

3 Alternatives



Angler on Odell Creek.

This chapter describes the management alternatives considered for the Red Rock Lakes National Wildlife Refuge. Alternatives are different approaches to planning unit management that are designed to achieve the refuge purposes, vision and goals, the mission of the Refuge System, and the mission of the U.S. Fish and Wildlife Service. Alternatives are developed to address the substantive issues, concerns, and problems identified by the Service, the public, and other partners during public scoping and throughout the development of the draft CCP.

3.1 ALTERNATIVES DEVELOPMENT

The alternatives represent different approaches for permanent protection and restoration of fish, wildlife, plants, habitats, and other resources. The planning team assessed the planning issues identified in chapter 2, the existing biological conditions, and external relationships affecting the refuge. This information contributed to the development of alternatives. As a result, each alternative presents different approaches for meeting long-term goals. Each alternative was evaluated according to how well it would advance the vision and goals of the refuge and the Refuge System and how it would address the planning issues.

All of the alternatives incorporate concepts and approaches intended to achieve the goals outlined in chapter 2 and are discussed in terms of how they could meet each goal.

Alternative A, the no-action alternative, describes ongoing refuge management activities. This alternative might not meet all the CCP goals. It is provided as a basis for comparison with the other alternatives.

3.2 ALTERNATIVES CONSIDERED BUT ELIMINATED

There were some requests from the public for the Service to evaluate reintroducing bison to the refuge. The Service has considered this in the past as free-ranging bison historically used the Centennial Valley. Currently, cattle are used as a tool to mimic this historic disturbance. In the state of Montana, bison are designated as livestock. As livestock, bison reintroduction is not desirable for various reasons including the need to keep bison from roaming onto neighboring land, which requires a substantial, electrified fence. The refuge is located in an area that is relatively undeveloped. In addition, 68% of the refuge is designated as wilderness. With little development in the valley and with more private and public landowners constructing wildlife-friendly fences, wildlife, such as elk, pronghorn, and the occasional grizzly bear and wolf are able to roam freely across the valley floor. The Centennial Valley is a large wilderness area and large electrified fences are counterproductive to the progress that has been made in making the eastern portion barrier-free for wildlife movement. A captive bison herd would not

mimic historical grazing patterns. Bison migrated through the valley, particularly during the winter months when heavy snows blanketed the valley, making it difficult for them to survive. Captive bison could have undesirable impacts on refuge habitats and would most likely require relocation or supplemental feeding during winter months. Other issues related to installing a large electrical fence would be the significant initial cost and maintenance. The Service has an obligation to ensure that such expenditures are necessary and result in the greatest benefit. Such an expenditure could not be justified.

3.3 ELEMENTS COMMON TO ALL ALTERNATIVES

This section identifies key elements included in the CCP regardless of the alternative selected. Each alternative contains key elements that are the same:

- All alternatives, including the no-action alternative, emphasize the same priority species and protection of endangered species.
- The U.S. Fish and Wildlife Service would ensure that refuge management complies with all other federal laws and regulations that provide direction for managing units of the Refuge System.
- Each alternative would attempt to eradicate invasive species through an integrated pest management approach, including biological, chemical, and mechanical treatment methods.
- No adjacent landowners would be adversely impacted by any action taken by the U.S. Fish and Wildlife Service without a mutual agreement and adequate compensation.
- All alternatives would provide equal protection and management of cultural resources.

3.4 DESCRIPTION OF ALTERNATIVES

The following section summarizes the alternatives considered by the planning team to achieve the proposed vision and goals and address issues. These alternatives include not only the current management, alternative A, but also the planning team's proposed action, alternative B. This proposed action is further described in chapter 6. There are additional details for these alternatives and the consequences of each in both table 4. within this chapter, and in "Chapter 5. Environmental Consequences."

ALTERNATIVE A: NO ACTION (CURRENT MANAGEMENT)

Alternative A, the no-action alternative, reflects current management of Red Rock Lakes National Wildlife Refuge. It provides the baseline against which to compare other alternatives. It is also a

requirement of NEPA that a no-action alternative be addressed in the planning process.

These are the key elements of alternative A:

- Habitat and wildlife management actions to benefit migratory birds and other wildlife would continue at present levels unless funding or staffing levels change. Refuge habitat would continue to be managed using existing water control structures, grazing, and prescribed fire opportunities. Results of management actions may or may not be able to be interpreted because monitoring of management actions would continue to be limited due to current funding levels. The refuge would continue to divert water from streams and impound water.
- The refuge would continue to coordinate with adjacent agencies and partners, as well as willing landowners, to manage on a larger (landscape) scale. In particular, management of forested habitats and sand dune systems would be coordinated with neighboring private and public landowners whenever possible.
- Wildlife-dependent compatible priority uses (such as hunting, fishing, wildlife observation, wildlife photography, and interpretation) would continue to occur at current levels (see figure 7). There would continue to be minimal outreach and education programs and insufficient resources to update signs, informational kiosks, and brochures, as well as improve hiking trails, access roads, and campgrounds.
- Duck, goose, and coot hunting would remain permitted near Lower Red Rock Lake under state and federal regulations (see figure 7).
- Big game hunting for elk, pronghorn, deer, and moose would continue to be allowed on the refuge (see figure 7). All seasons coincide with the state except for the shortened moose season.
- Visitation would likely remain at current levels of approximately 12,000 visitor days per year.

ALTERNATIVE B: PROPOSED ACTION

Management proposed under alternative B acknowledges the importance of naturally functioning ecological communities on the refuge. However, changes to the landscape from human alterations to the landscape, past refuge management creating wetlands, and species in peril requiring special management actions prevent managing the refuge solely as a naturally-functioning ecological community. Because some of these changes are

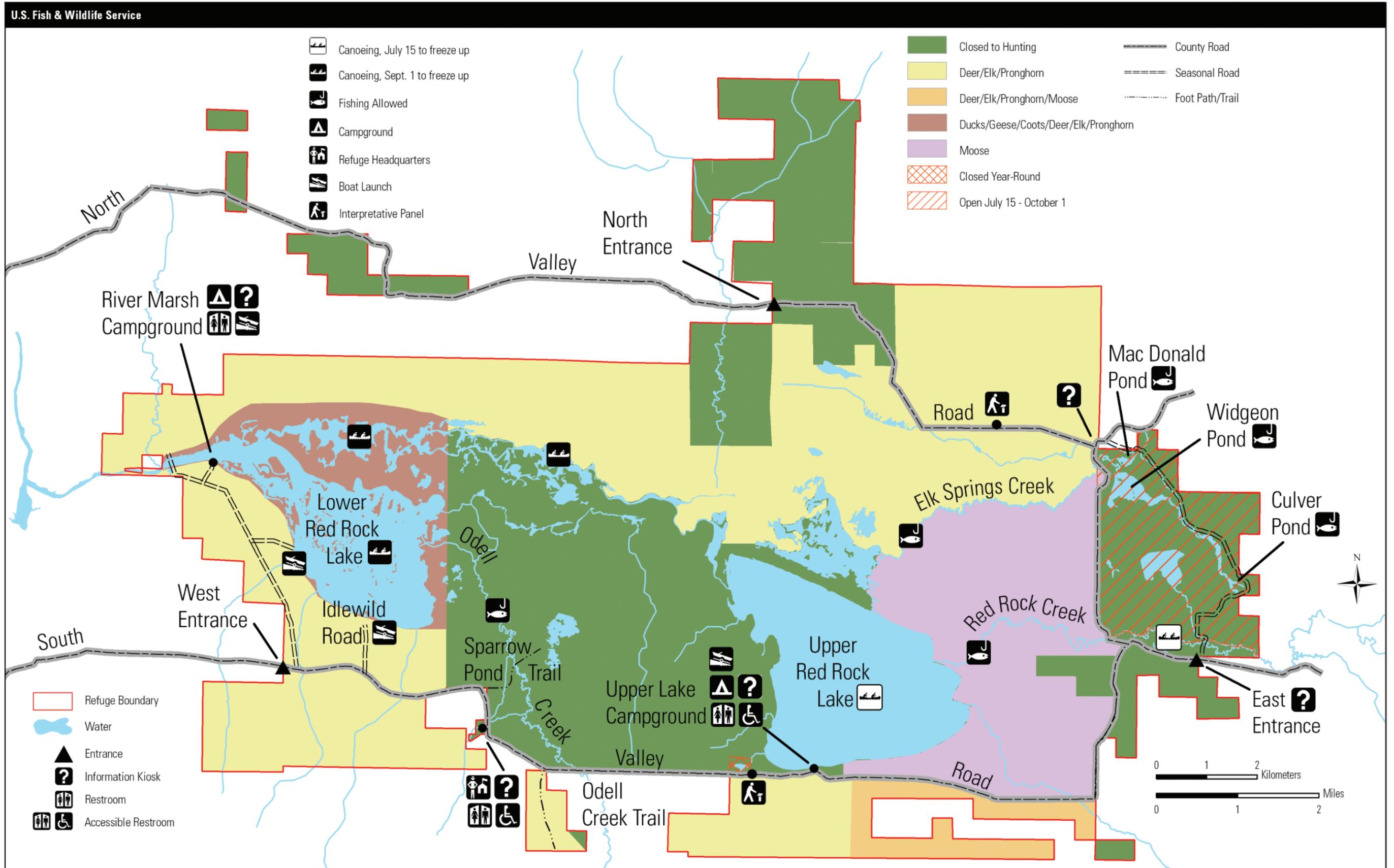


Figure 7. Alternative A, current visitor service areas and facilities map.

significant, some refuge habitats would require “hands on” management actions during the life of the CCP. Visitor services programs would be expanded, both on and off refuge.

