource objectives, they are implemented annually working with the lessees.

2. Monitoring

Monitoring, by BLM staff in coordination with the livestock operator, of the success in meeting allotment-specific resource objectives would take place following implementation. Pace 180° methodology (1984 Technical Reference (TR) 4400-4) and permanent photo points would be used to measure the relative frequency of occurrence of key forbs, shrubs, and perennial grass species, to assess trend in rangeland condition. The Cole Browse Method will be used to monitor antelope bitterbrush (*Purshia tridentata*), an important browse species for mule deer winter range within this allotment.

Soil Surface Factor methodology would be used to measure soil stability and Observed Apparent Trend would be assessed at each upland trend plot. Upland trend data would be collected and analyzed on 10-year intervals. The Cole Browse Method will be done annually to ensure utilization of bitterbrush by livestock leave at least 85 percent of the deer winter range intact and adjustments to the grazing rotation and season of use within deer winter range can be made every year if needed.

Annual utilization studies for each pasture grazed by livestock along with multiple-use supervision reports would be collected by BLM staff. The Key Forage Plant Method would be used to measure utilization in each pasture. Target utilization levels for key forage plant species are shown in Table 2 below.

Table 2: Key Species and Target Utilization Levels for Pastures Comprising Chalk Hills Allotment

Pasture	BLM Acres	Key Species	Utilization Target
Iron Spring	2,326	Bluebunch wheatgrass (*Pseudoroegneria spicata*)/Crested wheatgrass (*Agropyron cristatum*)	50%
Chimney Spring	1,612	Bluebunch wheatgrass	50%
Table	1,318	Bluebunch wheatgrass	50%
Three C's	1,150	Bluebunch wheatgrass	50%
Zinc Spring	2,529	Bluebunch wheatgrass	50%

During each allotment visit monitoring for noxious weed establishment would be occurring, as well as observations of overall rangeland condition. Adjustments to timing of grazing and pasture use sequence to ensure continued achievement of Standards and to meet resource objectives may be implemented based on this annual data.

a. New Monitoring:

(1) Establish Cole Browse plots in stands of bitterbrush throughout the allotment.
(2) Establish an upland trend plot at photo plot 5526-008 in the Zinc Spring Pasture.
(3) Establish an upland trend plot at photo plot 5526-007 in the Zinc Spring Pasture.
(4) Establish an upland trend plot at photo plot 5526-004 in the Table Pasture.
(5) Re-establish upland trend plot 5526-003 in the Three C's Pasture.
(6) Establish a riparian monitoring plot along the 0.4-mile of Mill Gulch present in the northwest corner of the allotment.

B. Alternative A: No Action

The No Action Alternative would renew the existing livestock grazing permit (#3601627) in Chalk Hills Allotment for 10 years, continuing the current grazing management, for the permitted season of use from April 16 through August 15, by 233 cattle. Permitted use would remain at 935 AUMs on public land. The permit would be issued with the same terms and conditions as the expiring permit. See Table 3 below for the current grazing management. No range improvements would be constructed under this alternative. Livestock grazing management would continue to not conform to Guidelines due to no periodic growing season rest in all pastures.

Table 3: Average Livestock Grazing Management (1994-2009)

Pasture Number	Pasture Name	Approximate Use Dates	Permitted Active AUMs	Season of Use (Grazing Treatment Description)
1	Iron Spring	05/09 – 06/29	140	Graze
2	Chimney Spring	05/28 – 08/02	195	Graze/Defer
3	Table	06/14 – 08/23	130	Graze/Defer
4	Three C's	05/23 – 07/25	160	Graze/Defer
5	Zinc Spring	05/14 – 07/22	310	Graze/Defer

C. Alternative B: Proposed Action – Management Changes and Project Development

The Proposed Action was developed by the BLM in order to address the permittee's request to change season of use and grazing management, and to address the concern that the allotment is at risk of not continuing to achieve Standards in the future if current management is continued. The Proposed Action conforms to all Guidelines by providing current growing season rest, which is lacking in the current management.

1. Proposed Management

a. Livestock Grazing Management:

(1) Livestock grazing management is designed to provide periodic growing season rest for upland plant species. Use periods per pasture may vary annually in order to provide for recommended rest periods described in Table 4 below. Livestock numbers may vary annually as outline under Adaptive Management, (Chapter II, A. Actions Common to All Alternatives); however, total AUMs will not exceed 935.

Table 4: Proposed - General Livestock Grazing Management

Year	Pasture Number	Pasture Name	Livestock Number	Approximate Use Dates	Approximate AUMs	Season of Use (Grazing Treatment Description)
All	1	Iron Spring	71	08/01 – 09/30	142	Defer
All	2	Chimney Spring	90	08/01 – 09/30	180	Defer
All	4	Three C's	80	08/01 – 09/30	160	Defer
All 5		Zinc Spring	160	08/01 – 09/30	322	Defer
1	3	Table	43	05/01 – 07/31	130	Graze
2	3	Table	51	07/15 – 09/30	131	Defer

(2) Current permitted season of use would be changed from April 16 through August 15 to May 1 through September 30 for Permit #3601627 to carry out the proposed grazing management. Refer to Maps E and F for proposed grazing schematics and Appendix A for Grazing Treatment Descriptions. Extending the permitted season of use would not increase the 935 AUMs of active use on public land.

All pastures except Table Pasture would receive an annual defer treatment. Table Pasture would receive a graze treatment in year 1 and a defer treatment in year 2. Under this grazing management, all pastures would receive periodic growing season rest (in the form of a deferment grazing treatment) at least every other year (which is lacking under current management), resulting in conformance to Guidelines. If monitoring indicates a possible riparian issue with the deferred grazing within Iron Spring Pasture, the grazing rotation would be changed to an early/graze system until the fence to control or exclude livestock use could be completed.

2. Permit Renewal

The Proposed Action also includes renewal of the existing livestock grazing permit (#3601627) in Chalk Hills Allotment for the current permittee. A new 10-year term livestock grazing permit would be issued to continue 935 active use AUMs of livestock grazing on public land as outlined in Table 4: Proposed - General Livestock Grazing Management. No changes to AUM numbers would occur. The permit would be issued with changes to the terms and conditions, encompassing the change in season of use from April 16 through August 15 to May 1 through September 30, and all other changes within this AMP.

Due to the variability in forage production from year to year, and the unreliability of water sources, actual use billing is authorized for the permittee in this allotment. Annual grazing will be authorized with a Letter of Authorization prior to turn out. Conditions are that accurate records are kept and an Actual Use Grazing Report is submitted within 15 days after the authorized use is completed. If conditions are not met, actual use billing would no longer be allowed, and advanced billing would occur.

3. Proposed Range Improvements

Rangeland improvement activities would include construction of pipelines, improved spring development, and construction of new fences. Additional water resources would enlarge livestock and wildlife range, improve distribution of livestock and help to attain acceptable levels and patterns of utilization. Fences would be used to protect spring sources and the surrounding riparian areas, and as a tool to facilitate livestock management that would further improve distribution within two affected pastures. If adaptive management suggested that defer grazing in Iron Spring Pasture along 0.4-mile of Mill Gulch is damaging the riparian and water resources, a fence would be built to create a riparian exclosure pasture.

Upon affirmative final decision of this Proposed Action, cooperative agreements between the Chalk Hills Allotment permittee and Burns District BLM would be completed to address each partner's responsibilities for construction, maintenance, and/or supplies.

a. Spring Development

The development of an unnamed spring, which currently feeds into Dead Cow Reservoir, located at T. 20 S., R. 37 E., Section 31, NE¼SW¼, would occur, consisting of an exclosure fence (large enough to allow wildlife to comfortably enter it) and a standard trough. Dead Cow Reservoir was constructed in 1959 by digging out the spring and adding a small dam causing the water to pool. Water would be provided by piping water to a trough outside the proposed exclosure. When livestock are not present in pastures, the gates would remain open, allowing wildlife in the area access to a natural water source.

The exclosure fence around Zinc Spring (T. 20 S., R. 37 E., Section 8, SW¼NE¼) would be expanded to protect the entire spring area and associated riparian vegetation. The spring was originally developed in 1977 with a small exclosure around the spring which does not encompass the entire spring. A second (new) exclosure would be constructed around the overflow area (which is in a drainage) in order to protect riparian vegetation, reduce erosion at the site, and provide a meadow habitat for birds.

Construction at both springs would be for a typical spring development, as applicable. For the Dead Cow Reservoir/Spring source a head box would be installed with water piped to a trough within 100 feet of the spring. From the collection box, a trench would be dug to bury a plastic pipe that would transport water to the new trough. A ripper tooth mounted to a dozer would most likely be used for digging a trench approximately 30 to 36 inches deep where 2-inch black PVC pipe would be buried. The disturbed ground along the pipeline would be seeded to help prevent the establishment of noxious weeds.

All fence construction would follow the General Project Design Elements for Proposed Range Improvements (described below).

b. Pipeline Construction

Approximately 5.3 miles of pipeline would be constructed within the Chalk Hills Allotment.

A 3.3-mile pipeline would come off of the Three C's Well (T. 20 S., R. 36 E., Section 26, SW¼SE¼); approximately 1.7 miles of pipeline would be connected to the current troughs overflow and piped east to the Juntura Cutoff Road and then south to a trough in Section 36, NE¼SE¼, in the Three C's Pasture. Currently, the only water source in this pasture is at the well.

Where the pipeline corners at the Juntura Cutoff Road, a drain would be installed, which would allow water to empty into a natural drainage and flow into the CC Reservoir (T. 20 S., R. 36 E., Section 36, NE¼NE¼) providing an additional water source for the Chimney Spring Pasture. (This drain would only be opened occasionally to supply water to the reservoir when livestock are present and when the reservoir is dry. The drain would only remain open long enough to allow a usable amount of water to accumulate in the reservoir; it would not result in a riparian area along the drainage). Currently the only reliable water source in Chimney Spring Pasture is Dead Cow Reservoir. The two other reservoirs in this pasture do not hold water on a regular basis.

At the Three C's well, a storage tank (above ground) would be placed uphill from the well, and the remaining 1.6 miles of pipeline would run from it.

A storage tank is required in order to make the beginning of the pipeline the highest point on the pipeline, allowing the water to gravity flow over a small saddle. This section of pipeline would start at the well, go to the storage tank, and then go from the storage tank northeast to T. 20 S., R. 36 E., Section 25, NE¼NE¼. At this point the pipeline would turn north and end at a trough in the Iron Spring Pasture at T .20 S., R. 36 E., Section 24, SW¼SW¼. The only reliable water in the Iron Spring Pasture is from a trough located in the northeast corner at a private well. The reservoir in this pasture rarely has water, and Mill Gulch is classified as an intermittent stream.

The remaining 2.0 miles of pipeline would run from a well on private property in T. 20 S., R. 36 E., Section 13, NE¼NE¼. This pipeline would run south, following a road to the boundary fence separating Zinc Spring and Chimney Spring Pastures. A bottomless trough, storage tank (above ground), and secondary pump (run by a generator or solar power) would be located approximately 1.2 miles from the well in T. 20 S., R. 37 E., Section 19, SE¼NW¼ in the Zinc Spring Pasture. A second trough would be located at the fence dividing Zinc Spring and Chimney Spring Pastures in T. 20 S., R. 37 E., Section 19, SE¼SW¼. This bottomless trough would service both pastures, allowing improved distribution due to a more reliable water source. Currently the only reliable water sources in Zinc Spring Pasture are Zinc Spring in the northeast, and a trough located at the private well; the Chimney Spring Pasture's most reliable source of water is Dead Cow Reservoir in the southwest part of the allotment; the permittee hauls water to the northeast side of the pasture, annually in an attempt to improve distribution.

Cooperative agreements between the BLM and grazing permittee would be developed to fill associated storage devices (i.e., troughs, storage tanks) after livestock are removed, to provide water for wildlife. Heavy equipment (i.e., trenchers) and manual labor would be used during construction of these developments. Associated storage tanks, pipelines, and water troughs with float valves would be included in project designs, as needed. The required design for the proper function of the water supply would vary to accommodate the associated storage tanks, capacity, and number of water troughs.

c. Mill Gulch Riparian Exclosure Fence

If monitoring indicates the deferred grazing system in Iron Spring Pasture is not maintaining riparian function (e.g., downward trend in riparian condition, increased erosion, etc.) to the Mill Gulch riparian and water resources, a fence approximately 0.4-mile long would be constructed to create a riparian exclosure in the northwest corner of this allotment.

This would require a cattleguard across the Juntura Cutoff Road, and would result in an exclosure approximately 43 acres in size. If this fence is constructed, the resulting exclosure would be opened to livestock grazing when the accumulation of fine fuels begin to limit new vegetative growth or becomes a fire hazard. If monitoring indicates an issue with the deferred grazing within this pasture, the grazing rotation would be changed to an early/graze system until the fence could be completed.

Refer to Map G for the Proposed Action range improvement locations.

d. General Project Design Elements for Proposed Range Improvements

(1) Proposed rangeland improvement sites would be surveyed for cultural values prior to implementation. Where cultural sites are found, their condition and National Register eligibility would be evaluated. If determined National Register eligible and under threat of damage, mitigation measures to protect cultural materials would be determined. Mitigation plans would be developed in consultation with the State Historic Preservation Office if necessary. Mitigation measures can include protective fencing, surface collection and mapping of artifacts, subsurface testing and complete data recovery (full-scale excavation).

(2) Proposed rangeland improvement sites would be surveyed for Special Status plant species prior to implementation. Special Status plant sites would be avoided.

(3) No range improvement projects would be constructed within 0.6-mile of known sage-grouse lek sites.

(4) All proposed fences constructed in sage-grouse habitat would include plastic safety clips on the wire to reduce potential mortality from sage-grouse hitting the fence.

(5) Proposed range improvement sites would be surveyed for noxious weed populations prior to implementation. Weed populations identified in or adjacent to the proposed projects would be treated using the most appropriate methods in accordance with the 1998 Burns District Noxious Weed Management Program EA/Decision Record (DR) OR-020-98-05.

(6) The risk of noxious weed introduction would be minimized by ensuring all equipment (including all machinery, 4-wheelers, and pickup trucks) is cleaned prior to entry to the sites, minimizing disturbance activities, and completing follow-up monitoring, to ensure no new noxious weed establishment.

Should noxious weeds be found, appropriate control treatments would be performed in conformance with the 1998 Burns District Noxious Weed Program Management EA/DR OR-020-98-05.

(7) All proposed fences would be constructed using BLM approved standards for four-strand fences.

(8) All watering troughs installed would be equipped with escape ramps for birds and small mammals.

(9) Reseeding would take place in areas disturbed by implementation of rangeland improvement projects. Soil displaced for pipeline installation would be pulled in and returned to original slope and grade then seeded with a whirlybird seeder and drag. The seed mix used for these rangeland improvement projects would be a mixture of native and nonnative species including crested wheatgrass, bluebunch wheatgrass, squirreltail (*Elymus elymoides*), and native forbs. Crested wheatgrass would be used in the seed mix because it is drought tolerant, competitive with invasive species, has a long seed viability period, and aggressive germination characteristics; therefore, reducing the chance of noxious weed establishment.

(10) In the development of springs, the spring source and trough overflow area would be fenced to prevent livestock grazing and trampling and provide meadow habitat. A small waterhole would be developed inside the fenced overflow area for wildlife use.

(11) One to two-inch diameter plastic pipe is generally used for pipelines. The pipeline is buried with a pipe-laying device consisting of a modified ripper tooth mounted on a tractor. The pipe is generally laid as deeply as possible under the ground, but no deeper than 36 inches. Where obstructions (e.g., rock) prohibit burying, the pipe would be laid on the surface and covered with borrowed soil.

(12) The grazing permittees would be responsible for all fence maintenance. Proper fence maintenance would be a stipulation for turnout each year.

D. Alternative C: Proposed Action with Modified Livestock Grazing Management

This alternative would include all the proposed range improvements and permit renewal. The alternative only differs from the Proposed Action in the livestock grazing management. This rotation would allow for rest on browse species (namely bitterbrush) throughout the allotment; bitterbrush is an important deer winter range browse species. Refer to Maps H, I, and J for Alternative C grazing rotation.

Table 5: Alternative C - General Livestock Grazing Management

Year	Pasture #	Pasture Name	Livestock #	Approximate Use Dates	Approximate AUMs	Season of Use (Grazing Treatment Description)
1	1	Iron Spring	50	05/01 – 07/31	152	Graze
1	2	Chimney Spring	91	08/01 – 09/30	182	Defer
1	3	Table	38	05/01 – 07/31	115	Graze
1	4	Three C's	80	08/01 – 09/30	160	Defer
1	5	Zinc Spring	162	08/01 – 09/30	325	Defer
2	1	Iron Spring	76	08/01 – 09/30	152	Defer
2	2	Chimney Spring	58	05/01 – 07/31	175	Graze
2	3	Table	53	07/15 – 09/30	136	Defer
2	4	Three C's	52	05/01 – 07/31	158	Graze
2	5	Zinc Spring	156	08/01 – 09/30	312	Defer
3	1	Iron Spring	76	08/01 – 09/30	152	Defer
3	2	Chimney Spring	94	08/01 – 09/30	189	Defer
3	3	Table	65	08/01 – 09/30	130	Defer
3	4	Three C's	79	08/01 – 09/30	158	Defer
3	5	Zinc Spring	101	05/01 – 07/31	305	Graze

E. Alternative D: Proposed Action with Fewer Range Improvements

This alternative would follow the Proposed Action, but would remove the construction of all 5.3 miles of pipeline. Under this alternative, the grazing management and permit renewal outlined in the Proposed Action would still occur, as would the spring exclosure expansion and construction, and the riparian exclosure fence. See Map K for the locations of range improvements proposed under this alternative.

F. Alternative E: Switch to Every Other Year Grazing in Four Pastures

Under this alternative, livestock grazing would be on graze/rest, 2-year rotation in Iron Spring, Zinc Spring, Chimney Spring, and Three C's Pasture. The Table Pasture would follow the grazing schedule outlined in the Proposed Action, and antelope bitterbrush would receive rest from utilization during graze treatment years. In the years that all pastures are grazed, they would all follow the livestock grazing management in the Proposed Action. The four pastures that would be rested every other year make up the majority (approximately 92 percent) of the deer winter range within this allotment. Rest on an every other year basis would provide bitterbrush with periodic rest. On years when grazing does not occur on Iron Spring, Zinc Spring, Chimney Spring, and Three C's, the permittee would only be allowed 161 AUMs of active use on the allotment. This would equate to an 83 percent reduction in permitted active use AUMs authorized under grazing Permit #3601627 every other year. This alternative would include all the proposed range improvements and permit renewal.

G. Alternatives Considered but not Fully Analyzed

1. Conversion of Livestock Type and Removal of Fences

This alternative would convert the current livestock grazing permits from cattle to domestic sheep. Because sheep utilization is intensively managed by a herder, the internal allotment fences could be removed. This type of livestock use would intensively manage utilization levels and timing of use, therefore, improving rangeland condition. However, this alternative was eliminated from detailed analysis for the following reasons:

a. No Demand for Domestic Sheep Grazing

Chalk Hills Allotment has historically been a cattle grazing allotment. The permittee who holds the grazing permit on the allotment operates a ranch, which has been producing cattle for multiple generations. The infrastructure of this ranch (i.e., handling facilities, winter range, winter feed, and employees) are designed for cattle production. Changing from cattle to a sheep business would require a complete change of their facilities including, but not limited to, rebuilding chutes, corrals, and fences and building lambing sheds. A change in management would also likely occur with hiring of sheepherders, as experience varies between sheepherders and wranglers; predator control would also need to occur. Considerable costs would be involved in making the above changes; therefore, this alternative is economically infeasible. There has been no demand by the affected permittee to switch to sheep production on this allotment nor has it been raised as an issue. The implementation of this alternative is remote due to the factors mentioned above.

