5 Environmental Consequences

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Sandhill Crane.

The environmental consequences described in this chapter are the potential effects on a resource of carrying out the actions of an alternative. Chapter 3, "Alternatives," presents for each alternative the management scenario that could create the consequences described here.

This chapter contains descriptions of the (1) effects common to alternatives, (2) consequences by alternative, and (3) cumulative impacts of the alternatives. Table 3 in chapter 3 includes a summary of these consequences in relation to the actions for each alternative.

5.1 EFFECTS COMMON TO ALL ALTERNATIVES

Both alternatives would have the same effects related to environmental justice, air quality, and global warming as described below.

Environmental Justice

Neither of the alternatives would have a disproportionately high or adverse environmental effect on minority or low-income populations. Public use and access to the district's WPAs would not require a fee—these areas would be open to all members of the public.

Air Quality

No adverse effects on air quality are expected. Short-term effects on air quality from prescribed burning at the district would not vary significantly between the alternatives. District staff would plan prescribed fire operations to reduce negative effects to neighbors through ignitions that would move the smoke up and out of the vicinity quickly. Rapid mop-up would be completed to reduce overnight effects on neighbors. There are no permits (air quality or smoke management) required by the state of Nebraska or local counties. During periods of high fire danger, counties may issue burn bans to reduce the occurrence of wildland fires.

Global Warming

Both alternatives would conserve or restore land and habitat, and would thus retain existing carbon sequestration at the district's WPAs. This would contribute positively to efforts to mitigate human-induced global climate change.

The use of prescribed fire, which releases CO_2, would result in no net loss of carbon because new vegetation would quickly replace the burned-up biomass. Overall, there should be little or no net change for carbon sequestered at the district's WPAs from either management alternative.

As it relates to global climate change, the documentation of long-term changes in vegetation, species, and hydrology is an important part of research and monitoring. Adjustments in management may be necessary over time to adapt to a changing climate.

5.2 DESCRIPTION OF CONSEQUENCES BY ALTERNATIVE

The following section provides an analysis of the effects estimated to result from alternative A (no action) and alternative B (proposed action). A summary of this narrative is contained in table 3 in chapter 3.

Alternative A (No Action)

The estimated potential effects of alternative A are described by the major topics (issues) discussed throughout this document.

Habitat Management

The restoration of degraded habitats would be financially taxing to the district because the current level of habitat management would be maintained at approximately the same intensity and with the same resources (staff and funding). In addition, the scarce attention given to WPAs with good habitat conditions could cause these habitats to experience degradation over time (such as invasive plant overruns).

This would be especially true for the uplands and for the WPAs with limited waterfowl habitat, because wetlands would receive the highest management priority. Poor fencing and a lack of adequate water supplies at some WPAs would not allow the proper, grazing treatment rate to meet management objectives.

Because of a scarcity of resources to perform outreach in neighboring communities, needed management actions are likely to be misunderstood by some people. This could lead to a lack of support for important habitat management tools such as the removal of volunteer trees and shelterbelts, and the use of prescribed fire and grazing.

Wetlands

Restored wetlands would receive most of their historical watershed runoff. Only areas with high value for migratory birds would receive priority.

Uplands

Farming practices, as part of the restoration process in uplands, would cause decreases in grassland-nesting birds in the short term. However, in the end, restored grasslands would provide improved quality of habitat for upland-nesting birds. While temporary farming practices would increase pesticide use in the short term, restored fields should reduce invasive plants within uplands, which would decrease the need for future pesticide application.

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Invasive woody vegetation.

Highly degraded habitats would receive priority for management. Habitats in good condition would be treated only if resources and time allows—this could cause degradation at WPAs with adequate wildlife habitat.

Overall bird diversity would continue to remain similar to current diversity, with a slow decline in bird species associated with woodland habitat. Among these species would be the blue jay, brown thrasher, and gray catbird. Nesting success of grassland-nesting birds would slowly improve as the number of trees and shelterbelts declined.

Water and Wetland Management

Because water and wetland management would continue at the current intensity, the available staff and resources would allow only some of the WPAs to be managed each year.

Supplemental Water (Pumping)

Because water pumping would be dependent on budget rather than on wildlife needs, it is likely that not all available wetlands could be made suitable for wildlife for spring and fall use.