These are the key elements of alternative B:

- Improved management of riparian habitats to benefit Arctic grayling and migratory bird species dependent on these habitats. Restoration of some modified wetlands (such as Culver Pond) back to riparian corridors would occur.
- Management actions (such as grazing and prescribed fire) would be directed toward specific habitat and wildlife objectives, with increased and improved oversight, monitoring, and research (when appropriate) being conducted to assess if management objectives are being met.
- There would be improved environmental education, outreach, and interpretation opportunities in order to better garner support, understanding, and awareness of refuge values. These offerings are expected to increase visitation to 15,000 visitor days per year, an increase of 3,000 visitor days.
- Facilities and signage on the refuge would be improved to better orient and educate visitors, including added kiosks and interpretive panels (both on the refuge and in the visitor contact area). An auto tour route along an existing refuge road would be designated and interpreted. Minimal signage would be used to retain the refuge’s wildland characteristics.
- The manager and assistant manager positions would be upgraded, and the assistant manager would be required to maintain law enforcement credentials. Added staff would include a full-time biological science technician, a permanent seasonal park ranger (visitor services manager), and maintenance worker.
- To create a contiguous hunting area and eliminate hunting boundary confusion, moose hunting would be open in the area west of the Centennial Valley Road near “Saier Corrals.” The area south of South Valley Road (Red Rock Pass Road) would be closed to eliminate a road hunting issue south of the road (see figure 8).
- Closed areas in the northern section of refuge would be opened to deer, elk, and pronghorn hunting.
- Fishing opportunities would be expanded, and visitors would be encouraged to keep nonnative fish.
- An apartment and refuge house would be constructed to accommodate added staff.

ALTERNATIVE C: WETLAND RESTORATION

Management under alternative C acknowledges the importance of a naturally functioning ecosystem. Management action emphasis would be placed on allowing wetland and riparian habitats to function naturally through the restoration of most created and all modified wetlands.

These are the key elements of alternative C:

- All modified and most created wetlands would be restored to their original state (stream, shallow wetland, and upland habitats).
- Prescribed fire and grazing by native ungulates would be used as the primary disturbance for sagebrush-steppe and grassland habitats. Cattle grazing would be eliminated.
- A full-time visitor services specialist would be recruited to design and expand environmental education and interpretive programs for adults and school children and conduct annual refuge events. These expanded offerings are expected to increase visitation to 16,000 visitor days, an increase of 4,000 visitor days.
- Outreach would be expanded to garner support and understanding of the refuge issues and management programs, including working with the surrounding landowners and other partners to protect the Centennial Valley from habitat loss and residential development.
- Moose hunting would follow state seasons.
- Hunting boundaries will be modified and expanded to eliminate boundary confusion, address law enforcement issues, and provide additional opportunities (see figure 9).
- The River Marsh (commonly referred to as Lower Lake) campground would be closed while accessibility to the campground at Upper Lake would be improved.
- A full-time wildlife biologist, full-time range technician, and permanent seasonal maintenance worker would be recruited. At least three temporary seasonal biological science technicians would be recruited.
- Up to five residences would be constructed for current and added staff.

ALTERNATIVE D: ECOLOGICAL RESTORATION

Management under alternative D further acknowledges the importance of a naturally functioning ecosystem. Management action emphasis would be placed on the restoration of all natural processes, including the restoration of wetland and riparian habitats and working with adjacent landowners and the state to reintroduce bison should they become designated as free-ranging wildlife in this part of Montana. The refuge would place emphasis on creating a wilderness setting in all areas away from the visitor contact station. Visitor

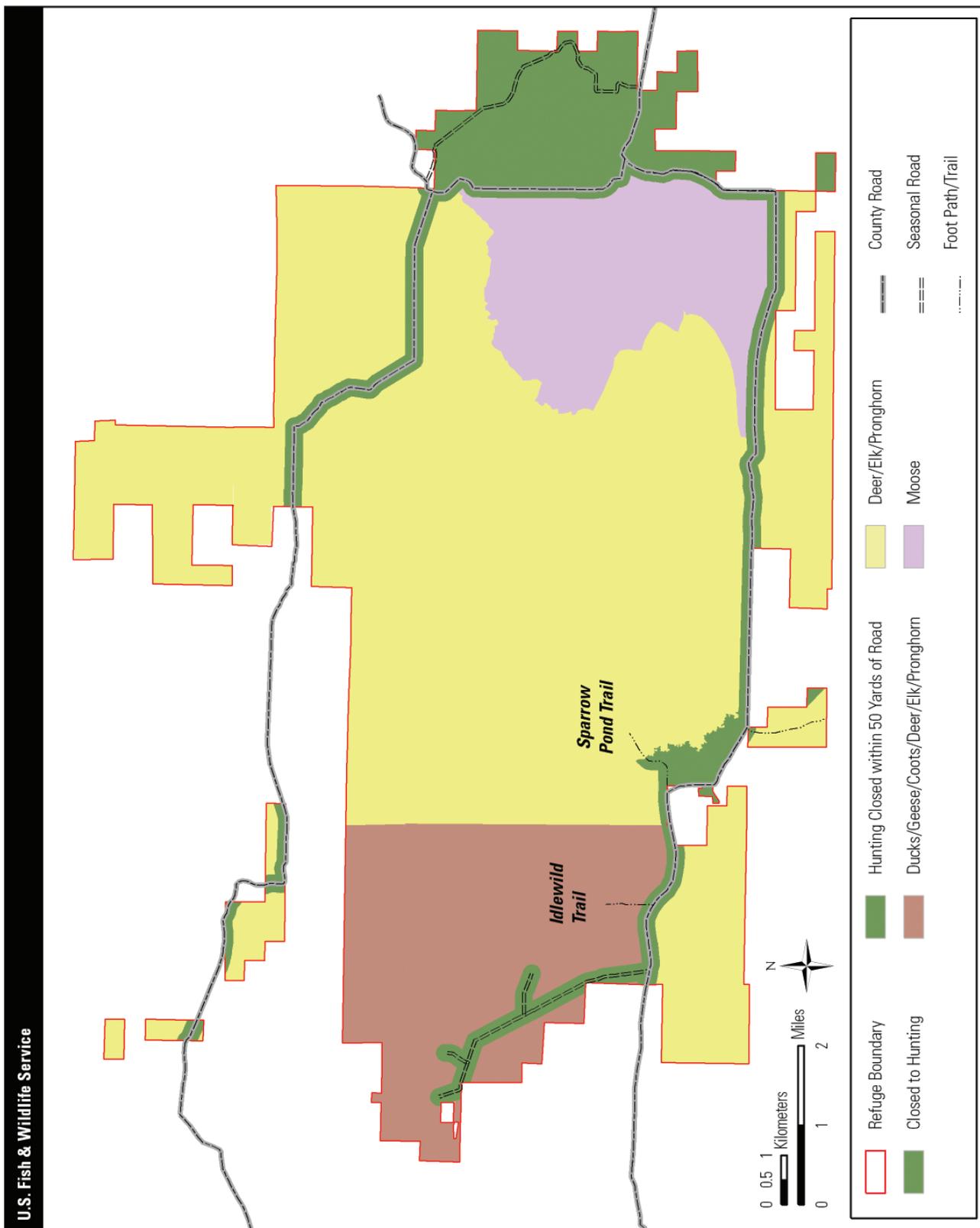


Figure 8. Hunting program boundaries proposed in alternative B.