2. Complete Removal of Livestock Grazing

Complete removal of livestock within the Chalk Hills Allotment was not further analyzed for the following reasons: 1) It does not meet the purpose of and need to issue a 10-year term grazing permit; 2) Four of five Standards are being achieved, and Standard 5 is not achieved due to juniper encroachment; livestock is not a causal factor, and therefore their removal would not create conditions under which this Standard could be achieved; 3) Pastures in this allotment not conforming to Guidelines are being considered for adjusted grazing management under other alternatives, which meet the Purpose and Need; 4) It is unlikely that it would be economically viable, as the permittee would have to provide replacement forage for 935 AUMs. Fair Market Value (FMV) for an AUM is between $17 and $25 for private AUMs (includes full care of livestock while on private lands, the permittee must provide complete care of livestock while grazing on BLM-administered lands including fence maintenance and salting). When the FMV is compared to the BLM cost of $1.35/AUM, it would cost approximately $14,632.75 more (at $17/AUM) to replace the existing BLM AUMs with private AUMs on an annual basis. Hay to replace the 935 AUMs would require approximately 234 tons (one-quarter ton of hay per cow per month). Current cost of hay is averaging $140 to $225/ton. The cost to feed hay to replace the AUMs would be approximately $32,760 to $52,650, plus labor, on an annual basis.

Based on the above rationale, this alternative was not considered for further analysis.

CHAPTER III: DESCRIPTION OF THE AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

An IDT has reviewed and identified issues and resources affected by the alternatives, the results are summarized in Table 5 below. Affected resources are in bold.

This environmental consequences section presents the potential changes to the environment resulting from implementation of the alternatives. This chapter describes all expected effects including direct, indirect, and cumulative on resources from enacting the proposed alternatives.

Direct and indirect effects plus past actions become part of the cumulative effects analysis; therefore, use of these words may not appear. The Reasonably Foreseeable Future Actions (RFFAs) for this site are continued livestock grazing, weed treatments, road maintenance, recreation activities, and machine pile and burn on 966 acres of previously cut juniper (Chalk Hills Habitat Improvement Project); these are also relevant to cumulative effects and are discussed under each resource as applicable. The Celatom Mine Expansion Project, although an RFFA, is still in process and subject to change based on public comments in future NEPA analysis and subsequent administrative remedies. The effects of this RFFA for mine expansion are not addressed in this analysis.

Table 6: Elements Affecting the Human Environment

Elements of Human Environment		Status	If Not Affected, why? If Affected, Reference Applicable EA Section
Areas of Critical Environmental Concern (ACECs)		Not Present	There are no ACECs within this allotment.
Air Quality (Clean Air Act)		Not Affected	The Proposed Action includes construction of range improvements; however, these actions would not have a measurable effect on air quality.
American Indian Traditional Practices		Not Affected	Though practices may occur within this allotment, it is not likely any alternative would have an affect beyond what has occurred in the past.
Cultural Heritage		**Affected**	See Chapter III, Part A.1
Environmental Justice (Executive Order 12898)		Not Affected	The Proposed Action and alternatives would not have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations as such populations do not exist within the Project Area.
Farmlands (prime or unique)		Not Present	No concerns have been disclosed.
Grazing Management/ Rangelands		**Affected**	See Chapter III, Part A.2
Fisheries		Not Present	There are no fish bearing streams within this allotment.
Flood Plains (Executive Order 13112)		Not Present	No occupancy or modification of flood plains, no risk of flood loss.
Hazardous or Solid Waste		Not Present	No concerns have been disclosed.
Migratory Bird Treaty Act (Executive Order 13186)		**Affected**	See Chapter III, Part A.3
Noxious Weeds (Executive Order 13112)		**Affected**	See Chapter III, Part A.4
Paleontology		Not Affected	It is not likely any alternative would have an affect beyond what has occurred in the past.
Recreation/Visual Resources		**Affected**	See Chapter III, Part A.5
Riparian Zones/Wetlands and Water Quality (Executive Order 11990)		**Affected**	See Chapter III, Part A.6
Social and Economic Values		**Affected**	See Chapter III, Part A.7
Soils and Biological Soil Crusts (BSCs)		**Affected**	See Chapter III, Part A.8
SSS and Habitat	Wildlife	**Affected**	See Chapter III, Part A.9
		Not Affected	SSS bats - foraging and roosting habitat not affected.
	Plants	Not Present	No known SSS within this allotment.

	Fish	Not Present	There are no fish bearing streams within the allotment.
T/E Species or Habitat	Wildlife	Not Present	There are no known T/E species found within the allotment.
	Plants	Not Present	No known T/E species found within the allotment.
	Fish	Not Present	There are no fish bearing streams within the allotment.
Upland Vegetation		**Affected**	See Chapter III, Part A.10
Wild and Scenic Rivers (WSRs)		Not Present	There are no WSRs within the allotment.
Wilderness/WSAs		Not Present	There is no designated wilderness or WSAs within the allotment.
Wilderness Characteristics		Not Affected	See Chapter I, Part G
Wildlife/Locally Important Species and Habitat		**Affected**	See Chapter III, Part A.11

A. Resources

1. Cultural Heritage

Current discussion and analysis of potential effects to cultural heritage are tiered to the 1991 Three Rivers Proposed RMP/Final Environmental Impact Statement (PRMP/FEIS) and contained in the following sections: Chapter 2, p. 2-152 and Chapter 3, p. 3-21.

Affected Environment: Cultural Heritage

Eleven percent (1,046 of 9,686 acres) of the Chalk Hills Allotment has been inventoried for cultural resources. Inventories for waterhole construction, a pipeline and juniper cuttings have been completed.

Five cultural sites have been found in this allotment. Two are single "Stock Driveway" posts, probably dating from the early 20th century. One site is a single-use, prehistoric stone tool making site, and two others are more complex prehistoric campsites. They contain flaked stone tools and waste flakes with one containing grinding stones and a "Stock Driveway" post. Other cultural sites are likely to exist within this allotment. Because of the underlying geology of much of the area, a number of important root crops may not be available in this area.

All five sites have been affected by grazing. The "Stock Driveway" posts have been used as rubbing posts by livestock while other sites have received light (up to 3 inches deep) to moderate (up to 6 inches) scuffing of surface sediments. Other impacts include weathering of the "Stock Driveway" posts due to exposure to the elements, erosion, and road construction/use.

Paleontological resources are known to occur in this allotment. Fossils would be the type associated with underwater sediments and likely be fish, wood, and vegetation.

Historic and modern American Indian use of the allotment is not known.

Environmental Consequences: Cultural Heritage

Effects Common to All Alternatives:

For the purposes of this analysis, the Cumulative Effects Analysis Area (CEAA) cultural resources is at the allotment scale. All Action Alternatives and other ongoing and reasonably foreseeable future projects would not lead to cumulative effects to cultural resources because proposed projects would be localized or the sites would be completely avoided. Potential direct and cumulative effects to cultural resources would be mitigated through project-specific cultural resource inventory and mitigation measures prior to any project implementation. The extent that sites have been affected by livestock trampling in the past has not been adequately measured and quantified. Therefore, it is not possible at this time to determine if continued livestock grazing would further affect sites.

Alternative A: No Action

Under the No Action Alternative, the assumption is that generalized grazing effects in the allotment would continue. Light to moderate (3 to 6-inch deep) surface scuffing would occur at cultural sites subject to generalized grazing. These effects would be seen as horizontal and vertical displacement of artifacts, and artifact breakage and disturbance of up to the top 6 inches of site fill (if present).

The only exception to this assumption would be effects of concentration of animals at existing water developments. Cultural resources in these locations could be affected by increased trampling, causing artifact breakage, horizontal and vertical displacement of artifacts and churning of the top 10 inches of sediment. These effects could reduce the data potential of archaeological sites and diminish their potential for nomination to the National Register of Historic Places.

Alternative B: Proposed Action

Generally, the Proposed Action range improvement projects would ultimately spread livestock use across the allotment to better utilize the available forage. The development of additional water sources would increase geographic spread of livestock into locations that may not have received prior grazing pressure and lessen the effects of grazing in other, more intensely used areas in the allotment.

It is assumed more widely spreading the same number of animals across the allotment would diminish trampling affects generally allotmentwide. Trampling effects on cultural resources would then be lessened in areas grazed in the past and the impact of grazing in new areas would be at low levels.

Alternative C: Proposed Action with Modified Livestock Grazing Management

The livestock grazing effects under this alternative would be the same as Alternative B.

Alternative D: Proposed Action with Fewer Range Improvements

Livestock grazing effects would be similar to Alternative A (No Action) because new water developments would be limited and spreading the use throughout the allotment would not occur.

Alternative E: Switch to Every Other Year Grazing in Four Pastures

Livestock grazing effects would be similar to Alternatives A and D because new water developments would not occur nor would spreading livestock use throughout the allotment. The effects would be less during rest years in three pastures but remain the same in graze years.

2. Grazing Management/Rangelands

Current discussion and analysis of potential effects to livestock grazing management are tiered to the 1991 Three Rivers PRMP/FEIS and contained in the following sections: Chapter 2, p. 2-33 and Chapter 3, p. 3-4.

Affected Environment: Grazing Management

Authorized use consists of one cattle grazing permit (#3601627) in this allotment. The permitted active use for this permit is for 233 cattle from April 16 through August 15 equaling 935 AUMs of active use. Cattle numbers can fluctuate annually as long as the 935 AUMs of total active use on the allotment are not exceeded. In this allotment there are intermixed private lands within BLM-managed pastures (Table 7).

Calculated carrying capacity on public lands (within the five allotted pastures) is 1,212 AUMs of forage available for livestock and 54 AUMs of forage for wildlife. These numbers were based upon calculations completed in 2006 from data collected between 1994 and 2005. This data can be found in the Chalk Hills Allotment file, evaluation section. From 1991 to 2009, the permittee has taken partial voluntary nonuse, making the average active use during that period 487 AUMs.

Table 7: Percent Public and Private Land per Pasture

Pasture	% Public	% Private
Iron Spring	75.8	24.2
Chimney Spring	100.0	0.0
Table	99.4	0.6
Three C's	100.0	0.0
Zinc Spring	100.0	0.0

The previous AMP was written in 1994 and planned for grazing management providing periodic growing season rest of upland species in the Zinc Spring, Chimney Spring, Three C's, and Table Pastures by using 2-year rotations of graze and defer treatments. Iron Spring was managed to provide an early, defer or rest treatment in year one, and then graze April 1 through August 30 in year two (an early/graze/defer treatment). This plan has not provided growing season rest for upland vegetation in Iron Spring Pasture. While rest was one of three possible options available in year one of the grazing rotation, since 1994, rest only occurred in 2007 (the year of the permit transfer). The defer option for year one has only been used twice (1995 and 2009), meaning the remaining years all received use during the growing season (11 consecutive years).

While the 1994 AMP provided for periodic growing season rest in the other four pastures (using a graze/defer rotation), this rotation has not been followed. Between 1994 and 2009, all pastures have received consecutive growing season use for at least 4 consecutive years; the Zinc Spring Pasture had 13 consecutive years of a graze treatment. The grazing management in Chalk Hills Allotment is not conforming to the Guidelines, and rangeland condition within the allotment is at risk for a downward trend due to continuous early season grazing during the critical growth period of desirable forbs and grasses.

Native upland plant communities within the allotment have remained in stable to upward trend in condition, with the exception of Chimney Spring Pasture which had a downward trend in the 2006 allotment evaluation. This downward trend was due to juniper encroachment and plot placement near a water source. While it appears continuous seasonlong grazing within this allotment has not caused a downward trend in rangeland condition, it is important to remember that from 1991 to 2009, the average active use on this allotment was 487 AUMs, which is only 52 percent of Permitted Active Use. To comply with BLM guidance, FLPMA, and Standards, the BLM needs to ensure that the full permitted use can be made while sustaining the resource values and rangeland conditions on the allotment. The 2006 allotment evaluation stated the allotments uplands were "at risk for undesirable compositional changes as key species decline in vigor and population" if the current trends are maintained and no periodic grazing season rest occurs. Currently this allotment is in the same condition as assessed in the 2006 evaluation.

Livestock use periods are currently early enough to allow for regrowth of riparian forage species following grazing on the 0.4-mile of Mill Gulch.

Lack of reliable water sources is the limiting factor affecting grazing management across the allotment. On most years, livestock utilization is concentrated in service areas within 1 to 2 miles of reliable water sources (Map C – Range Improvements for reliable water). This results in poor grazing distribution, repeat defoliation of forage plants, and heavy to severe utilization (>61 percent) patterns within these service areas. The permittee has attempted to provide growing season rest within these service areas during years of above average precipitation when more waterholes contain water; however, this is only estimated to occur 1 out of every 5 years. Areas further away from water experience light (<20 percent) to no grazing use.

In 2006, a 966-acre juniper cut project was completed within Chimney Spring Pasture. This cut should result in increased forage available within Chimney Spring Pasture, while releasing some water.

Effects Common to All Alternatives:

For the purposes of this analysis, the CEAA for livestock grazing management consists of the allotment. Past and present actions, such as those described in *Affected Environment*, have influenced the existing environment within the CEAA. RFFAs in the CEAA that may contribute to cumulative effects to livestock grazing management include wildlife use, hunting and other recreational pursuits, diatomaceous earth mine exploration, noxious weed treatments, and cutting and prescribed burning to reduce hazardous fuels and restore habitat. Within the allotment, up to 1,000 acres of cut juniper will be machine piled, burned, and seeded within the next few years. Past and RFFAs that have affected livestock grazing management are found in Table 8.

Table 8: Grazing Management Past and RFFA

ACTION	PAST ACTIONS				FUTURE ACTIONS			
	ACRES	SQ. MILES	MILES	NUMBER	ACRES	SQ. MILES	MILES	NUMBER
Wildfires	665	1.04	--- -	--	Unknown	Unknown	--- -	--
Tree/Shrub cutting/mowing	966	1.5	--- -	--	None	None	--- -	--
Rx Burns	None	None	--- -	--	966	1.5	--- -	--
Seedings	900	1.4	--- -	--	None	None	--- -	--
Fences	---	---	31.3	---	---	---	None	---
Mine (Exploratory)	2,447	3.8	--- -	--	None	None	--- -	--
Reservoirs	---	---	---	6	---	---	---	None
Spring Developments	---	---	---	1	---	---	---	None
Wells	---	---	---	1	---	---	---	None

Alternatives analyzed in this document may incrementally affect livestock grazing management by providing more reliable water sources, improving utilization and distribution patterns. The Proposed Action, Alternatives C and E would likely contribute to cumulative effects to livestock grazing management, due to improved livestock distribution. The No Action Alternative and Alternative D would not have cumulative effects to livestock grazing management.

Alternative A: No Action

Livestock grazing management would be maintained as described in Chapter II under the No Action Alternative. This alternative would maintain continuous seasonal grazing during the authorized season of use (April 16 through August 15) in Chalk Hills Allotment. The permit would be renewed with no changes in terms and conditions.

No new fences or water developments would be implemented to enhance livestock distribution and utilization patterns. Repeated heavy to severe utilization (>61 percent) patterns would continue within 1 to 2 miles of reliable water sources. Periodic growing season rest from livestock grazing would only be provided in these areas during years of above average precipitation when marginal waterholes contain water. Upland and riparian plant communities that lack periodic opportunity to recover vigor, set seed, and establish seedlings, decline in population over time.

Under current management, carrying capacity within the Chalk Hills Allotment would be reduced. Continuous seasonal grazing would lead to reduced functional and structural diversity of these plant communities as key forage plant species decline in vigor and population. Over time, this would promote homogeneous plant communities less efficient at utilizing site resources by occupying the potential rooting volume of the soil and photosynthesizing throughout the potential growing season. This could also promote establishment of undesirable plant species such as cheatgrass and medusahead, which are both currently present in the allotment. Guidelines for Livestock Grazing Management would continue to not be met due to the lack of growing season rest. The Standards that are currently met would likely not be met in the future under the current grazing management system if the permittee uses all 935 AUMs of Active Permitted Use.

This alternative would not ensure achievement of allotment resource objectives and would not meet the purpose and need for the Proposed Action.

Alternative B: Proposed Action

Under this alternative, changes to livestock grazing management would be made to continue to achieve Standards currently being achieved and conform to Guidelines. Grazing management within Chalk Hills Allotment would be implemented as described in Chapter II under the Proposed Action Alternative.

The permitted season of use would be changed to May 1 through September 30; this extension would allow for increased flexibility in the timing of livestock grazing and allow the permittee to use the pastures for fall calving. Adaptive management would be used to ensure Mill Gulch Creek Riparian Area continues to function properly, and utilization on antelope bitterbrush does not exceed 15 percent.

The Proposed Action would implement livestock grazing rotations providing periodic growing season rest to key forage plant species on all pastures within Chalk Hills Allotment, with growing season rest occurring every year in four of the pastures. This affords key forage plant species the opportunity to complete their life cycles, store carbohydrates, and produce the maximum amount of cover and herbage, resulting in more abundant and vigorous plants. Annual defer treatment in four of the pastures, and biennial defer treatment in Table Pasture, would allow the permittee to use the allotment as fall calving grounds.

Due to the lack of reliable water sources, construction of pipelines and strategic placement of troughs and drain valves would enhance livestock distribution within the allotment and away from areas of historical heavy use. This would promote more uniform utilization patterns, thus reducing forage competition between all grazers. Wildlife habitat would be increased as reliable water would be established in areas currently receiving little to no use due to lack of water. Providing these additional water sources would facilitate livestock grazing rotations providing periodic growing season rest to key forage plant species in native plant communities across the allotment. Without these developments, grazing would continue to be concentrated around existing water sources, resulting in uneven utilization patterns and increased forage competition between all grazers.

The proposed spring exclosure fence around Zinc Spring would help protect the riparian area from damage due to livestock grazing, and help prevent erosion by keeping livestock out of the drainage where the overflow is. This would increase resource protection while still providing a reliable water source for livestock.

The proposed spring development at Dead Cow Reservoir would protect all riparian vegetation at the site, and reduce erosion and sedimentation caused by livestock. This would provide a small meadow habitat and an open water source for wildlife while providing water for livestock in a nearby trough.

This alternative would allow for achievement of allotment resource objectives and meet the purpose and need for the Proposed Action. By meeting Guidelines and providing periodic growing season rest, this would ensure vegetation throughout the allotment is able to complete its annual life cycle, allowing the allotment to continue meeting standards that are currently being achieved, when the allotment receives full active use of 935 AUMs.

Alternative C: Proposed Action with Modified Livestock Grazing Management

This alternative would include all proposed range improvements and permit renewal, and effects from these improvements would be the same as under the Proposed Action.

Livestock grazing management under this alternative would be a 3-year rotation with 2 years of deferred grazing and 1-year of a graze treatment for all pastures. This would allow the permittee to use all 935 Permitted Active Use AUMs on the allotment each year, while providing periodic rest to antelope bitterbrush within the allotment. This system would allow four pastures to receive a defer treatment on any given year, which would allow the permittee to use the allotment as fall calving grounds.

Alternative D: Proposed Action with Fewer Range Improvements

Proposed grazing management is the same as under the Proposed Action; however, the effects may not be the same. By not constructing the proposed pipeline, water within the allotment would continue to be unreliable and the proposed defer treatments within the allotment would not always be possible. Livestock would continue to utilize areas within 1 to 2 miles of reliable water heavily (>61 percent); livestock distribution and utilization patterns would not be improved under this alternative.

This alternative would allow for Guidelines to be met by providing periodic growing season rest to all pastures, and provide increased protection for springs and associated riparian vegetation. Water availability in this allotment would not be improved; therefore, livestock distribution would not be improved.

The spring developments and permit renewal would still occur and have the same effects as under the Proposed Action Alternative.

Alternative E: Switch to Every Other Year Grazing in Four Pastures

Under this alternative, Iron Spring, Zinc Spring, Chimney Spring, and Three C's Pastures would receive rest every other year. This would equate to an 83 percent reduction in Permitted Active Use AUMs authorized under grazing Permit #3601627, every other year. Table Pasture would be the only pasture grazed during the rest year. This would result in the permittee having to find replacement forage for the 774 AUMs lost on the rest year. In years when grazing occurs on all pastures, effects would be the same as under the Proposed Action.

This alternative would include all proposed range improvements and permit renewal, and effects would be the same as under the Proposed Action.

3. Migratory Birds

Current discussion and analysis of potential effects to migratory birds are tiered to the 1991 Three Rivers PRMP/FEIS wildlife sections and contained in the following sections: Chapter 2, p. 2-66 and Chapter 3, p. 3-9.

