U.S. Fish and Wildlife Service

National Elk Refuge Visitor Center Replacement Project

Draft Environmental Assessment

September 2021

The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.

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Abbreviations

Administration Act	National Wildlife Refuge System Administration Act of 1966
BMP	Best Management Practice
CCP	Comprehensive Conservation Plan
CFR	Code of Federal Regulations
EA	Environmental Assessment
Improvement Act	National Wildlife Refuge System Improvement Act of 1977
NEPA	National Environmental Policy Act
NWRS or Refuge System	National Wildlife Refuge System
Refuge	National Elk Refuge
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

Executive Summary

This Draft Environmental Assessment (EA) evaluates two alternatives including: Proposed Action, Alternative B and No Action Alternative, Alternative A. The Proposed Action would replace the existing visitor center with a new visitor center that accommodates the increasing visitor use to the area. The Proposed Action also includes restoring and enhancing the site associated with the visitor center, currently referred to as Murie Family Park. The No Action Alternative would not construct any new facilities and so USFWS would continue to use the existing visitor center. The existing visitor center building is more than 40 years old and has several maintenance deficiencies. In addition, the building does not meet requirements of the Architectural Barriers Act Accessibility Standard.

This Draft EA examines the potential environmental impacts associated with the two alternatives and has been prepared in compliance with the National Environmental Policy Act (NEPA) in accordance with Council on Environmental Quality regulations (40 CFR 1500-1509) and Department of the Interior (43 CFR 46; 516 DM 8) and U.S. Fish and Wildlife Service (550 FW 3) regulations and policies.

The following resource areas were analyzed in this Draft EA: Geology and Soils, Wildlife and Aquatic Species, Air Quality, Habitat, Vegetation and Wetlands, Visitor Use and Experience, Cultural Resources, Socioeconomics, and Environmental Justice. Several other resource areas were also initially considered by USFWS but were ultimately dismissed from further analysis in this Draft EA because neither the Proposed Action nor its alternatives would have the potential to result in measurable adverse impacts to these resources areas.

Based on the analysis presented in the Draft EA and coordination and/or consultation with all appropriate federal, state, and local agencies as well as all pertinent federally recognized Native American tribes, the USFWS has determined that the impacts associated with the Proposed Action and its alternative would not individually or cumulatively have a significant impact on the quality of the physical or human environment.

This Draft EA will be made available for public comment from September 21 to October 20, 2021.

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1 Purpose and Need for Action

1.1 Introduction

National wildlife refuges are guided by the mission and goals of the National Wildlife Refuge System (NWRS), the purposes of an individual refuge, USFWS policy, and laws and international treaties. Relevant guidance includes the National Wildlife Refuge System Administration Act of 1966 (Administration Act), as amended by the National Wildlife Refuge System Improvement Act (Improvement Act) of 1997 (16 U.S.C. 668dd et seq.), Refuge Recreation Act of 1962, and selected portions of the Code of Federal Regulations and Fish and Wildlife Service Manual. See Appendix A for a list of relevant laws and regulations.

The Refuge was established in 1912 as a "winter game (elk) reserve" pursuant to 37 Stat 293, 16 USC 673, and the following year Congress designated the area as "a winter elk refuge" (37 Stat 847). In 1921, all lands included in the Refuge or that might be added in the future were reserved and set apart as "refuges and breeding grounds for birds" (Executive Order 3596), which was affirmed in 1922 (Executive Order 3741). In 1927, the Refuge was expanded to provide "for the grazing of, and as a refuge for, American Elk and other big game animals" (44 Stat 1246, USC 673a).

The mission of the NWRS, as outlined by the Administration Act, as amended by the Improvement Act, is

> *"... to administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans"*

Additionally, the Administration Act mandates the Secretary of the Interior in administering the NWRS (16 U.S.C. 668dd(a)(4)) to

- Provide for the conservation of fish, wildlife, and plants, and their habitats within the NWRS;
- Ensure that the biological integrity, diversity, and environmental health of the NWRS are maintained for the benefit of present and future generations of Americans;
- Ensure that the mission of the NWRS described at 16 U.S.C. 668dd(a)(2) and the purposes of each refuge are carried out;
- Ensure effective coordination, interaction, and cooperation with owners of land adjoining refuges and the fish and wildlife agency of the states in which the units of the NWRS are located;

- Assist in the maintenance of adequate water quantity and water quality to fulfill the mission of the NWRS and the purposes of each refuge;
- Recognize compatible wildlife-dependent recreational uses as the priority general public uses of the NWRS through which the American public can develop an appreciation for fish and wildlife;
- Ensure that opportunities are provided within the NWRS for compatible wildlife-dependent recreational uses; and
- Monitor the status and trends of fish, wildlife, and plants in each refuge.

The Management Objective under the Visitor Services Goal established by the National Elk Refuge Comprehensive Conservation Plan (USFWS 2015) relevant to this action:

Within 10 years, rehabilitate the existing building or build a new visitor center to address the aging building maintenance deficiencies.

