CHAPTER 7
Environmental Consequences of the Proposed Action and Alternatives

This chapter describes the potential environmental consequences of implementing the no-action alternative and the four AFA alternatives. It is organized by resource topics described in chapter 6. These include habitat management; wildlife management; research, inventory, and monitoring; visitor services; cultural resources; operations; and socioeconomics.

Resource topics that were excluded from further consideration are physical environment, and special management areas. These resources would not be affected by any of the proposed alternatives and were dismissed from further consideration. Likewise, none of the proposed alternatives would:

- affect State, tribal, or local laws imposed for the protection of the environment;
- result in the use, storage, release or disposal of hazardous substances;
- cause changes in the function of the surrounding community;
- cause disproportionate impacts to minority or low-income populations;
- affect culturally valued properties; or impact wetlands or other sensitive habitats.

According to the Council on Environmental Quality regulations, NEPA directs us to study effects that affect the human environment, as described below (Section 1508.14 Human Environment):

> 'Human environment' shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment. This means that economic or social effects are not intended by themselves to require preparation of an environmental impact statement. When an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment.

Potential cumulative effects of past, present, or reasonably foreseeable actions are described at the end of this chapter.

7.1 Analysis Approach

Resource impacts are discussed in terms of the context of the intensity, duration, and type of impact. The intensity and type of impact (or "effect") is described as negligible, minor, moderate, or major and as adverse or beneficial, defined as follows:

- **Negligible**—An adverse or beneficial effect would occur, but would be at the lowest levels of detection.
- **Minor**—The effect would be noticeable, but would be relatively small and would not affect the function or integrity of the resource.
- **Moderate**—The effect would be readily apparent and would influence the function or integrity of the resource.
- **Major**—The effect would be substantial and would result in severely adverse or exceptionally beneficial changes to the resource.

Some of the other important NEPA concepts for this analysis are defined as follows:

- **Direct Effect**—caused by the action and occurs at the same time and place
- **Indirect Effect**—caused by the action, is later in time or farther removed in distance, but is still reasonably foreseeable
- **Cumulative Effect**—the incremental effect of the action when added to other past, present, and reasonably foreseeable actions. These effects are discussed in "Section 7.10 Cumulative Effects."
- **Reasonably Foreseeable**—reasonably foreseeable events, although still uncertain, must be probable. Those effects that are considered possible, but not probable, may be excluded from NEPA analysis.

This analysis is based on the following assumptions:

- For all AFA alternatives, the staffing and administrative structure proposed in each would be fully and successfully implemented.
- In all alternatives, increases in qualified staff would improve the ability of the refuge complex to implement programs.
- None of the proposed alternatives would result in physical impacts or disturbance to resources.
- None of the proposed alternatives would result in a change to resource management objectives, approaches, or implementation.
- Effects to the no-action alternative are based on a comparison to existing conditions (as described in chapter 6), while the effects of the proposed AFA alternatives (B through E) are compared to the no-action alternative.

The duration of impacts is also considered. In this case, all of the proposed action alternatives describe AFAs with a term of 5 years. Therefore, short-term effects are considered to be those that would occur immediately following the implementation of an AFA and up to about one year afterward. Long-term effects are considered to be those that would occur after the AFA is fully implemented, or between about two and five years (also referred to as the full term of the AFA).

7.2 Habitat Management

Anticipated effects of the no-action and proposed AFA alternatives on habitat management at the refuge complex are described below.

HABITAT MANAGEMENT

Refuge habitat management efforts that may be affected by the proposed alternatives include invasive species management, prescriptive grazing, wildfire response, and water level management. Note that fire management (wildfire response) is already coordinated with CSKT under an annual operating plan; that would not change under any of the alternatives.

Alternative A

Under the no-action alternative, the expansion of staff from current conditions would likely have moderate, indirect benefits to habitat management by increasing the number of refuge staff from 9 to 12 permanent positions and additional temporary seasonal positions. This increased professional staffing capacity would improve the ability of the refuge complex to plan and implement habitat management activities.

Alternative B

Additional refuge staff under the proposed action would have negligible indirect benefits compared to alternative A, which would have similar levels of staff expansion and subsequent benefits to habitat management.

Alternative C

Same as alternative B, there would be negligible indirect benefits resulting from the additional staff on the refuge, as compared to Alternative A.

Alternative D

Same as alternative B, there would be negligible indirect benefits resulting from the additional staff on the refuge, as compared to Alternative A.

Alternative E

Under alternative E, four additional CSKT positions and several seasonal staff would likely improve the refuge complex's ability to implement habitat management efforts at Ninepipe Refuge,

Pablo Refuge, and the district and would likely increase management capacity at the National Bison Range. Compared to alternative A, these additions would likely result in minor, indirect benefits.

