Chapter 2

Description and Comparison of Alternatives

CHAPTER 2
DESCRIPTION AND COMPARISON OF ALTERNATIVES

Introduction

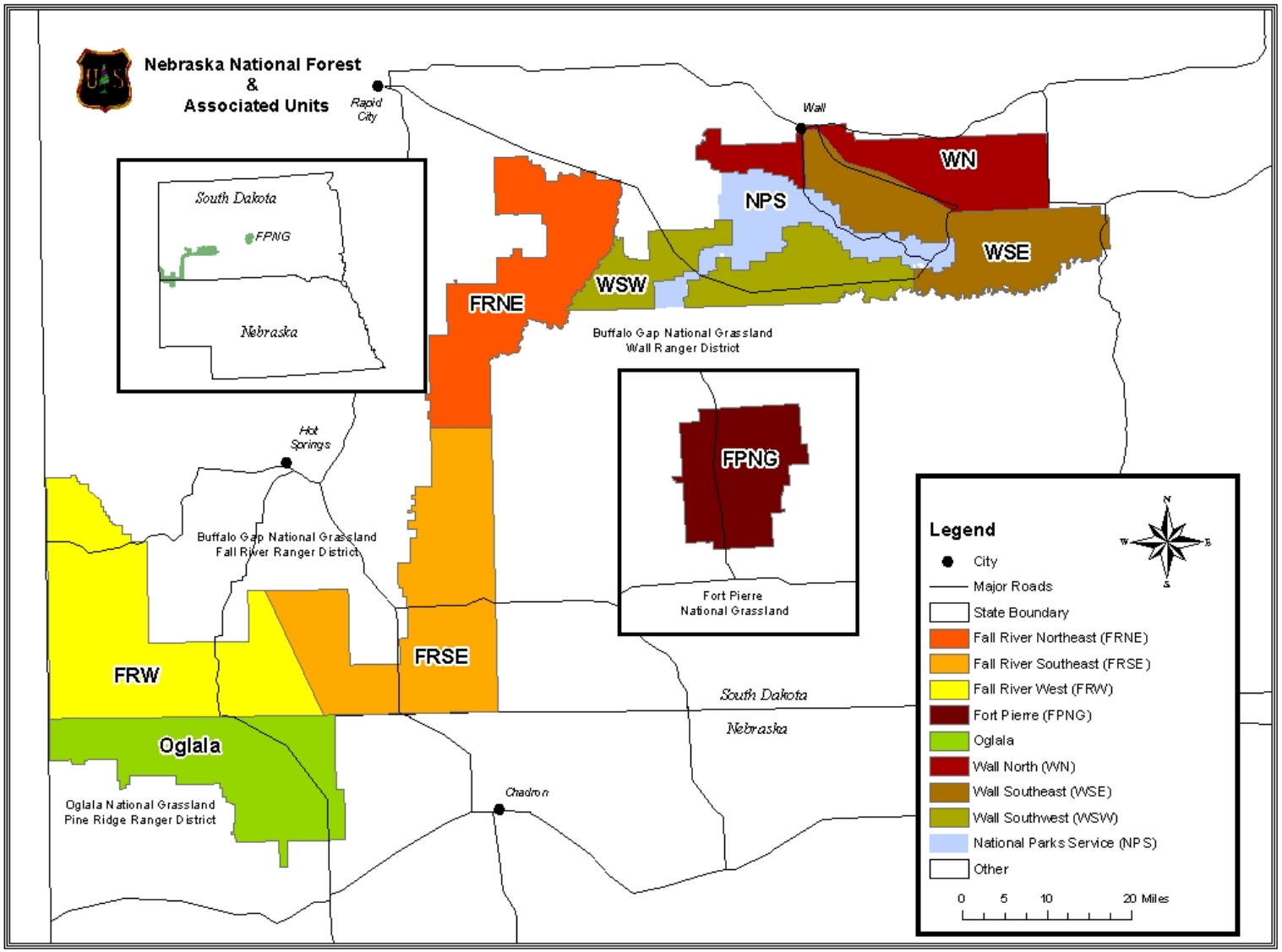
This chapter describes and compares five alternatives, a no action and four action alternatives, for black-tailed prairie dog management in the interior-colony management zone (IMZ) of the Forest. The four action alternatives all require an amendment of the *Land and Resource Management Plan, Nebraska National Forest and Associated Units* (2001 Forest Plan). The focus of the action alternatives is on managing populations of prairie dogs within the IMZ by identifying acre objectives based on geographic or management area land bases. Each action alternative also includes thresholds which initiate the decision to apply site-specific management tools within the context of the alternative. This chapter includes a summary comparison of the alternatives that provides a basis for determining alternative preferences for the decision-maker and the public.

The 2001 Forest Plan includes direction to manage prairie dog populations in the IMZ using non lethal tools, to limit rodenticide use to those situations where public health and safety risks are present or where damage to private and public facilities is occurring, and to restrict prairie dog shooting (USDA Forest Service 2001c). The 2001 Forest Plan was amended to allow the lethal use of rodenticide in boundary management zones (BMZs), as well as shooting in some circumstances, in the *Record of Decision for Black-tailed Prairie Dog Conservation and Management on the Nebraska National Forest and Associated Units, Including Land and Resource Management Plan Amendment 2* (USDA Forest Service 2005e).

Alternatives Considered in Detail

Following completion of scoping and issue analysis, significant issues were analyzed, refined, and used to develop five alternatives, including the “no action” alternative. An alternative was considered reasonable if it met the purpose and need and responded to significant issues by: 1) setting objectives for desired acres and applying an adaptive process to manage prairie dog colonies within the interior of the National Grasslands to maintain or move toward desired vegetation cover, protect topsoil, and prevent the potential establishment of noxious and invasive species and 2) managing black-tailed prairie dog habitat designated as a black-footed ferret management area (MA 3.63) in the 2001 Forest Plan to sustain black-footed ferrets and associated species.

Figure 2-1. Distribution of geographic areas in the project area.



The following are common factors for all alternatives:

- Objectives are provided at the geographic or management area (GA and MA respectively) scale. See Appendix F – Maps.
- Suitable acres (see Appendix F – Maps) were delineated by GIS analysis and include soil, slope, water, and other factors to delineate potential acres for prairie dog colony occupation.
- This analysis incorporates a ten-year planning horizon on a parallel with the 2001 Forest Plan.
- Thresholds are defined decision points that will initiate adaptive management response when objectives are approached or met. When evidence suggests that thresholds are being approached or met, an adaptive response protocol (ARP) will be initiated (see FEIS Appendix H – Implementation Plan). The ARP will document the decision process, validate need, and prescribe the management options from a suite of active, passive, and administrative management tools to address specific thresholds within interior management-colony zones (see Table 2-11).

Alternative 1 (Preferred)

Summary Description: This alternative employs adaptive management and emphasizes a mix of multiple uses while sustaining black-footed ferrets and associated species within Management Area 3.63 (MA 3.63). MA 3.63 is designated as a black-footed ferret management emphasis in the 2001 Forest Plan (USDA Forest Service 2001c). This alternative is based on a moderate objective for prairie dogs while incorporating adaptively applied active and passive management tools. Table 2-11 provides a list of adaptive management tools currently available for implementing this alternative. Alternative 1 addresses sustainability of black-footed ferrets, concerns about vegetation condition, and social/economic issues. In the Conata Basin MA 3.63 where black-footed ferrets currently exist, this alternative prioritizes black-footed ferrets and the associated need for prairie dog colonies over other multiple uses. This alternative utilizes an adaptive response protocol (See FEIS Appendix H – Implementation Plan) to help make implementation decisions at the site-specific level.

In addition to 2001 Forest Plan direction, this alternative provides objectives for maximum and minimum acres of active prairie dog colonies at the geographic area (GA) scale, excluding the acreage within MA 3.63. In MA 3.63, the specific maximum and minimum acreage is designed to provide habitat for sustainable populations of black-footed ferrets based on prairie dog densities. The acre objectives for Alternative 1 are defined as follows:

- GA – The maximum acreage occupied by active prairie dog colonies is 3 percent of the total aggregate National Grassland acres within the specific GA. The 3 percent objective was chosen based on recommendations from the ranching community and counties and consideration for the biological needs of wildlife species associated with prairie dog colonies, public desires, and the multiple uses that also need to occur on the national grasslands.