Currently, nonnative and undesirable plant species dominate the wetlands in poorest condition. The unattended wetlands are likely to experience degradation because of the priority of fixing wetlands in the poorest condition. Wetlands that have quality waterfowl habitat would not be given the needed management and would decline in quality until they become priorities. This is likely to directly affect the health and size of the migratory bird populations and resident wildlife populations dependent on these habitats.

There would be a beneficial effect on shorebirds and whooping cranes during their migration because pumping of water into wetlands (limited to a small number of WPAs) would sustain shallow water on large mud flats. However, the concentration of large numbers of migrating birds at a limited number of WPAs could increase the risk of an epizootic disease event.

Water Quality and Quantity

It is possible that wetlands with watersheds affected by feedlot operations would experience slow yet continual degradation in the quality of the water entering the wetlands. This could result because actions associated with water quality and feedlot runoff would be limited to only severe problems that are clearly in violation of state regulations.

The district would have little information about the quantity and quality of runoff entering wetlands. District staff would be unable to assess the effects that agricultural and feedlot runoff would have on wetlands and wildlife. Information about the role played by the Rainwater Basin's wetlands in improving surface water and groundwater quality and quantity would remain unknown. Concerns about the district's ability to protect its water sources or runoff supply would remain unresolved.

Water Rights

The Service would have an inadequate understanding about water rights held or needed by the district to achieve the vision and goals.

Invasive Plant Control

Because the district would manage invasive plants with priority on state-identified noxious weeds, areas not managed for these species could experience habitat degradation as other invasive plants overtake desirable vegetation.

The availability of mapped invasive plant areas would decrease the response time for treatment—known areas would have been identified for quick assessment and prioritization. This mapping would allow for effective monitoring, which would help to strategize for future treatment and to measure effectiveness of treatment. Ultimately, quick treatment of known infestations would help restore native vegetation and protect adjacent noninfested areas.

Wildlife Disease Control

Because the district would monitor out-of-the-ordinary bird behavior and mortality at the WPAs during migration, it is likely that epizootic disease outbreaks would be minimized and contained.

Species of Concern

Current management activities are having beneficial effects on the populations of prairie dogs and the occasional federally listed species that migrates through the basin. The effects on any known species of concern to occur in the district would be neutral or positive.

Research and Science

The limited research performed within the district would likely be of minimal value to management activities.

Habitat and Wildlife

There would be minimal benefits from the occasional research conducted within the district. The district would do limited monitoring, as staff and funding resources allow.

Socioeconomics

The district would not know the socioeconomic benefits that local communities derive from the existence and management of the district.

Land Protection

The limitations on land acquisition—to focus only on remaining wetlands that have partial district ownership—could cause valuable wildlife habitats to be subjected to land degradation. This problem would be increased if the criteria for fee acquisition remains unclear and focuses only on larger wetlands.

Cultural Resources

Only cultural resources found before habitat management activities would be identified and protected.

Visitor Services

Because there would be no change in the visitor services' programs and infrastructure, the consequences would be neutral. There could be increased visitation by wildlife enthusiasts including hunters, trappers, wildlife observers, and wildlife photographers during migrations. However, the district would have no methodology in place to determine changes in activity. Use of the current headquarters facility would make it hard for potential visitors to get district information, which could keep them from visiting the district.

Hunting

The district would continue to be a destination for avid hunters. There would be limited information about the level of use by and satisfaction of hunters.

Fishing

Fisheries would not be developed.

Wildlife Observation and Photography

Wildlife observer and wildlife photographer visits would remain at current levels because there would be limited opportunities for these activities.

Environmental Education and Interpretation

Interactions during environmental education and interpretation would remain at current levels because there would be limited opportunities for these activities.

Public Access

Visitors would not always know where the WPAs are located, which would result in the same level of use as currently occurs.

Partnerships

It would be unlikely that the district could meet the vision and goals because there would be no increase in partnerships. The lack of promotion of public use, public awareness of district wetlands, and community involvement would increase public misunderstanding and lack of support of the activities and goals of the district.

Socioeconomics

Socioeconomic consequences in the local communities would be neutral or minimal, with district expenditures and public visitation remaining near current levels.

The lack of information on visitation and use would limit the district's efforts for adequate outreach to

generate public support for conservation of wildlife and habitats in the district.

Operations

The district would manage habitats in a reactive rather than proactive way. This may lead to some degradation of habitats due to invasive plant encroachment and under-management.

Staff and Funding

The staff would remain the same.

Law Enforcement

Current levels of law enforcement would likely lead to inadequate protection of resources and wildlife.