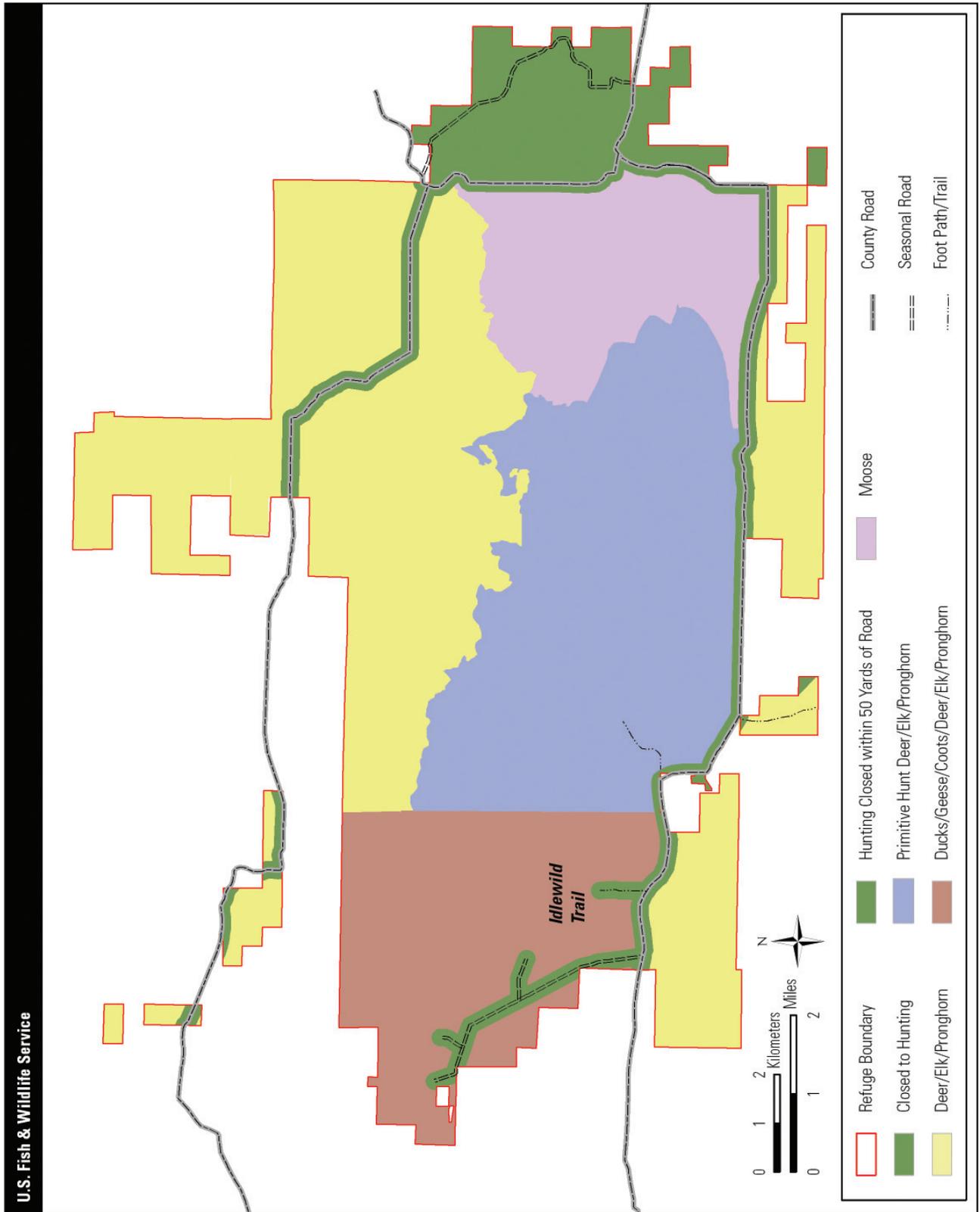


Figure 9. Hunting program boundaries proposed in alternative C.

programs would remain at current levels or be reduced.

These are the key elements of alternative D:

- To the extent possible, management would focus on the restoration of all natural processes including the removal of all structures currently used for impounding and managing waters.
 - If bison become designated as free-ranging in Montana, the Service would work with the state and neighboring landowners to repatriate bison to the refuge. Cattle grazing and interior fences would be eliminated.
 - Hunting boundaries will be modified and expanded to eliminate boundary confusion, address law enforcement issues, and provide additional opportunities.
- Interpretation would be concentrated at the visitor contact station to reduce the need for signage and interpretative kiosks.
 - All trails would be eliminated, and off-trail hiking would be emphasized to visitors using the refuge.
 - All moose hunting would be eliminated on the refuge (see figure 10).
 - Both River Marsh and Upper Lake campgrounds would be closed.

Table 4 provides additional information for each alternative including an evaluation of the consequences.

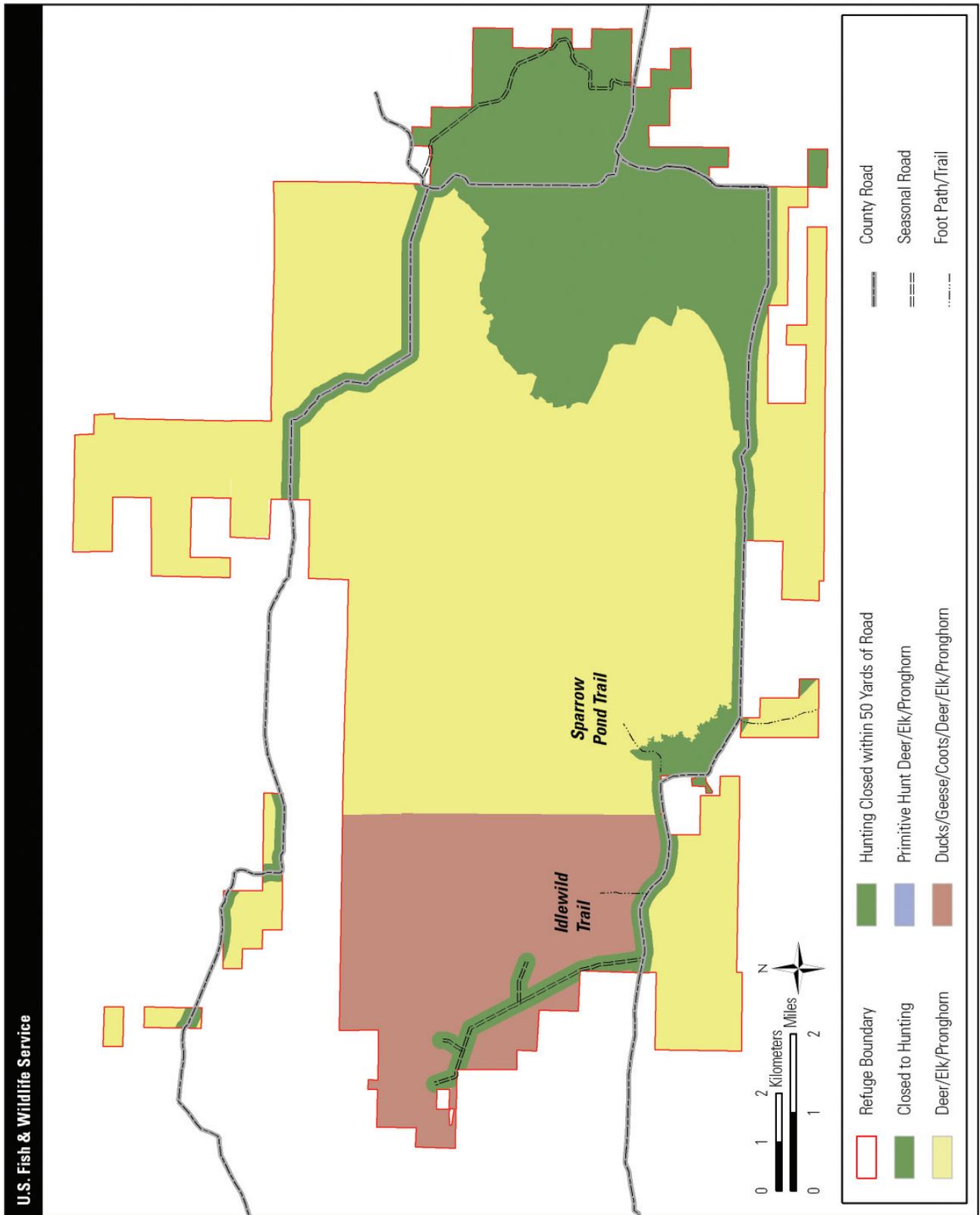


Figure 10. Hunting program boundaries proposed in alternative D.

Table 4. Summary of alternatives for the comprehensive conservation plan, Red Rock Lakes National Wildlife Refuge.

<i>Alternative A (Current Management)</i>	<i>Alternative B (Proposed Action)</i>	<i>Alternative C (Wetland Restoration)</i>	<i>Alternative D (Ecological Restoration)</i>
Lake, Pond, and Marsh Habitat Goal			
Provide habitat for breeding and migrating birds, native fishes, and resident wildlife that maintains the biological diversity and integrity of montane wetland systems.			
Natural Lakes (Upper Lake and Swan Lake)—Management Actions			
The lakes would be allowed to function naturally with no monitoring or management intervention.	<i>Same as alternative A, except:</i> Monitoring would be conducted to ensure management of adjacent habitats is not adversely affecting the lakes (for example, through increased levels of nitrogen due to upstream grazing practices).	<i>Same as alternative B.</i>	<i>Same as alternative B, including:</i> If bison become designated as free-ranging wildlife in Montana the refuge will work with the state and neighboring landowners to reintroduce them. Livestock grazing would be eliminated and interior fences would be removed.
Natural Lakes (Upper Lake and Swan Lake)—Environmental Consequences			
Intact refuge wetlands would function naturally, maintaining the biodiversity of native species and the biological integrity of this intact wetland system. Lack of monitoring could preclude detection of habitat degradation from actions conducted in the upper watershed.	Monitoring would provide an understanding of the natural variation in the system and allow the refuge to detect when system functions fall outside that range.	<i>Same as alternative B.</i>	<i>Same as alternative B, except:</i> If free-ranging bison wintered in the valley there could be increased grazing of sedge habitats, which could reduce residual cover for nesting waterfowl.
Modified Wetlands (Culver, Widgeon, McDonald, Shoveler Ponds, Shambow, Shorebird, Antelope Ponds and Sparrow Pond and Slough)—Management Actions			
All of the modified wetlands would remain impounded with various types of water management structures and would be maintained at a static level year-round to preserve open-water habitat. Unlike the other modified wetlands, Antelope, Shoveler, Shorebird, and Sparrow ponds, and Sparrow Slough are not spring fed; therefore, water levels of these ponds would fluctuate due to changing climatic conditions.	Culver and McDonald ponds would be restored to free-flowing streams and associated riparian corridors to benefit Arctic grayling. Widgeon Pond would be maintained at a high, static water level for Arctic grayling brood habitat. The remaining modified wetlands would be managed at dynamic water levels to increase productivity for the benefit of migratory birds.	<i>Same as alternative B, except:</i> All remaining modified wetlands would be reverted, to the extent possible, back to riparian habitat, or other natural hydrological states.	<i>Same as alternative C.</i>