  The minimum acreage for GAs is one prairie dog colony complex defined as 1,000 acres by the 2001 Forest Plan (USDA Forest Service 2001c). Exceptions to this include the Fall River Southeast GA, where prairie dog acres will be dedicated to MA 3.63 at Smithwick, and the Wall Southwest GA, where prairie dog acres will be dedicated to MA 3.63 at Conata Basin. Prairie dog colony acres in these two GAs will be addressed only after acreage requirements are met in the associated MA 3.63 areas of the GA.

- MA 3.63 (Conata Basin and Smithwick) – The maximum acre objective for Conata Basin is based on what is required to sustain 100 breeding adult ferrets when prairie dog densities are low because of such factors as drought. The minimum acre objective for Conata Basin is based on what is required to maintain 100 breeding adult ferrets when prairie dog densities are high (USDA Forest Service 2005c, Livieri 2005). The maximum acre objective for Smithwick is based on what is required to maintain 30

breeding adult ferrets. The minimum acre objective is based on a recent environmental assessment (EA) for a similar ferret reintroduction need in Wind Cave National Park (National Park Service 2006a, 2006b). The following table provides the acreage objectives for black-tailed prairie dogs under this alternative.

Table 2-1. Management objectives for range of IMZ acres occupied by prairie dogs under Alternative 1.

District	Geographic Area	Total Acres in Geographic Area or Management Area	Total Suitable Acres in the Interior-colony Management Zone (IMZ)	Objective for Acres Occupied by Black-tailed Prairie Dogs Within the IMZ (minimum to maximum)
Pine Ridge	Oglala	94,484	18,646	1,000 to 2,800
Fall River	Fall River Northeast GA	91,298	33,478	1,000 to 2,700
	Fall River West GA	119,951	48,420	1,000 to 3,600
	Fall River Southeast GA	86,666	24,694	No acreage objective
	MA 3.63 Black-footed ferret reintroduction area	25,307	17,010	2,100 to 5,000
Wall	Wall North GA	69,437	14,801	1,000 to 2,100
	Wall Southeast GA	90,840	27,885	1,000 to 2,700
	Wall Southwest GA	28,580	6,693	No acreage objective
	MA 3.63 Black-footed ferret reintroduction area	77,155*	46,399	12,500 to 19,000
Fort Pierre	Fort Pierre GA	116,053	61,214	1,000 to 3,500
* This acreage includes approximately 3,912 acres of MA 3.63 from the Wall Southeast GA				

Under Alternative 1, prairie dog management objectives from the previous table would be applied to the following situations (subject to acreage objectives and prescribed actions dealing with thresholds):

- Retain or expand currently occupied colonies as long as the colony does not occur in identified areas where prairie dogs are not desired, such as BMZs.
- Allow new prairie dog colony starts in areas designated to be managed for such, as long as they are consistent with resource conditions, 2001 Forest Plan direction, and maximum acreage objectives.

The Fall River Southeast and Wall Southwest (non MA 3.63) have no acreage objectives. These areas will have acreage objectives addressed at a later time under separate analysis (such as allotment management planning) and after MA 3.63 Black-footed Ferret Reintroduction Area objectives are met.

Thresholds: The threshold objectives and prescribed actions for this alternative are listed in the following table. The threshold used to determine action based on vegetation condition is similarity index[1] (or some other vegetation monitoring protocol correlated to SI). Similarity index (SI) is calculated as a

[1] Similarity index (SI) rating is a method to evaluate an ecological site. This method compares the present plant community on an ecological site to the various common vegetation states that can exist on the site or that are desired on the site. The SI is expressed as the percentage of a vegetation state plant community presently on the site to the desired vegetation state plant community. The desired vegetation state plant community must be identified as the reference plant community. The SI can provide an indication of past disturbances, as well as future management or treatments, or both, needed to achieve the client's objectives (NRCS 2006).

percentage of the historical climax plant community for a given ecological site. FEIS Chapter 3, FEIS Appendix A, and the range specialist report contain a more thorough discussion of historical climax plant communities and ecological sites on the Oglala, Buffalo Gap, and Fort Pierre National Grasslands. An SI of 25 percent is the desired vegetation condition for a prairie dog colony (see discussion in the following table).

Table 2-2. Thresholds under Alternative 1.

Threshold	Prescribed Action
Visual observation of specific prairie dog towns suggests the similarity index is at or below 25% or trending downward toward 25% of the historical climax plant community (HCPC).	Initiate adaptive response protocol addressing the specific prairie dog colony. If SI is above 25% but trending downward, develop a plan to reverse trend, including monitoring to ensure that SI has been reversed. In MA 3.63, any actions taken to reduce prairie dog acreage below the maximum objective will be dependent on current prairie dog densities and what is required to maintain ferret viability. Consider all tools available to accomplish this action (see Table 2-11).
Acres exceed maximum objective for GA or MA.	Initiate adaptive response protocol. If determined necessary, apply rodenticide treatment to reduce acreages to some level within range of objectives. In MA 3.63, any actions taken to reduce prairie dog acreage below the maximum objective will be commensurate with current prairie dog densities. Consideration for level of reduction will include risk and projected timeline of further expansion.
Acres are below minimum objective for GA or MA.	Initiate adaptive response protocol. Suspend any actions in the GA or MA which are designed to reduce acres. If the adaptive response protocol indicates a need, consider the full range of active and passive tools to increase acreages within the GA or MA (see Table 2-11).
Chronic BMZ problem exists.	Initiate adaptive response protocol if a chronic BMZ problem exists because control of encroachment arising from a complaint does not affect the entire colony. Consider all current activities being utilized in the BMZ such as fencing and grazing. If the adaptive response protocol indicates a need, consider controlling the entire colony as long as all other objectives are met (including objectives dealing with black-footed ferrets).

Forest Plan Amendment: Implementation of this alternative would necessitate a forest plan amendment (Amendment 3) to address the following:

- Expanded use of rodenticide within the IMZ.

  The 2001 Forest Plan restricts the use of rodenticide in reducing prairie dog populations in Standard 1, Section H. Animal Damage Management (USDA Forest Service 2001c). Amendment 2 to the 2001 Forest Plan allows rodenticide use in boundary management zones and for instances where public health and safety risks are present or where damage to private and public facilities is occurring (USDA Forest Service 2005e).

- A management allocation change for that portion of the Conata Basin MA 3.63 that lies above Badlands National Park from MA 3.63 to MA 6.1 (rangeland with broad resource emphasis).
- Changes to management indicator species objectives.
- MA 3.63 General Standard #1 (2001 Forest Plan, Chapter 3) which authorizes only those uses and activities that do not reduce suitability of the area (Conata Basin MA 3.63 and Smithwick MA 3.63) as black-footed ferret reintroduction habitat.

Summary: This alternative would achieve the purpose and need through active management and monitoring of prairie dog and black-footed ferret populations and soil and vegetation conditions. Non lethal management would be emphasized before poisoning, and implementation of this alternative would prioritize prairie dogs over livestock. The comparison tables at the end of the chapter describe key components and predicted effects of each alternative and give the reader a method for comparing proposed implementation, management, monitoring, and effects among them.

Alternative 2 – No Action (current Forest Plan direction)

Summary Description: This alternative is the current prairie dog management on the National Forest and Grasslands as defined in the 2001 Forest Plan and the *Record of Decision for Black-tailed Prairie Dog Conservation and Management on the Nebraska National Forest and Associated Units, Including Land and Resource Management Plan Amendment 2* (BTPDCM) (USDA Forest Service 2005e). The 2001 Forest Plan did not set specific acreage objectives for prairie dog colonies. The current management objective for prairie dogs located in the IMZ is to achieve population regulation and management through non lethal methods and limited rodenticide use where public health and safety risks are present or where damage to private and public facilities is occurring (USDA Forest Service 2001c).