Facilities and Equipment

The substandard facilities would create crowded and unhealthy working conditions. Shop space would be inadequate for maintenance and equipment storage needs would remain unmet.

Lack of temporary housing for researchers, volunteers, and seasonal firefighters would limit the amount of outside assistance the district could receive.

The absence of fences and livestock-watering facilities at many WPAs would limit management of invasive plants.

With the current situation, the district's resources would be drained: (1) large distances for travel would require extensive staff time; (2) moving equipment from storage to repair sites would be costly; and (3) valuable equipment would need increased maintenance and would wear out quickly.

It is possible that unprotected equipment would be vandalized.

Alternative B (Proposed Action)

The estimated potential effects of alternative A are described by the major topics (issues) discussed throughout this document.

Habitat Management

Alternative B would increase the level of habitat management in the district. Management techniques would remain the same but would occur at a greater frequency or intensity. A common problem with resource management is applying the right treatment at the right time to change wildlife habitat. There are often more places to treat than there is time.

The district would develop partnerships with more conservation groups to increase the efficiency of both partners. For example, through a partnership the district staff might be able to spray weeds on a partner's property near a WPA. In turn, the partner could control weeds at a WPA close to their property. Partnerships could also allow partners to combine several management areas into one planned grazing system. Within the basin, it is difficult to retain a livestock producer unless there is some assurance that there would be grazing on an annual basis. Outlying WPAs that need infrequent grazing could be included in a grazing system involving lands managed by partners.

Using larger herds of livestock would allow managers to apply grazing when it could be helpful or harmful to the targeted plant species. An example would be to place a large number of animals in a wetland choked with reed canarygrass. A low stocking rate creates a symbiotic relationship between the plant and the grazer, with the plant unharmed. A high stocking rate causes increase injury and demand on the plant—causing invasive plants to be reduced or eliminated.

The combination of three or four public areas (such as the federally managed WPAs and state-managed WMAs) in close proximity would provide assurance to a livestock producer that some land would be available for grazing each year. It is difficult to find local producers with large enough herds to adequately affect wetland vegetation communities. With combined areas, grazing could be rotated between wetland and upland units to benefit wildlife and give producer enough assurance to encourage them to develop herds that would fit management needs.

Aggressive management would allow treatment of a problem before it reached a level that required extensive restoration. For example, the district would remove tree seedlings before they reached a size where fire could not remove them. Once the WPAs were restored to their natural conditions, management intensity and costs would become lower.

The district staff would share information with its resource partners about the response of wildlife and vegetation to management treatments for specific problems. The added information would allow adaptive resource management to be applied more quickly to problem areas.

Wetlands

The use of grazing would improve through adaptive resource management. Expanded partnerships would allow more wetlands to be treated to achieve desirable conditions.

Wetland management would keep wetlands in an early successional stage that is dominated by seed-producing, annual, wetland species. Management treatments would include a combination of water pumping, prescribed fire, prescribed grazing, tree removal, and limited haying.

Land acquisition would become more efficient—partners would help get obtain funding or would buy the remaining portions of WPA wetlands that are in private ownership. The district staff would work

closer with the RWBJV to place the appropriate level of protection on wetlands throughout the basin. Protection would range from conservation easements to fee-title acquisition. Ownership of the easement or property would be matched with the most suited partner for the needed level of protection and type of wetland.

Uplands

Grasslands would be managed using prescribed fire, prescribed grazing, limited haying, and tree removal. Restoration activities would use a high-diversity seed mixture collected from the local area. Volunteer trees and select shelterbelts would be removed and no new shelterbelts would be planted.

Upland restoration activities would focus on previously farmed areas on newly acquired lands and on lands having heavy infestations of weeds or nonnative plants. These areas would be cropped for several years before reseeding. Farming the uplands would cause decreases in grassland-nesting birds in the short term; however, restored grasslands would provide improved habitat for upland-nesting birds.

While farming would increase herbicide use in the short term, restored fields should reduce noxious weeds within uplands and decrease the need for future chemical applications.

Partnerships would allow sharing of equipment and staff to increase the number and size of burns. For example, partners may need fall burns to meet their objectives, while the district plans spring burns. Alone, partners would only able to complete a portion of their goal. Working together, goals for both partners could be attained.

There would be a decline in woodland bird species such as the blue jay, brown thrasher, and gray catbird. There would be improved nesting success—for grassland-nesting birds such as bobolink, dickcissel, and greater prairie-chicken—as the number of trees and shelterbelts declined.