HABITAT RESOURCES

Habitat resources in the refuge complex generally consist of grassland communities, forest communities, riparian areas, and wetlands. These are the resources that are influenced by the habitat management efforts to meet the purposes of the refuge complex and the mission of the Refuge System. As described above, the no-action and action alternatives are likely to result in negligible to moderate indirect benefits on habitat management.

While the effects of the alternatives on habitat management can be anticipated, it is much more difficult to predict the effects of habitat management on actual habitat resources. This is because the trajectory of individual habitat resources becomes apparent over long periods of time and is influenced by a variety of interrelated biotic and abiotic factors that include precipitation, climate, wildlife populations, natural and human-caused disturbances, and refuge management actions. To attempt to predict the effects of relatively minor changes in habitat management on these resources would be speculative. For these reasons, the effects of the alternatives on habitat resources are unknown.

7.3 Wildlife Management

This section describes that anticipated effects of the no-action and action alternatives on wildlife management, primarily bison, other ungulates, and general wildlife management programs.

WILDLIFE POPULATIONS

The effects of any of the alternatives on actual wildlife populations, including threatened and endangered species, are unknown. For the reasons described above under the habitat resources section, it is not possible to predict the effect of relatively minor changes in habitat management resulting from refuge staffing changes on any specific population or species of wildlife that occur within the refuge complex. Bison management and big game monitoring and management are discussed further because they are specific refuge wildlife management programs that have the potential to be affected by changes in refuge staffing scenarios.

BISON MANAGEMENT

The management of bison is central to the mission of the refuge complex, and is described in detail in “Section 6.3 Wildlife Management.”

Alternative A

Under the no-action alternative, the proposed expansion of staff (converting two term position back to permanent) would have a minor, indirect benefit to bison management by increasing the number of individuals available to conduct or assist with bison management operations.

Alternative B

Additional refuge staff (primarily the CSKT wildlife refuge specialist) would have a negligible, indirect benefit to bison management, as compared to alternative A.

Alternative C

Same as alternative B—negligible indirect benefit resulting from the additional staff on the refuge.

Alternative D

Same as alternative B—negligible indirect benefit resulting from the additional staff on the refuge.

Alternative E

Same as alternative B—negligible indirect benefit resulting from the additional staff on the refuge.

BIG GAME MONITORING AND MANAGEMENT

The refuge complex manages herds of elk, mule deer, white-tailed deer, bighorn sheep, and pronghorn. Big game populations are managed under our fenced animal management plan, and deceased animals are evaluated for health and disease.

Alternative A

Under alternative A, our staff would continue to monitor and manage ungulate populations. The expansion of staff capacity under this alternative, from 9 to 12 permanent staff and additional temporary seasonals, would result in moderate, indirect benefits to big game monitoring and management programs by increasing the capacity of the refuge complex to plan and implement management actions.

Alternatives B through D

Under all of the AFA alternatives, new or expanded positions would improve the capacity of the refuge complex to implement big game management efforts, resulting in negligible indirect benefits.

Alternative E

Compared to the no-action and the other AFA alternatives, alternative E would likely improve the capacity of the refuge to implement big game management efforts due to its proposed additional staff positions, resulting in minor indirect benefits.

7.4 Research, Inventory, and Monitoring

Biological staff design and implement research, inventory, and monitoring programs for a variety of plant and animal resources found on the refuge complex. Some efforts are funded by, or coordinated through, outside partners, including universities, other Federal agencies, and CSKT.

Alternative A

Under the no-action alternative, our staff would continue to design and implement research, inventory, and monitoring programs. The expansion of staff under this alternative, from 9 to 12 permanent staff and additional temporary seasonals, would result in moderate, indirect benefits to research, inventory, and monitoring programs by increasing the capacity of the refuge complex to plan and implement these programs.

Alternatives B through D

The proposed changes in refuge staff and capacity under alternatives B through D would have negligible, indirect benefits on research, inventory, and monitoring programs, as compared to alternative A.

Alternative E

Under alternative E, the addition of several CSKT staff, including a district manager and a seasonal biological science technician would result in minor, indirect benefits to research, inventory, and monitoring programs, particularly those associated with wetlands.

7.5 Visitor Services

Visitor services include hunting and fishing access and programs, wildlife observation and photography opportunities (including the management of the auto tour route), and environmental education and interpretation facilities and programs.

Alternative A

Under the no-action alternative, we would seek to add an outdoor recreation planner to the refuge complex staff. This increase would result in moderate, indirect benefits to visitor services because this additional staff would allow the refuge complex to be more proactive in providing visitor access and visitor services programs.