The 2001 Forest Plan projected that there would be between 24,400 and 39,800 acres of prairie dogs on the Nebraska National Forest by 2012. The BTPDCM also used the expansion model with more current acreage numbers and projected there would be between 29,600 to 41,400 acres of prairie dogs on the Nebraska National Forest by 2012. There are currently 33,311 acres of occupied prairie dog colonies (see FEIS Appendix B), an indication that the 2001 Forest Plan projections are still relevant.

From 1996 to 2006, expansion rates varied tremendously across the national grasslands due to precipitation, plague, and rodenticide use (see tables in FEIS Appendix B). A 25 percent expansion rate was used to determine predicted acres of prairie dogs on the Nebraska National Forest in the next 10 years (2017). From 2002 to 2006, actual annual growth rates in the IMZ indicate an average forestwide expansion of 25 percent. This time frame was selected because drought was occurring and there were no control activities; drought and no rodenticide use are two primary causative agents of expansion in the IMZ. More specific geographic area objectives are listed in the following table.

Table 2-3. Geographic area objectives for prairie dog management under current 2001 Forest Plan direction.

Geographic Area	Current Management Direction
Fall River Northeast GA	Black-tailed prairie dog is not listed as a management indicator species (MIS), so no specific objectives are listed in the 2001 Forest Plan.
Fall River Southeast GA	Increase prairie dog populations over the next 10 to 15 years. Maintain or expand current distribution over the next 10 to 15 years. Develop a prairie dog complex in the northeastern part of this GA over the next 10 to 15 years. This area has been designated as MA 3.63 (black-footed ferret emphasis).
Fall River West GA	Increase prairie dog populations over the next 10 to 15 years. Maintain or expand current distribution over the next 10 to 15 years.
Wall North GA	Black-tailed prairie dog is not listed as a MIS, so no specific objectives are listed in the 2001 Forest Plan
Wall Southeast GA	Black-tailed prairie dog is not listed as a MIS, so no specific objectives are listed in the 2001 Forest Plan
Wall Southwest GA	To help increase prairie dog populations and habitat for associated species, enhance and maintain three or more prairie dog colony complexes in this GA. Colonies protected by conservation agreements or easements on adjoining land jurisdictions, including private, shall be considered part of a complex.
Fort Pierre GA	To increase prairie dog populations and habitat for associated species, establish one or more prairie dog colony complexes in the northeast portion (Sand and Timber Creek drainages) of this GA over the next 10 to 15 years. Colonies protected by conservation agreements or easements on adjoining land jurisdictions, including private and tribal, may be considered part of a complex.
Oglala GA	To help increase prairie dog populations and habitat for associated species, establish a prairie dog colony complex in the GA over the next 10 to 15 years. Colonies protected by conservation agreements or easements on adjoining land jurisdictions, including private, may be considered part of a complex.

Projected Prairie Dog Acres: For analysis purposes, the following acreage assumptions were made to maintain consistency with the 2001 Forest Plan:

- GA – This alternative is passive with regard to controlling prairie dog acres except within BMZs and in limited instances of threat to infrastructure or public health. For this reason, the minimum acreage objective is assumed to be the current inventory. Maximum acres were determined using 25 percent average annual growth rate per year and the current colony inventory as a base starting point.
- MA 3.63 (Conata Basin and Smithwick) – For Conata Basin MA 3.63, the minimum acreage defined by the 2001 Forest Plan is three prairie dog complexes or 3,000 acres (USDA Forest Service 2001c). This alternative is passive with regard to controlling prairie dog acres, and the current inventory exceeds the 2001 Forest Plan minimum of 3,000 acres as shown in the following table. For this reason, the minimum acreage objective is assumed to be the current inventory. The 2001 Forest Plan minimum acreage for Smithwick MA 3.63 is represented by one prairie dog complex as defined under GA descriptions. As with the GAs, the maximum acre objectives were determined using the average annual growth rate of 25 percent and the current colony inventory as a base starting point.

The following table displays prairie dog acre objectives within parameters of the assumptions noted above.

Table 2-4. Management objectives for range of IMZ acres occupied by prairie dogs under Alternative 2.

District	Geographic Area	Total Acres in Geographic Area or Management Area	Total Suitable Acres in the Interior-colony Management Zone (IMZ)	Projected Maximum and Minimum Acres Occupied by Black-tailed Prairie Dogs Within the IMZ by 2017
Pine Ridge	Oglala	94,484	18,646	1,125 to 13,097
Fall River	Fall River Northeast GA	91,298	33,478	1,130 to 13,155
	Fall River West GA	119,951	48,420	210 to 2,445
	Fall River Southeast GA	86,666	24,694	42 to 489
	MA 3.63 Black-footed ferret reintroduction area	25,307	17,010	503 to 5,856
Wall	Wall North GA	69,437	14,801	454 to 5,285
	Wall Southeast GA	90,840	27,885	1,414 to 16,461
	Wall Southwest GA	28,580	6,693	214 to 2,491
	MA 3.63 Black-footed ferret reintroduction area	77,155*	46,399	26,484 to 46,400
Fort Pierre	Fort Pierre GA	116,053	61,214	1,735 to 20,198
* This acreage includes approximately 3,912 acres of MA 3.63 from the Wall Southeast GA.				

Current IMZ Management: 2001 Forest Plan direction to manage prairie dog populations using non lethal management tools (and limited use of rodenticide) is implemented as appropriate and where it would be most effective over the long-term.

Non lethal methods (e.g., vegetation management through livestock grazing modifications) are implemented in selected sites to help regulate and manage prairie dog populations. Non lethal methods are used to reduce colony establishment and expansion rates in these areas. This may include the use of temporary fencing to increase vegetation and create visual (vegetation) barriers. Within the fenced areas, livestock grazing would be temporarily excluded. Vegetation management fencing could also provide areas of additional forage for prairie dogs, especially during low precipitation periods (drought), in an

attempt to help reduce prairie dog dispersal to other lands. Fencing would be determined on a case-by-case basis, taking into consideration factors such as the rate of prairie dog expansion, soils, precipitation trends, and vegetative species composition.

The Wall Ranger District (Buffalo Gap NG) built 13.23 miles of temporary electric fence and deferred 3,765 acres from cattle grazing in the BMZ. Vegetation monitoring indicated that these sites are recovering and slowing-down prairie dog encroachment (USDA Forest Service 2008b).

If suitable destination sites are available, live-trapping may be used in a few selected colonies to remove and relocate prairie dogs. Identification and evaluation of opportunities for landownership adjustment to reduce prairie dog management conflicts with adjoining landowners continue as prescribed in the 2001 Forest Plan (USDA Forest Service 2001c).

Limited use of rodenticide is prescribed in the 2001 Forest Plan and can be implemented for public health and safety risks and damage to facilities, such as rural residences, and for addressing encroachment in BMZs. All decisions regarding rodenticide use (including the amount and extent) on the National Grasslands in response to public health and safety risks would be made by the Forest Service after on-site evaluations and review of rodenticide label directions. In most cases, public health and safety risks would occur near private land within BMZ, and these problems are addressed in both the 2001 Forest Plan and the BTPDCM.

Thresholds: The 2001 Forest Plan, as amended, allows rodenticide use in BMZs. Outside the BMZs, limited use of rodenticide is allowed when evidence indicates human health and safety or infrastructure is threatened or compromised.

Forest Plan Amendment: None needed.

Summary: This alternative would achieve the purpose and need through the most passive level of management and monitoring of prairie dog and black-footed ferret populations. Over time, some prairie dog towns may cause shifts in vegetation seral expression that could increase the potential. Non lethal management would be employed. Rodenticide use would be limited to situations where health and safety and infrastructure protection are a concern, as described in the 2001 Forest Plan. Implementation of this alternative would prioritize prairie dogs over livestock. Depending on the efficacy of the livestock management efforts, the amount of fencing and poisoning in the BMZ may increase and livestock grazing may be reduced. The comparison tables at the end of the chapter describe key components and predicted effects of each alternative and give the reader a method for comparing proposed implementation, management, monitoring, and effects among them.