Affected Environment: Migratory Birds

Migratory birds use all habitat types in the allotment for nesting, foraging, and resting as they pass through on their yearly migrations. There has been no formal monitoring of migratory birds on this allotment. Common species observed or expected to occur in the allotment include American robin (*Turdus migratorius*), dark-eyed junco (*Junco hyemalis*), mourning dove (*Zenaida macroura*), Townsend's solitaire (*Myadestes townsendi*), and mountain bluebird (*Sialia currucoides*).

Birds of Conservation Concern for the Great Basin Region that may inhabit the allotment include Brewer's sparrow (*Spizella breweri*), sage sparrow (*Amphispiza belli*), and loggerhead shrike (*Lanius ludovicianus*) (U.S. Fish and Wildlife Service (USFWS) 2008). These species tend to select more sagebrush or shrubland type habitat, avoiding or reducing use in areas encroached by dense stands of juniper.

A mix of big and low sagebrush communities are dominant vegetation types across the allotment, but juniper trees have encroached on approximately 85 percent of the area, and is dominant on up to 25 percent of the allotment. The encroaching juniper favors some migratory species, such as mountain bluebird and gray flycatcher (*Empidonax wrightii*) that utilize or prefer habitat with a tall vegetation component. However, juniper encroachment decreases the quality of habitat available for sagebrush associated species that tend to avoid areas with trees, such as those listed above as Birds of Conservation Concern.

Past and present actions and events that probably influenced migratory birds include wildfires, livestock grazing, seeding, fuels reduction and restoration treatments, road development, fence and transmission line installation, and recreational activities. One wildfire occurred in the allotment during the past 20 years, and burned approximately 660 acres in the northern portion of Zinc Spring Pasture. Mortality of sagebrush and antelope bitterbrush (*Purshia tridentata*) was over 90 percent, and was largely replaced by grass and forbs. A thousand acres of dense juniper encroachment was cut down in Chimney Spring Pasture in an effort to restore degraded sagebrush and other understory vegetation communities. Open water is a limited resource in the allotment, with little surface water available later into the season in springs, troughs, and reservoirs (Appendix B – Map C). The allotment contains approximately 2.06 miles of fence per square mile, and 1.51 miles of road per square mile.

A transmission line parallels the southern boundary of the allotment. Some birds with large home ranges, such as red-tailed hawks and ravens, may gain advantage by using the transmission towers for elevated perching or nesting. The hunting advantage gained from the elevated structures diminishes as the distance from the line increases, and effects are probably undetectable at distances greater than a mile. Electrocution is generally not a concern for most migratory species on transmission lines due to the separation distance between energized contact points; however, collisions are a potential source of mortality for larger species. The transmission line may be influencing distribution of migratory species near the lines and maintained right-of-way.

Environmental Consequences: Migratory Birds

Effects Common to All Alternatives:

For the purposes of this analysis, the CEAA for migratory birds extends up to 10 miles beyond the allotment boundary to encompass regular movements of some wider ranging migratory birds that may be using the allotment when they are present in the area. Vegetation communities present in the allotment are fairly representative of those across the CEAA, with the exception of the total acres. Past and present actions and events, such as those described in *Affected Environment*, have influenced the existing environment within the CEAA. RFFAs in the CEAA that may contribute to cumulative effects to migratory birds and habitat include livestock grazing, hunting, and other recreational pursuits, expansion of a diatomaceous earth mine, and cutting and prescribed burning to reduce hazardous fuels and restore habitat. Within the allotment, up to 1,000 acres of cut juniper will be machine piled, burned, and seeded within the next few years. Past and RFFAs that have affected migratory birds or habitat in the CEAA are found in Table 9.

Table 9: Migratory Birds Past and RFFA

ACTION	PAST ACTIONS				FUTURE ACTIONS			
	ACRES	SQ. MILES	MILES	RATIO: Length to Area	ACRES	SQ. MILES	MILES	RATIO: Length to Area
Wildfires	74,100	116	--- -	--	Unknown	Unknown	--- -	--
Tree/Shrub cutting/mowing	2,288	3	--- -	--	8,882	13.9	--- -	--
Rx Burns	910	1.4	--- -	--	7,493	11.7	--- -	--
Seedings	22,719	35	--- -	--	None	None	--- -	--
Roads 1782		---	696	1.39:1	None	-	---	---
Fences	---	---	578	1.15:1	---	---	17	1.19:1
Mine	502	0.784	--- -	--	Unknown	Unknown	--- -	--

This list does not include unplanned or speculative actions. The total acres of mine activity within the next 25 to 50 years is unknown, but would take place within a 4,162-acre area identified in the EP Minerals POD. For comparative purposes, the 502 acres of past mine disturbance occurred over a 25-year period. Seventy-two wildfire starts have occurred over the last 20 years and more are likely to occur in the next 20; however, predicting size and affects of future wildfires are not possible.

Alternatives analyzed in this document may incrementally affect migratory birds through disturbance and temporary reductions of herbaceous and shrub plant cover. Disturbance would be limited to the period when cattle occupy the allotment, and grazing would be managed at levels that achieve Rangeland Health Standards and Guidelines to maintain adequate habitat for migratory birds. No road construction or other actions that result in loss of habitat are proposed in any alternative, and no more than one-half mile of new fence is proposed under any alternative. The alternatives analyzed would not likely contribute to detectable cumulative effects to migratory birds, because loss of vegetative structure and cover to livestock grazing would be temporary (lasting until vegetation regrows seasonally), managed to maintain adequate forage and cover for birds, and not lead to an irreversible loss or alteration of habitat.

Alternative A: No Action

Current grazing management has achieved Rangeland Health Standards (with the exception of Standard 5 for sage-grouse due to juniper encroachment – see Table 5. Allotment Standards), and maintained adequate habitat to support migratory birds despite not scheduling adequate growing season rest on part of the allotment. This is partly because the stocking rate over the last two decades was approximately half the permitted active use. The 2006 allotment evaluation indicated that even though Standards were currently being achieved, they were at risk of not being achieved in the future due to poor livestock distribution.

Continuing the current grazing strategy would likely result in the Standards not being met during the term of the permit, and habitat conditions for migratory birds would deteriorate, especially for cover for ground-nesting species near existing water sources. The rate of habitat degradation would be further exacerbated if the permittee uses the full permitted active use. Quality of foraging habitat and available cover for migratory birds would continue to decrease following repeat grazing each growing season. Areas within a mile or two of the few reliable water sources would continue to receive the heaviest utilization and be at risk of losing native plant cover as noxious weeds become established.

Grazing in the spring increases potential for reducing herbaceous screening cover at nests, which in turn may increase the risk of predation. Grazing in the spring also increases potential for disturbance or flushing of nesting birds and trampling of nests. Current management is designed to maintain adequate herbaceous cover during the breeding season, and planned rotations between pastures would provide periodic rest across portions of the pasture during the breeding season. Trampling may occasionally occur; however, based on research by Guthery and Bingham (1996), the impact to ground-nesting birds, especially those that nest near the base of sagebrush and other shrub vegetation, is not expected to affect populations.

Vegetative cover around Dead Cow Spring and Zinc Spring would continue to decrease, providing low quality riparian habitat for birds and increasing the risk of noxious weed introduction in these sensitive areas. The small, steep-sided reservoir at Dead Cow Spring may also be subjected to excessive trampling, damaging the integrity of the dam and lead to a loss or reduction of open water.

Alternative B: Proposed Action

The proposed grazing strategy is expected to provide maximum growth and cover of current year's herbaceous vegetation during the nesting period for migratory birds on 86 percent of the allotment every year, and the entire allotment every other year. Ground-nesting species would benefit the most from deferred grazing due to the reduced potential for trampling and loss of screening cover around nests. Deferring grazing until August in most pastures would also eliminate potential disturbance to all nesting birds from livestock and associated activities during the critical nesting period.

Proposed new water sources would help address poor distribution of livestock, and reduce the amount of time cattle spend around the existing water sources. Vegetation in areas subject to heavier use would respond with increased vigor and growth, providing more ground cover and reducing the opportunity for noxious weed establishment. Disturbance to birds during installation of pipelines may occur if conducted in the spring, but this affect would be temporary and limited habitat would be involved. Design features would reduce the risk of noxious weed establishment, and disturbed areas would be seeded to allow for a quicker recovery to pre-disturbance conditions. Better distribution of livestock may increase the area accessed by livestock, but would provide a more even spatial distribution of residual vegetation in the allotment.

Fencing the two springs would protect and maintain hydric vegetation around the small riparian areas for grouse and other species, but would increase the potential risk of collision to flying birds (Allen and Ramirez 1990). Design features to increase visibility of fences and the limited amount of fence needed to protect these areas would minimize the risk of collision. The small amount of fence needed to protect the springs would have almost no affect on the fence length to the area ratio in the allotment.

Alternative C: Proposed Action with Modified Livestock Grazing Management

Effects of range improvements would be the same as those analyzed in the Proposed Action Alternative.

Changes to grazing would increase potential impacts to migratory birds, primarily ground nesters, relative to the Proposed Action Alternative due to the earlier scheduled grazing treatments. Approximately one-fourth of the allotment would be grazed 2 out of 3 years during the nesting season, and nearly half of the allotment would be grazed during the nesting season every third year. Grazing at this time of the year increases potential for reducing herbaceous screening cover at ground nests and subsequently increases risk of predation. Potential for disturbance or flushing of nesting birds and trampling of nests also increases. Trampling may occur, but based on research by Guthery and Bingham (1996), the impact to ground-nesting birds, especially those that nest near the base of sagebrush and other shrub vegetation, is not expected to substantially affect populations. Maintaining grazing within the target utilization levels as proposed is expected to continue achieving Standards and conform to Guidelines, and should provide adequate cover for migratory birds.

Alternative D: Proposed Action with Fewer Range Improvements

Effects of livestock grazing would be similar to those analyzed in the Proposed Action; however, since no new water sources would be created, heavy livestock use would continue to occur around the relatively few late season water sources, increasing the risk of not achieving Rangeland Health Standards over the term of the permit. These heavily used areas would continue to provide lower quality late season foraging habitat and hiding cover, leading to reduced use in these areas by migratory birds.

The two springs and adjacent wetter habitat would be protected by exclosures and provide small riparian areas with increased hydric vegetation for migratory birds and their insect prey. Design features for fence construction would reduce risk of collision for flying birds, and the amount of fence needed for the exclosures would not be enough to notably change the fence length to area ratio in the allotment.

Alternative E: Switch to Every Other Year Grazing in Four Pastures

Effects of range improvements on migratory birds would be the same as those discussed under the Proposed Action.

This grazing schedule would have the least potential for conflicts with migratory birds, especially ground nest species. Complete rest from livestock grazing would occur every other year on 86 percent of the allotment. No livestock grazing in these areas would provide understory vegetation, important nesting habitat and foraging habitat for birds and their insect prey, a complete growing season to recover and recruit new plants following the previous season's grazing.

This alternative would also eliminate potential disturbance and trampling affects from livestock and associated activities during this time. In years when grazing is scheduled, livestock would turnout after the nesting period. Potential disturbance to nesting birds and foraging habitat would be avoided. Table Pasture would continue to be grazed under a graze and defer treatment, which is expected to provide an adequate rest period to maintain migratory bird habitat.

4. Noxious Weeds

Current discussion and analysis of potential effects of noxious weeds are tiered to the 1991 Three Rivers PRMP/FEIS vegetation sections and contained in the following sections: Chapter 2, p. 2-53, V1.6 and Chapter 3, p. 3-7.

Affected Environment: Noxious Weeds

There are currently 86 known noxious weed sites totaling 114.5 acres in Chalk Hills Allotment. There have been nine different noxious weed species documented in the allotment. The numbers and acreages associated with each are displayed in Table 10 below:

Table 10: Noxious Weed Distribution

Noxious Weed Species	Number of Sites	Acres
Whitetop	34	4.8
Spotted knapweed	3	67.2
Canada thistle	6	6.3
Bull thistle	10	2.0
Field bindweed	1	.07
Houndstongue	1	.05
Scotch thistle	23	19.9
Mediterranean sage	4	12.9
Medusahead rye	4	1.1
Totals	***86***	***114.5***

A systematic weed inventory for this allotment has been started, but has not been completed for the entire allotment. The vast majority of weed sites (approximately 96 percent) occur along the many State, County, and secondary BLM roads which border or run through this allotment.

The greatest number of individual noxious weed sites occurs within the Zinc Spring Pasture (over 51 percent). These are primarily Scotch thistle sites. There is a secondary road network through this pasture which may explain the high number of weed sites. The whitetop sites in this pasture are primarily along roads. Weeds along the State Highway right-of-way, which borders the southern end of the allotment, have included large infestations of both Mediterranean sage (approximately 12.9 acres) and Scotch thistle (approximately 17.1 acres).

The weed infestations located along the main roadways have been treated. Weeds occurring along the highway are spot treated annually with either manual or chemical treatments. The large spotted knapweed site located in Three C's Pasture in close proximity to the State highway is characterized by scattered knapweed plants which have been treated and monitored annually. Many of the Scotch thistle patches occur along the County road which runs north and south bisecting the allotment. These sites are treated annually as well.

Weed treatments conducted in the allotment include manual treatments of Scotch and bull thistle and herbicide treatments for all weed species present. Treatments on whitetop have been herbicide applications of 2,4-D and dicamba, tank mixed. This is not particularly effective on whitetop but is the best chemical for now as Oregon BLM is currently limited to use of four chemicals. The intent is to prevent the plants from producing seed and spreading with this herbicide mix. The most contentious weed problem in the area is medusahead rye. We do not know if there are more sites within Chalk Hills Allotment but it is increasing in the uplands in many neighboring areas. We currently have very limited tools to effectively manage medusahead rye on BLM lands in Oregon. In areas with heavy clay soils, medusahead rye can and does outcompete mid- and late seral species, as well as competitive introduced species such as crested wheatgrass. Medusahead rye is known to occur in the Iron Spring and Three C's Pastures and a new site was discovered in 2004 in Zinc Spring Pasture in a mineral material site. Treatments on medusahead rye have occurred in the past using a glyphosate product which is detrimental to desirable forbs. Where medusahead rye occurs in a gravel pit the glyphosate use is not problematic; however, once the medusahead rye spreads into vegetated areas then glyphosate would not be a useful option.

Environmental Consequences: Noxious Weeds

Effects Common to All Alternatives:

Since the State highway and quite a number of miles of County and BLM roads run through the allotment, new weed introductions are likely to occur on a regular basis. Typically, these areas are monitored annually and new infestations should be detected and eliminated before they spread to adjacent acreages.

Management actions that encourage mid- to late seral vegetation and good to excellent condition rangeland, managed to encourage vigor and productivity in those species would be helpful in occupying niches and slowing down potential movement of noxious weeds into those areas.

The allotment and adjacent area receives quite a bit of hunting and other recreational activity. With the mobility of hunters and the increased use of off-road vehicles, the potential for new weed introductions as well as the spread of existing infestations in this area is increasing.

There are a number of existing and proposed large disturbances within and near the allotment. They consist of a juniper removal project which has been cut and is scheduled to be piled and burned in the fall of 2010, and existing and expanding mine activities in close proximity to the allotment. Additionally, there are some infestations of Scotch and Canada thistle on the adjacent private lands. All those activities have potential to create opportunities for noxious weed introduction and spread. Thistles in that area are especially problematic in that seeds are wind-borne and could easily reach Chalk Hills Allotment.

Alternative A: No Action

Continuing the current management at the full permit level could affect plant communities in the graze every year pastures by reducing vigor and productivity of the plants. Those less vigorous plant communities become more at risk for noxious weed introduction and spread.

Alternative B: Proposed Action

While the Proposed Action involves an increase in short-term disturbances during construction of some of the range improvements, if Design Elements are followed and follow-up monitoring and treatments occur in a timely manner, over the long term (5+ years) potential for persistent weed issues in the allotment would be considerably less than the No Action Alternative.

The grazing management being proposed, while at a level the allotment has not seen for some time, should promote vigorous, productive plant communities, which would better utilize the resources of the site, lessening opportunities for noxious weed introduction and spread.

Alternative C: Proposed Action with Modified Livestock Grazing Management

Impacts from this alternative are the same as for the Proposed Action provided the grazing treatments are successful in meeting the vegetation objectives.

Alternative D: Proposed Action with Fewer Range Improvements

This alternative may in the long term (5+ years) lead to greater disturbances at the livestock congregation areas. The distribution of livestock would not be as spread out which could cause higher levels of disturbance at the available watering locations.

Springs and riparian vegetation would still be protected from trampling and other mechanical disturbance and should maintain good vegetative cover to lessen opportunities for noxious weed introduction and spread.

Alternative E: Switch to Every Other Year Grazing in Four Pastures

This alternative should have the same impacts as the Proposed Action. Rest years should allow the vegetation to recover from the year they received growing season rest and maintain their vigor and productivity which should minimize opportunities for noxious weed introduction and spread.

5. Recreation/Visual Resources

Current discussion and analysis of potential effects to recreation are tiered to the 1991 Three Rivers PRMP/FEIS and contained in the following sections: Chapter 2, p. 2-107 and Chapter 3, p. 3-15.

Affected Environment: Recreation/Visual Resources

Primary recreational opportunities within the allotment include big game hunting for elk and mule deer, camping, hiking, photography, Off-Highway Vehicle riding, and horseback riding. Chalk Hills Allotment is in Visual Resource Management (VRM) Class IV. Management objectives for this class allow for modifications to the existing character of the landscape. Management activities may dominate the view and be the major focus of viewer attention.

Environmental Consequences: Recreation/Visual Resources

Effects Common to All Alternatives:

For the purpose of this document, the CEAA for recreation/visual resources encompasses the Chalk Hills Allotment. All alternatives and other ongoing and reasonably foreseeable future projects would not lead to cumulative effects to recreation/visual resources because impacts of proposed range improvements would be localized. Any future development is unknown however effects to recreation/visual resources would be analyzed through a separate appropriate NEPA analysis for such project(s).

Alternative A: No Action

Effects to recreation and visual resources under the No Action Alternative would continue. The existing livestock grazing permit would be renewed. Existing range improvements would be maintained and remain visible. Under this alternative no new pipelines, water storage tanks or fences would be constructed; therefore, there would be no additional effects to resources. However, if vegetation began to decline due to the permittee taking full active use and not providing periodic growing season rest, hunting opportunities within this allotment would most likely decline.

Alternative B: Proposed Action

Effects to recreation and visual resources would only be minimal as livestock numbers may vary annually and the permitted season would slightly change in response to adaptive management; however, total AUMs would not exceed 935. Current permitted season of use would be changed from April 16 through August 15 to May 1 through September 30. The proposed annual defer treatments in four of the five pastures may result in increased conflict between livestock and bow hunters (whose general season is usually the end of August to the end of September).

The range improvements projects proposed under this alternative are allowed under the VRM Class IV Objective. None of the proposed developments are adjacent to any known campsites or other features associated with prolonged visitor use. If any encounters with visitors occur during construction of the proposed developments, there would be some temporary and short-term disturbance (days) to the recreational activities in the immediate area surrounding project locations. Negative effects to recreation due to the proposed range improvements are expected to be undetectable for the allotment as a whole, given their short term and localized nature. Overall, recreational opportunities, such as hunting, would likely be enhanced by improvements in rangeland conditions.

Alternative C: Proposed Action with Modified Livestock Grazing Management

This alternative would include all the proposed range improvements and permit renewal. The alternative only differs from the Proposed Action in the livestock grazing management. Effects to recreation and visual resources would be similar to the Proposed Action. However, since a graze treatment would occur in each pasture every third year (with two pastures having a graze treatment some years), the hunting-livestock conflicts would be slightly less than under the Proposed Action.

Alternative D: Proposed Action with Fewer Range Improvements

This alternative would follow the Proposed Action, removing the construction of 5.3 miles of pipeline. Under this alternative, the grazing management and permit renewal outlined in the Proposed Action would still occur, as would the spring exclosure expansion and construction, and the riparian exclosure fence. Effects to recreation and visual resources would be similar to the Proposed Action but without the temporary and short-term disturbance (days) to the recreational activities caused by the construction of the pipeline.