Water and Wetland Management

Wetland habitat would be improved throughout the basin, not just at wetlands in district ownership.

Supplemental Water (Pumping)

The benefits of water pumping in spring and fall would be significantly increased with the availability of contributed funds through partnerships. Increased funds and coordination would reduce the probability of areas with pumped water being clustered rather than spread throughout the district. There would be more wells and improved wells. Pumping water to wetlands would be done more effectively for the benefit of migrating shorebirds and whooping cranes.

Through partnerships and coordination, water would be pumped into select public wetlands for optimal distribution of water. A unified water-pumping partnership would get funding to pump adequate water to spring and fall habitats.

Water Quality and Quantity

The district staff would work with agencies and partners to assess and monitor water quality in the watersheds containing public wetlands and large livestock confinement areas. The district staff would work with neighboring landowners to reduce the sediment and agricultural runoff that reaches public areas.

Water Rights

Working with partners, the district staff would remove water concentration pits and ditches that prevent natural runoff from reaching public wetlands.

Invasive Plant Control

Invasive plants would be reduced to target levels. Patch size and occurrence of invasive plants would be reduced or eliminated at the WPAs. The amount of invasive plants such as reed canarygrass, crown vetch, intermediate wheatgrass, Kentucky bluegrass, and brome would decrease.

IPM would use herbicide application, biological control, mechanical control, cropping, grazing, prescribed fire, high-diversity native plant reseeding, and haying. Herbicide application would be the primary control method for noxious weeds. As areas are treated, the location and treatment type would be recorded in the GIS. The recorded information would help to evaluate treatment effects, monitor treatment success, and improve efficiency.

The district staff would work closely with partners to identify areas where it would be beneficial to exchange control responsibilities at properties. This approach would reduce the amount of overall travel to treat problem areas. The result would be decreased overall costs and increased success with control of invasive plants.

Wildlife Disease Control

Working with partners, the district staff would increase awareness of, detection of, and response to highly pathogenic diseases. During an occurrence of a wildlife disease, coordination with agencies and partners would ensure an appropriate response such as additional water pumping or temporary closures.

Species of Concern

Proper maintenance grazing would keep prairie dog populations at acceptable levels.

Increases in management intensity and coordination with resource partners would increase the occurrence and abundance of rarer species. The whooping crane and other rare migrants would benefit from the more

open, native grassland environment. Management would mimic the natural ecological processes associated with native grasslands in the central Great Plains, supporting those species that occurred historically.

Research and Science

Alternative B would increase the amount of research and monitoring.

Habitat and Wildlife

The district staff would work closer with the RWBJV, universities, and other partners to increase volunteer, internship, and graduate research programs. Priority research needs would be identified and, through partnerships, would be completed. The district would expand monitoring of upland habitats and response of grassland birds to management treatments. The results of research and monitoring would allow use of adaptive resource management in a more timely fashion.

Through the partnership with RWBJV, the district staff would be better able to determine what actions are needed to ensure natural runoff is protected from diversion or loss.

Socioeconomics

Through expanded parterships, the district staff would be able to determine the benefits that it provides to local communities and the state. Areas would be identified where visitor services could be expanded to provide more benefits to the community. More segments of the population would be reached to gain further support for conservation efforts.

Land Protection

For land acquisition, wetlands would be well matched to the appropriate acquisition program and ownership. Easements would protect wetlands from development. Grasslands acquired through easement would help control soil erosion and provide nesting habitat.

Cultural Resources

Through expanded and enhanced partnerships, the district would benefit from more data about cultural resources without having to bear the entire cost of getting the information.

The people of the United States would benefit from identification and protection of previously unknown cultural resources in the basin.

Visitor Services

Alternative B would expand opportunities for public use at the WPAs. Increased hiking trails, viewing blinds, and information kiosks would enhance visitors' experiences.

The district staff would provide the public with timely information about wetland conditions, migration status, and location of key bird populations. Improved signage at the WPAs would help visitors know which WPA they were visiting and increase awareness about WPAs.

Hunting

Through the development of a hunt plan and partnerships, the district staff would better understand hunter use, hunter satisfaction, and potential areas to improve its infrastructure to meet visitor needs.

Fishing

Fisheries would not be developed.

Wildlife Observation and Photography

Through the development of partnerships, the district staff would better understand the level of use by and satisfaction of wildlife observers and wildlife photographers.

The district would be able to identify potential areas to improve its infrastructure to meet visitor needs.