Alternative 3

Summary Description: This alternative was suggested and supported through initial scoping input from several county agencies, groups, and individuals. It employs adaptive management with a focus on ensuring there is not a disproportionate share of prairie dog acres in any county containing National Grasslands. Table 2-11 provides a list of adaptive management tools currently available for implementing this alternative. This alternative would establish two primary objectives: 1) at a minimum, maintain an SI of 25 to 50 percent and 2) define the "proportionate share of prairie dog acres" as the maximum acreage objectives displayed in the following table. This alternative utilizes an adaptive response protocol (See FEIS Appendix H) to help make implementation decisions at the site-specific level.

Prairie Dog Acre Objectives: In South Dakota, this alternative provides an objective that focuses on preventing a disproportionate share of prairie dogs in any given county. Specifically, it sets a maximum objective only, providing for acreages not to exceed 3 percent of the aggregate total of national grasslands in each county. To keep analysis consistent with the other alternatives, each GA and MA was analyzed

for how the acres were split between individual counties. In the Oglala GA, objective input was at the GA level and not focused at the county level. All of Fall River West GA, Fall River Southeast GA and MA 3.63 (Smithwick) lie within Fall River County. The Fall River Northeast GA consists of public lands in both Custer and Pennington Counties. The Wall Southwest GA, portions of the Wall North GA, and MA 3.63 (Conata Basin) consist of public lands in Pennington County. The remaining portion of Wall North GA, Wall Southeast GA, and a very small portion of Wall Southwest GA are within Jackson County. The Ft. Pierre GA is located in the three counties of Jones, Lyman, and Stanley. Appendix F contains maps displaying prairie dog colony locations and South Dakota county boundaries.

For the Oglala GA (in Nebraska), minimum and maximum acreages were suggested through scoping input as well. The minimum and maximum acres were specified rather than calculated as a straight percentage of the acres in each county.

As noted, this alternative provides an objective for prairie dog acres specific to each county. In this regard, the objectives include acres in both the IMZ and BMZ. Acres not controlled in the BMZ under 2001 Forest Plan direction will count toward compliance with the maximum objective when considering what is actually occurring on the ground.

Except as noted for the Oglala GA, this alternative uses counties as the benchmark for acreage objectives. This allows management flexibility to place the acreage objective anywhere within the county without restriction to geographic or management area boundaries to meet other objectives such as for black footed ferret habitat. To facilitate comparison with other alternatives, the objectives are listed by GA and MA. To maintain connection with individual counties, the total amount of acres by county in each South Dakota GA and MA is shown in the last row of the table.

Table 2-5. Management objectives for maximum acres occupied by prairie dogs (by county) under Alternative 3.

District	Geographic Area	Total Acres in Geographic Area or Management Area	Total Suitable Acres in the Interior-colony Management Zone (IMZ)	Objective for Maximum Acres Occupied by Black-tailed Prairie Dogs*
Pine Ridge	Oglala	94,484	18,646	100 to 900 (No county breakout)
Fall River	Fall River Northeast GA	91,298	33,478	2,700 (1,600 in Custer, 1,100 In Pennington)
	Fall River West GA	119,951	48,420	3,600 (Fall River)
	Fall River Southeast GA	86,666	24,694	2,500 (Fall River)
	MA 3.63 (Smithwick) Black-footed ferret reintroduction area	25,307	17,010	800 (Fall River)
Wall	Wall North GA	69,437	14,801	2,100 (700 in Pennington, 1,400 in Jackson)
	Wall Southeast GA	90,840	27,885	2,700 (1,000 in Pennington, 1,700 in Jackson)
	Wall Southwest GA	28,580	6,693	830 (800 in Pennington, 30 in Jackson)

District	Geographic Area	Total Acres in Geographic Area or Management Area	Total Suitable Acres in the Interior-colony Management Zone (IMZ)	Objective for Maximum Acres Occupied by Black-tailed Prairie Dogs*
Wall, cont.	MA 3.63 (Conata Basin) Black-footed ferret reintroduction area	77,155**	46,399	2,200 (Pennington)
Fort Pierre	Fort Pierre GA	116,053	61,214	3,470 (570 in Jones, 1,900 in Lyman, 1,000 in Stanley)
* Acre objective by county applies only to South Dakota with the following breakdown of total acres by county: Fall River – 6,900 acres; Custer – 1,600 acres; Pennington – 5,800 acres; Jackson – 3,130 acres; Jones – 570 acres; Lyman – 1,900 acres; Stanley – 1,000 acres. ** This acreage includes approximately 3,912 acres of MA 3.63 from the Wall Southeast GA.				

Thresholds: This alternative would incorporate the following threshold objectives and prescribed actions. The threshold used to determine action based on vegetation condition is similarity index (or some other vegetation monitoring protocol correlated to SI). Similarity index (SI) is calculated as a percentage of the historical climax plant community for a given ecological site. FEIS Chapter 3, FEIS Appendix A, and the range specialist report contain a more thorough discussion of historical climax plant communities and ecological sites on the Oglala, Buffalo Gap, and Fort Pierre National Grasslands. An SI of 25 percent is the desired vegetation condition for a prairie dog colony.

Table 2-6. Thresholds under Alternative 3.

Threshold	Prescribed Action
Rangeland analysis of specific prairie dog towns shows the Natural Resource Conservation Service (NRCS) South Dakota State Technical Guide ecological site similarity index for range condition ≤ 25% of the historical climax plant community (HCPC).	Apply rodenticide treatment to 90% of the active prairie dog holes in the allotment within the 12 months prior to proposed reductions of permitted grazing (AUMs). A verification form documenting this action will be prepared by the Forest Service in conjunction with the affected permittee(s).
Minimum range conditions are not being met in second and subsequent years after initial rodenticide application on occupied prairie dog colonies.	Apply rodenticide treatment to 90% of the prairie dog holes in the allotment within the 12 months prior to proposed reductions of permitted grazing (AUMs). A verification form documenting this action will be prepared by the Forest Service in conjunction with the affected permittee(s).
Prairie dog colony acreage exceeds maximum county objective (3% of aggregate acres in each county).	Apply rodenticide treatment to affect reduction of acreage to bring the total acres in compliance with the objective.

Forest Plan Amendment: Implementation of this alternative would necessitate a forest plan amendment to allow for the following:

- Use of rodenticide in the IMZ.

  The 2001 Forest Plan restricts the use of rodenticide in reducing prairie dog populations in Standard 1, Section H. Animal Damage Management (USDA Forest Service 2001c). Amendment 2 to the 2001 Forest Plan allows rodenticide use in boundary management zones and for instances where public health and safety risks are present or where damage to private and public facilities is occurring (USDA Forest Service 2005e).

- A management allocation change for that portion of the Conata Basin MA 3.63 that lies above Badlands National Park from MA 3.63 to MA 6.1 (rangeland with broad resource emphasis).

- Changes to management indicator species objectives.
- MA 3.63 General Standard #1 (Forest Plan, Chapter 3) which authorizes only those uses and activities that do not reduce suitability of the area (Conata Basin MA 3.63 and Smithwick MA 3.63) as black-footed ferret reintroduction habitat.

Summary: This alternative would achieve the purpose and need for desired acreage objectives of prairie dog colonies within the interior of the National Grasslands and sustaining black-footed ferret populations but would require some level of black-footed ferret augmentation. Under this alternative, all the prairie dog colony acres in a county could be in one location. For example, all 5,800 acres in Pennington County could be in Conata Basin MA 3.63; the 6,900 acres in Fall River County could be in Smithwick. Due to the small acreage managed for prairie dogs under this alternative, management and monitoring would be intensive. The emphasis is on lethal management. The comparison tables at the end of the chapter describe key components and predicted effects of each alternative and give the reader a method for comparing proposed implementation, management, monitoring, and effects among them.