Alternative E: Switch to Every Other Year Grazing in Four Pastures

Under this alternative, livestock grazing would be a graze/rest, 2-year rotation in Iron Spring, Zinc Spring, Chimney Spring, and Three C's Pastures. This alternative would include all the proposed range improvements and permit renewal. Effects to recreation and visual resources would be similar to the Proposed Action. The only difference being that in the years where grazing does not occur in the four pastures, there would be no conflicts between livestock and hunters within those pastures.

6. Riparian Zones/Wetlands and Water Quality

Current discussion and analysis of potential effects to water quality and wetlands/riparian zones are tiered to the 1991 Three Rivers PRMP/FEIS and contained in the following sections: Water Quality – Chapter 2, p. 2-4 and Chapter 3, p. 3-2; Riparian – Chapter 2, 2-96 and Chapter 3, p. 3-12.

Affected Environment: Water Quality and Wetland/Riparian Zones

Chalk Hills Allotment contains portions of Kingsbury Gulch and Lower Otis Creek subwatersheds (6th field Hydrologic Unit Code) within Upper Malheur Subbasin. Mill Gulch is the only drainage in this allotment known to support riparian habitat. In total, Mill Gulch is 7.9 miles long with approximately 0.4-mile (5 percent) falling under BLM administration in Chalk Hills Allotment. This 0.4-mile section flows though Iron Spring Pasture. The United States Geological Survey (USGS) topographic 7.5-minute map (Drinkwater Pass) depicts this portion of the creek as intermittent. The 2006 allotment evaluation determined both Standards 2 (Watershed Function – Riparian/Wetland Areas) and 4 (Water Quality) were met along this portion of Mill Gulch.

Riparian habitat at Zinc Spring consists of a wet meadow originating from a single spring. Maintenance of wetland riparian soils and vegetation in meadows such as this is dependent on the frequency and duration of saturated conditions and condition of the vegetative community.

Zinc Spring is currently developed to provide water for livestock and wildlife. The spring head box is fenced; however, the existing exclosure is too small to adequately protect the entire spring source. The channel that overflow water is piped to is also not fenced. Site visits and photos show that hoof-shear has created pockets of compacted, nonvegetated soil around the unfenced spring and meadow. This has disrupted the functionality of the wetland area as soil stabilizing, hydric plant species are limited.

Riparian habitat surrounding Dead Cow Reservoir/Spring consists of a single spring source flowing into a small impounded dugout. This site was originally developed to provide water for livestock and wildlife. The spring source and reservoir are unfenced and late seral riparian vegetation is lacking.

Environmental Consequences: Water Quality and Wetland/Riparian Zones

Effects Common to All Alternatives:

The CEAA for riparian/wetland zones are the Kingsbury Gulch and Lower Otis Creek subwatersheds. RFFAs such as grazing, recreational pursuits, diatomaceous earth mine exploration, noxious weed treatments, and cutting and prescribed burning to reduce hazards fuels and restore habitat would continue under all alternatives. Cumulative effects from any of the alternatives to the RFFAs are not expected.

Alternative A: No Action

The No Action Alternative would not change use along Mill Gulch in this allotment. This would either maintain or continue to improve conditions along this reach.

This alternative would continue current livestock grazing management at Zinc Spring and Dead Cow Reservoir/Spring. Current intensity of use is causing degradation of the riparian/wetland area. Conditions at these springs are not expected to improve under this alternative. This alternative would not aim to improve overall watershed, riparian/wetland area, or water quality conditions within Upper Malheur Subbasin.

Alternative B: Proposed Action

The Proposed Action would change livestock use along Mill Gulch in Iron Spring Pasture from early use annually to a defer treatment. Grazing during this part of the summer generally concentrates livestock use along riparian areas. If monitoring indicates a downward trend in riparian function from livestock management, an exclosure fence would be constructed along the 0.4-mile section of Mill Gulch. The fence would eliminate any livestock grazing from this section of Mill Gulch. With exclusion, stabilizing riparian vegetation would be expected to increase in quantity and vigor and improve channel characteristics.

The Proposed Action is expected to improve riparian/wetland conditions at Zinc Spring and Dead Cow Reservoir/Spring as hoof-shearing would no longer modify hydrologic flow patterns in riparian areas. Due to the close placement of the actual spring source to Dead Cow Reservoir, the spring source and surrounding riparian vegetation is at risk for degradation caused by livestock.

By constructing an exclosure around this spring source, it would protect the spring and riparian vegetation. Hydric herbaceous vegetation would be allowed to complete their growing and reproductive cycles without utilization by livestock. As later seral, deeper rooted plant species are established, several components of a functioning wetland would materialize such as the capture of sediment and debris. These effects would be local in scope and limited to Zinc Spring and Dead Cow Reservoir/Spring drainages. Results from the Proposed Action would cumulatively influence the overall condition of the Upper Malheur Subbasin.

Alternative C: Proposed Action with Modified Livestock Grazing Management

Effects would be the same as Proposed Action.

Alternative D: Proposed Action with Fewer Range Improvements

Effects would be the same as Proposed Action.

Alternative E: Switch to Every Other Year Grazing in Four Pastures

Effects would be similar to the Proposed Action. However, Mill Gulch in Iron Spring Pasture would be rested every other year. If monitoring detects a downward trend in riparian condition due to livestock management, Mill Gulch would be excluded from livestock grazing. Resting Mill Gulch every other year would be more likely to maintain current riparian conditions and preclude the need for exclusion fencing.

7. Social and Economic Values

Affected Environment: Social and Economic Values

Current discussion and analysis of potential effects on economic values are tiered to the Three Rivers PRMP/FEIS (September 1992) on Pages 3-25 to 3-27.

Livestock raising and associated feed production industries are major contributors to the economy of Harney County. The highest individual agricultural sales revenue in the County is derived from cattle production (65 percent), which is linked to the grazing of public land. The cattle industry provided $37,955,000 in sales in Harney County in 2009 compared to $42,973,000 in 2008 (Oregon State University, Extension Service, 2010).

"Quality of life" is very individual when determining what is valued in a lifestyle and what features make up that lifestyle. Lifestyle features can be determined by historical activities of the area, career opportunities and the general cultural features of the geographical area. Quality of life issues are subjective and can be modified over time with exposure to other ways of living. Recreation is a component of most lifestyles in the area and includes driving for pleasure, camping, backpacking, fishing, hunting, hiking, horseback riding, photography, wildlife viewing, and sightseeing. These activities contribute to the overall quality of life for residents.

In addition to local recreation use, the undeveloped, open spaces in the County are themselves a tourist attraction and contribute a "sense of place" for many. The attachment people feel to a setting, typically through a repeated experience, provides them with this sense of place. Attachments can be spiritual, cultural, aesthetic, economic, social or recreational.

Hunting and other types of dispersed outdoor recreation contribute to the local economy on a seasonal basis. Fee hunting and recreation alone contributed $110,000 to Harney County in 2009 (http://oain.oregonstate.edu, 2009).

Environmental Consequences: Social and Economic Values

Effects Common to All Alternatives:

RFFAs such as grazing, recreational pursuits, diatomaceous earth mine exploration, noxious weed treatments and cutting and prescribed burning to reduce hazardous fuels and restore habitat would continue under all alternatives. Implementation of any of the alternatives in combination with RFFAs is not expected to measurably contribute to cumulative effects. The Celatom Mine Expansion Project (EIS), although an RFFA, is still in process and subject to change based on public comments in future NEPA analysis and subsequent administrative remedies. The effects of the proposed mine expansion would likely have the most affect to social and economic values.

Alternative A: No Action

Public lands in and around the Project Area would continue to contribute social amenities such as open space and recreational opportunities (including hunting, hiking, and camping). These amenities enhance local communities and tourism, though the specific contribution of the Project Area is not known. The Federal government would continue to collect grazing fees from the permittee and this commodity use on public lands would continue to generate revenues for the Federal government. No new range improvements would be constructed; therefore, no revenues to the local communities (Burns and Hines) would be generated from these activities.

Alternative B: Proposed Action

The Proposed Action would allow the permittee to graze all 935 AUMs with an annual payment to the Federal government of $1,262.25. This alternative could generate approximately $100,000 through purchase of supplies and labor for range improvements and provide economic opportunities to the local communities.

Developments are designed to allow conformance to Guidelines by providing periodic rest to upland vegetation and better cattle distribution improving rangeland conditions. This improved condition would enhance recreational opportunities such as hunting and wildlife viewing.

Alternative C: Proposed Action with Modified Livestock Grazing Management

Effects would the same as the Proposed Action.

Alternative D: Proposed Action with Fewer Range Improvements

Effects would be similar to the Proposed Action except only approximately $5,700 would be spent on range improvements and better cattle distribution and utilization would not be realized as livestock would continue to heavily use areas within 1 to 2 miles of reliable water.

Alternative E: Switch to Every Other Year Grazing in Four Pastures

Effects from implementation of rangeland projects would be the same as the Proposed Action. There would be an 83 percent reduction every other year in Federal revenues generated from collection of grazing fees under Permit #3601627 as Iron Spring, Zinc Spring, Chimney Spring, and Three C's Pastures would receive rest every other year. Table Pasture would be the only pasture grazed during the rest year. This would result in the permittee having to find replacement forage for the 774 AUMs lost on the rest year equaling approximately $16,254 (774 AUMs x $21/average AUM). This additional expense to the permittee could affect quality of life. However, the expense of replacing the lost forage may benefit other citizens of Harney County.

8. Soils and Biological Soil Crusts

Current discussion and analysis of potential effects to soils are tiered to the 1991 Three Rivers PRMP/FEIS and contained in the following sections: Chapter 2, p. 2-15 and Chapter 3, p. 3-3.

Affected Environment: Soils and Biological Soil Crusts

BSCs such as moss, lichen, micro fungi, cyanobacteria, and algae play a role in a functioning ecosystem, and are an indicator used in evaluating watershed function for uplands. In addition to providing biological diversity, BSCs contribute to soil stability through increased nutrient cycling and resistance to erosion (2001 BLM TR 1730-2).

Historically, erosion and loss of BSC cover occurred on upland soils as a result of uncontrolled land use, prolonged drought, and catastrophic storms. Some geologic and localized erosion as well as loss of BSC cover still occurs, caused by concentrated uses. Introduced annual (medusahead rye and cheatgrass) and perennial plants currently occupy portions of these highly disturbed sites (see noxious weeds and vegetation sections). Current soil productivity and BSC cover reflects site-specific natural conditions and past management practices. Approximately 966 acres of juniper cutting (Chalk Juniper Cut Project) occurred in Chimney Spring Pasture. Juniper cutting was primarily within hills and dissected tablelands containing Vitale-Merlin soils (2 to 20 percent slopes); downed juniper not harvested by wood cutters would eventually be treated with machine piling and prescribed fire (pile burning). Vegetative understory recovery (including non-vascular components) has progressed in the cut area, but may require additional years of vegetative recovery to stabilize the soils to pre-juniper encroachment conditions.

Current management practices have reduced erosion and have likely reduced loss of BSC cover in areas receiving limited grazing due to distribution problems (water sources are limited) and increased erosion and loss of BSC cover in those areas of concentrated use. The future condition of soil and BSC resources would be dependent on the condition of other resources, primarily upland and riparian vegetation. Management actions that affect the condition of these resources would also affect soils and BSCs.

Soils in Chalk Hills Allotment are dominated by two general soils complexes: Merlin-Observation-Lambring which occurs in all pastures except Three C's and supports mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*), low sagebrush (*Artemisia arbuscula*) (or stiff sagebrush) and Idaho fescue (*Festuca idahoensis*) communities; and Gumble-Risley-Mahoon which occurs in all pastures, but predominantly within Three C's and Zinc Spring and supports primarily Wyoming big sagebrush (*Artemisia tridentata* spp. wyomingensis) and bluebunch wheatgrass communities.

Iron Spring and Three C's Pastures contain small seasonal flood plain/playa landforms with Spankenberg-Enko-Catlow soil complexes. These soils support silver sagebrush (*Artemisia cana*), basin big sagebrush (*Artemisia tridentata* spp. *tridentata*), basin wildrye (*Leymus cinereus*), and Nevada bluegrass.

Ecological Site Inventory data, collected in 1991 shows this allotment was primarily in the slight Erosion Condition Class (ECC) category (68 percent), with 31 percent in the moderate category, and only 1 percent in the critical category. Soil surface factor determination forms completed in 2004 at trend site locations throughout the allotment indicate that ECC ratings have improved since no critical ECC ratings were noted, and there was an increase in the stable and slight ratings.

Environmental Consequences: Soils and Biological Soil Crusts

Effects Common to All Alternatives:

For the purposes of this analysis, the CEAA for soils and BSCs is the allotment boundary. Past and present actions and events, such as those described in *Affected Environment*, have influenced the existing environment within the CEAA. Wildfires have had the most pronounced impact on these resources and provided opportunities for invasive annual grass establishment which occupies interspaces once available for BSC establishment. RFFAs in the CEAA that may contribute to cumulative effects to soils and BSCs include livestock grazing, hunting and other recreational pursuits, expansion of a diatomaceous earth mine, and cutting and prescribed burning to reduce hazardous fuels and restore habitat. Within the allotment, up to 1,000 acres of cut juniper will be machine piled, burned, and seeded within the next few years causing temporary impacts to soils and BSCs. Past and RFFAs that have affected soils and BSCs in the CEAA include wildfires, tree and shrub cutting, prescribed fire, seeding establishment/ maintenance, mining activity, as well as range improvement installation and maintenance.

<u>Alternative A: No Action</u>

No range improvements would be constructed under this alternative resulting in a lack of improved distribution away from historical heavy use areas. Benefits to soils and BSCs resulting from improved distribution (described under Alternative B) would not occur. Additionally, livestock grazing would continue to not conform to Guidelines due to a lack of periodic growing season rest in all pastures.

<u>Alternative B: Proposed Action</u>

Rangeland improvement activities would include construction of pipelines, improved spring development, and construction of new fences. Additional water resources would enlarge livestock and wildlife range, improve distribution of livestock, and help to attain acceptable levels and patterns of utilization. Fences would be used to protect spring sources and surrounding riparian areas, and as a tool to facilitate livestock management that would further improve distribution within two pastures.

Development of an unnamed spring, which currently feeds into Dead Cow Reservoir, would protect soils associated with the spring and riparian vegetation, creating meadow habitat available to birds. Water would be provided by piping water to a trough outside the proposed exclosure which would result in concentrated use by livestock resulting in an area (approximately a 30-foot radius) of greater soil compaction and loss of BSC cover.

The exclosure fence around Zinc Spring would be expanded to protect the entire spring area, associated soils, and riparian vegetation. A second exclosure would be constructed around the overflow area in order to protect riparian vegetation, reduce erosion at the site, and provide a meadow habitat for birds.

Impacts to soils and BSCs from construction at both springs would be related to the methods used for spring development. For the Dead Cow Reservoir/Spring source a head box would be installed with water piped to a trough within 100 feet of the spring. A ripper tooth mounted to a dozer would most likely be used for digging a trench approximately 30 to 36 inches deep where 2-inch black plastic pipe would be buried. The disturbed ground along the pipeline would be seeded with an aggressive germinator, such as crested wheatgrass or western wheatgrass, to help prevent the establishment of noxious weeds.

Soil horizons would be modified in the area of proposed trenching. Adjacent soil horizons would be intact and would mediate impacts. Some soil movement would be expected between modified and unmodified adjacent soils and would result in more similar soil chemistry over time. Complete recovery of soil horizons would occur over geological time scales (100s to 1000s of years).

Approximately 5.3 miles of pipeline would be constructed within Chalk Hills Allotment. Due to the lack of reliable water sources, construction of these pipelines and strategic placement of troughs and drain valves would enhance livestock distribution within the allotment and away from areas of historical heavy use. Proposed management practices would reduce erosion and loss of BSC cover in areas formerly receiving concentrated grazing due to limited water sources and limited increases in erosion and loss of BSC cover in those areas receiving increased use due to enhanced distribution.

<u>Alternative C: Proposed Action with Modified Livestock Grazing Management</u>

Effects to soils and BSCs would be similar to those described under Alternative B. This alternative would allow for rest on browse species in the four pastures, allowing these species to maintain a healthy vigor and good cover over the soil and biological crust. Soils and BSCs occurring within the aforementioned pastures would see a reduction in disturbance from herbivores during pasture rest timeframes.

Alternative D: Proposed Action with Fewer Range Improvements

This alternative would follow the Proposed Action, without the construction of 5.3 miles of pipeline. Under this alternative, the grazing management and permit renewal outlined in the Proposed Action would still occur, as would the spring exclosure expansion and construction, and the riparian exclosure fence. Water availability in this allotment would not be improved; therefore, livestock distribution would not improve. Likewise, soils and BSCs would not benefit from improved livestock distribution.

Alternative E: Switch to Every Other Year Grazing in Four Pastures

As the proposed range improvements described under Alternative B are part of the proposal under Alternative E, livestock distribution would improve allotmentwide. The resulting effects to soils and BSCs would be similar to those described under Alternative B; however, every other year grazing may enhance these resource benefits.

9. Special Status Species – Fauna

Current discussion and analysis of potential effects to SSS – fauna are tiered to the 1991 Three Rivers PRMP/FEIS and contained in the following sections: Chapter 2, p. 2-56 and Chapter 3, p. 3-9.

Affected Environment: Special Status Species – Fauna

There are no Federally listed T/E wildlife species found within Chalk Hills Allotment.

The allotment provides habitat for greater sage-grouse (*Centrocercus urophasianus*), a BLM-designated SSS, Bird of Conservation Concern for the Great Basin Region, and a USFWS candidate species. There are no lek sites within the allotment, but six active leks occur within 10 miles of the allotment and sage-grouse have been observed in the allotment outside the lekking season. The nearest lek is approximately 3 miles southwest of the allotment. Five other leks are located approximately 6 miles to the west and northwest of the allotment.

Approximately 30 percent of the allotment is classified as either yearlong or probable habitat for sage-grouse with uncertain usage. The majority (approximately 77 percent) of this occurs in the southwest portion of the allotment. The remainder of the allotment contains potential habitat, but is being impacted by seedings, fires, juniper encroachment, or power lines.

An allotment evaluation in 2006 determined this allotment was not meeting the Standards for Rangeland Health for wildlife (specifically sage-grouse) due to extensive juniper encroachment of the sagebrush vegetation community. In 2007, juniper encroachment was reduced on 966 acres in the Chimney Spring Pasture as part of an effort to restore sagebrush steppe habitat for sage-grouse and other sagebrush associated species. Treatments eliminated competition between the encroaching juniper trees and understory vegetation. Understory vegetation is starting to recover in this area, but juniper expansion in other areas continues to impair potential sage-grouse habitat in the allotment.

Past and present actions and events that probably influenced SSS animals include wildfires, livestock grazing, seeding, fuels reduction and restoration treatments, road development, fence and transmission line installation, and recreational activity. A wildfire in 1996 burned across 665 acres and caused mortality to mountain big sagebrush communities in the northern portion of the Zinc Spring Pasture. A transmission line parallels the entire southern boundary of the allotment. Approximately 77 acres of the allotment have been directly altered by road development, and fence density in the allotment is estimated at 2.06 miles of fence per square mile.

Environmental Consequences: Special Status Species – Fauna

Effects Common to All Alternatives:

For the purposes of this analysis, the CEAA for sage-grouse extends up to 10 miles beyond the allotment boundary to encompass regular movements of sage-grouse that may be using the allotment. The CEAA does not include the entire annual use area because this information is not available nor is it expected to change the analysis. Vegetation communities present in the allotment are representative of those within the CEAA, with the exception of total acres.

Past and present actions and events, such as those described in *Affected Environment*, have influenced the existing environment within the CEAA. RFFAs in the CEAA that may contribute to cumulative effects to sage-grouse and habitat include livestock grazing, hunting and other recreational pursuits, expansion of a diatomaceous earth mine, and cutting and prescribed burning to reduce hazardous fuels and restore habitat. Within the allotment, up to 1,000 acres of cut juniper will be machine piled, burned, and seeded within the next few years. Past and RFFAs that have affected sage-grouse or habitat in the CEAA are found in Table 11.