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Modified Wetlands (Culver, Widgeon, McDonald, Shoveler Ponds, Shambow, Shorebird, Antelope Ponds and Sparrow Pond and Slough)—Environmental Consequences			
<p>Nonnative fish species would continue to impact native populations, in particular, Arctic grayling and Westslope cutthroat trout. Historical spawning areas would remain unavailable to Arctic grayling.</p> <p>Wintering habitat for waterfowl would be provided.</p> <p>Nesting habitat for swans would be maintained.</p>	<p>Spawning habitat for Arctic grayling and other native fishes would be provided in restored free-flowing streams and associated riparian habitat.</p> <p>Created winter habitat would be eliminated, encouraging waterfowl to migrate to historical wintering areas.</p> <p>The primary productivity of the wetlands would improve, providing quality habitat for nesting and staging migratory birds.</p>	<p><i>Same as alternative B, except:</i></p> <p>Open-water habitat (such as ponds) would be replaced by restored stream habitat.</p> <p>Restored streams would provide additional spawning habitat for native fish species.</p> <p>Four known trumpeter swan nesting territories would be lost.</p> <p>There would be an increase in riparian habitat but a net loss of wetland acres.</p>	<p><i>Same as alternative C.</i></p>
Created Wetlands (North Tuck Slough, West Pintail Ditch Wetlands)—Management Actions			
<p>Water would continue to be diverted to these created wetlands through a series of water management structures.</p> <p>North Tuck Slough would continue to be managed for breeding waterbirds, while the other wetlands will not receive diverted water.</p>	<p>Diversion of water to North Tuck Slough would be limited to years when diversion of water from Red Rock Creek would not adversely affect riparian habitat or spawning Arctic grayling.</p> <p>As part of the restoration of Culver Pond (see above), Mallard Canal and Pintail Ditch would also be restored, precluding diversion of water to the West Pintail Ditch wetlands.</p>	<p>Water management structures would be removed from all created wetlands and the habitat would be reverted to riparian habitat.</p>	<p><i>Same as alternative C, plus the following:</i></p> <p>All diversion infrastructures (ditches, dikes, WCSs, dams) would be removed and areas returned to a more natural hydrologic state.</p>

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Created Wetlands (North Tuck Slough, West Pintail Ditch Wetlands)—Environmental Consequences			
<p>Water diversions from Red Rock Creek would continue to create migratory waterbird habitat. These diversions would continue to alter the creek's hydrology and potentially affect the water and soil chemistry of the area.</p>	<p>Diverting water less frequently would create fewer impacts to the hydrology of Red Rock Creek, and the water and soil chemistry of these created wetlands.</p> <p>Reduced frequency of water diversion from Red Rock Creek would allow this stream to function more naturally.</p> <p>Migratory waterbird habitat would be created during above average water years.</p> <p>One swan nesting territory would be lost.</p>	<p>103 acres of created wetland habitat for migratory waterbirds would be lost.</p> <p>Areas would be created that could be susceptible to invasion by pest plant species.</p> <p>The riparian system would be returned to a more natural hydrological state.</p> <p>One additional swan nesting territory would be lost (in addition to the loss of four in the modified wetlands areas).</p>	<p><i>Same as alternative C, except:</i></p> <p>There would be a complete loss of created wetland habitats.</p> <p>Additional areas would be created that could be susceptible to invasion by pest plant species.</p> <p>Surface water runoff patterns would be restored.</p> <p>A more natural appearance would be created, reflecting the wilderness character of this refuge.</p> <p>Altered upland habitats would be reestablished.</p>
Lower Red Rock Lake/River Marsh—Management Actions			
<p>The WCS on Lower lake would continue to be kept open to allow for a naturally-fluctuating hydrological cycle.</p> <p>The Lower Lake structure would continue to be maintained to permit manipulation of water levels, most specifically for ecological experiments designed to improve the understanding and management of the system.</p>	<p><i>Same as alternative B, except:</i></p> <p>The impacts and benefits of the structure would be analyzed to determine its future.</p> <p>Ecological experiments would be expanded to improve the understanding and management of the system.</p>	<p>The WCS would be removed systematically as it deteriorates.</p>	<p>The WCS on Lower Lake would be removed to restore the system to a natural hydrologic state.</p>

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Lower Red Rock Lake/River Marsh—Environmental Consequences			
This wetland system would continue to provide productive and diverse habitat for migratory waterbirds.	<p><i>Same as alternative A, except:</i></p> <p>Ability to provide enhanced waterbird habitat during drought years would be maintained, because the structure could continue to be used to capture water if necessary.</p> <p>The effect of the WCS on the hydrology and ecology of the system would be better understood, allowing a more informed decision on the need for its retention or removal.</p>	<p>The slow removal of the water control structure would permit ecological experiments to be conducted. Its eventual removal would allow the hydrological state of the system to be restored, but the ability to manipulate water levels would be lost.</p> <p>The ability to capture water during drought years would be lost.</p>	The immediate removal of the water constructure would not permit ecological experiments to determine the effects of removing the dam or developing a better understanding of the hydrology of the refuge.
Riparian Habitat Goal			
Maintain the processes necessary to sustain the biological diversity and integrity of native riparian vegetation for breeding birds, native fishes, and wintering ungulates.			
Stream Corridor—Management Actions			
<p>Browse studies on willow would continue to determine habitat quality for moose and migratory land birds.</p> <p>Annual water diversions to protect Arctic grayling habitat and to preserve the hydrologic function of the system would continue to be limited.</p> <p>Riparian fences would continue to be maintained along larger corridors (such as Odell and Red Rock creeks) to protect them from grazing livestock.</p>	<p>The refuge would work with MFWP to monitor moose abundance and browse levels, as well as breeding land bird composition and abundance.</p> <p>The frequency of water diversions to created and modified refuge wetlands would be reduced to provide healthy stream corridor riparian habitat to support breeding migratory land birds, Arctic grayling, and native ungulates.</p> <p>The refuge would work with adjacent landowners to reduce effects of livestock grazing on upstream sections of Red Rock Creek to protect and improve Arctic grayling spawning habitat.</p>	<p><i>Same as alternative B, except:</i></p> <p>All water management structures would be removed from all created and modified wetlands, returning these areas (including native streams) to their natural hydrologic state.</p> <p>Livestock grazing would be eliminated and all interior fences would be removed.</p>	<p><i>Same as alternative C, including:</i></p> <p>All water diversions would be removed and the hydrologic state restored, to the extent possible.</p> <p>If bison become designated as free-ranging wildlife in Montana the refuge will work with the state and neighboring landowners to reintroduce them.</p>

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	<p>Diversion of water to North Tuck Slough would be limited to years when diversion of water from Red Rock Creek would not adversely affect riparian habitat or spawning Arctic grayling.</p> <p>Existing riparian fences would be maintained and additional temporary fencing would be used, as needed, to protect stream corridors from grazing livestock.</p> <p>Irrigation ditches found to affect the hydrology of adjacent areas would be restored. Some ditches may be needed for proposed restoration of grassland habitats.</p>		
Stream Corridor—Environmental Consequences			
<p>Valuable riparian habitat would continue to be protected for wildlife.</p> <p>Studies would expand the refuge's knowledge of relationships among moose abundance, willow browse, and breeding migratory land birds.</p> <p>Most riparian corridors would be protected from the effects of grazing, except for some of the smaller creeks.</p>	<p><i>Same as alternative A, except:</i></p> <p>Reduced frequency of water diversion from Red Rock Creek would allow this stream to function more naturally.</p> <p>There may be some loss of created and modified wetland habitat in years where water resources are limited.</p> <p>Stream corridor habitats would be improved throughout the valley, providing naturally functioning systems for the benefit of native wildlife dependent on stream habitat.</p>	<p><i>Same as alternative B, except:</i></p> <p>Open-water habitat (such as ponds) would be replaced by restored stream habitat, providing naturally functioning systems for the benefit of wildlife dependent on stream habitat.</p> <p>Restored streams would provide additional spawning habitat for native fish species.</p> <p>Four known trumpeter swan nesting territories would be lost.</p> <p>There would be an increase in riparian habitat but a net loss of wetland acres.</p> <p>Possible conflicts between native browsers and livestock would be eliminated.</p>	<p><i>Same as alternative C, except:</i></p> <p>Hydrological function of these stream corridors would be protected by elimination of all water diversions on refuge streams.</p> <p>If bison were to replace cattle it is possible that stream corridor impacts normally caused by cattle would be reduced, but not eliminated.</p>

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		Removal of interior fences would eliminate the potential for wildlife impacts, including altering wildlife movements.	
Woody Dominated Wetlands (willow, aspen, cinquefoil)—Management Actions			
Browse studies on willow would continue in order to determine habitat quality for moose and migratory land birds. The majority of this habitat would remain protected from livestock grazing by interior fences.	The refuge would work with MFWP to monitor moose abundance and browse levels, along with breeding land bird composition and abundance. Additional fencing would be used, as needed, to protect these habitats from grazing livestock. The refuge would work with adjacent landowners to protect and restore these habitats to support moose and breeding land bird populations.	<i>Same as alternative B, except:</i> Livestock grazing would be eliminated and the interior fences removed.	<i>Same as alternative C.</i>
Woody Dominated Wetlands (willow, aspen, cinquefoil)—Environmental Consequences			
Valuable riparian habitat would continue to be protected for wildlife.	Expanding and improving riparian habitats throughout the Centennial Valley would increase the area available for breeding migratory birds and native ungulates and improve water quality.	<i>Same as alternative B, including:</i> Browsing of woody species by livestock would be eliminated. Possible conflicts between native browsers and livestock would be eliminated. Removal of interior fences would eliminate impacts on wildlife.	<i>Same as alternative C.</i>
Wet Meadow, Grassland and Shrub-steppe Habitat Goal (wet meadow)			
Provide structurally complex native meadow, grassland and shrub-steppe habitats within a watershed context, for sagebrush-dependent species, upland-nesting migratory birds, rare plant species, and other resident wildlife.			
Wet Meadow, Grassland and Shrub-steppe (wet meadow)—Management Actions			
Meadows would be grazed by livestock under the current upland habitat management plan (USFWS 1994).	Same as alternative A, except: Livestock grazing and prescribed fire would continue to be used,	Fire would be used as the primary disturbance, complimented by native grazers, to meet wildlife habitat objectives, reduce invasive grasses	If bison become classified as wildlife in Montana, the Service would work with the state and