Alternative 4

This alternative employs adaptive management with details and prairie dog recommendations derived from the South Dakota Black-tailed Prairie Dog Conservation and Management Plan - Feb. 2005, (SD Plan) and/or other state statutes. The SD Plan (Cooper 2005) was approved by the South Dakota Legislature and is codified in state law. This alternative emphasizes four major objectives:

- Follow the "good neighbor" policy (as described in the SD Plan) to prevent the unwanted encroachment of prairie dogs from U.S. Forest Service lands to adjoining private lands.
- Follow the guidelines in the SD Plan regarding prairie dog management goals and "triggers" as they apply to inventoried state prairie dog acreage estimates.
- Manage prairie dog populations to minimize situations exposing the land to bare soil by maintaining a similarity index of no less than 20 percent. Grass or grass sod conditions should be the management goal on all prairie dog colonies.
- Sustain the black-footed ferret population. Maintaining active prairie dog colony acreages within the established parameters of between 8,000 and 12,000 acres will be the management goal.

Alternative 4 utilizes an Adaptive response protocol (See FEIS Appendix H) to help make implementation decisions at the site-specific level. Table 2-11 provides a list of adaptive management tools currently available for implementation.

Prairie Dog Acre Objectives: In addition to 2001 Forest Plan objectives, this alternative provides specific objectives only for the Conata Basin MA 3.63. The SD Plan did not set specific acreage figures for areas outside of Conata Basin MA 3.63. It set objectives at the statewide level for tribal and non-tribal acreage. The plan identified the presence of prairie dogs on federal lands but did not set specific acreage objectives for the federal lands included in this analysis. This alternative does incorporate a vegetation condition objective based on the NRCS ecological site similarity index. The objective for this alternative is a minimum similarity index of greater than 20 percent on all GAs and MAs. The state of Nebraska does not currently have a prairie dog management plan and no specific acreage has been identified for the Oglala GA. Specifically, those objectives are defined in the following table.

Table 2-7. Management objective for range of IMZ acres occupied by prairie dogs under Alternative 4.

Ranger District	Management Area	Management Objective for Acres Occupied by Prairie Dogs Within the IMZ[1]	
		Minimum	Maximum
Wall	3.63 Black Footed Ferret Reintroduction Habitat Management Area	8,000	12,000

Thresholds: This alternative would incorporate the following threshold objectives and prescribed actions. The threshold used to determine action based on vegetation condition is similarity index (or some other vegetation monitoring protocol). Similarity index (SI) is calculated as a percentage of the historical climax plant community for a given ecological site. FEIS Chapter 3, FEIS Appendix A, and the range specialist report contain a more thorough discussion of historical climax plant communities and ecological sites on the Oglala, Buffalo Gap, and Fort Pierre National Grasslands. The SI of 20 percent discussed below for this alternative is the desired vegetation condition for a prairie dog colony.

Table 2-8. Thresholds under Alternative 4.

Threshold	Prescribed Action
Active prairie dog colony acreage approaches or exceeds the 12,000 acres in Conata Basin MA 3.63.	Approved rodenticides will be used in the subsequent fall to reduce the active level of active prairie dog colony acres to no less than 11,000 acres. Coordinate and consult with the U.S. Fish and Wildlife Service to identify, for treatment and reduction, those prairie dog colonies with the least potential to negatively impact black-footed ferrets.
Active prairie dog acres exceed 12,000 acres in Conata Basin.	A compensation plan developed by third parties is implemented to allow prairie dog acreage over 12,000 acres to survive and provide ferret habitat.
Active prairie dog colony acreage falls below 8,000 acres in Conata Basin MA 3.63	The use of rodenticides to control prairie dogs will cease when annually inventoried active prairie dog colonies fall below 8,000 acres except for special and unique site-specific situations as directed by the forest supervisor. The 8,000 acre minimum should be observed regardless of environmental conditions (drought, above-average precipitation, disease, etc.) or management-induced conditions (grazing intensity).
Rangeland analysis of specific prairie dog towns shows the similarity index ≤ 20% of the historical climax plant community (HCPC) or trending downward.	Approved rodenticides will be used in the subsequent fall to reduce the active level of active prairie dog colony acres to no less than 11,000 acres. Coordinate and consult with the U.S. Fish and Wildlife Service to identify, for treatment and reduction, those prairie dog colonies with the least potential to negatively impact black-footed ferrets. Any reduction in active prairie dog colony acres under this threshold will not cause the total acres in Conata Basin MA 3.63 to fall below the minimum objective of 8,000.
Black footed ferret population numbers fall below objectives.	Supplement black-footed ferret populations with animals trapped and transplanted from other wild populations or with animals from the captive breeding program as needed to maintain population goals.

Forest Plan Amendment: Implementation of this alternative would necessitate a forest plan amendment to allow for the following:

- Use of rodenticide in the IMZ.

  The 2001 Forest Plan restricts the use of rodenticide in reducing prairie dog populations in Standard 1, Section H. Animal Damage Management (USDA Forest Service 2001c). Amendment 2 to the 2001 Forest Plan allows rodenticide use in boundary management zones and for instances where public health and safety risks are present or where damage to private and public facilities is occurring (USDA Forest Service 2005e).

- A management allocation change for that portion of the Conata Basin MA 3.63 that lies above Badlands National Park from MA 3.63 to MA 6.1 (rangeland with broad resource emphasis).

- Changes to management indicator species objectives.
- MA 3.63 General Standard #1 (Forest Plan, Chapter 3) which authorizes only those uses and activities that do not reduce suitability of the area (Conata Basin MA 3.63 and Smithwick MA 3.63) as black-footed ferret reintroduction habitat.

Summary: All acres to be managed would be located in Conata Basin MA 3.63. Management would favor fewer, larger colonies, and colonies would move across the landscape over time. Due to the acreage managed for prairie dogs under this alternative, management and monitoring would be intensive. This alternative would achieve the purpose and need for desired acreage objectives of prairie dog colonies within the interior of the National Grasslands and sustaining black-footed ferret populations but would require some level of ferret augmentation. The comparison tables at the end of the chapter describe key components and predicted effects of each alternative and give the reader a method for comparing proposed implementation, management, monitoring, and effects among them.

Alternative 5

Summary Description: This alternative employs adaptive management and emphasizes two major objectives within the IMZ: 1) a larger population of black-footed ferrets and associated species and 2) higher levels of black-tailed prairie dog colony acreages on all GAs and MAs. It would provide priority for ferrets over other multiple uses within both MA 3.63 areas. It would also provide priority for black-tailed prairie dogs over other multiple uses when minimum acre objectives are not being met. This alternative utilizes an adaptive response protocol (See Appendix H) to help make implementation decisions at the site-specific level. Table 2-11 provides a list of adaptive management tools currently available for implementing this alternative.

Historical occupancy for black-tailed prairie dogs across South Dakota has been estimated to range from 33,000 acres to 1,757,000 acres (Cooper 2005). This occupancy undoubtedly fluctuated with precipitation and herbivory patterns, but it does provide goals by which national grasslands can contribute to the overall conservation of black-tailed prairie dogs and their associated species. This alternative would provide habitat to maintain a well-distributed population of black-tailed prairie dogs and other associated species across the National Grasslands. Under this alternative, prairie dog acreage expansion would not continue indefinitely.

Prairie Dog Acre Objectives: In addition to 2001 Forest Plan objectives, this alternative provides objectives for a range (maximum and minimum) of active prairie dog acreage at the GA scale, excluding the acreage in MA 3.63 where the specific range of acreage is designed to optimize populations of black-footed ferrets based on prairie dog acreage. Specifically, those objectives are defined below and listed in the following table:

- GA – The minimum and maximum acreage occupied by active prairie dog colonies would be 10 percent and 20 percent, respectively, of the total aggregate acres in the specific GA.
- MA 3.63 (Conata Basin and Smithwick) – There are two acre objectives for Conata Basin MA 3.63: 1) minimum acres required to maintain 125 breeding adult black-footed ferrets (using average home range size data collected in Conata Basin MA 3.63, adjusted for unoccupied areas) and 2) maximum acres equal to the total suitable acres in the IMZ to optimize the potential for adult black-footed ferrets. For Smithwick MA 3.63, the minimum is based on what is required to maintain a minimum of 50 breeding adults while the maximum optimizes potential of the area for breeding adults. With regard to black-footed ferret numbers, this alternative places priority on number of black-footed ferrets in the MA 3.63 areas.