Table 11: Special Status Species - Fauna Past and RFFA

ACTION	PAST ACTIONS				FUTURE ACTIONS			
	ACRES	SQ. MILES	MILES	RATIO: Length to Area	ACRES	SQ. MILES	MILES	RATIO: Length to Area
Wildfires	74,100	116	--- -	--	Unknown	Unknown	--- -	--
Tree/Shrub cutting/mowing	2,288	3	---	---	8,882	13.9	---	---
Rx Burns	910	1.4	---	---	7,493	11.7	---	---
Seedings	22,719	35	--- -	--	None	None	--- -	--
Roads	1,782	---	696	1.39:1	None	---	---	---
Fences	---	---	578	1.15:1	---	---	17	1.19:1
Mine	502	0.784	---	---	Unknown	Unknown	---	---

This list does not include unplanned or speculative actions. The total acres of mine activity within the next 25 to 50 years is unknown, but would take place within a 4,162-acre area identified in the EP Minerals POD. For comparative purposes, the 502 acres of past mine disturbance occurred over a 25-year period. Seventy-two wildfire starts have occurred over the last twenty years and more are likely to occur in the next twenty; however, predicting size and effects of future wildfires is not possible.

The alternatives analyzed in this document may incrementally affect SSS through disturbance and temporary reductions of herbaceous and shrub plant cover. Disturbance would be limited to the period when cattle occupy the allotment, and grazing would be managed at levels that achieve Rangeland Health Standards and conform to Guidelines to maintain adequate habitat for sage-grouse. No road construction or other actions that result in loss of habitat are proposed in any alternative, and no more than one-half mile of new fence is proposed under any alternative. The alternatives analyzed would not likely contribute to cumulative effects to SSS, because loss of vegetation to livestock grazing would be temporary and managed to sustain adequate forage and cover for sage-grouse, and not lead to an irreversible loss or alteration of habitat.

Alternative A: No Action

The current grazing strategy is achieving all Standards for Rangeland Health on the allotment, with the exception of Standard 5 which was not achieved due to juniper encroachment in sagebrush communities. Livestock grazing was not a causal factor. Sagebrush restoration work is ongoing, and juniper has been treated on nearly 1,000 acres of potential sage-grouse habitat in Chimney Spring Pasture. Since the initial treatment, sage-grouse have been observed in the allotment.

Continued sagebrush restoration efforts would likely improve conditions for sage-grouse to the extent that the allotment would achieve Standard 5. However, the 2006 allotment evaluation recognized Guidelines were not being met, and

Standards were at risk of not being achieved in the future due to poor distribution of livestock. The current grazing strategy does not meet the Guidelines because it does not provide adequate growing season rest in Iron Spring Pasture. This pasture provides nearly 600 acres of suitable sage-grouse habitat and 2,500 acres of potential sage-grouse habitat. Grazing this pasture each year in the spring and early summer reduces current year's herbaceous growth, limiting the structural screening available for nesting sage-grouse and reducing forage availability during the early brood period.

Additionally, without range improvements to change the distribution, cattle would continue to utilize areas adjacent to the relatively few water sources in the allotment. Heavier utilization occurs up to a mile or two from these water sources and limits standing cover and density of herbaceous vegetation. The light stocking rate during the last two decades is likely the reason Standards are still being achieved (with the exception of juniper encroachment), despite the grazing strategy. However, continuing the current grazing strategy and using the full permitted active use would likely lead to a downward trend in vegetative cover and corresponding degradation of sage-grouse habitat.

Alternative B: Proposed Action

The proposed grazing strategy is expected to provide maximum growth and cover of current year's herbaceous growth during the nesting and brood-rearing period for sage-grouse on 86 percent of the pasture every year, and the entire allotment every other year. Deferring grazing until August in most pastures would also eliminate potential disturbance from livestock and associated activities during the critical nesting period.

Proposed new water sources would help address the poor distribution of livestock, and reduce the amount of time cattle spend around the relatively few existing water sources. Vegetation in areas subject to heavier use would respond with increased vigor and growth, providing more ground cover and reducing the opportunity for noxious weed establishment. Disturbance to birds during installation of pipelines may occur, but this affect would be temporary (few days) and limited habitat (<3 acres) would be involved. Design features would reduce the risk of noxious weed establishment, and disturbed areas would be seeded to allow for a quick recovery to pre-disturbance conditions. Better distribution of livestock may increase the area accessed by livestock; however, it would provide a more even spatial distribution of residual vegetation in the allotment.

Fencing the two springs would protect and maintain hydric vegetation around the small riparian areas for grouse and other species, but would increase the potential risk of collision to flying birds. No fences would be constructed within 0.6-mile of sage-grouse leks, and permanent flagging would be installed on newly constructed fences in sage-grouse habitat to further reduce collision risk (Hagen 2005). The small amount of fence needed to protect the springs would have almost no affect on the fence length to the area ratio in the allotment.

Alternative C: Proposed Action with Modified Livestock Grazing Management

Effects of range improvements would be the same as those analyzed in Proposed Action Alternative.

Changes to grazing would increase the potential impacts to grouse relative to the Proposed Action Alternative. Approximately one-fourth of the allotment would be grazed 2 out of 3 years during the nesting and brood-rearing period for sage-grouse, and nearly half of the allotment would be grazed during the nesting and brood-rearing period every third year. Grazing at this time of the year increases potential for reducing herbaceous screening cover at sage-grouse nests and subsequently increases risk of predation (Gregg and Crawford 2009). Trampling of nests is unlikely due to the typical placement of nests under sagebrush vegetation where cattle are less likely to step. This grazing schedule would also increase potential for disturbance to nesting grouse relative to the Proposed Action Alternative (Beck and Mitchell 2000). However, maintaining grazing within the target utilization levels on key forage species as proposed is expected to achieve Standards and conform to Guidelines, and provide adequate habitat for sage-grouse (Hagen 2005).

Alternative D: Proposed Action with Fewer Range Improvements

Effects of livestock grazing would be fairly similar to those analyzed in the Proposed Action; however, since no new water sources would be created, heavy livestock use would continue to occur around the relatively few late season water sources, potentially increasing the risk of not achieving Rangeland Health Standards over the term of the permit. These areas would continue to provide little late season forage and cover, leading to displacement or reduced sage-grouse use in these areas of the allotment.

The two springs and adjacent habitat would be protected by exclosures, and provide small riparian areas with potential for increased forb availability for sage-grouse during the critical brood-rearing period. Design features for fence construction would reduce potential impacts to sage-grouse, and the amount of fence needed for the exclosures would not cause a notable change in the fence length to area ratio in the allotment.

Alternative E: Switch to Every Other Year Grazing in Four Pastures

Effects of range improvements on sage-grouse would be the same as those discussed under the Proposed Action.

This grazing schedule would have the least potential for conflicts with sage-grouse. Complete rest from livestock grazing would occur every other year on 86 percent of the allotment. No grazing by livestock would provide herbaceous vegetation, including critical forb cover for sage-grouse, a complete growing season to recover and recruit new plants following the previous season's grazing.

This alternative would also eliminate all potential disturbance from livestock and associated activities during this time. In years when grazing is scheduled, livestock would turnout after the nesting and brood-rearing period. Potential disturbance to nesting birds would be avoided across the majority of the allotment, and competition for critical forbs would be absent. Table Pasture would continue to be grazed following a graze and defer treatment, which is expected to provide an adequate growing season rest to maintain sage-grouse habitat.

10. Upland Vegetation

Current discussion and analysis of potential effects to vegetation are tiered to the 1991 Three Rivers PRMP/FEIS and contained in the following sections: Chapter 2, p. 2-51 and Chapter 3, p. 3-7.

Affected Environment: Upland Vegetation

Major vegetation types in Chalk Hills Allotment consist of sagebrush with a perennial bunchgrass understory. Main types include mountain big sagebrush/crested wheatgrass, Wyoming big sagebrush/bluebunch wheatgrass, western juniper/mountain big sagebrush/bluebunch wheatgrass, and Wyoming big sagebrush/Sandberg's bluegrass (*Poa* secunda). Less common vegetation types consist of low sagebrush/bluebunch wheatgrass, and fringed sagebrush (*Artemisia frigid*)/bluebunch wheatgrass or crested wheatgrass. Other perennial grass species found in this allotment include bottlebrush squirreltail, and Thurber's needlegrass (*Stipa thurberianum*). Numerous perennial and annual forbs can be found across the allotment; species composition is closely linked to soils and Ecological Site Descriptions. Perennial forbs found include Lupine (*Lupinus* sp.), pussytoes (*Antennaria* sp.), milkvetch (*Astragalus* sp.), buckwheat (*Eriogonum* sp.), Phlox (*Phlox* sp.), and wild onion (*Allium* sp.). Rubber rabbitbrush (*Chrysothamnus nauseosus*), and antelope bitterbrush (*Purshia* tridentata), which are both perennial shrubs, can also be found within the allotment.

The 2006 Chalk Hills Allotment Evaluation analyzed the direction of trend in condition at nine upland trend plots within the allotment. Three C's Pasture had only one plot, which showed a static trend in rangeland health, while the other four pastures had two plots each. Within the Table Pasture, one trend plot was static, while the other showed an upward trend in rangeland health. One plot within Chimney Spring Pasture showed a static trend, and the other showed a downward trend in rangeland health; however, the trend plot that shows a downward trend is located within a few hundred feet of water, and therefore gets heavy use. Both plots in Zinc Spring showed a static trend in rangeland health, as did both plots within Iron Spring Pasture. While only one trend plot currently shows a downward trend, it is important to consider that in the past, the actual use AUMs have been far less than the Permitted Active Use AUMs of 935. If full use was made of this allotment, it is likely plots currently static would begin to show a downward trend.

Western juniper has increased on the east side of this allotment to the point where it is often the dominant plant species in a community. Encroachment of juniper has reduced cover and density of sagebrush and associated herbaceous plants while increasing the percent of soil surface exposed. This has reduced forage available for livestock and wildlife, as well as reducing habitat for wildlife dependent upon shrub and forb species. While juniper encroachment is an important issue at this point in time, current livestock grazing practices have no effect on existing juniper or its ability to increase.

In 2006 a 966-acre juniper cut project was completed within Chimney Spring Pasture. Machine piling and burning of this unit is scheduled to occur in the fall of 2010. Additional juniper reductions are currently being considered; however, this is outside of the scope of this analysis and will not be discussed further.

Environmental Consequences: Upland Vegetation

Effects Common to All Alternatives:

For the purposes of this analysis, the CEAA for upland vegetation consists of the allotment. Past and present actions, such as those described in *Affected Environment*, have influenced the existing environment within the CEAA. RFFAs in the CEAA that may contribute to cumulative effects to upland vegetation include livestock grazing, wildlife use, hunting and other recreational pursuits, diatomaceous earth mine exploration, and cutting and prescribed burning to reduce hazardous fuels and restore habitat. Within the allotment, up to 1,000 acres of cut juniper will be machine piled, burned, and seeded within the next few years. Past and RFFAs that have affected upland vegetation are found in Table 12.

Table 12: Upland Vegetation Past and RFFA

ACTION	PAST ACTIONS				FUTURE ACTIONS			
	ACRES	SQ. MILES	MILES	NUMBER	ACRES	SQ. MILES	MILES	NUMBER
Wildfires	665	1.04	---	---	Unknown	Unknown	---	---
Tree/Shrub cutting/mowin g	966	1.5	---	---	None	None	---	---
Rx Burns	None	None	---	---	966	1.5	---	---
Seedings	900	1.4	---	---	None	None	---	---
Roads	---	---	22 ---		---	---	None	---
Fences	---	---	31.3	---	---	---	None	---
Mine (Exploratory)	2,447 3.	8	---	---	None	None	---	---
Reservoirs	---	---	---	6	---	---	---	None
Spring Developments	---	---	---	1	---	---	---	None
Wells ---		---	---	1	---	---	---	None

Alternatives analyzed in this document may incrementally affect upland vegetation through disturbance and temporary reductions of herbaceous and shrub plant cover. Disturbance would be limited to the short period when cattle occupy the allotment, and grazing at levels that achieve Rangeland Health Standards and conform to Guidelines is expected to maintain adequate ground cover and an appropriate upland vegetation composition. No new roads or other actions that result in a permanent loss of upland vegetation are proposed in any alternative. The alternatives analyzed would not likely contribute to cumulative effects to upland vegetation, because any loss of vegetation would be temporary and managed within target use levels that sustain upland vegetation and ground cover.

Alternative A: No Action

Under this alternative, no new pipelines, fences or, water developments would be implemented to enhance utilization and distribution patterns. Service areas within 1 to 2 miles of existing waterholes would continue to receive continuous seasonal grazing by livestock and wildlife. Lack of growing season rest and limited change in timing and duration of grazing would result in reduced herbaceous plant vigor, density, and cover. Over time, this would lead to downward trend in rangeland condition across Chalk Hills Allotment. In addition, fine fuels would continue to accumulate in areas with little livestock and wildlife use due to the large distance from water, which would increase fire risk within the allotment.

The season of use would not change under this alternative. Since livestock grazing would occur in the beginning of the herbaceous vegetation growing season, use of antelope bitterbrush would be small due to other palatable and nutritious forage being available. As the herbaceous vegetation begins to mature, the use on antelope bitterbrush will increase (Ganskopp et al. 1999).

However, Ganskopp and associates (1999) found that antelope bitterbrush that is grazed early in the growing season (prior to herbaceous forages becoming dormant) often show a greater shrub diameter, than in pastures not grazed or grazed when herbaceous vegetation is mature. This is most likely due to the removal of apical dominance from the shrubs, and the reduction in competition caused by the grazing of adjacent forages (Ganskopp et al. 1999).

It is unlikely this alternative would fully achieve allotment resource objectives or fully meet the purpose and need for this Proposed Action.

Alternative B: Proposed Action

Under this alternative, the proposed range improvements would facilitate grazing management which should maintain or improve upland plant communities. Proposed grazing management would provide periodic growing season rest from livestock grazing for key forage species across Chalk Hills Allotment. This would allow for improved plant vigor and diversity, improved plant community composition, age class distribution and overall production within the allotment. Livestock distribution would be improved with development of additional water sources. A larger foraging area would be available by providing additional reliable water later in the year. More water sources would slightly reduce heavy to severe utilization levels on key forage species within service areas around current reliable water.

Deferred livestock grazing would allow upland forbs and grasses to complete their reproductive cycles at least every other year. However, since the use of antelope bitterbrush increases as growing season progresses and plants become dormant, the bitterbrush plants that are in heavy bitterbrush use areas may show a reduction in vigor. Ganskopp (et al. 1999) shows that antelope bitterbrush plants that are grazed in the period after herbaceous material becomes dormant are not as tall and have a smaller diameter and overall size than those plants that are grazed early in the season or not grazed at all. McConnell and Smith (1977) found that while early season use of bitterbrush results in more twig growth per plant, late-season use may result in more leafage on shorter spurs. Moderate late-season use of bitterbrush results in bitterbrush densities comparable to early season use; this may be due to livestock trampling acting as a natural planting mechanism after seed ripe during late season grazing (McConnell and Smith 1977). Under this alternative, monitoring plots would be established to make sure livestock use on antelope bitterbrush does not exceed 15 percent.

The proposed exclosure expansion around Zinc Spring would promote recovery of herbaceous riparian plant species within this wetland area. The proposed spring development in Chimney Spring Pasture would protect the herbaceous riparian plant species within the wetland area while providing an additional water source for livestock.

The Proposed Action would improve overall rangeland health by encouraging productivity, vigor, and diversity of plant communities within Chalk Hills Allotment. Current carrying capacity for all demands (wildlife and livestock) would be maintained or improved as plant communities would remain in stable to upward trend in rangeland condition.

Impacts to upland vegetation resulting from fence construction would be minimal (<1 acre total) and temporary (<1 year) in nature. Impacts to upland vegetation from pipeline construction and trough placement would also be minimal (less than 1 percent of total allotment area), and any disturbed areas would be seeded to restrict noxious weed establishment and reduce surface erosion.

Monitoring and adaptive management would be used to ensure antelope bitterbrush utilization is not over 15 percent and the riparian area along Mill Gulch continues to function properly. This alternative is expected to achieve allotment resource objectives and fully meet the purpose and need for this Proposed Action.

Alternative C: Proposed Action with Modified Livestock Grazing Management

All range improvements, change in season of use, and permit renewal would occur under this alternative and effects are the same as under the Proposed Action.

Under this alternative all pastures would receive 2 years of a deferred grazing treatment and 1-year of a graze treatment. In the year where there is no deferred grazing, the use on antelope bitterbrush would be limited to wildlife; this would decrease use of antelope bitterbrush in the fall. However, use on antelope bitterbrush would occur for 2 years in a row which may reduce the number of bitterbrush plants that are able to complete a 2-year reproductive cycle. Monitoring and adaptive management would occur to make sure utilization on bitterbrush does not exceed 15 percent and bitterbrush abundance and vigor do not decline.

Growing season rest would be provided in each pasture for two consecutive years and life cycle completion would occur for key forage plant species during these 2 years. This would result in increased vigor and abundance of key forage species.

Alternative D: Proposed Action with Fewer Range Improvements

Proposed grazing management is the same as under the Proposed Action; however, utilization and distribution patterns would not improve without installation of the pipelines. Service areas within 1 to 2 miles of existing waterholes would continue to receive continuous seasonal grazing by livestock and wildlife. Without additional water developments, water would limit deferred grazing within the allotment, or require water to be hauled. Late in the summer as water becomes more limited, livestock would congregate in larger groups were water is available, resulting in further reduced herbaceous plant vigor, density, and cover at these sites. In addition, fine fuels would continue to accumulate in areas with little livestock and wildlife use due to the large distance from water, which would increase fire risk in these areas. Over time, this would likely lead to downward trend in rangeland condition across Chalk Hills Allotment.

Under this alternative, the springs would still be developed, livestock season of use changed, and the permit renewed. The effects of these actions are the same as under the Proposed Action.

Alternative E: Switch to Every Other Year Grazing in Four Pastures

Under this alternative lower utilization levels would occur on key forage plant species and less forage competition between wildlife and livestock would occur within all the pastures except Table Pasture as livestock grazing would be removed every other year. More frequent growing season rest and life cycle completion would be provided for key forage plant species when livestock were not present. Over the 2-year reproductive cycle of bitterbrush, livestock would not utilize it during at least 1-year; therefore, allowing the plants to complete their reproductive cycles.

Table Pasture would receive a graze/defer treatment outlined in the Proposed Action, and effects would be the same. All range improvements and permit renewal would occur under this alternative, and effects would be the same as the Proposed Action.

11. Wildlife

Current discussion and analysis of potential effects to wildlife are tiered to the 1991 Three Rivers PRMP/FEIS and contained in the following sections: Chapter 2, p. 2-66 and Chapter 3, p. 3-9.

Affected Environment: Wildlife

This allotment is in a semi-arid environment, with 11 to 13 inches of precipitation annually. Open water is a limited resource, with little surface water available late into the season in springs, troughs, and reservoirs (Appendix B – Map C). The dominant vegetation community in the allotment is sagebrush (*Artemisia* sp.) steppe with stands of antelope bitterbrush, but juniper (*Juniperus occidentalis*) has encroached on approximately 85 percent of the allotment, particularly in the two easternmost pastures. Approximately 966 acres of juniper expansion was cut in Chimney Spring Pasture to reduce competition with sagebrush, and herbaceous vegetation, and to improve wildlife habitat. A wildfire in 1996 burned across 660 acres in the northern portion of Zinc Spring Pasture, reducing the cover of big sagebrush and other shrubs. The allotment contains approximately 2.06 miles of fence per square mile, and 1.51 miles of road per square mile.