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<p>Hydrologically, these wet meadows would continue to be allowed to function naturally.</p> <p>Livestock grazing and prescribed fire would be used, (per the refuge’s current upland management plan) to mimic historical disturbance systems and to control the spread of invasive grasses while enhancing native species.</p> <p>Annual monitoring of response of vegetation and land birds to management actions would continue.</p>	<p>with increased management oversight, to meet wildlife habitat objectives, reduce invasive grasses, enhance native species, and to reduce hazardous fuels.</p> <p>Temporary fencing within current management units would be used to localize and better control grazing.</p> <p>The Service would work with the state to determine the effects of any future initiatives to reintroduce bison should they become designated as wildlife. This would not be considered if a fence were still required.</p>	<p>and to reduce hazardous fuels, minimizing the threat to life and property.</p> <p>Livestock grazing would be phased-out as permittees retire grazing operations, and interior fences would be removed.</p> <p>Annual monitoring of vegetation and land bird response to management actions would continue.</p>	<p>neighboring landowners to repatriate bison to the refuge.</p> <p>Cattle grazing would be eliminated.</p> <p>Prescribed fire would continue to be a component of upland management and for control of hazardous fuels.</p> <p>Reduction of nonnative invasive grasses and hazardous fuels would continue.</p> <p>Interior fences would be eliminated.</p> <p>Fire would be used to manage grazing by native ungulates to meet wildlife habitat objectives.</p> <p>Annual monitoring of vegetation and land bird response to management actions would continue.</p>

Wet Meadow, Grassland and Shrub-steppe (wet meadow)—Environmental Consequences

<p>Moderately grazed and idled areas, complemented by adjacent lands grazed at higher levels, would continue to be provided for wildlife.</p> <p>The refuge would continue to expand their understanding of habitat and wildlife response to grazing.</p> <p>Continued presence of fencing may negatively impact wildlife.</p> <p>The diversity of native plant species would be enhanced while reducing invasive plant species.</p> <p>Reducing hazardous fuels would minimize threats to life and property on the refuge and the surrounding private lands.</p>	<p><i>Same as alternative A, except:</i></p> <p>Grazing management would be directed more toward specific wildlife and habitat objectives.</p> <p>The diversity of native plant species would be improved even more while reducing invasive plant species.</p> <p>Conducting a thorough analysis of the potential impacts of reintroducing free-ranging bison would ensure that the consequences are clearly understood by the refuge, neighboring landowners, and other partners prior to any repatriating efforts.</p>	<p>Conflicts between native grazers and cattle would be eliminated.</p> <p>Removal of interior fences would eliminate impacts to wildlife.</p> <p>In the absence of cattle grazing, fire may not provide adequate disturbance to reduce nonnative invasive grasses.</p> <p>Reducing hazardous fuels would minimize threats to life and property on the refuge and the surrounding private lands.</p>	<p>If bison assumed historical grazing patterns, this could return an important, historic ecological process to the refuge and, consequently, the Centennial Valley.</p> <p>Bison have the potential to transmit brucellosis to cattle. This would have to be addressed.</p> <p>Bison could become concentrated on the refuge, causing overgrazing of grassland habitats needed by nesting migratory birds.</p>
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			<p>There could be cumulative habitat impacts as a result of introducing bison into an already active cattle and native ungulate grazing community within in the valley.</p> <p>Fences that currently exist on neighboring lands in the valley could inhibit natural migration of these bison, particularly in the winter. This could cause concentrated habitat impacts and loss of animals during deep snow years.</p> <p>Reducing hazardous fuels would minimize threats to life and property on the refuge and the surrounding private lands.</p>
Meadow, Grassland and Shrub-steppe (grasslands, sagebrush, steppe, and Centennial Sandhills)— Management Actions			
<p>The refuge would continue coordinating with adjacent landowners, including the Nature Conservancy and Bureau of Land Management (BLM), to determine the efficacy of maintaining and increasing early seral stage habitat in the sandhills using prescribed fire and grazing. Resulting data would be used to determine management of this unique area.</p> <p>Annual monitoring of the response of vegetation and land birds to management actions would continue.</p>	<p><i>Same as alternative A, except:</i></p> <p>Livestock grazing and prescribed fire would be used with increased management oversight to meet wildlife habitat objectives, reducing invasive grasses and hazardous fuels.</p> <p>Fencing within current management units would be used to localize and better control grazing.</p>	<p><i>Same as alternative B, except:</i></p> <p>To meet wildlife habitat objectives and to reduce nonnative invasive grasses, prescribed fire would be used as the primary disturbance, complimented by native grazers.</p> <p>Livestock grazing would be phased-out as permittees retire grazing operations.</p> <p>Interior fences would be removed as they become unnecessary.</p> <p>Fuels treatment (including prescribed fire or other mechanical means) would also be used to reduce hazardous fuels.</p>	<p><i>Same as alternative C , except:</i></p> <p>Livestock grazing would be replaced with free-ranging bison if the state classifies bison as wildlife.</p> <p>A Memorandum of Understanding would be established with adjacent public land agencies to make movement of bison into Alaska and Antelope basins, and other areas easier.</p>

Table 4. Summary of alternatives for the comprehensive conservation plan, Red Rock Lakes National Wildlife Refuge.

<i>Alternative A (Current Management)</i>	<i>Alternative B (Proposed Action)</i>	<i>Alternative C (Wetland Restoration)</i>	<i>Alternative D (Ecological Restoration)</i>
<p>Livestock grazing and prescribed fire would be used, per the refuge’s current upland management plan (USFWS 1994), to mimic historical disturbance systems, control the spread of invasive grasses, and reduce hazardous fuels.</p>			
<p>Meadow, Grassland and Shrub-steppe (grasslands, sagebrush, steppe, and Centennial Sandhills)— Environmental Consequences</p>			
<p>Management actions would provide early seral habitat required by rare plant species in the Centennial Sandhills.</p> <p>Moderately grazed and idled areas, complemented by adjacent lands grazed at higher levels, would continue to be provided for wildlife.</p> <p>The refuge would continue to expand their understanding of habitat and wildlife response to grazing.</p> <p>Continued presence of fencing would negatively impact wildlife.</p> <p>Reducing hazardous fuels would minimize threats to life and property on the refuge and the surrounding private lands.</p>	<p><i>Same as alternative A, except:</i></p> <p>Grazing and prescribed fire management would be directed more towards specific wildlife and habitat objectives, making the best use of resources while ensuring habitats are not negatively impacted.</p> <p>The diversity of native plant species would be enhanced while reducing invasive plant species.</p>	<p><i>Same as alternative A, except:</i></p> <p>Conflicts between native grazers and cattle would be eliminated.</p> <p>Removal of interior fences would eliminate impacts to wildlife.</p> <p>In the absence of cattle grazing, prescribed fire may not provide adequate disturbance to reduce invasive nonnative grasses.</p>	<p>If bison assumed historical grazing patterns, this could return an important, historic ecological process to the refuge and, consequently, the Centennial Valley.</p> <p>Bison have the potential to transmit brucellosis to cattle. This would have to be addressed.</p> <p>Bison could become concentrated on the refuge causing overgrazing of grassland habitats needed by nesting migratory birds.</p> <p>There could be cumulative habitat impacts as a result of introducing bison into an already active cattle and native ungulate grazing community within in the valley.</p> <p>Fences that currently exist on neighboring lands in the valley could inhibit natural migration of these bison, particularly in the winter. This could cause concentrated habitat impacts and loss of animals during deep snow years.</p> <p>Reducing hazardous fuels would minimize threats to life and property on the refuge and the surrounding private lands.</p>

Table 4. Summary of alternatives for the comprehensive conservation plan, Red Rock Lakes National Wildlife Refuge.