Table 2-9. Management objectives for range of IMZ acres occupied by prairie dogs under Alternative 5.

District	Geographic Area	Total Acres in Geographic area or Management Area	Total Suitable Acres in the Interior-colony Management Zone (IMZ)	Objective for Acres Occupied by Black-tailed Prairie Dogs Within the IMZ (minimum to maximum)
Pine Ridge	Oglala	94,484	18,646	9,500 to 18,900
Fall River	Fall River Northeast GA	91,298	33,478	9,100 to 18,300
	Fall River West GA	119,951	48,420	12,000 to 24,000
	Fall River Southeast GA	86,666	24,694	8,700 to 17,300
	MA 3.63 (Smithwick) Black-footed ferret reintroduction area with a range of 50-90 breeding adults	25,307	17,010	9,600 to 17,000
Wall	Wall North GA	69,437	14,801	6,900 to 13,900
	Wall Southeast GA	90,840	27,885	9,100 to 18,200
	Wall Southwest GA	28,580	6,693	2,600 to 5,100
	MA 3.63 (Conata Basin) Black-footed ferret reintroduction area. At low end of range, a minimum of 125 breeding adults and optimizing potential for total breeding adults at high end of range.	77,155*	46,399	27,000 to 46,400
Fort Pierre	Fort Pierre GA	116,053	61,214	11,600 to 23,200
* This acreage includes approximately 3,912 acres of MA 3.63 from the Wall Southeast GA.				

Thresholds: This alternative would incorporate the following threshold objectives and prescribed actions:

Table 2-10. Thresholds under Alternative 5.

Threshold	Prescribed Action
Inventory of colonies indicates acres exceed maximum objective for GA or MA	Initiate adaptive response protocol. If determined necessary, apply rodenticide treatment to reduce acreages to some level within range of objectives. Consideration for level of reduction will include risk and projected timeline of further expansion. In MA 3.63, treatment to reduce prairie dog acres below the maximum acreage objective must meet or exceed the acreage/density requirements needed to sustain black-footed ferrets.
Inventory of colonies indicates acres are below minimum objective for GA or MA	Initiate adaptive response protocol. Suspend any actions within the GA or MA which are designed to reduce acres. If the adaptive response protocol indicates a need, consider the full range of active and passive tools to increase acreages within the GA or MA.
Chronic BMZ problem exists	Initiate adaptive response protocol if a chronic BMZ problem exists because control of encroachment arising from a complaint does not affect the entire colony. Consider all current activities being utilized in the BMZ such as fencing and grazing. If the adaptive response protocol indicates a need, consider controlling the entire colony as long as all other objectives are met (including objectives dealing with black-footed ferrets).

Forest Plan Amendment: Implementation of this alternative would necessitate a forest plan amendment to allow for the following:

- Use of rodenticide in the IMZ.

  The 2001 Forest Plan restricts the use of rodenticide in reducing prairie dog populations in Standard 1, Section H. Animal Damage Management (USDA Forest Service 2001c). Amendment 2 to the 2001 Forest Plan allows rodenticide use in boundary management zones and for instances where public health and safety risks are present or where damage to private and public facilities is occurring (USDA Forest Service 2005e).

- Changes to management indicator species objectives.

Summary: This alternative would achieve the purpose and need through management and monitoring of prairie dog and black-footed ferret populations and soil and vegetation conditions. This alternative prioritizes management to increase prairie dog densities over livestock grazing in all GAs, thus non lethal management options would be utilized before poisoning. This alternative has low management and monitoring intensities for prairie dogs and black-footed ferrets but an increased monitoring of vegetation conditions as prairie dog move towards higher acreage objectives. The comparison tables at the end of the chapter describe key components and predicted effects of each alternative and give the reader a method for comparing proposed implementation, management, monitoring, and effects among them.

Management Tools Available to All Action Alternatives

In addition to expanded rodenticide use provided for by all of the action alternatives, the 2001 Forest Plan provides for administrative and habitat/population manipulation tools to manage prairie dog habitat. The tools listed below are available for implementing all of the action alternatives (Alternatives 1, 3, 4, and 5). This is not an exhaustive list; new tools may be added as they become available through future research and development.

Table 2-11. Tools to manage prairie dog habitat and populations.

Administrative Tools	Habitat Manipulation Tools	Population Manipulation Tools
Utilize land exchanges, acquisitions, and conservation easements with willing landowners to facilitate prairie dog population maintenance and expansion where desired, and to ease impacts to private land resulting from current or potential colony expansion.	Rodenticide may be used to reduce prairie dog density and/or acres where desired vegetation conditions on prairie dog colonies are not being met. Use in conjunction with other tools such as fencing and/or changes in livestock systems (grass banks, numbers or timing of use) to maximize potential for moving the treated acres toward desired vegetation conditions.	Rodenticide may be used to reduce prairie dog acreage when the maximum acre objective is exceeded. Use in conjunction with other tools such as fencing and/or changes in livestock systems (grass banks, numbers or timing of use) to achieve desired vegetation condition.
Facilitate partnerships between willing landowners and other third parties for land purchase or other financial incentives to the private landowner if they are willing to conserve prairie dogs on their property.	Modify cattle grazing to expand or contract prairie dog habitat and direct prairie dog movement through manipulation of vegetative structure, residual vegetation, and seral stage.	Consider removing livestock from any IMZ colonies in which toxicants are used until the desired vegetation condition is achieved.

Administrative Tools	Habitat Manipulation Tools	Population Manipulation Tools
Consider the development of forage reserves as opportunities arise in order to have areas available on a temporary use basis to meet the need for alternate forage resources for such things as drought and other natural disturbance. The Forest Service may withhold redistribution of any relinquished livestock permits with the recognized intention to establish some forage reserves for use by the remaining permittees as authorized by the district ranger.	Utilize visual and physical barriers such as taller grasses, tall structure vegetation buffers, or barrier fencing to inhibit prairie dog movement off-site in those areas where colony expansion is not part of the desired condition.	Alternately, consider restrictions on forage utilization by livestock (timing, intensity, duration), in specific instances, to achieve desired vegetation condition.
Cooperate and coordinate with other agencies who want prairie dogs for prairie dog relocation or food sources (black-footed ferret, raptors). Focus removals on sites where colony expansion and/or population density is a concern.	Plan and manage livestock grazing to maintain a low structure and a generally early seral condition in those areas where stable or increasing populations/colonies of prairie dogs are desired. Plan and manage livestock grazing to maintain a medium to tall structure and a generally mid to later seral stage condition in those areas where prairie dog expansion is not desired.	In areas where black-footed ferret populations are below the desired objectives and/or in areas where black-footed ferret expansion is a desired condition, supplement numbers from other black-footed ferret populations, either wild born or pen-raised.
Shift livestock grazing away from BMZs where chronic unwanted prairie dog encroachment onto non federal properties is occurring.	Utilize prescribed fire in a focused, site-specific effort to enhance prairie dog habitat and direct prairie dog movement or colony expansion into areas where prairie dog colonies are part of the desired condition.	Upon request, allow live trapping and delivery of prairie dogs to raptor and black-footed ferret facilities.
Continue to monitor, inventory, and provide research opportunities on prairie dogs and their habitat relationships as well as black-footed ferret to assist in application of best available science and information through adaptive management.	Where livestock grazing is restricted or curtailed in order to meet objectives related to prairie dog management (e.g., maintenance of tall structure, buffer vegetation zones, etc.), work to provide alternate forage resources for livestock grazing on other areas of the grassland unit or on other national grasslands.	Install raptor nesting or resting/ hunting structures to encourage predators in areas where there are concerns about prairie dog colony expansion or population densities.
Identify and support mechanisms for landowners and conservation groups to work together to apply prairie dog management actions on the ground.		In close cooperation with the states, consider permitting shooting under specified conditions where efforts are needed to reduce populations or to limit colony expansion. Coordination with states includes defining specified conditions for shooting activities.