No formal wildlife habitat monitoring has been conducted in the allotment, but suitable habitat is present for many species. Elk (*Cervus elaphus*) and mule deer (*Odocoileus hemionus*) use the area primarily in the winter and during seasonal migrations. Winter is a critical period for these two game species, and approximately two-thirds of the allotment provides important mule deer winter range. Stands of antelope bitterbrush are present in Zinc Spring and Iron Spring and to a lesser extent in Table and Three C's Pastures. Antelope bitterbrush is an important forage component of quality winter habitat for mule deer (Kufeld et al. 1973). Elk winter habitat comprises less than 5 percent of the allotment, and is found primarily along the eastern portion of Chimney Spring Pasture. This allotment makes up less than 1 percent of Oregon Department of Fish and Wildlife's Beulah wildlife management unit for deer and elk. Mule deer populations across the hunt unit are likely below management objectives while elk numbers are near management objectives (Klus, personal communication). Fifty-four AUMs are allocated for deer in the allotment, which are expected to be more than adequate considering the low deer numbers. No AUMs are allocated for other big game species (Three Rivers RMP 1992).

Other wildlife likely present in the allotment include coyote (*Canis latrans*), bobcat (*Lynx rufus*), several smaller mammals, reptiles, lizards, and amphibians. These animals may reside in the allotment yearlong or on a temporary basis when foraging or passing through the area during daily or seasonal movements.

Environmental Consequences: Wildlife

Effects Common to All Alternatives:

For the purposes of this analysis, the CEAA for wildlife extends up to 10 miles beyond the allotment boundary to encompass regular movements of most animals that may be using the allotment. The CEAA does not incorporate the entire annual use area for some animals, such as elk and mule deer, because this information is not available nor is it expected to change the analysis. Vegetation communities present in the allotment are representative of those in the CEAA, with the exception of the total acres.

Past and present actions, such as those described in *Affected Environment*, have influenced the existing environment within the CEAA. RFFAs in the CEAA that may contribute to cumulative effects to wildlife and habitat include livestock grazing, hunting and other recreational pursuits, expansion of a diatomaceous earth mine, and cutting and prescribed burning to reduce hazardous fuels and restore habitat. Within the allotment, up to 1,000 acres of cut juniper will be machine piled, burned, and seeded within the next few years. Past and RFFAs that have affected wildlife or wildlife habitat in the CEAA are found in Table 13.

Table 13: Wildlife Past and RFFA

ACTION	PAST ACTIONS				FUTURE ACTIONS			
	ACRES	SQ. MILES	MILES	RATIO: Length to Area	ACRES	SQ. MILES	MILES	RATIO: Length to Area
Wildfires	74,100	116	--- -	--	Unknown	Unknown	--- -	--
Tree/Shrub cutting/mowing	2,288	3	---	---	8,882	13.9	---	---
Rx Burns	910	1.4	---	---	7,493	11.7	---	---
Seedings	22,719	35	--- -	--	None	None	--- -	--
Roads	1,782	---	696	1.39:1	None	---	---	---
Fences	---	---	578	1.15:1	---	---	17	1.19:1
Mine	502	0.784	---	---	Unknown	Unknown	---	---

This list does not include unplanned or speculative actions. The total acres of mine activity within the next 25 to 50 years is unknown, but would take place within a 4,162-acre area identified in the EP Minerals POD. For comparative purposes, the 502 acres of past mine disturbance occurred over a 25-year period. Seventy-two wildfire starts have occurred over the last twenty years and more are likely to occur in the next twenty; however, predicting size and effects of future wildfires is not possible.

Alternatives analyzed in this document may incrementally affect wildlife through disturbance and temporary reductions of herbaceous and shrub plant cover. Disturbance would be limited to the short period when cattle occupy the allotment, and grazing at levels that achieve Rangeland Health Standards and conform to Guidelines is expected to maintain adequate habitat for wildlife.

No new roads or other actions that result in loss of habitat are proposed in any alternative, and no more than one-half mile of new fence is proposed under any alternative. The alternatives analyzed would not likely contribute to cumulative effects to wildlife, because loss of vegetation structure and cover to livestock grazing would be temporary (lasting until vegetation re-grows seasonally) and managed within target use levels that sustain adequate forage and cover for wildlife. Alternatives that propose late season grazing may negatively impact antelope bitterbrush (and quality mule deer winter range), and annual monitoring and adaptive management strategies would be critical to ensure that grazing does not lead to an irreversible loss or alteration of habitat.

Alternative A: No Action

Current grazing management has achieved Rangeland Health Standards (with the exception of Standard 5 due to juniper encroachment – see Table 5. Allotment Standards), and maintained adequate habitat to support wildlife despite not scheduling growing season rest on part of the allotment. This is likely because the stocking rate over the last two decades was approximately half the permitted active use. The 2006 allotment evaluation indicated that even though Standards were currently being achieved, they were at risk of not being achieved in the future due to poor livestock distribution.

Continuing the current grazing strategy would likely result in Standards not being achieved during the term of the permit, and habitat conditions for wildlife would deteriorate, especially near existing water sources. The rate of habitat degradation would be further exacerbated if the permittee uses the full permitted active use for this allotment. Forage and cover for wildlife would continue to decrease following repeat use each growing season, and areas within a mile of the few reliable water sources would continue to receive the heaviest utilization and be at risk of losing native plant cover and establishment of noxious weeds.

Vegetative cover around Dead Cow Spring and Zinc Spring would decrease, providing poor riparian habitat for wildlife and increasing the risk of noxious weed introduction in these sensitive areas. The small, steep-sided reservoir at Dead Cow Spring may be subjected to excessive trampling under a higher stocking rate, damaging the integrity of the dam and lead to a loss or reduction of open water.

Alternative B: Proposed Action

Grazing when most herbaceous plants are dormant would promote healthy rangeland conditions, and enhance productivity and sustainability of wildlife habitat. Competition and disturbance from livestock for spring vegetation would be eliminated on all pastures except the Table Pasture, providing greater distribution of habitat structure for hiding and escape cover and forage availability.

Deferring grazing in four of the five pastures every year would provide growing season rest for herbaceous vegetation across 86 percent of the allotment. The entire allotment would be deferred from grazing every other year, allowing herbaceous vegetation to attain maximum growth and production. Areas near water sources that historically received the heaviest livestock utilization would be allowed to grow throughout the spring without livestock grazing pressure, and would provide better ground cover and vertical structure later into the season and help reduce the risk of noxious weed introduction and spread.

Vegetation around the two spring sources would be protected, including a small reservoir that contains open water late into the season. Fencing around the springs and adjacent areas would reduce trampling and grazing impacts, and allow more natural hydric vegetation to establish. Even small riparian areas, especially in arid environments, provide critical habitat for many wildlife species (Thomas et al. 1979). Fencing around the springs may alter movements or cause injury or even death for some wildlife (Harrington and Conover 2006), but design features (Chapter II) for fence construction would increase the visibility and reduce the potential for injuries or entrapment by wildlife. The small amount of fence needed for the exclosures would have an undetectable effect to the fence length to the area ratio for the allotment.

Installing new water sources is expected to result in better distribution of cattle across the allotment and alleviate heavy use that occurs near the relatively few reliable water sources. Ground disturbance during pipeline installation may temporarily alter vegetation and soil, but the affected area would be relatively small (<3 acres) and effects would last for only a growing season or two as vegetation recovers. Increased trampling and use of vegetation would occur at new water sources, decreasing the available cover and forage for wildlife later in the season compared to existing conditions.

Livestock diet during the summer and fall shifts from primarily herbaceous vegetation to include more browse plants. Antelope bitterbrush, an important winter habitat component for mule deer, may be utilized heavily by livestock during this time of year. Cattle browse antelope bitterbrush in the spring, but peak (and most detrimental) use occurs in the summer around seed shatter and remains fairly high into the fall (Ganskopp et al. 1999). Summer and fall grazing can cause declines in production and recruitment of antelope bitterbrush. As part of monitoring, transects would be established specifically to monitor livestock utilization of antelope bitterbrush, and annual results would indicate if management needs to be changed to ensure antelope bitterbrush stands remain well distributed and productive across their current range and provide sustainable winter habitat for mule deer.

Monitoring results indicating livestock utilization is resulting in a downward trend in antelope bitterbrush, would trigger changes to grazing strategy (such as additional rest or earlier grazing periods) that would alleviate grazing pressure on bitterbrush. This would prevent quality winter habitat for mule deer from decreasing in the allotment. Loss of antelope bitterbrush would reduce high quality winter forage and negatively affect winter habitat on over 3,000 acres of the allotment. This would affect 3 percent of mule deer winter range within the cumulative effects area. Sagebrush and juniper cover would not be affected by livestock grazing, and would continue to provide cover and forage within the allotment.

Alternative C: Proposed Action with Modified Livestock Grazing Management

Effects of range improvements would be similar to those analyzed in Alternative B; however, changes to grazing would alleviate some of the pressure on mule deer winter range.

Livestock would be on a 3-year rotation and scheduled earlier in some pastures to provide more rest from effects of late season grazing on antelope bitterbrush than in the Proposed Action. Approximately one-quarter of the allotment would be grazed earlier in the season for 2 out of 3 years, and half of the allotment would be grazed earlier the third year. This strategy would allow antelope bitterbrush in these pastures a season to recover from livestock grazing in these pastures, and may offset utilization from the previous season of grazing. The scheduled earlier graze treatment in these pastures would still overlap with seed shatter for antelope bitterbrush (Johnson and Berrang 2007), and heavy use may still occur on shrubs in these pastures. Monitoring would be established as discussed under the Proposed Action Alternative and results would indicate whether changing management is necessary to maintain mule deer winter habitat.

Alternative D: Proposed Action with Fewer Range Improvements

Effects of livestock grazing would be similar to those analyzed in the Proposed Action; however, since no new water sources would be created, heavy livestock use would continue to occur around the relatively few late season water sources, increasing the risk of not achieving Rangeland Health Standards over the term of the permit. These areas would continue to provide little late season forage and cover, leading to displacement or reduced wildlife use in these areas of the allotment.

The two springs and adjacent habitat would still be protected by exclosures, and provide small riparian areas for wildlife. Design features for fence construction would reduce potential impacts on wildlife movement, and the amount of fence needed for the exclosures would be undetectable to the overall fence length to the area ratio in the allotment. Monitoring would be established as discussed under the Proposed Action Alternative and results would indicate whether changing management is necessary to maintain mule deer winter habitat.

Alternative E: Switch to Every Other Year Grazing in Four Pastures

Effects of range improvements would be the same as those discussed under the Proposed Action.

This grazing schedule would likely result in the lowest livestock utilization of antelope bitterbrush, and subsequently provide the most forage in mule deer winter range compared to the other alternatives. Complete rest from livestock grazing would be provided every other year across 86 percent of the allotment. No spring or summer livestock grazing would provide shrubs a recovery period from the previous season's use. Monitoring would be established as discussed under the Proposed Action Alternative and results would indicate whether changing management is necessary to maintain mule deer winter habitat.

B. Discussion on Cumulative Effects

As the Council on Environmental Quality (CEQ), in guidance issued on June 24, 2005, points out, the "environmental analysis required under NEPA is forward-looking," and review of past actions is required only "to the extent that this review informs agency decision-making regarding the Proposed Action." Use of information on the effects on past action may be useful in two ways according to the CEQ guidance. One is for consideration of the Proposed Action's cumulative effects, and secondly as a basis for identifying the Proposed Action's effects.

The CEQ stated in this guidance that "[g]enerally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions." This is because a description of the current state of the environment inherently includes the effects of past actions. The CEQ guidance specifies that the "CEQ regulations do not require the consideration of the individual effects of all past actions to determine the present effects of past actions." Our information on the current environmental condition is more comprehensive and more accurate for establishing a useful starting point for a cumulative effects analysis, than attempting to establish such a starting point by adding up the described effects of individual past actions to some environmental baseline condition in the past that, unlike current conditions, can no longer be verified by direct examination.

The second area in which the CEQ guidance states that information on past actions may be useful is in "illuminating or predicting the direct and indirect effects of a Proposed Action." The usefulness of such information is limited by the fact that it is anecdotal only, and extrapolation of data from such singular experiences is not generally accepted as a reliable predictor of effects.

However, "experience with and information about past direct and indirect effects of individual past actions" have been found useful in "illuminating or predicting the direct and indirect effects" of the Proposed Action in the following instances: the basis for predicting the effects of the Proposed Action and its alternatives is based on the general accumulated experience of the resource professionals in the agency with similar actions.

The environmental consequences discussion described all expected effects, including direct, indirect, and cumulative, on resources from enacting the proposed alternatives. Direct and indirect effects plus past actions become part of the cumulative effects analysis; therefore, use of these words may not appear. In addition, the Introduction Section of this EA, specifically the Purpose of and Need for Action, identifies past actions creating the current situation.

RFFAs, also relevant to cumulative effects, include those Federal and non-Federal activities not yet undertaken, but sufficiently likely to occur, that a Responsible Official of ordinary prudence would take such activities into account in reaching a decision. These Federal and non-Federal activities that must be taken into account in the analysis of cumulative impact include, but are not limited to, activities for which there are existing decisions, funding, or proposals identified by the bureau. These RFFAs must fall within the geographic scope and timeframe of the analysis being prepared. Continued livestock grazing, weed treatments, road maintenance, recreation activities, machine pile and burning of 966 acres of previously cut juniper, and the possible Eagle Pitcher Mine expansion are known RFFAs. The cumulative effects of these five actions were thoroughly addressed throughout Chapter III by resource as applicable.

CHAPTER IV: PERSONS, GROUPS, AND AGENCIES CONSULTED

A. Agencies and Individuals Consulted

Grazing Permittee
Harney County Court
Oregon Department of Fish and Wildlife

B. Interdisciplinary Team

John Bethea – Outdoor Recreation Planner *(Recreation, Visual Resources)*
Jason Brewer - Wildlife Biologist *(Migratory Birds, Wildlife, SSS – Fauna)*
Lindsay Davies - Fisheries/Riparian Specialist (*Water Quality, Wetlands/Riparian Zones)*
Eric Haakenson - Wilderness Planner (*Wilderness and WSAs*)
Doug Linn - Botanist (*Biological Soil Crust, Soils)*
Lesley Richman - District Weed Coordinator (*Noxious Weeds)*
Scott Thomas - District Archaeologist *(Cultural Heritage)*
Autumn Toelle - Rangeland Management Specialist – Lead Preparer *(Upland Vegetation)*

C. Advisory

Bill Dragt, Acting District Range Lead
Stacy Fenton, GIS Specialist
Rhonda Karges, District Planning/Environmental Coordinator
Richard Roy, Three Rivers Resource Area Field Manager
Willie Street, Acting Supervisory Natural Resource Specialist

D. References

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Appendix A

Grazing Treatment Descriptions

Early – (Approximately March 1 to April 30) – This treatment provides the plants an opportunity to recover after utilization of early plant growth. By removing livestock before all spring and summer precipitation occurs, the plants would be able to store carbohydrates, set seed, and maintain their vigor. This "early" treatment can be used every year with little effect on the plant.

The dates of April 1 to April 30 are a guideline for the "early" treatment. Early use must take place before grass plants are in the boot stage. There must also be enough soil moisture in the ground to provide for regrowth after grazing. Therefore, flexibility in the early treatment would allow for use prior to April 1 but generally not after April 30, and will depend on climate.

Graze – (Approximately May 1 to July 1 to 15) – This treatment allows for grazing during the critical growth period of most plants. Carbohydrate reserves are continually being utilized because the green parts of the plant are continuously being removed by livestock. Pastures that are under the "graze" treatment will generally experience some other treatment the following year so as not to repeat graze treatments.

Defer – (Approximately July 1 to 15 to October 31) – Grazing during this treatment will not begin until after most plants have reached seed ripe and have stored adequate carbohydrate reserves. This treatment will assist in meeting the objectives by providing all plants an opportunity to complete their life cycles and produce the maximum amount of cover and forage.

Winter – Grazing during this treatment will occur when most plant species are dormant. Most plants will have completed their life cycles and stored maximum carbohydrates for the next growing season.

Rest – This treatment provides the plants a full year of growth in the absence of grazing. They are allowed to store maximum carbohydrate reserves, set seed, and provide carryover herbage for the following year's turnout.

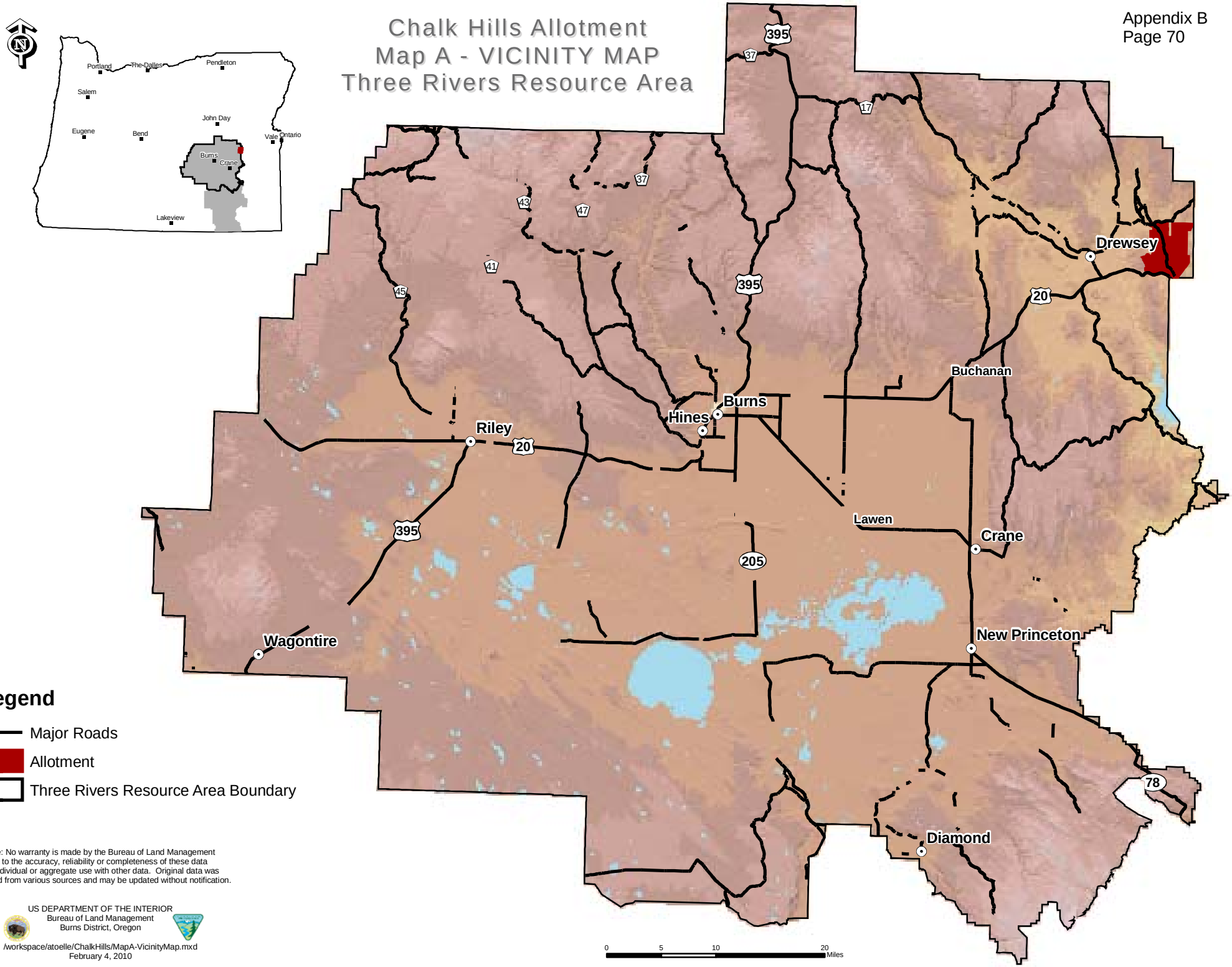
These dates are approximations based on general plant phenology. Year-to-year variation in phenology will occur based on climatological phenomena.