<i>Alternative A (Current Management)</i>	<i>Alternative B (Proposed Action)</i>	<i>Alternative C (Wetland Restoration)</i>	<i>Alternative D (Ecological Restoration)</i>
Aspen Forest, Mixed Coniferous Forest, and Woodlands Goal			
Create and maintain aspen of various age classes within a mosaic of coniferous forest and shrub land for cavity-nesting birds and other migratory and resident wildlife.			
Aspen Woodlands and Forests—Management Actions			
Staff would continue to coordinate with The Nature Conservancy and BLM to determine current and historical extent of aspen on and adjacent to the refuge and to quantify browse intensity	<i>Same as alternative A, including:</i> Aspen would be managed on a landscape scale in coordination with adjacent BLM land managers.	<i>Same as alternative B.</i>	<i>Same as alternative B.</i>
Aspen Woodlands and Forests—Environmental Consequences			
Understanding of the relationships between native ungulate browsing and aspen regeneration would be developed.	<i>Same as alternative A, except:</i> Management actions would reduce or reverse the loss of aspen habitats in the Centennial Valley.	<i>Same as alternative B.</i>	<i>Same as alternative B.</i>
Coniferous Woodlands and Forests—Management Actions			
In coordination with the BLM, prescribed fire would continue to be used for protection of structures around the Lakeview community.	<i>Same as alternative A, including:</i> A fire use plan would be developed in conjunction with BLM to allow minimal suppression of wildland fires.	<i>Same as alternative B.</i>	<i>Same as alternative B.</i>
Coniferous Woodlands and Forests—Environmental Consequences			
Fire intensity and severity would be reduced around Lakeview.	<i>Same as alternative A, including:</i> Minimal wildland fire suppression would prevent a buildup of fuels which could cause catastrophic fires.	<i>Same as alternative B.</i>	<i>Same as alternative B.</i>

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<i>Alternative A (Current Management)</i>	<i>Alternative B (Proposed Action)</i>	<i>Alternative C (Wetland Restoration)</i>	<i>Alternative D (Ecological Restoration)</i>
Visitor Services and Cultural Resources Goal			
Provide quality wildlife-dependent recreation, interpretation, environmental education, and outreach opportunities that nurture an appreciation and understanding of the unique natural and cultural resources of the Centennial Valley for visitors and local community members of all abilities while maintaining the primitive and remote experience unique to the refuge.			
Hunting—Management Actions			
<p>Duck, goose, and coot hunting would continue to be permitted in the vicinity of Lower Red Rock Lake (approximately 10% of entire refuge) under state and federal regulations and seasons (see figure 7, page 31).</p> <p>Big game hunting for elk, pronghorn antelope, deer, and moose would continue to be allowed on 59% of the refuge (see figure 7, page 31). All seasons coincide with the state except for the shortened moose season.</p> <p>No trapping would be permitted on the refuge.</p> <p>Commercial guiding would continue to be prohibited.</p>	<p><i>Same as alternative A except:</i></p> <p>Big game hunting boundaries would be modified and expanded to eliminate boundary confusion, address law enforcement issues, and to expand current big game hunting opportunities (see figure 8, page 34).</p> <p>Moose hunting seasons would follow state regulations.</p> <p>To address illegal road hunting, no big game hunting would be permitted within 50 yards from the centerline of any county or refuge road.</p> <p>Other wildlife-dependent recreational activities would be permitted in areas closed to hunting.</p> <p>The refuge would monitor any potential conflicts between hunters and nonconsumptive visitors.</p> <p>A hunting regulations brochure would be developed to meet Service standards.</p>	<p><i>Same as alternative B except:</i></p> <p>Primitive-only hunting would be permitted (such as archery or black powder) in the central portion of the refuge east of the Lower Lake hunting boundary, south of the River Marsh, west of Upper Lake and north of South Valley Road (Red Rock Pass Road) (see figure 9, page 35).</p>	<p><i>Same as alternative C except:</i></p> <p>All moose hunting would be eliminated on the refuge.</p>

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Hunting—Environmental Consequences			
<p>Refuge hunting would continue at current levels and areas. The current hunting boundaries would continue to limit additional hunting opportunities and be confusing to hunters, increasing violations and making enforcement difficult.</p>	<p><i>Same as alternative A, except:</i></p> <p>Hunting area boundary changes would simplify hunting area boundaries and reduce road hunting, while providing additional hunting acres.</p> <p>Opening additional areas to big game hunting would disperse ungulates that become unnaturally concentrated in protected areas, impacting refuge habitats.</p> <p>Nonconsumptive visitors will be provided opportunities to safely conduct wildlife observation and other activities during hunting seasons.</p> <p>There would be a reduction in browsing impacts on habitat because ungulates would become more dispersed throughout the refuge.</p> <p>The hunting brochure would assist hunters in identifying areas open to hunting and in understanding refuge regulations.</p>	<p><i>Same as alternative B, except:</i></p> <p>Primitive-only hunting would offer additional opportunities and a quality hunting experience for primitive weapon hunters.</p>	<p><i>Same as alternative C, except:</i></p> <p>Moose might be less dispersed than they would if hunting is allowed.</p> <p>An increase in the moose population would negatively impact a wide variety of species that use willow habitats, including migratory birds and the moose themselves. This impact may increase as moose become concentrated on the newly-created closed area during the hunting season.</p>

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<i>Alternative A (Current Management)</i>	<i>Alternative B (Proposed Action)</i>	<i>Alternative C (Wetland Restoration)</i>	<i>Alternative D (Ecological Restoration)</i>
Fishing—Management Actions			
<p>Fishing would continue to be permitted on Odell, Red Rock, and Elk Springs creeks (west of Elk Lake Road) under state seasons. Other refuge ponds and creeks would remain open seasonally (July to October 1).</p> <p>Shambow Pond would remain closed to all visitor services.</p> <p>Motorized watercraft would continue to be prohibited east of the Lower Lake structure.</p> <p>The refuge would continue to not stock fish.</p> <p>Commercial guiding would remain prohibited.</p>	<p><i>Same as alternative A except:</i></p> <p>All refuge streams would be open to fishing in compliance with state and refuge regulations.</p> <p>The staff will work with the state and neighboring landowners to address impacts to off-refuge Arctic grayling habitat upstream of the refuge.</p> <p>Until Arctic grayling are restored, MacDonald, Widgeon, and Culver ponds would be open under state regulations to fishing from the bank, but closed if necessary to protect nesting swans and Arctic grayling.</p> <p>A fishing brochure would be developed, meeting Service standards.</p> <p>To protect native Arctic grayling and Westslope cutthroat populations, visitors would be encouraged to keep all nonnative fish they catch in accordance with state regulations.</p> <p>Red Rock Creek west of the Lower Lake structure would be opened to fishing.</p>	<p><i>Same as alternative B, except:</i></p> <p>To protect spawning Arctic grayling, the fishing season would be shortened. Fishing would be open on refuge streams where currently allowed (Odell, Red Rock, and Elk Springs creeks) on June 15 in accordance with state regulations.</p> <p>Tom Creek, and MacDonald and Culver ponds would be opened to fishing on June 15.</p> <p>Grayling Creek, Widgeon Pond, and east Shambow Creek would be opened to fishing on July 15.</p>	<p><i>Same as alternative C.</i></p>

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<i>Alternative A (Current Management)</i>	<i>Alternative B (Proposed Action)</i>	<i>Alternative C (Wetland Restoration)</i>	<i>Alternative D (Ecological Restoration)</i>
Fishing—Environmental Consequences			
<p>Visitors would continue to enjoy the limited fishing opportunities in the current areas and seasons.</p> <p>Protection would be provided to breeding birds on a majority of the wetlands within the refuge.</p>	<p><i>Same as alternative A, except:</i></p> <p>There would be increased fishing opportunities on creeks within the refuge.</p> <p>A fishing brochure would provide a clearer understanding of regulations at fishing access points.</p> <p>There may be an increase in wildlife disturbance.</p> <p>Nonnative fish populations would be reduced, which may benefit native fish species.</p>	<p>Delaying the opening of creek fishing on the refuge may provide for better protection of Arctic grayling spawning areas.</p> <p>By designating a shorter fishing season (different from state seasons) there would be a need for increased law enforcement to ensure these special restrictions are being followed.</p>	<p><i>Same as alternative C.</i></p>
Wildlife Observation and Photography—Management Actions			
<p>Wildlife observation and photography would continue to be permitted with seasonal closures (including various refuge roads and trails) to protect sensitive wildlife values. A year-round closure would continue to exist at Shambow Pond.</p> <p>Some trails would continue to be unidentified on a visitor services map.</p> <p>Trailhead parking would remain insufficient.</p>	<p>Wildlife observation and photography opportunities would be maintained during hunting seasons using boundaries.</p> <p>The east portion of the refuge would be open to year-round foot travel. Culver Springs Road would be opened May 15 to December 2, or when weather permits, to allow for wildlife observation and photography.</p> <p>To eliminate confusing regulations, all designated refuge roads would be open to vehicles from May 15 to December 2. All roads may be closed at anytime due to weather conditions. The only exception is Widgeon Pond Road which would be closed until July 15 to minimize disturbance to nesting swans.</p>	<p><i>Same as alternative B, except:</i></p> <p>The east portion of the refuge would be opened June 15 to coincide with the opening of fishing on the refuge.</p>	<p>Refuge trails would not be designated or maintained, and off-trail wildlife observation and photography would be promoted.</p>

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<i>Alternative A (Current Management)</i>	<i>Alternative B (Proposed Action)</i>	<i>Alternative C (Wetland Restoration)</i>	<i>Alternative D (Ecological Restoration)</i>
	<p>An auto tour route, including Culver Springs Road, would be developed for wildlife observation. This would require replacing Red Rock Creek bridge.</p> <p>The refuge would work with Beaverhead County to provide accessible pulloff(s) for the safe viewing of wildlife and photography. The site would be interpreted through the auto-tour brochure and minimal signage.</p>		
Wildlife Observation and Photography—Environmental Consequences			
<p>A lack of year-round access, a lack of designated trails and blinds, and unmarked trails, would result in missed opportunities for visitors to view and photograph wildlife.</p>	<p>Expanding and providing year-round access to designated interpretive trails would create more opportunities for visitors of all abilities to view and photograph wildlife.</p> <p>Expanded trail use and designation may increase disturbance to wildlife.</p> <p>An auto tour route would provide additional interpretive opportunities and make wildlife observation and photography available to visitors of all abilities. Increased use of this road may cause some limited disturbance to wildlife. There would be initial costs associated with replacing the Red Rock Creek bridge.</p>	<p><i>Same as alternative B, except:</i></p> <p>There would be fewer wildlife-viewing opportunities in the eastern portion of the refuge.</p> <p>Coinciding permitted access to this portion of the refuge with the late fishing season (June 15) would assist law enforcement officers in enforcing the limited fishing season.</p>	<p>A lack of designated trails would make it difficult for visitors to explore and orient themselves to the refuge for the purposes of viewing and photographing wildlife.</p> <p>There would be no accessible refuge trails.</p> <p>A lack of designated trails would provide visitors with a more “wilderness” experience.</p> <p>There would be increased disturbance across a wider area of the refuge because visitor use would not be focused on specific trails or areas of the refuge.</p>