The visitor center, on the southern end of the Refuge, plays a critical role in Jackson's tourism-based economy, serving approximately 320,000 people each year and providing a wide range of visitor services. The visitor center is often the first place that people stop for information during their visit to the Jackson Hole area, and many hotels and businesses, as well as the Jackson Hole Chamber of Commerce, encourage people to go to the visitor center for information on the area.

The visitor center is an interagency facility, staffed and supported by area agencies and organizations—Bridger-Teton National Forest, Grand Teton Association, Grand Teton National Park, Jackson Hole Chamber of Commerce, and National Elk Refuge. Operation of the visitor center enables the partner agencies to distribute information vital to their organizations. Displays in the visitor center give an overview of the role of the National Elk Refuge, other federal lands, and state wildlife agency partners. This same information is shared in presentations, talks to key groups, and in news releases.

The existing visitor center building is more than 40 years old and has several maintenance deficiencies. In addition, the building does not meet requirements of the Architectural Barriers Act Accessibility Standard (United States Access Board 2013, USFWS 2008). Over $1 million (federal and non-federal) have been spent over the past 10 years to temporarily correct maintenance and safety issues, and several million dollars' worth of additional corrections are needed.

The existing visitor center does not have sufficient space to hold programs for visiting youth and school groups, let alone the large number of visitors that come during peak visitation.

This Draft Environmental Assessment is being prepared to evaluate the effects associated with the proposed action and complies with the NEPA in accordance with Council on Environmental Quality regulations (40 CFR 1500-1509) and Department of the Interior (43 CFR 46; 516 DM 8) and U.S. Fish and Wildlife Service (550 FW 3) regulations and policies. NEPA requires examination of the effects of proposed actions on the natural and human environment.

1.2 Proposed Action

The U.S. Fish and Wildlife Service (USFWS) is proposing to replace the existing visitor center with a new visitor center that accommodates the increasing visitor use, provides an accessible experience, and improves operational efficiency. The proposed project also includes restoring and enhancing the site associated with the visitor center, currently referred to as Murie Family Park.

A proposed action may evolve during the NEPA process as the agency refines its proposal and gathers feedback from the public, Tribes, and other agencies. Therefore, the final proposed action may be different from the original. The proposed action will be finalized at the conclusion of the public comment period for the Draft EA.

1.3 Purpose and Need for Action

The purpose of this proposed action is to replace the existing visitor center with a building that will appropriately accommodate visitors and meets the requirements of the Architectural Barriers Act Accessibility Standard (United States Access Board 2013); to eliminate the deferred maintenance backlog by an estimated $7 million; and to reduce the annual maintenance costs for the National Elk Refuge.

The proposed action meets the USFWS's priorities and mandates as outlined by the National Wildlife Refuge System Administration Act of 1966 to "recognize compatible wildlife-dependent recreational uses as the priority general uses of the [National Wildlife Refuge] System" and "ensure that opportunities are provided within the [National Wildlife Refuge] System for compatible wildlife-dependent recreational uses" 16 U.S.C. 668dd(a)(4).

This action is needed to provide accessible and energy efficient facilities to reduce annual operating costs and greatly increase logistical capabilities for administering public use programs.

This project would contribute to strengthening the USFWS's conservation stewardship legacy and modernizing infrastructure. Furthermore, it would contribute to building an atmosphere of trust with local communities and partners by facilitating and enhancing ongoing collaboration, and supporting a robust tourism industry that attracts visitors from around the world to the Refuge for outdoor recreation and wildlife observation.

1.4 Tribal Consultation

The USFWS mailed an invitation on 09/21/2021 for comments to all Tribes potentially impacted by initiating an Environmental Assessment to replace the existing National Elk Refuge visitor center with a new visitor center. The USFWS extended an invitation to engage in government-to-government consultation in accordance with Executive Order 13175.

1.5 Public Involvement

To solicit public review and comment, the Refuge and Legacy Region 6 External Affairs sent notices to area media outlets that have wide local distributions, posted notices on social media, and posted on the Refuge website at: https://www.fws.gov/refuge/National_Elk_Refuge/.

This Draft Environmental Assessment will be made available for public comment from 09/21/2021 through 10/20/2021.

Comments should be mailed to Frank Durbian, Project Leader, National Elk Refuge, P.O. Box 510, Jackson, WY 83001 or sent via email to frank_durbian@fws.gov. To be considered, all comments must be received by 10/20/2021.

2 Description of Alternatives

2.1 Alternative A – Current Management – No Action Alternative

Under the No Action alternative, the USFWS will continue to maintain the existing visitor center. The 7,100-square-foot building was opened to the public in 1974 and is located on the southwestern corner of the Refuge along state highway 98 in Jackson, Wyoming. The building was formerly owned by the Wyoming Department of Transportation and served as a State Information Center for the Wyoming Division of Tourism. The building is more than 45 years old and has many significant maintenance issues such as deficiencies in the electrical system, annual flooding in the crawlspace, and rotted wood on the remote-viewing platform.