Appendix B

Maps

Map A – Vicinity
Map B – Land Status
Map C – Current Range Improvements
Map D – Wilderness Inventory
Map E – Proposed Grazing Year 1
Map F – Proposed Grazing Year 2
Map G – Proposed Action Range Improvements
Map H – Alternative C Grazing Year 1
Map I – Alternative C Grazing Year 2
Map J – Alternative C Grazing Year 3
Map K – Alternative D Proposed Range Improvements

Chalk Hills Allotment
Map A - VICINITY MAP
Three Rivers Resource Area



Legend

- Major Roads
- Allotment
- Three Rivers Resource Area Boundary

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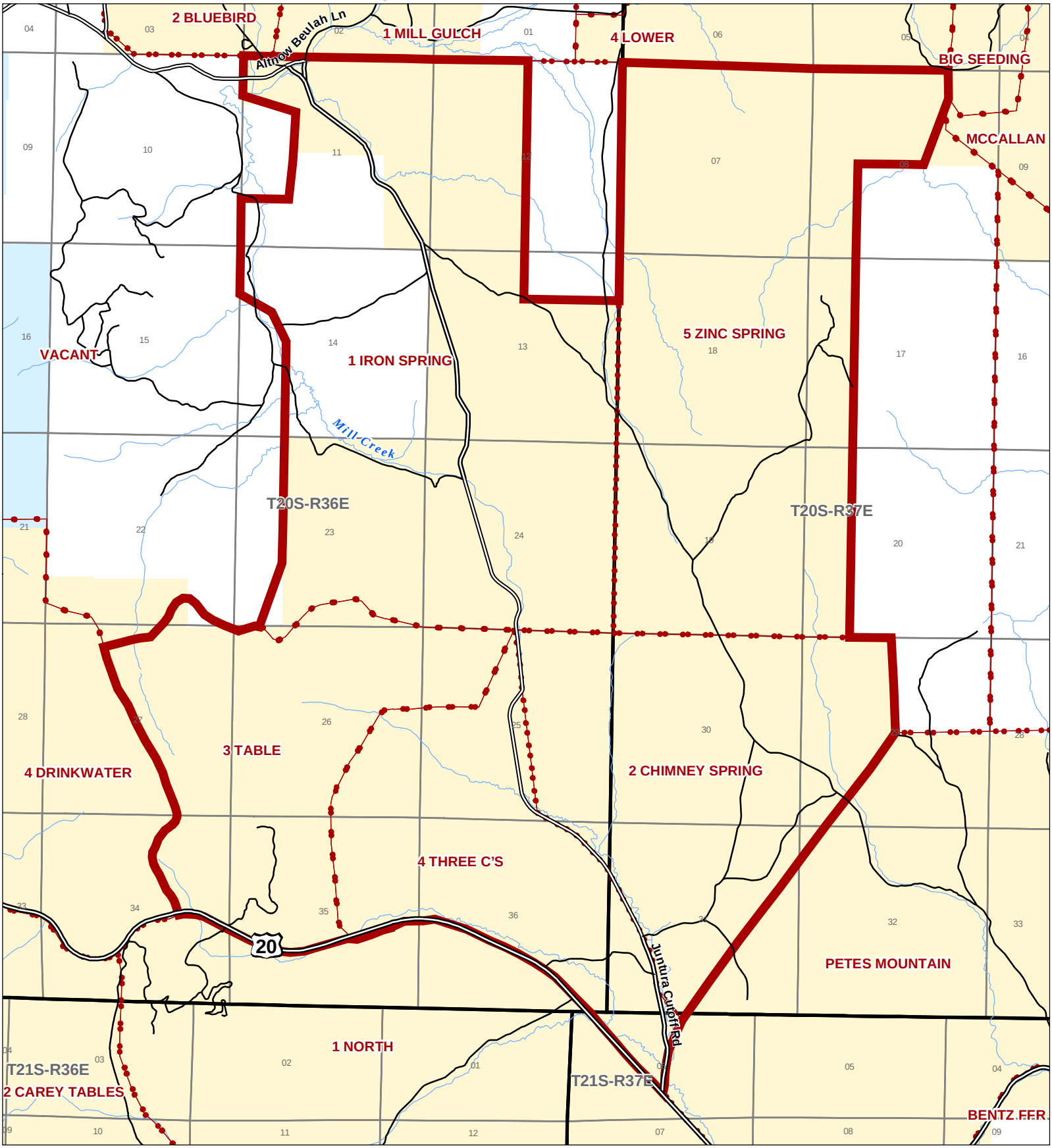
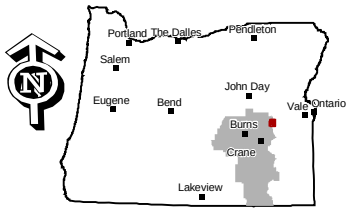
February 4, 2010

Chalk Hills Allotment #05526
Map B - Land Status



Legend

- Allotment Boundary
- Pasture Boundary
- Intermittent Streams
- Paved Road
- Non-Paved Improved Road
- Primitive or Unknown Road Surface
- Township and Range
- Section Lines
- Bureau of Land Management
- Private
- State



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Chalk Hills Allotment #5526

Map C - Range Improvements

Appendix B
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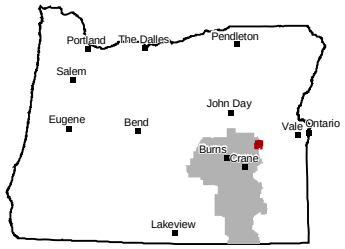
Legend

- Allotment Boundary
- Pasture Boundary
- Perennial Streams
- Intermittent Streams
- Unreliable Water
- RESERVOIR
- SPRING
- TROUGH
- WELL
- Bureau of Land Management
- Private
- State



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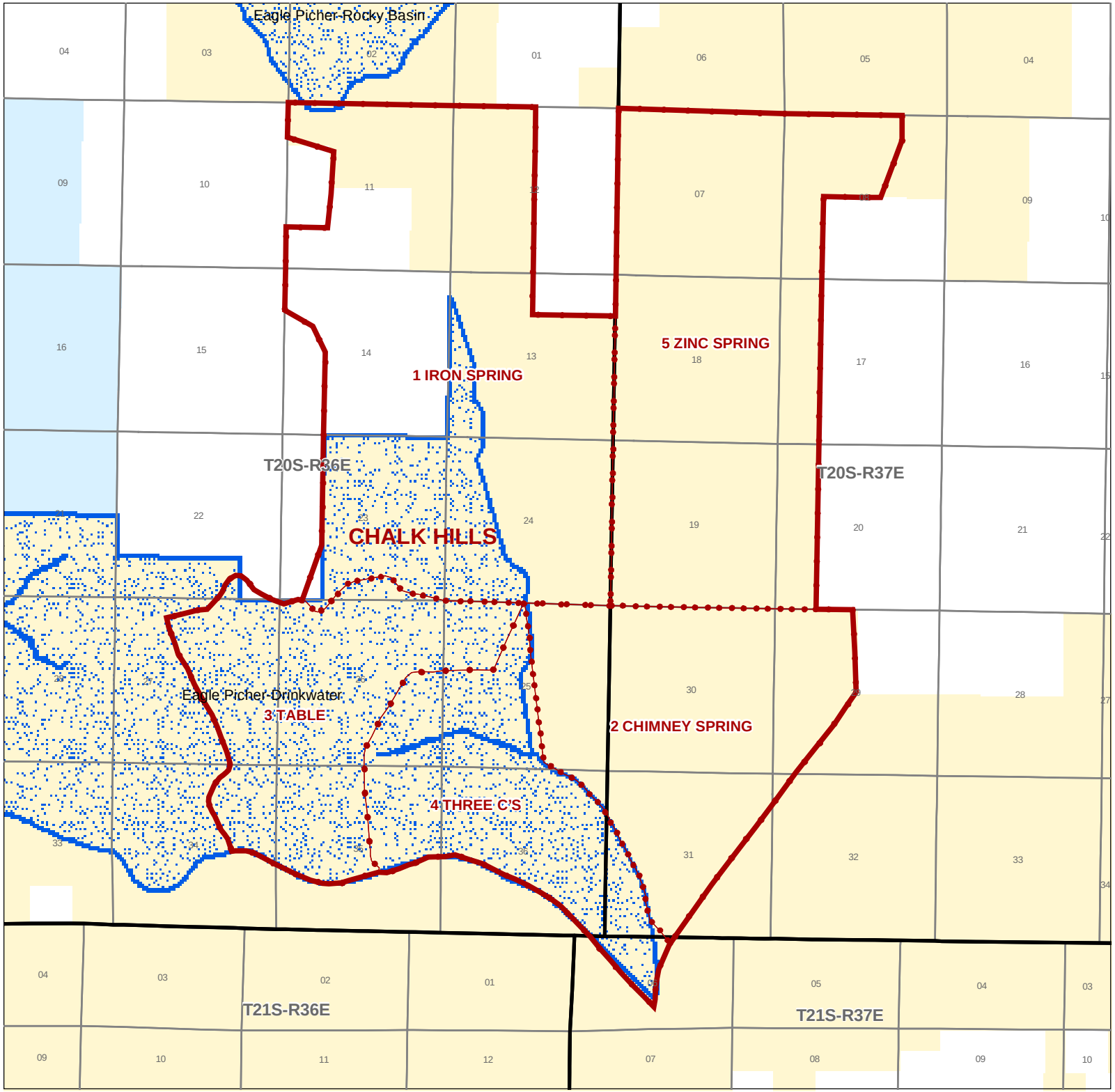
/workspace/atoelle/ChalkHills/MapC-RangeImprovements.mxd
February 4, 2010

0 0.35 0.7 1.4 Miles

T19S-R36E
T19S-R37E
T20S-R36E
T20S-R37E
T21S-R36E
T21S-R37E
2 BLUEBIRD
1 MILL GULCH
3 MIDDLE
4 LOWER
SCAB
BIG SEEDING
MCCALLAN
VACANT
5 ZINC SPRING
1 IRON SPRING
PJ #2 FFR
WEST JUNIPER
CHALK HILLS
CHUKAR PARK FFR NORTH
4 DRINKWATER
3 TABLE
2 CHIMNEY SPRING
CHUKAR PARK STEX
4 THREE C'S
PETES MOUNTAIN
2 CAREY TABLES
1 NORTH
3 RIVER
BENTZ FFR
Warm Springs Creek
Mill Creek
Chimney Creek

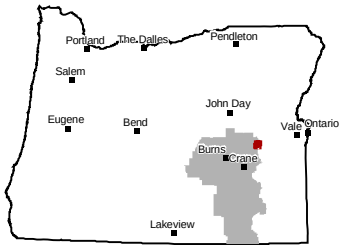
Chalk Hills Allotment #5526

Map D - Wilderness Inventory



Legend

- Allotment Boundary
- Pasture Boundary
- WIM UNITS > 5K ACRES
- Bureau of Land Management
- Private
- State



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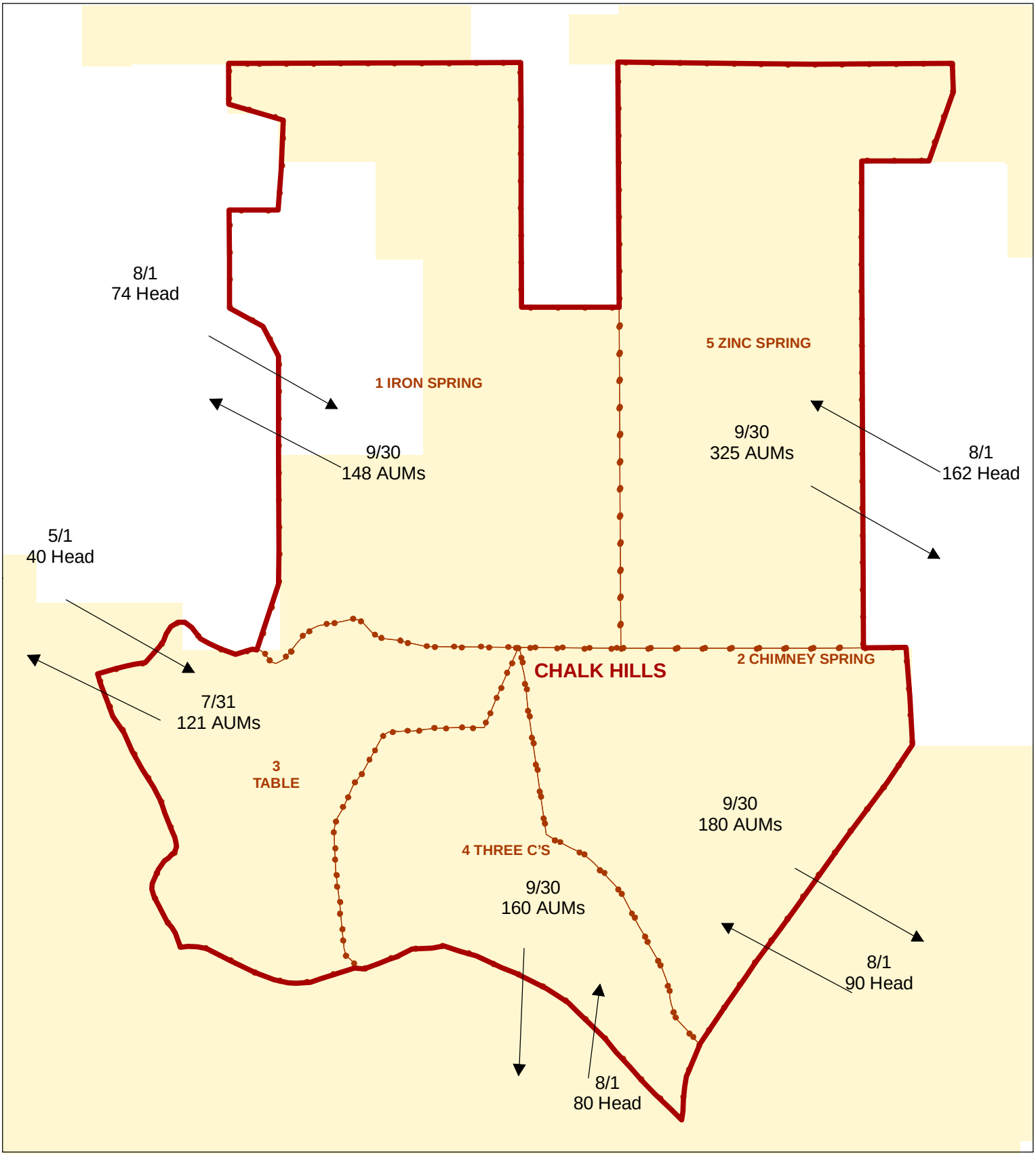
March 29, 2010

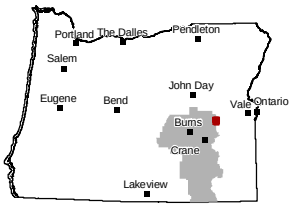
0 0.3 0.6 1.2 Miles

Chalk Hills Allotment #5526
Map E - Proposed Grazing Year 1



Legend

Allotments
Pasture Boundary
BLM
Private



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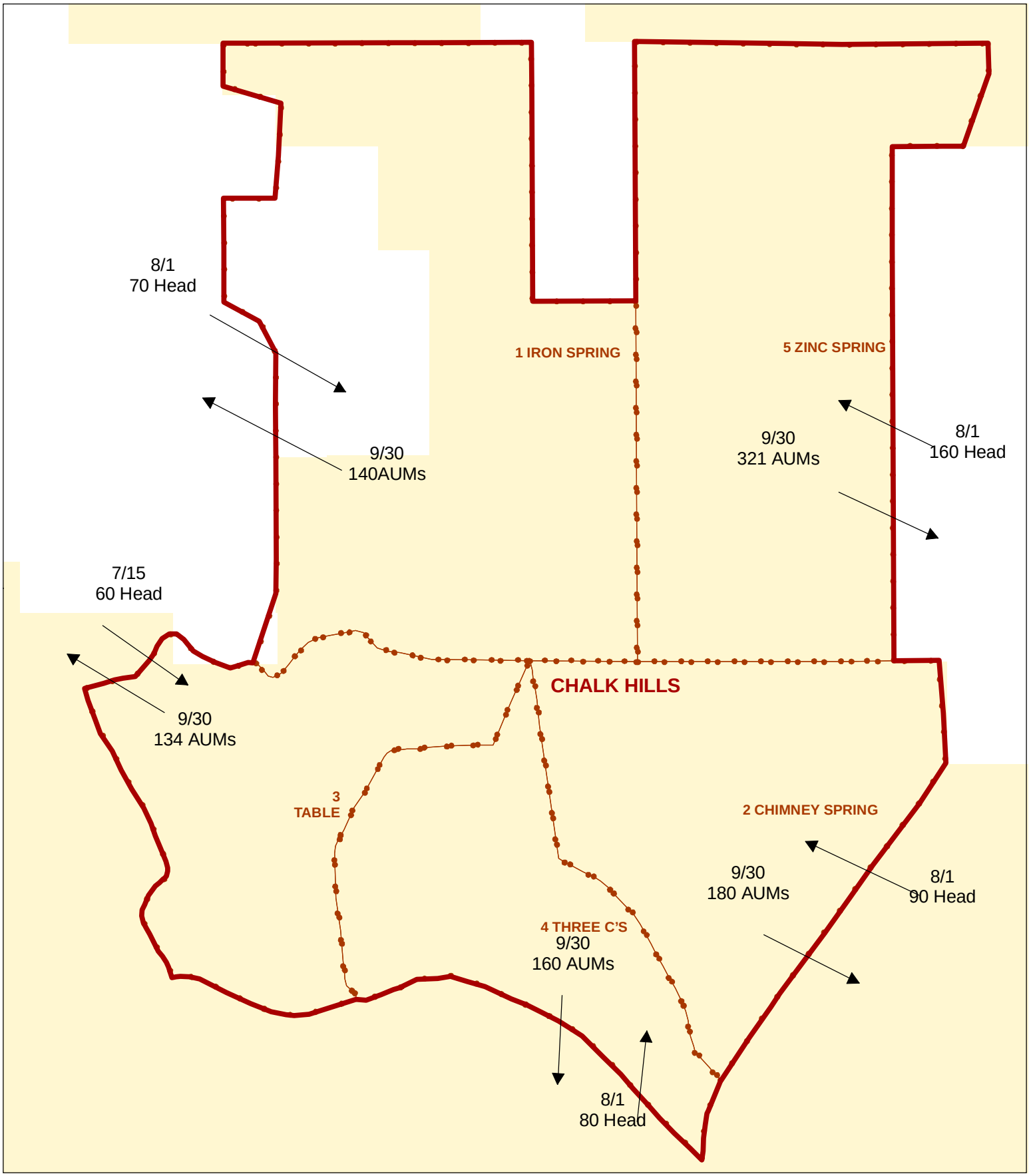
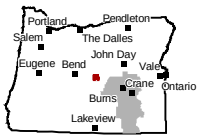
February 17, 2010

Chalk Hills Allotment #5526
Map F - Proposed Grazing Year 2



Legend

- Allotments
- Pasture Boundary
- BLM
- Private



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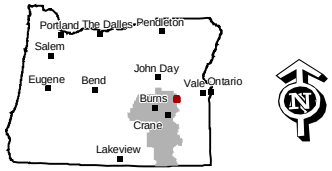
February 4, 2010

Chalk Hills Allotment #5526
Map G - Proposed Action Range Improvements

Legend

- Allotment Boundary
- Pasture Boundary
- Paved Road
- Non-Paved Improved Road
- Primitive or Unknown Road Surface
- Intermittent Streams
- Unreliable Water
- RESERVOIR
- SPRING
- TROUGH
- WELL
- Bureau of Land Management
- Private
- State
- 1000ft Contours
- 40ft Contours
- Proposed Water Troughs
- Proposed Spring Trough
- Proposed Storage Tank
- ProposedPipeline
- Proposed Exclosure Fences
- Proposed Cattleguard