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<i>Alternative A (Current Management)</i>	<i>Alternative B (Proposed Action)</i>	<i>Alternative C (Wetland Restoration)</i>	<i>Alternative D (Ecological Restoration)</i>
Environmental Education—Management Actions			
<p>Due to the refuge's remote location, the environmental education program would continue to be opportunistic as time and staff allows. Student groups would continue to not visit the refuge due to road conditions and distance.</p> <p>No current staff would be dedicated to environmental education.</p> <p>There would continue to be no refuge-specific programs or events for students or adults.</p>	<p><i>Same as alternative A.</i></p>	<p>The refuge website would be expanded to include educational tools, including Centennial Valley resource information, classroom projects, and online exercises.</p> <p>On-site summer educational programs would be offered to schools.</p> <p>Environmental education kits would be developed to address conservation of the Centennial Valley resources that meet teacher curriculum needs.</p> <p>Educational programs for adults would be developed for visitors and surrounding neighbors and communities on the values of the refuge resources and importance of conserving these and the resources of the Centennial Valley.</p>	<p><i>Same as alternative A.</i></p>
Environmental Education—Environmental Consequences			
<p>There would be a continual loss of opportunities to educate youth and adults in surrounding areas about the unique resources in the Centennial Valley and why it should be conserved and protected.</p>	<p><i>Same as alternative A.</i></p>	<p>Students in the surrounding communities would have opportunities to learn about the refuge resources, the refuge system, and the importance of conserving the Centennial Valley and other resources in Montana.</p> <p>Providing information to the surrounding landowners and communities on the value and importance of conserving the Centennial Valley would lead to an increase in</p>	<p><i>Same as alternative A.</i></p>

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<i>Alternative A (Current Management)</i>	<i>Alternative B (Proposed Action)</i>	<i>Alternative C (Wetland Restoration)</i>	<i>Alternative D (Ecological Restoration)</i>
		conservation efforts on surrounding lands. This could reduce off-refuge impacts to the refuge’s resources.	
Interpretation—Management Actions			
<p>Interpretive panels and maps would continue to be updated in the visitor center as funding allows. Kiosks and signs would remain outdated and in insufficient quantities to reach visitors. Refuge brochures would not meet Service standards. There would continue to be no established interpreted trails or auto tour routes.</p>	<p>A comprehensive exhibit One temporary seasonal visitor services specialist would be recruited annually to develop and implement the visitor services program.</p> <p>A comprehensive exhibit package would be developed and installed in the rehabilitated visitor contact area.</p> <p>Interpretative panels for existing kiosks would be updated. More interpretive kiosks would be constructed at entry points (west entrance at Lower Lake Road, east entrance at Red Rock Creek, and the northwest corner entrance) in a design that complements the rustic nature of the landscape.</p> <p>All current and future brochures and other refuge literature would meet Service standards and consistently emphasize the refuge’s purposes and the mission of the Refuge System. All designated trails and roads would be identified.</p> <p>The visitor contact area would be staffed on weekends during months of high visitor use.</p> <p>The auto tour route would be adequately interpreted with a brochure and minimal signage that retains the primitive visitor experience.</p>	<p><i>Same as alternative B, plus the following:</i></p> <p>A full-time permanent visitor services specialist would be recruited to develop and conduct visitor services and outreach programs.</p> <p>A refuge-specific portable exhibit would be developed.</p> <p>There would be annual events surrounding refuge week, international migratory bird day, fishing week, and other events.</p> <p>A video would be developed highlighting the refuge resources and the values of the Centennial Valley.</p>	<p>Interpretation would be concentrated at the visitor contact station, refuge, and on the web, using limited signage and focusing on naturally functioning ecosystems.</p>

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<i>Alternative A (Current Management)</i>	<i>Alternative B (Proposed Action)</i>	<i>Alternative C (Wetland Restoration)</i>	<i>Alternative D (Ecological Restoration)</i>
	Refuge signage would ensure that all visitors are oriented and understand refuge-specific regulations.		
Interpretation—Environmental Consequences			
There would continue to be missed opportunities to educate refuge visitors and garner support and understanding of the refuge's purposes and current programs.	This up-to-date, expanded, and comprehensive interpretive program would reach additional visitors, enhancing their appreciation for and understanding of the resources of the refuge and Centennial Valley. Updating and installing additional signage may affect some visitors' wilderness experience. The refuge visitor services program would better orient visitors to the refuge and more effectively teach them about the values and purposes of refuge resources.	<i>Same as alternative B, including:</i> Full-time staff, a portable refuge exhibit, video, and expanded website would reach a larger number of individuals. Annual events would build a constituency who have a greater understanding of the refuge's resources and programs, the values of the Centennial Valley and the Refuge System.	Minimal interpretive signage and limiting interpretation to the visitor contact station would preserve a more wilderness setting, but only a minimum number of visitors would independently understand and be oriented to the refuge and its resources.
Outreach—Management Actions			
The outreach program would continue to be opportunistic as time and staff allows. No current staff would be dedicated to outreach.	Through the addition of added staff the refuge would be able to greatly expand its outreach program. An outreach section would be included in the refuge's visitor services plan.	<i>Same as alternative B, including:</i> Outreach methods and materials would be developed for user groups and congressional staffers, outlining the refuge's purposes and issues. Outreach methods would be expanded to ensure that local governments, surrounding communities, visitors, and neighbors better understand the refuge programs and issues, and the values of conserving the resources of the Centennial Valley.	<i>Same as alternative A.</i>

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<i>Alternative A (Current Management)</i>	<i>Alternative B (Proposed Action)</i>	<i>Alternative C (Wetland Restoration)</i>	<i>Alternative D (Ecological Restoration)</i>
Outreach—Environmental Consequences			
<p>Having no organized, concerted outreach program would continue to result in a lack of support and understanding of Red Rock Lakes as part of the Refuge System.</p> <p>There would be a potential loss of partnerships to carry out mutually beneficial projects.</p>	<p>Added staff would provide more time and opportunities to interact with refuge neighbors, surrounding communities, governments, and other partners.</p> <p>Expanding outreach may result in providing stakeholders a better understanding of refuge programs and issues resulting in additional support and partnerships for the conservation of the resources of the refuge and the Centennial Valley.</p>	<p>A more systematic outreach program would result in strengthening current partnerships and developing new partnerships, garnering support for refuge programs while addressing refuge issues.</p> <p>There would be a greater understanding and level of support of the refuge and the protection of the resources of the Centennial Valley.</p>	<p><i>Same as alternative A.</i></p>
Campgrounds—Management Actions			
<p>Two primitive campgrounds would be retained, providing up to 14 sites, including two outhouses at each campground, fire rings, and some picnic tables.</p>	<p><i>Same as alternative A, except:</i></p> <p>Campground tables, fire rings, and access roads would be improved.</p> <p>An accessible camp site would be developed at the River Marsh campground. The current accessible site at Upper Lake would be improved.</p> <p>Two outhouses, one at each campground, would be replaced and designed to meet requirements of the Americans with Disabilities Act, including accessible parking and access routes.</p> <p>A recreational fee would be charged to help offset the maintenance of the campgrounds.</p>	<p>The River Marsh campground would be eliminated.</p> <p>The outhouse at Upper Lake campground would be replaced and made universally accessible.</p> <p>The current accessible site at Upper Lake campground would be improved.</p>	<p>Both campgrounds would be closed.</p>

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Campgrounds—Environmental Consequences			
<p>Refuge campgrounds would continue to provide visitors the opportunity to enjoy wildlife-dependent recreational activities on extended stays without excessive driving on minimally-maintained roads.</p> <p>The Upper Lake campground would continue to have an inaccessible outhouse and the campground at River Marsh would continue to be inaccessible.</p>	<p><i>Same as alternative A, except:</i></p> <p>Rehabilitating the refuge campsites would improve the enjoyment and safety of visitors of all abilities using the campgrounds to explore the refuge for multiple days.</p>	<p>Closing one campground would result in fewer opportunities for visitors to enjoy extended stays on the refuge, particularly during high-use periods such as holidays, weekends, and opening of hunting seasons.</p>	<p>Closing the refuge campgrounds would eliminate extended stays on the refuge. Due to the long driving distances, visitor services programs would have to be adapted to half-day activities only.</p> <p>Closing the campgrounds would have the greatest effect on hunters who typically hunt from sunrise to sundown.</p> <p>There would be an increase in road traffic as visitors drive from distant areas to enjoy wildlife-dependent opportunities such as wildlife viewing, fishing, and hunting.</p>
Cultural Resources—Management Actions			
<p>Several historical properties exist on the refuge. The refuge would continue maintaining historical properties that are in use.</p> <p>A cultural resource interpretive panel would be installed at Shambow Way Station, as already planned, budgeted, and approved.</p> <p>Cultural resource evaluations would be done to fulfill compliance with historical preservation laws.</p>	<p><i>Same as alternative A, including:</i></p> <p>Through partnerships, the refuge would expand on current cultural resource inventories in high probability areas.</p> <p>The visitor contact area would contain additional interpretation of the cultural resources of the refuge and Centennial Valley.</p>	<p><i>Same as alternative B, except:</i></p> <p>The refuge would actively pursue partnerships to conduct a more comprehensive survey to identify, evaluate, and develop management plans for all cultural resources on the refuge.</p>	<p><i>Same as alternative B.</i></p>
Cultural Resources—Environmental Consequences			
<p>Cultural resources that would be potentially affected by an undertaking are identified and, if significant, preserved when possible.</p>	<p>Increasing the refuge knowledge and understanding of the cultural history of the refuge and Centennial Valley would aid in planning and research.</p>	<p><i>Same as alternative B, including:</i></p> <p>The addition of a comprehensive survey would further aid in planning and research by identifying all sensitive areas.</p>	<p><i>Same as alternative B.</i></p>