Alternative B

Under the proposed action, alternative B, several visitor services positions would transfer to CSKT, including a supervisory outdoor recreation planner (through attrition). Expanded CSKT involvement in visitor services and interpretive information is expected to benefit these programs, resulting in minor, indirect benefits to visitor services in the long term, as compared to alternative A.

Alternative C

Under alternative C, a new CSKT outdoor recreation planner would be added and four temporary seasonal park ranger positions would be transferred to CSKT. Similar to alternative B, this staff increase would result in minor, indirect benefits to visitor services.

Alternatives D and E

Under alternatives D and E, staff changes affecting visitor services would be the same as alternative C, with the same overall minor, indirect benefits.

7.6 Cultural Resources

Many historical and cultural resources are inextricably linked to CSKT, and we collaborate with CSKT on most interpretation programs and clearances for infrastructure projects. In general, an AFA with CSKT would strengthen these programs and actions and our overall relationship with the Tribes.

Alternative A

Under the no-action alternative, the current level of collaboration with CSKT would continue, resulting in no effect.

Alternative B

Under the proposed action, alternative B, a stronger role for, and partnership with, CSKT would result in negligible, indirect benefits.

Alternatives C, D, and E

Under alternatives C, D, and E, a strong role for, and partnership with, CSKT would be further strengthened by additional CSKT staff (outdoor recreation planner and park rangers) who would contribute to cultural resource preservation and interpretation, resulting in minor, indirect benefits.

7.7 Operations

Operations comprises the infrastructure and administrative systems that are necessary to manage and fulfill the purposes of the refuge complex. By entering into an AFA with CSKT, we seek to forge a long-term partnership for managing or assisting with the operations of the refuge complex. The proposed AFA alternatives present four different approaches to achieving this, while the proposed action (alternative B) is based on a specific AFA (see appendix A).

Distinctions between alternatives under operations stem from the number and type of staff positions proposed. Currently, the refuge complex operates with nine permanent staff, two term appointments, and several temporary seasonal employees and volunteers. Under any alternative, the number of temporary seasonal positions recruited by us or CSKT would vary each year depending on the annual budget for the refuge complex and station priorities. While there may not be a direct relationship between the number of refuge staff and effective operations, it is reasonable to assume that additional staff would, over time, improve or expand refuge complex operations.

Alternative A

Under the no-action alternative, the proposed additional staff (for a total of 12 permanent and up to 6 temporary seasonal positions) would result in moderate benefits.

Alternative B

Under the proposed action, alternative B, the number of permanent positions would be similar to the no-action alternative, with the addition of a GS-11 wildlife refuge specialist. This would result in minor benefits, compared to the no-action alternative.

Alternatives C and D

Alternatives C and D would be similar to the no-action alternative (12 permanent and up to 7 temporary seasonal positions), resulting in negligible benefits.

Alternative E

Under alternative E, additional permanent positions would be added (primarily associated with district management) for a total of 16 permanent staff positions and up to 6 temporary seasonal positions. Compared to the no-action alternative, these additions would result in moderate benefits.

COMPARISON OF COSTS FOR EACH ALTERNATIVE

Table 4 summarizes the costs above current management costs for each alternative. We would provide this money to CSKT to support the positions transferred. The table shows indirect costs for the four AFA alternatives (B–E). We negotiated the indirect costs at $5,000 per full-time employee, prorated for seasonal staff, following 25 Code of Federal Regulations 1000.138. The indirect costs vary because the number of temporary positions transferred to the Tribes would depend on annual funding; therefore, some positions may not be filled each year. When making these estimates, we assumed that all temporary positions would be filled. In addition, we used the step 6 pay scale for 2014 and included benefits estimated at 35 percent for permanent and term employees and 7.65 percent for temporary employees.

Table 4. Additional cost estimates for each alternative when compared to current conditions.

Alternative	*Added salary cost including benefits*	*Indirect cost*	*Total estimated added cost*
A	[1]$75,477	None	$75,477
B	$91,322	[2]$47,300 to $61,800	[2]$138,622 to $153,122
C	$75,477	[2]$2,100 to $16,600	[2]$77,577 to $92,077
D	$75,477	[2]$28,800 to $43,300	[2]$104,277 to $118,777
E	$296,729	[2]$45,800 to $60,300	[2]$342,529 to $357,029

[1] *Proposal to add a GS–9 outdoor recreation planner to current staff.*

[2] *Range accounts for from two to seven seasonal positions filled.*

7.8 Socioeconomics

This socioeconomic analysis is based on various factors that may influence the location and magnitude of potential socioeconomic effects. These factors include:

- the location of and access to the refuge;
- the likely residence area for people working at the refuge (existing residents or any in-migrating employees);
- the rate and magnitude of in-migration, if any (which will be influenced by the availability of a trained or trainable local workforce);
- the rate and magnitude of population and employee turnover, if any (including student population turnover in schools, employee turnover, and employee turnover from existing jobs to employment at the refuge);
- the availability and location of existing housing and potential housing and the capacity and condition of existing local services and facilities;
- the people directly and indirectly affected economically by the proposed action, such as from wages and taxes.