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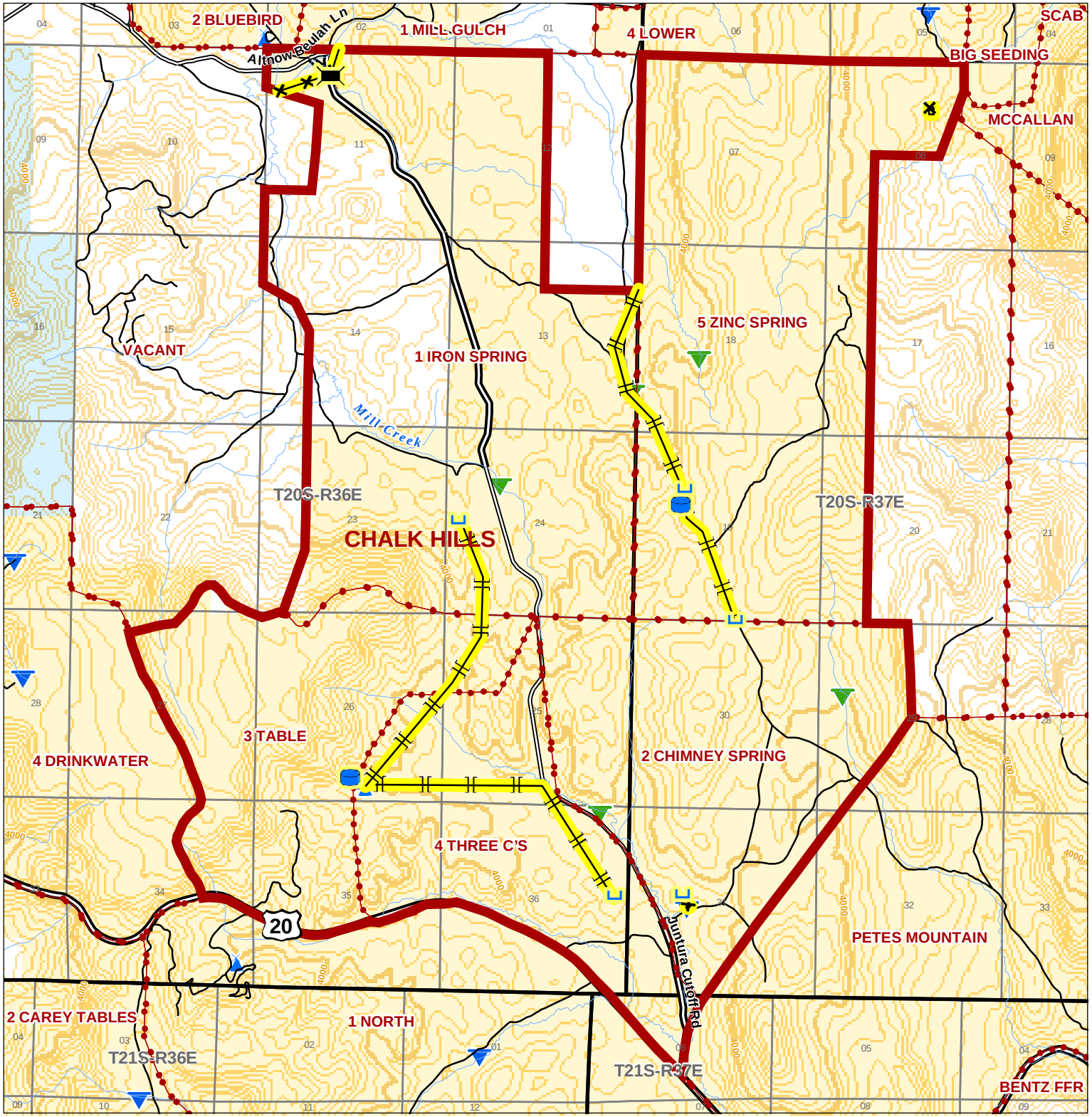
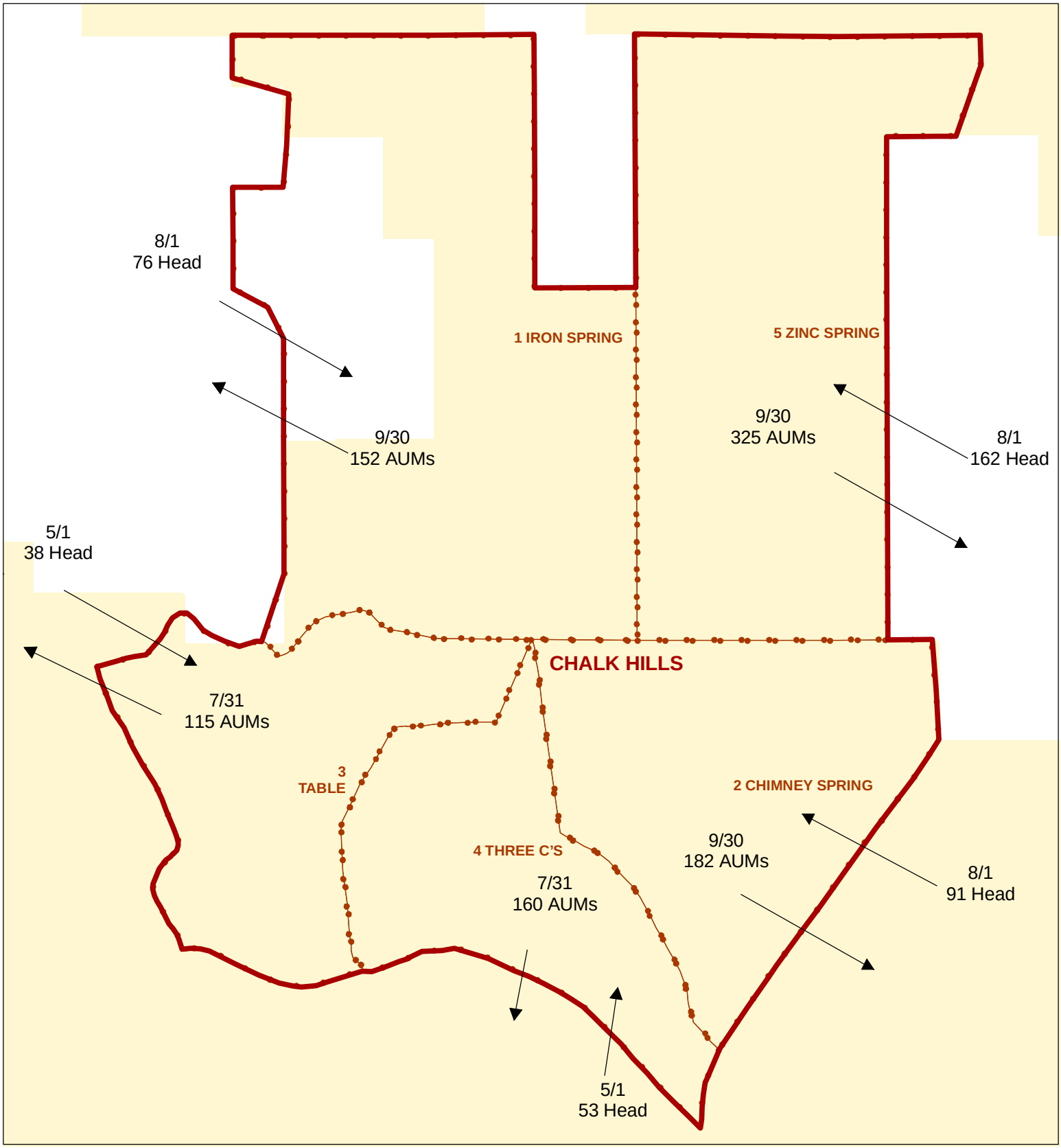
February 4, 2010

0 0.25 0.5 1 Miles

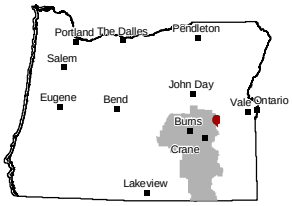


Chalk Hills Allotment #5526
Map H - Alternative C Grazing Year 1



Legend

- Allotments
- Pasture Boundary
- BLM
- Private



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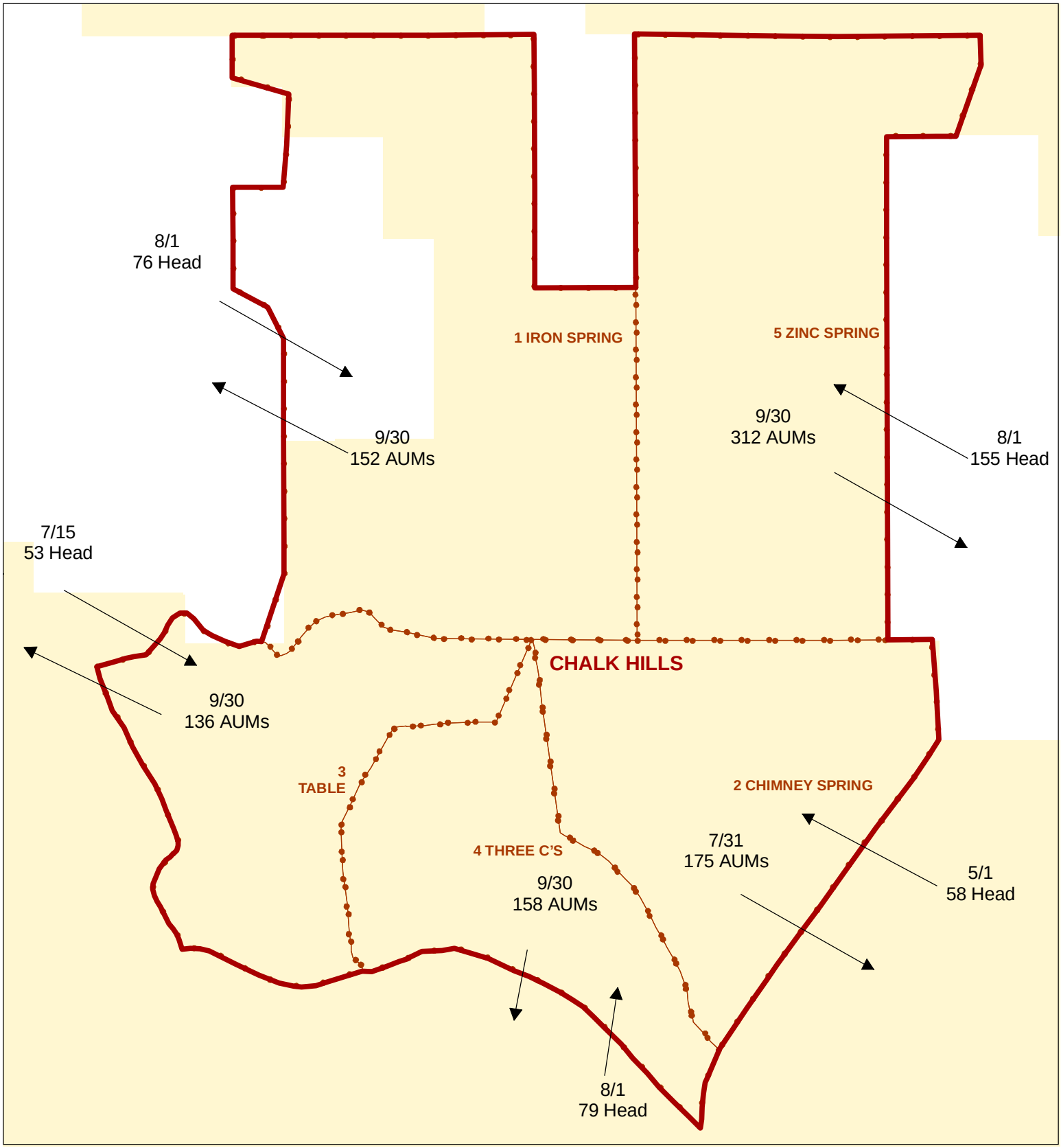
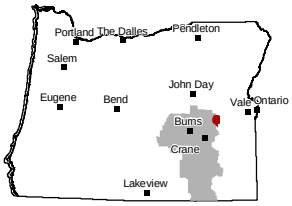
Chalk Hills Allotment #5526
Map I - Alternative C Grazing Year 2



Legend

- Allotments
- Pasture Boundary
- BLM
- Private



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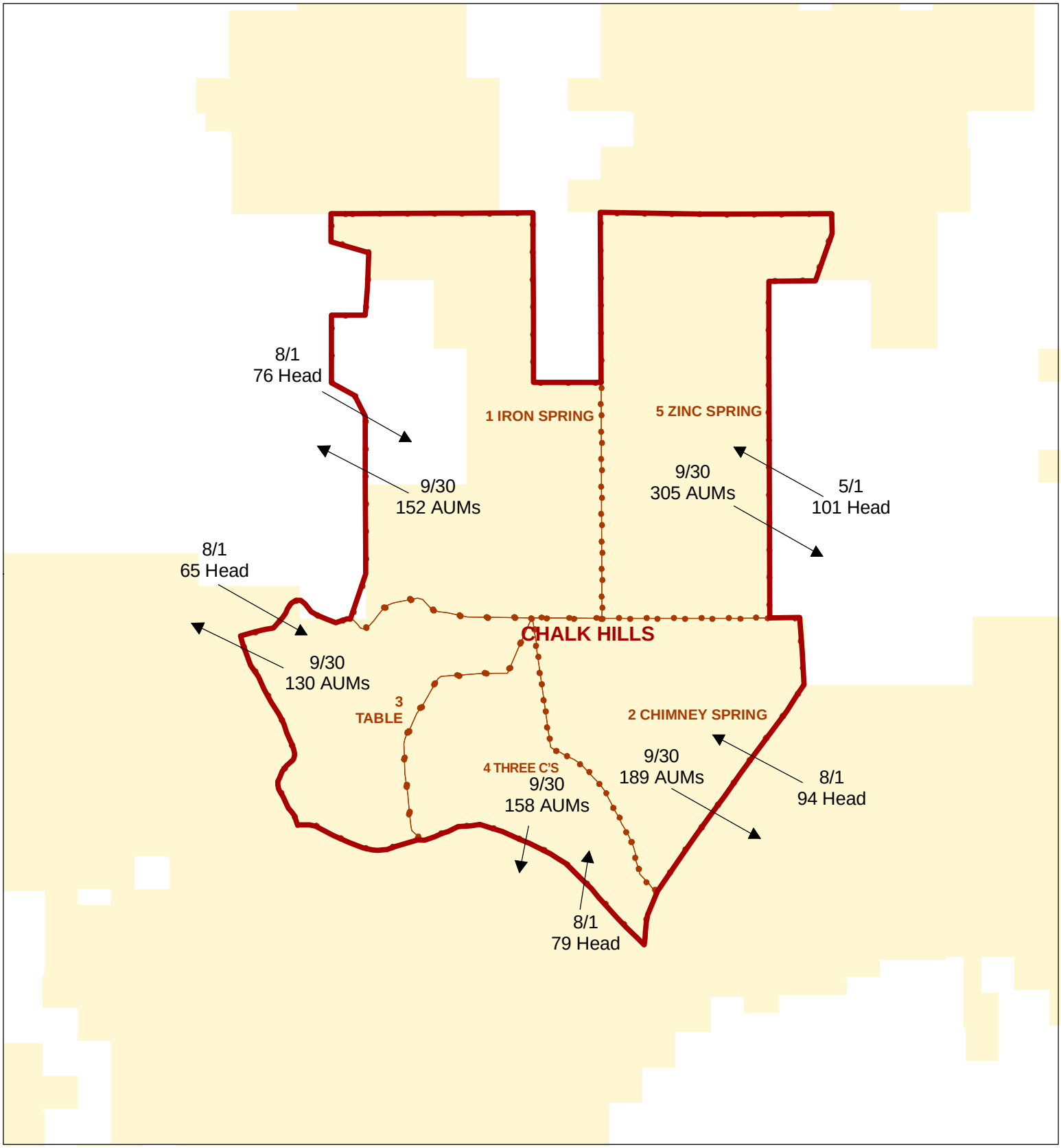
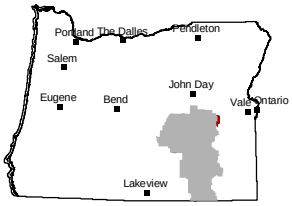
Chalk Hills Allotment #5526
Map J - Alternative C Grazing Year 3



Legend

- Allotments
- Pasture Boundary
- BLM
- Private



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February 17, 2010

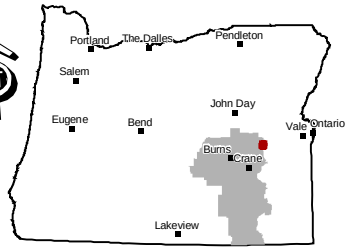
Chalk Hills Allotment #5526

Map K - Alternative D Proposed Range Improvements

Appendix B
Page 80

Legend

- Spring Trough
- Proposed Exclosure Fences
- Allotment Boundary
- Pasture Boundary
- Intermittent Streams
- RESERVOIR
- SPRING
- TROUGH
- WELL
- Bureau of Land Management
- Private
- State



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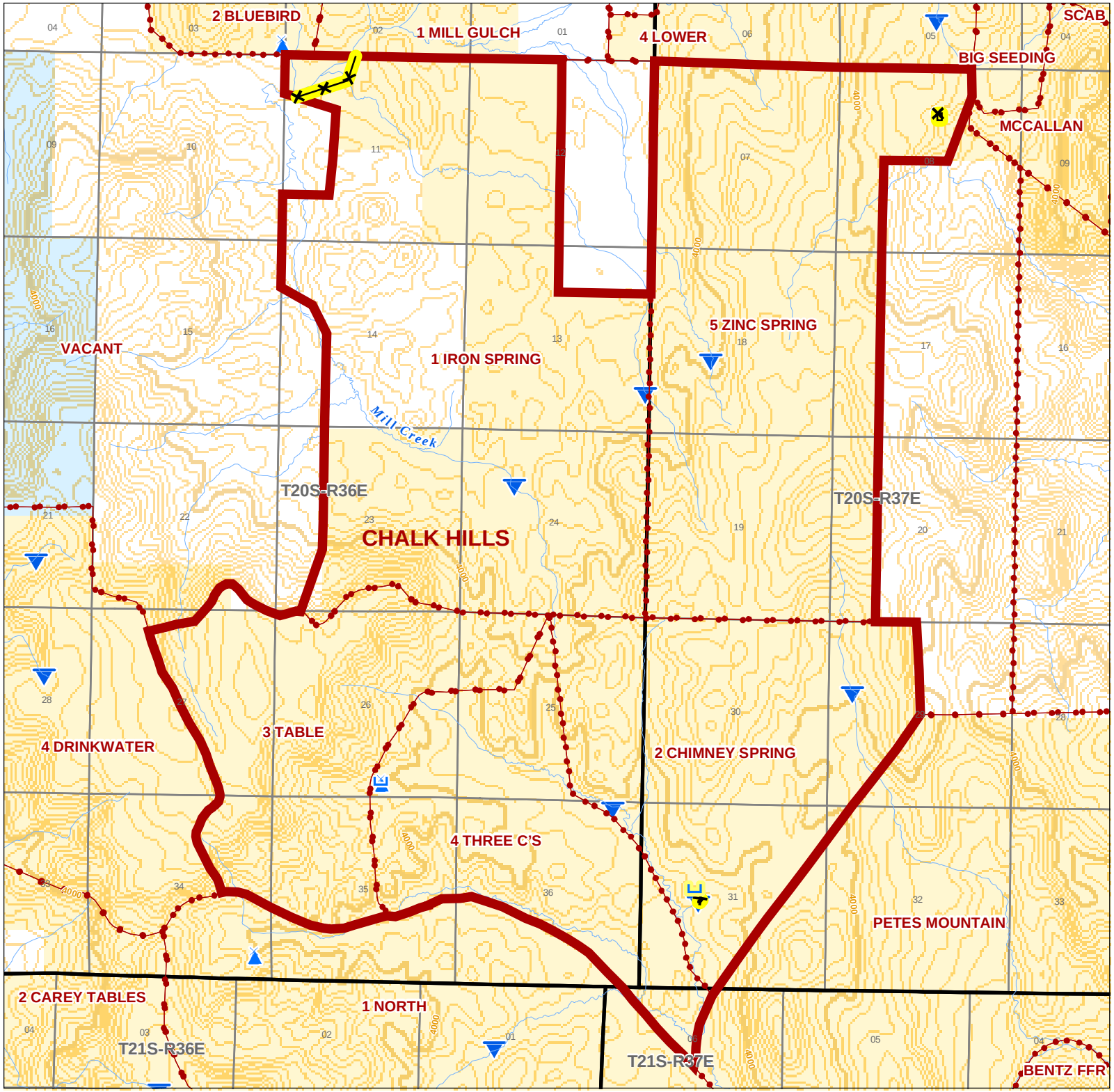
0 0.25 0.5 1 Miles