Administrative Tools	Habitat Manipulation Tools	Population Manipulation Tools
Develop a unified grazing system for Conata Basin that will integrate rest or deferment in areas where taller structure or residual vegetation is desired. Do this by combining all permittees under a comprehensive grazing system to improve long-term management of the existing or planned large colonies of prairie dogs.		Utilize live trapping and translocation of prairie dogs from areas of concern or opportunity to areas where colony expansion or supplementation is desired. Focus efforts in areas where there are concerns regarding prairie dog colony expansion or population densities.
		Utilize best-available-science plague mitigation protocols when plague is suspected in a specific geographic area; including use of pesticides for reducing flea populations particularly in Conata Basin MA 3.63.
		Optimize distances between colonies to reduce the potential for spread of plague.

Conservation Measures Common to Alternatives

The following measures apply to all alternatives:

1. Avoid all significant fossil and heritage resource sites when conducting any ground-disturbing projects. Prior to these projects, a qualified paleontologist or archeologist will determine effects and document such determination for the files.
2. Prior to ground-disturbing projects, a journey-level biologist will review the project for effects on TES species; determination of effects will be made and documented for the files.
3. If prairie dog acreages are outside identified objectives, an adaptive response protocol (see FEIS Appendix H) for the specific occurrence will be initiated and the decision-makers' rationale for any action will be documented for the file.
4. Consult with the U.S. Fish and Wildlife Service for all activities (such as rodenticide use, black-footed ferret translocation protocols, shooting restrictions, etc.) determined to have the potential to affect black-footed ferrets and document the results of that coordination for the file.
5. New research and/or technology that are consistent with the findings of this analysis and the responsible officials' record of decision can be added to the list of management tools as long as they are consistent with all of the preceding measures. Rationale for such use will be reviewed and documented for the file.

Alternatives Considered but Eliminated from Detailed Study

There were no alternatives considered but eliminated from detailed study.

Comparison of Alternatives

The following two tables describe key components of each alternative and give the reader a method for comparing proposed implementation, management, and monitoring among them.

Table 2-12. Estimated relative degree of management, monitoring, and cost to implement for each alternative over a ten-year period.*

	Less ⟷ Greater				
Management Intensity	Alternative 2	Alternative 5	Alternative 1	Alternative 4	Alternative 3
Monitoring intensity	Alternative 2 $246,421	Alternative 3 $255,138	Alternative 5 $308,448	NA	Alternative 1 $324,991
Estimated cost	Alternative 2 $581,588	Alternative 5 $681,220	Alternative 1 $1,109,379	NA	Alternative 3 $1,249,088
Amount & frequency of poisoning	Alternative 2	Alternative 5	Alternative 1	Alternative 4 or 3	Alternative 3 or 4

* This ranking assumes that the maximum thresholds for prairie dog acres and/or vegetation condition will be reached at some point, and rodenticide use will be triggered.

Table 2-13. Proposed implementation, management, and monitoring comparison by alternative.

Management & Implementation	Alternative 1	Alternative 2	Alternative 3	Alternative 4 MA 3.63 acres only	Alternative 5
Emphasizes prairie dogs over livestock	Yes	Yes	No	No	Yes
Poisoning may occur					
Poison to maintain acreage objectives in IMZ	When maximum acres are exceeded	No	When maximum acres are exceeded, but only to the extent that 11,000 acres of active prairie dogs remain.	When maximum acres are exceeded	When maximum acres are exceeded
Poison to protect veg and soil conditions	When SI ≤ 25%	No	Approx. 100% of acres annually. When SI ≤ 25%, poison 90% of prairie dog holes.	When SI ≤ 20%, but only to the extent that 11,000 acres of active prairie dogs remain.	Initiate adaptive response protocol (see FEIS Appendix H).

Management & Implementation	Alternative 1	Alternative 2	Alternative 3	Alternative 4 MA 3.63 acres only	Alternative 5
Poison to address chronic boundary management problems	Initiate adaptive response protocol (see FEIS Appendix H)	Possible, after further analysis, per 2001 Forest Plan direction	Possible, after further analysis, per 2001 Forest Plan direction	Possible, after further analysis, per 2001 Forest Plan direction	Initiate adaptive response protocol (see FEIS Appendix H)
Black-footed ferret management – MA 3.63 only Possible actions					
Insecticidal dusting	Annually 8 to 10 thousand acres	Every 2 years 4 to 6 thousand acres	Annually All acres (3,000)	Annually 50% of the acreage	Conata Basin – 4 to 6 thousand acres every 2 years. Smithwick – Annually
Supplementing	Every 10 to 15 years	No	Every 3 to 5 years Black-footed ferret conditioning pens	As needed Black-footed ferret conditioning pens	No
Recreational shooting	None in Smithwick	None in Smithwick	None in Smithwick	NA	None in Smithwick
Increase grazing, prescribed fire	As needed to meet acreage objectives	No	No	No	Yes
Predator control	No	No	Yes	Yes	No
Predator fencing	No	No	Yes	Yes	No
USFWS management	No	Possibility	No	No	No
Excess ferrets	No	No	No	No	Yes
During poisoning, capture, medicate, microchip (if necessary), and relocate ferrets.	Yes	No	Yes	Yes	Yes
Livestock management Possible actions					
Temporarily adjust livestock use system (rotation systems, fencing, eliminate grazing, etc.) through the permit system.	Yes, in conjunction with poisoning and/or when SI ≤25% or SI >25% but is trending downward. Or, When desire is to increase prairie dog populations.	Yes As identified in 2001 Forest Plan and Allotment Management Plans.	Only after poisoning occurs and the need to adjust livestock grazing has been documented.	In MA 3.63 only In conjunction with poisoning and/or when SI ≤20%.	Yes When desire is to increase prairie dog populations.

Management & Implementation	Alternative 1	Alternative 2	Alternative 3	Alternative 4 MA 3.63 acres only	Alternative 5
Other management options					
Irrigation	No	No	Not feasible	No	No
Incentives, compensation	No	No	No	Yes	No

Table 2-13, cont.

Monitoring	Alternative 1	Alternative 2	Alternative 3	Alternative 4 MA 3.63 acres only	Alternative 5
Prairie dogs					
Density	Non 3.63 MAs – every 3 years or as needed. MA 3.63 – 100% of acres annually.	MA 3.63 – 100% of the acres annually.	Non 3.63 Mas – 100% of Forest annually. MA 3.63 – 100% of acres annually.	100% of acres Annually	No
Acres	Non 3.63 Mas – every 3 years. MA 3.63 – 100% of acres annually.	Non 3.63 Mas – every 3 years or as needed. MA 3.63 – 100% of acres every 1 to 3 yrs.	Non 3.63 Mas – 100% of Forest annually. MA 3.63 – 100% of acres annually.	100% of acres Annually	Non 3.63 Mas – every 3 years. MA 3.63 – 100% of acres every 1 to 3 yrs.
Mapping	Non 3.63 Mas – every 3 years. MA 3.63 – 100% of acres annually.	Non 3.63 Mas – every 3 years. MA 3.63 – 100% of acres every 1 to 3 yrs.	Non 3.63 Mas – 100% of Forest annually. MA 3.63 – 100% of acres annually.	100% of acres Annually	Non 3.63 Mas – every 3 years. MA 3.63 – 100% of acres every 1 to 3 yrs.
Windshield surveys for plague	No Incidental to other field visits.	Annually	No Incidental to other field visits.	No Incidental to other field visits.	Annually
Black-footed ferret – MA 3.63 only					
Population	Annually 12,500 to 19,000 acres	Every 3 years 12,500 to 19,000 acres	Annually Up to 5,800 acres if all Pennington Co. acre objective is MA 3.63	Annually 8,000 to 12,000 acres	Every 3 years 27,000 to 46,400 acres
Genetics	Yes	Yes	Yes	Yes	Yes
Modeling	Yes	Yes	Yes	Yes	Yes
Dispersal	Yes	Yes	Yes	Yes	Yes
Predator levels	No	No	Yes	Yes	No

Table 2-13, cont.