The socioeconomic effects for the no-action alternative and the AFA alternatives were evaluated within the above context. The impacts for all of the alternatives would be relatively the same, so the discussion of alternatives A through E have been combined. Costs associated with each of the alternatives are discussed separately in "Section 7.7 Refuge Complex Operations."

POPULATION AND DEMOGRAPHICS

Under all the alternatives, existing patterns and trends would continue to drive the social structure and economy of the area. There would be no effect to either the population trends in, or demographics of, Lake and Sanders Counties. Likewise, none of the alternatives would result in disproportionately high and adverse human health or environmental effects on a minority population, low-income population, or Native American tribe.

EMPLOYMENT AND INCOME EFFECTS

The potential employment and labor income effects from the alternatives is shown in table 5. Employment for alternatives A through D would result in one new job with an annual labor income of $75,477. Alternative B would result in an annual labor income of $91,322. Alternative E would result in five new jobs with a total annual labor income of $296,729. On a per-job basis, direct annual labor income for alternative E would range from $39,854 to $75,477. For all alternatives, regional or national economic conditions could cause refuge operations to be curtailed or shut down at any point, particularly affecting the funding for temporary seasonal positions.

Table 5. Alternative Employment and Annual Labor Income Estimates

Employment, labor income	*Alternative A*	*Alternative B*	*Alternative C*	*Alternative D*	*Alternative E*
Direct employment	1 – Outdoor recreation planner	1 – Wildlife refuge specialist	1 – Outdoor recreation planner	1 – Outdoor recreation planner	5 – Outdoor recreation planner, biological science tech., district manager, two maintenance workers
Direct annual labor income	$75,477	$91,322	$75,477	$75,477	$296,729

ECONOMIC ACTIVITY EFFECTS

While any new positions would be beneficial for the employed individuals and their families, the overall effect of any of the alternatives on community-wide employment and economic activity would be limited. Using the Bureau of Labor Statistics Consumer Expenditure Survey data for individuals with the above income estimates, roughly 79 percent of annual income would be spent locally. Under this assumption, alternatives A, C, and D would contribute $59,627 to the local economy in employee spending. Alternative B would contribute $72,144 to the local economy in employee spending, while alternative E would contribute $234,416. This additional economic activity generated in alternative E would result in minor benefits, compared to negligible benefits under alternatives A through D.

COMMUNITY EFFECTS

Given the nature of the employment effects under all alternatives, there is unlikely to be any in-migrating population. Therefore, local governments would not likely experience the need to serve a fluctuating population. There would be no effect to specific local governmental units within Lake and Sanders Counties due to in-migrating workers. Community fire, emergency, medical, and social service providers would not likely see any need to adjust their staffs, as there would be no increases in service demands associated with any of the alternatives. Alternatives A through E would not add to population and housing demand pressures and would not increase costs for cities, schools, and counties through refuge-related in-migration and resulting increases in local government service costs.

7.9 Summary of Environmental Consequences

Environmental consequences of the no-action and the AFA alternatives are summarized in table 6.

Table 6. Summary of environmental consequences.

Resource topic	*Alternative A*	*Alternative B*	*Alternative C*	*Alternative D*	*Alternative E*
Habitat management	Moderate benefits	Negligible benefits	Negligible benefits	Negligible benefits	Minor benefits

Table 6. Summary of environmental consequences.

Resource topic	*Alternative A*	*Alternative B*	*Alternative C*	*Alternative D*	*Alternative E*
Habitat resources	Unknown	Unknown	Unknown	Unknown	Unknown
Wildlife populations	Unknown	Unknown	Unknown	Unknown	Unknown
Bison management	Minor benefits	Negligible benefits	Negligible benefits	Negligible benefits	Negligible benefits
Big game monitoring and management	Moderate benefits	Negligible benefits	Negligible benefits	Negligible benefits	Minor benefits
Research, inventory, and monitoring	Moderate benefits	Negligible benefits	Negligible benefits	Negligible benefits	Minor benefits
Visitor services	Moderate benefits	Minor benefits	Minor benefits	Minor benefits	Minor benefits
Cultural resources	No effect	Negligible benefits	Minor benefits	Minor benefits	Minor benefits
Refuge operations	Moderate benefits	Minor benefits	Negligible benefits	Negligible benefits	Moderate benefits
Socioeconomics	Negligible benefits	Negligible benefits	Negligible benefits	Negligible benefits	Minor benefits