Environmental Education and Interpretation

Partnerships would help develop and increase environmental education and interpretation in schools scattered throughout the basin. The number of volunteers that would result from increased public awareness would increase dramatically, along with general public support and understanding of wetland habitats.

Public Access

Expanded and improved signage would likely lead to better recognition of the Service and the district. In addition, there may be an increase in public visitation.

Partnerships

There would be a notable increase in partnerships in the areas of public use, research and science, land acquisition, and water development (pumping). The various partnerships would increase public awareness and involvement in all aspects of district activities. Local communities would "sponsor" nearby WPAs and promote their use in environmental education and wildlife-dependent recreation. Vandalism would decrease as more people take ownership of the WPAs.

Local communities would have a better understanding of the local and national benefits of the Rainwater Basin's wetlands and likely would have increased pride in the basin's contribution to the Central Flyway migration. This could lead to new and expanded partnership opportunities to conserve the natural resources of the basin.

Socioeconomics

There would likely be long-term positive effects on the local economy. Increased visitor use is expected because of better habitat, more wildlife, and additional trails, signage, and wildlife-dependent uses. The effects, however, would not be significant in one area but would occur as a slight increase throughout the entire basin.

The district would be managed for migratory bird habitat and there would be increased investment in visitor facilities. Hunting, wildlife observation, and other priority uses would be highly encouraged. The combined effects of changes in management practices would likely increase overall visitation over time, as habitat and user facilities are improved. Hunting and wildlife viewing are the major draws at the district. Improvement in the quality of the hunting and wildlife-viewing experiences may bring in a modest number of additional visitors and additional local spending. (BBC Research and Consulting 2006)

The four additional staff persons would have a minimal effect on the local economy. Additional employment at the district would induce more federally supported spending in the local economy, but at this point only modest employment increases are expected. (BBC Research and Consulting 2006)

The improved facilities and accommodations could potentially draw additional visitors to the district. As a result, the regional economy could possibly see up to a 20% increase in visitor spending. A 20% increase in visitor spending would introduce an additional $180,000 in economic activity to the basin. These additional visitors would not only create more business for local proprietors, but increase regional tax revenues as well. (BBC Research and Consulting 2006)

Operations

The efficiency of district operations would increase dramatically.

Staff and Funding

There would be adequate staff to improve wildlife habitat, increase public use, reduce vandalism, and increase education and outreach.

Law Enforcement

There would be adequate law enforcement to protect wildlife habitat, support public use, and reduce vandalism.

Facilities and Equipment

A modern shop and office facility would increase productivity and reduce down time associated with having equipment stored at various locations. Daily work assignments would go unimpeded since staff would not have to travel a long distance to pick up a piece of equipment before traveling to a job site. The public would be provided with a better contact center to obtain information and interact with staff.

Improved water-pumping facilities would allow the district staff to spread water over a larger number of WPAs. Outside perimeter fences and livestock watering on larger properties would improve land management by being able to apply the right amount of grazing to influence plant composition.

5.3 CUMULATIVE IMPACTS

Cumulative impacts are the potential effects of each alternative in combination with past, present, and future actions. NEPA regulations define cumulative effects "as the impact on the environment which results from the incremental impact of the actions when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over time." (40 CFR 1508.7)

The cumulative effects analysis for this project is based on reasonably foreseeable future actions that, if carried out, would contribute to the effects of the alternatives.

Impacts will be monitored during implementation of the final CCP. Implementation over an extended period will reduce the likelihood of negative cumulative impacts.

The NEPA requires mitigation measures when the environmental analysis process detects possible significant impacts to habitats, wildlife, or the human environment. All activities proposed under alternative B are not expected nor intended to produce environmental impacts that would require mitigation measures. Nevertheless, the final CCP will contain the following measures to preclude significant environmental impacts from occurring:

- Federally listed species will be protected from intentional or unintentional impacts by having activities banned and/or restricted where these species occur.
- Hunting safety regulations will be closely coordinated with and enforced by personnel from the district and NGPC.
- All proposed activities will be regulated to reduce potential impacts to wildlife and plant species, especially during their sensitive reproductive cycles.
- Monitoring protocol will be established to determine goal achievement levels and possible unforeseen impacts to resources for application of adaptive management to ensure wildlife and habitat resources, as well as the human environment, are preserved.

- The final CCP can be revised and amended after 5 years of implementation, for application of adaptive management to correct unforeseen impacts that occur during the first years of the plan.