Monitoring	Alternative 1	Alternative 2	Alternative 3	Alternative 4 MA 3.63 acres only	Alternative 5
Vegetation					
Similarity Index	When threshold objectives are a concern.	Calculate SI equivalent from seral stage, structure.	100% of Forest When threshold objectives are a concern.	100% of Forest When threshold objectives are a concern.	20% of Forest Calculate SI equivalent from seral stage and structure.
Seral stage, structure	No	20% of Forest Annually	No	No	20% of Forest Annually
Livestock utilization of plant species	Yes Annually on pastures with livestock use and prairie dog colonies.	Yes As needed	Yes Annually on pastures with livestock use and prairie dog colonies.	Yes Annually on pastures with livestock use and prairie dog colonies.	Yes As needed
Invasive species	On prairie dog towns and in conjunction with prairie dog monitoring.	On prairie dog towns and in conjunction with prairie dog monitoring.	On prairie dog towns and in conjunction with prairie dog monitoring.	On prairie dog towns and in conjunction with prairie dog monitoring.	On prairie dog towns and in conjunction with prairie dog monitoring.
Precipitation (measured by permittee)	By allotment Annually	By allotment Annually	By allotment Annually	By allotment Annually	By allotment Annually

Comparison of Effects by Alternative

The following table compares the effect of implementing each alternative on major resource areas. It is a summary of the more detailed effects analyses presented in Chapter 3.

Table 2-14. Comparison of relative degree of negative effects on resources, by alternative.

Effect on	Degree of Negative Impacts Less Impact ⟷ Greater Impact				
Air resources	*Not analyzed*				
Aquatic resources					
Water quality	Alternative 4 – Least risk to water resources	Alternative 1 – less risk to water resource	Alternative 3 – risk to water resource	Alternative 2 – more risk to water resource	Alternative 5 – greatest risk to water resource.

Effect on	Degree of Negative Impacts Less Impact ⟷ Greater Impact				
Heritage Resources	Alternatives 1, 2, 3, 4, and 5 No potential to directly or indirectly affect heritage resources in the project area.				
Paleontological Resources	Alternatives 1, 2, 3, 4, and 5 Paleontological resources are not likely to be negatively impacted.				
Rangeland vegetation Change from existing vegetation condition class					
Late Seral			Alternatives 1, 3, 4 (MA 3.63 Conata Basin only) – no noticeable change	Alternative 2 - minor to moderate decrease	Alternative 5 - moderate decrease to potential loss
Late Intermediate Seral	Alternative 4 - major increase (MA 3.63 Conata Basin only)	Alternative 3 - no noticeable change	Alternative 1 - no noticeable to minor decrease	Alternative 2 - minor to moderate decrease	Alternative 5 – moderate decrease to potential loss
Early Intermediate Seral	Alternative 1 - no noticeable change to minor increase	Alternative 5 - no noticeable change to minor increase	Alternatives 2, 3, and 4 - no noticeable change from existing (Alt 4 is MA 3.63 Conata Basin only)		
Early Seral	Alternative 2 - major increase	Alternative 5 - major increase	Alternative 1 moderate to major increase	Alternative 3 - moderate to major increase	Alternative 4 - major decrease (MA 3.63 Conata Basin Area only)
Soil Resources					
Potential for soil loss determined by vegetation threshold and range of acres	Alternative 3 – Least potential for accelerated soil loss	Alternative 4 –Slight potential (Conata Basin only)	Alternative 1 – Moderate potential	Alternative 5 – Higher potential	Alternative 2 – Highest potential

Table 2-14, cont.

Effect on	Degree of Negative Impacts Less Impact ⟷ Greater Impact				
Species at Risk					
Seed Eater	Alternative 5 – least risk to granivorous species.	Alternative 2 – less risk to granivorous species.	Alternative 1 – risk to granivorous species.	Alternative 4 - more risk to granivorous species (Wall Southwest GA, MA3.63 only).	Alternative 3 – greatest risk to granivorous species.
Predator	Alternative 5 – least risk to predator species.	Alternative 2 – less risk to predator species.	Alternative 1 – risk to predator species.	Alternative 4 - more risk to predator species (Wall Southwest GA, MA3.63 only).	Alternative 3 – greatest risk to predator species.
Black-footed ferret	Alternative 5 – least risk to the black-footed ferret.	Alternative 2 – less risk to the black-footed ferret.	Alternative 1 – risk to the black-footed ferret.	Alternative 4 - more risk the black-footed ferret (Wall Southwest GA, MA3.63 only).	Alternative 3 – greatest risk to the black-footed ferret.
Prefers High Grassland Structure	Alternative 3 will have the least impact on species preferring high structure	Alternative 4 – less impact	Alternative 1 – relatively little impact	Alternative 2 – more impact	Alternative 5 – greatest impact
Prefers Low Grassland Structure	Alternative 5 will have the least impact on species preferring low structure	Alternative 2 – less impact	Alternative 1 – relatively little impact	Alternative 4 – more impact	Alternative 3 – greatest impact
Uses the Prairie Dog Burrows	Alternative 5 – least risk to burrow-dependent species.	Alternative 2 – less risk to burrow-dependent species.	Alternative 1 – risk to burrow-dependent species.	Alternative 4 - more risk to burrow-dependent species (Wall Southwest GA, MA3.63 only).	Alternative 3 – greatest risk to burrow-dependent species.

Table 2-14, cont.

Effect on	Degree of Negative Impacts Less Impact ⟷ Greater Impact				
Management Indicator Species (MIS)					
Prefers High Grassland Structure (Prairie grouse)	All alternatives not expected to impact sage-grouse populations or habitat in Fall River West GA.	All alternatives would support a neutral to positive population trend for the Greater prairie chicken (Fort Pierre GA only) and sharp-tailed grouse on all geographic areas. Forest Plan high structure objectives are expected to be met.			
Prefers Low Grassland Structure (Black-tailed prairie dog)	Alt 5 – greatest potential for prairie dogs (approximately 13 to 25% across all GAs). Forest Plan low grassland structure objectives expected to be met.	Alt 2 – potential for prairie dogs (approximately 4 to 14% across all GAs). Forest Plan low grassland structure objectives expected to be met.	Alt 1 – potential for prairie dogs (approximately 3 to 5% across all GAs). Forest Plan low grassland structure objectives expected to be met.	Alt 4 – potential for prairie dogs (approximately 1 to 2% in Wall Southwest GA, MA3.63 only). Forest Plan low grassland structure objectives expected to be met.	Alt 3 – least potential for prairie dogs (approximately <1 to 3% across all GAs). Forest Plan low grassland structure objectives expected to be met.
Recreation Resources					
Prairie dog shooting and viewing	Alternative 2 – greatest increase in opportunities for recreational shooting / viewing.	Alternative 5 – slight increase in opportunities for recreational shooting / viewing.	Alternative 1 – insignificant effect on opportunities for recreational shooting / viewing	Alternative 4 – slight decrease in opportunities for recreational shooting / viewing.	Alternative 3 – fewest opportunities for recreational shooting / viewing.
Social and economic factors					
Potential Additional Annual Cost to permittees for AUMs (Maximum Acre Objective)	Alternative 4 does not project additional cost in Conata Basin, but is N/A on all other areas	Alternative 3 – slight increase	Alternative 1 – slightly greater impact than Alternative 3	Alternative 5 – greater impact	Alternative 2 – greatest impact
Potential costs to control prairie dogs	Alternative 2 – No control and no cost	Alternative 5 – prairie dogs controlled only when maximum acres are exceeded	Alternative 4 – Control only in Conata Basin, N/A on all other areas.	Alternative 1 – greater potential impact	Alternative 3 – highest potential impact
Recreational shooting/wildlife viewing revenues	Alternative 2 – greatest opportunity for additional revenue	Alternative 5 – slight increase in opportunity for additional revenue	Alternative 1 – little opportunity for additional revenue	Alternative 4 – slight decrease in opportunity for additional revenue	Alternative 3 – least opportunity for additional revenue