7.10 Cumulative Effects

Cumulative effects are defined in the Council on Environmental Quality regulations as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such actions" (40 Code of Federal Regulation § 1508.7). Cumulative effects can result from individually minor, but collectively significant, actions taking place over a period of time. This section analyzes cumulative effects of the alternatives when combined with the effects of other relevant past, present, and reasonably foreseeable future activities.

REASONABLY FORESEEABLE ACTIONS

Reasonably foreseeable future activities are actions and activities that are independent of the action alternatives, but could result in cumulative effects when combined with the effects of the alternatives. These activities are anticipated to occur regardless of which alternative is selected. Reasonably foreseeable future actions that could potentially result in cumulative effects include the following, and are described below:

- **CSKT Water Compact**—For many years, the CSKT, the State of Montana, and the United States Government negotiated a proposed water rights settlement compact. The compact quantifies the tribe's water rights and sets forth the conditions on their use, provides water for the Tribes for existing and future tribal water needs (both consumptive and instream flow) to settle the Tribes' claims to reserved water rights, protects all current water users non-irrigation

rights from the Tribes' exercise of their senior water rights, and protects on-reservation irrigators. (Montana Department of Natural Resources and Conservation 2013). The proposed compact is expected to be submitted for approval during the 2015 Montana legislative session (Missoulian 2013).

- **CSKT Wetland Enhancement Projects**—Consistent with the CSKT Fish and Wildlife Implementation Strategy (2000) and the Habitat Acquisition and Restoration Plan (2000), the CSKT has completed, or has plans to complete, multiple projects to restore and enhance prairie pothole wetland habitat. Completion of these projects is expected to increase the size and quality of wetland habitat on CSKT lands, several of which are in close proximity to Ninepipe Refuge and other units managed by the Service (CSKT 2009).
- **Land Buy-Back Program for Tribal Nations**—In 2012, the U.S. Department of the Interior published a plan to use funds from the Cobell Settlement Agreement to acquire and consolidate fractional land interests in trust for the beneficial use of tribal nations. Fractional lands are those tribal trust lands with more than one landowner, some as high as 200 owners of a single 5-acre parcel. Under this program, interested individual owners of fractional land interests would receive payments for voluntarily selling their land. As outlined in the implementation plan, there are 696 fractionated tracts with purchasable interests in the defined CSKT region, comprising over 25,000 acres. Successful acquisition, consolidation, and use of many of these fractional land interests could result in economic, community, or resource benefits for the CSKT and the region. However, the extent and nature of these benefits are uncertain and depend on the location, extent, cost, and ultimate use of the affected land interests (DOI 2013).

CUMULATIVE EFFECTS OF THE PROPOSED AFA ALTERNATIVES

The potential cumulative effects of the proposed AFA alternatives, when combined with the effects of past, present, and reasonably foreseeable future actions, are described below. Resources with no cumulative effects are not discussed further.

CUMULATIVE EFFECTS ON WILDLIFE AND HABITAT MANAGEMENT

The ongoing restoration and enhancement of wetlands and other habitat types by CKST would be beneficial to the overall abundance and function of wetland habitats and the wildlife species that depend on them. While ongoing or improved management of these habitats within the refuge complex would generally benefit these regional wetland systems, the cumulative effect of the no-action and proposed AFA alternatives are not known.

Implementation of the proposed CSKT Water Compact is not anticipated to result in a direct or cumulative effect on the management and availability of water for wetland habitats within the refuge complex, particularly in the district. However, the CSKT wetland enhancement projects could provide an opportunity for cumulative benefits to wetland management and associated wildlife habitat when combined with AFA alternatives that improve coordination with CSKT, particularly for alternative E, which would have a CSKT employee who could coordinate water management for Ninepipe and Pablo reservoirs.

CUMULATIVE EFFECTS ON SOCIOECONOMICS

In addition to the proposed AFA, the Land Buy-Back Program for Tribal Nations would affect Lake and Sanders Counties. Successful consolidation and use of fractional tribal trust land interests could result in economic and community benefits. However, the extent and nature of these benefits is uncertain and are not expected to lead to major developments in the reasonably foreseeable future. Under any likely situation, each alternative is not expected to have any cumulative effect on employment, income, population, or demand for public services in Lake or Sanders Counties.