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<i>Alternative A (Current Management)</i>	<i>Alternative B (Proposed Action)</i>	<i>Alternative C (Wetland Restoration)</i>	<i>Alternative D (Ecological Restoration)</i>
<p>There would be minimal interpretation of refuge cultural resources.</p> <p>The refuge would not have a comprehensive understanding of where cultural resources exist, making it more difficult to protect these areas.</p>	<p>Refuge visitors would have a greater understanding of the history and cultural resources of the refuge and Centennial Valley.</p>		
Refuge Operations Goal			
<p>Prioritize for wildlife first and emphasize the protection of trust resources in the utilization of staff, funding, and volunteer programs.</p>			
Staff and Funding—Management Actions			
<p>The refuge would continue to be managed by the existing five permanent full-time staff, including a refuge manager, refuge operations specialist, wildlife biologist, maintenance worker, and administrative support assistant.</p> <p>There would be no on-site law enforcement staff.</p> <p>The refuge would provide accommodations for two volunteers, who will be able to complete about 700 hours per year.</p>	<p>A permanent seasonal maintenance worker would be recruited.</p> <p>One permanent full-time wildlife biologist, one full-time range technician, and at least three temporary seasonal biological science technicians would be recruited to implement a science-based comprehensive biological program.</p> <p>One temporary seasonal visitor services specialist would be annually recruited to develop and carry out the visitor services programs.</p> <p>One temporary seasonal office assistant (generalist) would be recruited.</p> <p>Given the proposed expansion of refuge program, the grade levels of current staff positions would be evaluated.</p> <p>One refuge staff person would be required to maintain law enforcement credentials.</p>	<p><i>Same as alternative B, except:</i></p> <p>A full-time permanent visitor services specialist would be hired to expand, develop, and carry out the refuge's visitor services program.</p>	<p><i>Same as alternative B, except:</i></p> <p>The refuge would not recruit a seasonal visitor services specialist.</p>

Table 4. Summary of alternatives for the comprehensive conservation plan, Red Rock Lakes National Wildlife Refuge.

<i>Alternative A (Current Management)</i>	<i>Alternative B (Proposed Action)</i>	<i>Alternative C (Wetland Restoration)</i>	<i>Alternative D (Ecological Restoration)</i>
	Talented and enthusiastic volunteers would be recruited to perform approximately 3,000 hours of work per year to support all refuge programs.		
Staff and Funding—Environmental Consequences			
<p>The current staffing and discretionary funding would continue to limit the refuge’s ability to conduct adaptive resource management and provide expanded wildlife-dependant recreation opportunities, and maintain current facilities.</p> <p>With no on-site law enforcement staff, violations would continue to occur without consequence.</p>	<p>The condition of facilities would improve and only require routine maintenance instead of major repairs.</p> <p>The refuge’s ability to understand and conduct necessary management actions and monitor results would be expanded.</p> <p>The seasonal visitor services specialist would develop limited on-site interpretive programs that would result in increasing visitor’s knowledge and appreciation of the refuge and its resources.</p> <p>Upgrading refuge positions would recruit experienced staff that would effectively lead the development of these expanded refuge programs.</p> <p>Additional volunteers would assist the refuge in expanding biological, maintenance, and visitor services programs.</p>	<p><i>Same as alternative B, except:</i></p> <p>The refuge visitor services programs, including outreach, interpretation, and environmental education, would be greatly expanded. This would allow the refuge to interact and educate the maximum number of children and adults. This would result in garnering support for the refuge and its mission of preserving the unique qualities of the Centennial Valley.</p>	<p><i>Same as alternative B, except:</i></p> <p>Visitor services programs would be maintained at the current level.</p>
Facilities and Maintenance—Management Actions			
<p>The refuge would continue to develop interpretive displays at the recently upgraded office and visitor contact area.</p> <p>Four refuge houses would be maintained for four of the five existing refuge staff. These</p>	<p><i>Same as alternative A, except:</i></p> <p>Up to four residences would be constructed for current and future staff.</p> <p>Three trailer pads would be constructed to recruit and provide lodging for seasonal volunteers.</p>	<p><i>Same as alternative B, except:</i></p> <p>Up to five residences would be constructed for current and future staff.</p>	<p><i>Same as alternative A, except:</i></p> <p>Up to four residences would be constructed for current and future staff.</p> <p>Three trailer pads would be constructed to recruit and provide lodging for seasonal volunteers.</p>

Table 4. Summary of alternatives for the comprehensive conservation plan, Red Rock Lakes National Wildlife Refuge.

<i>Alternative A (Current Management)</i>	<i>Alternative B (Proposed Action)</i>	<i>Alternative C (Wetland Restoration)</i>	<i>Alternative D (Ecological Restoration)</i>
<p>houses are necessary due to the lack of available housing surrounding this remote refuge.</p> <p>The refuge bunkhouse would continue to be maintained for seasonal biological and fire staff.</p> <p>One maintenance shop and the historical log barn would be upgraded to meet safety and workplace standards.</p> <p>Directional, boundary, and entrance signs would remain insufficient or in poor condition.</p>	<p>Parking would be improved at the headquarters, Odell Creek trailhead, and the entrance to Lower Lake Road and Sparrow Pond Trailhead.</p> <p>The old vault toilets at the campgrounds would be replaced to meet requirements of the Americans with Disabilities Act. The campgrounds would also have accessible parking and routes to all restrooms.</p> <p>An accessible boat launch would be provided at Lower Lake for persons with disabilities (hardened surfaces would be provided for both access and use).</p> <p>Interpretive trails, an auto tour route, kiosks, and viewing areas would be developed to expand wildlife observation and photography opportunities. The Red Rock Creek bridge would be replaced to allow for the development of the auto tour route.</p> <p>Directional and boundary signs would be updated to ensure all visitors are oriented.</p> <p>Boundary signs would be replaced with the simply stated “Refuge Boundary” language to ensure visitors feel welcome.</p> <p>Sparrow Pond Trail Bridge at Odell Creek would be replaced to provide safe access for foot traffic and heavy equipment to maintain dams.</p>		<p>Only those roads and trails necessary for administrative use would be maintained. All other roads and trails would be restored.</p> <p>All campground facilities would be removed.</p> <p>Idlewild Road (and the associated boat ramp) and the north entrance spur roads would be permanently closed to public vehicle access to reduce maintenance costs.</p>

Table 4. Summary of alternatives for the comprehensive conservation plan, Red Rock Lakes National Wildlife Refuge.

<i>Alternative A (Current Management)</i>	<i>Alternative B (Proposed Action)</i>	<i>Alternative C (Wetland Restoration)</i>	<i>Alternative D (Ecological Restoration)</i>
	<p>The road and parking area at Upper Lake campground would be rehabilitated.</p> <p>Idlewild Road (and the associated boat ramp) and the north entrance spur roads would be permanently closed to public vehicle access to reduce maintenance costs.</p>		
Facilities and Maintenance—Environmental Consequences			
<p>Inadequate housing would continue to make it difficult to recruit additional staff needed to keep up with the maintenance backlog, demand for visitor services, law enforcement issues, and support for the biological program.</p> <p>Inadequate signage would continue to make it difficult for visitors to find and navigate around refuge.</p>	<p>Improved facilities, signage, and accessibility would provide visitors of all abilities with improved access to refuge resources and improve the interpretation and professional appearance of the refuge.</p> <p>Additional housing would address minimal staff housing needs and facilitate the expansion of refuge management and visitor services programs.</p> <p>Additional visitor services facilities would better orient visitors of all abilities and enhance their safety and enjoyment while visiting the refuge.</p> <p>Closing selected roads would result in the loss of vehicle access to one boat ramp. There would only be a minimal loss of direct access to refuge lands and waters due to the availability of alternate routes.</p>	<p><i>Same as alternative B, except:</i></p> <p>The ability to house even more staff, would allow the refuge’s visitor services, biological monitoring, law enforcement, and maintenance programs to be expanded.</p>	<p>There would be a reduction in visitor services facility maintenance costs.</p> <p>There would be little focus on accommodating visitors that were unable to hike off-trail. This and the loss of the refuge campgrounds would result in a substantial decrease in visitor use on the refuge.</p> <p>A wilderness and backcountry experience would be promoted.</p> <p>Additional housing would address minimal staff housing needs and facilitate the expansion of refuge management and visitor services programs.</p> <p>Closing selected roads would result in the loss of vehicle access to one boat ramp. There would only be a minimal loss of direct access to refuge lands and waters due to the availability of alternate routes.</p>