Visitation to the existing visitor center averages about 320,000 people per year. Visitor center parking is inadequate relative to the visitation rate and does not provide for appropriate flow or accommodation for visitors arriving on buses. Furthermore, the current building is not compliant with the Architectural Barriers Act Accessibility Standard (United States Access Board 2013).

2.2 Alternative B – Construct new Facilities on Anderson WPA

Under the Proposed Action alternative, the USFWS will replace the existing visitor center with a new visitor center, which will eliminate the deferred maintenance backlog by an estimated $7 million and reduce the annual maintenance costs at the Refuge.

The USFWS will design and construct an approximately 15,000 square foot visitor center, demolish the old building, redesign the parking area, and redesign the associated building site (Murie Family Park) to restore and enhance wildlife habitat.

The location of the new visitor center will be immediately adjacent to the current visitor center (Figure 1, Appendix B). The USFWS will conduct geotechnical surveys to determine exact building location prior to construction. For this analysis, the USFWS will be exploring construction designs in a 10-acre area (Murie Family Park), the site of the existing visitor center. The overall footprint of construction and buildings will be approximately two acres and the associated habitat restoration and landscaping will be approximately eight acres (Figure 2, Appendix B). No additional or new Refuge lands will be incorporated into the existing 10-acre site

2.3 Mitigation Measures and Best Practices

Mitigation measures include:

1. Avoidance of an impact by not taking an action or parts of an action.
2. Minimizing impacts by limiting the degree or magnitude of an action; or
3. Rectifying impacts by repairing, rehabilitating, or restoring the affected environment

Best Management Practices (BMPs) can include an array of alternatives that produce desirable results with minimal impact on other resources. Construction BMPs can be put into place to eliminate or reduce environmental impacts associated with construction activities, such as erosion or sediment control. This allows USFWS to choose the most economical, effective, and possibly innovative BMPs to reduce or eliminate impacts.

2.3.1 Migratory Bird Mitigation Measures and BMPs

As part of Leadership in Energy and Environmental Design Certification requirements for the new facilities, this project would include compliance with Pilot 55: Bird Collision Deterrence to minimize impacts to migratory birds. This measure is intended to reduce the chances of bird injury and mortality from in-flight collisions with buildings. This rule requires designers and builders to comply with building façade and site structures that include a lighting and a monitoring plan designed to minimize bird collisions.

2.3.2 Soil Mitigation Measures and BMPs

Contractors would provide erosion control methods (such as watering dry soils) and structures (such as silt fences) as necessary to prevent wind-borne dust and water-borne silt from leaving the immediate work areas.

Additionally, native topsoil would be stockpiled and reused for landscaping purposes around the exterior of the facilities. Access points would be designated and flagged to minimize soil compaction. Mats or boards would be used to access equipment during wet conditions to prevent rutting and soil loss.

2.3.3 Archeology and Cultural Resources Mitigation Measures and BMPs

If paleontological, archaeological, or historical remains (including burials or skeletal material) were encountered, all work would be immediately halted and a construction representative, contracting officer representative, contracting officer, or a USFWS representative would be notified. The contracting officer would notify the regional archaeologist, to ensure that the provisions of 36 CFR 800.7 and other relevant laws are followed. Work would cease in the immediate vicinity until permitted to resume by written order from the contracting officer. Work in other areas may proceed as approved by the contracting officer.

All mitigation measures discussed in consultation with the Wyoming State Historic Preservation Office in relation to this project would be administered.

2.3.4 Demolition and Construction and BMPs

The existing visitor center building would be demolished after the new facility is on-line to provide seamless visitor opportunities.

All construction debris will be removed by the contractor. Single use packaging, particularly Styrofoam, would be opened in an enclosed area and immediately swept up.

2.3.5 Climate Change

The USFWS will strive to plan and take actions consistent with existing USFWS and partner climate change strategies, and anticipate impacts from the effects of climate change on habitat, species (fauna and flora), water, forage and wildfire. USFWS staff rely on outside entities such as the United States Geological Survey (USGS) to help downscale climate change models to increase predictability of temperature and precipitation changes and use these predictions to help inform adaptive management activities, as warranted.

Warming, whether it results from anthropogenic or natural sources, is expected to affect a variety of natural processes and associated resources. Climate changes (past century) are accelerating and already have substantially, and often unexpectedly, changed this ecosystem from what early Euro-American explorers and settlers chronicled (Belovsky and Slade, in prep). However, the complexity of ecological systems means that there is a tremendous amount of uncertainty about the impact climate change will actually have. In particular, the localized effects of climate change are still a matter of much debate. Similarly, there is no definitive information on how exactly changes in climate will impact species populations. Potential impacts could include earlier stop overs in bird migration patterns, increased frequency of wildfires, habitat conversion (i.e. salt marsh to open water), decreased or increased water availability.

Climate change, and the Refuge's strategies to address climate change are discussed in sections 3.1 and 4.3 of the Comprehensive Conservation Plan (CCP), which can be found here: www.fws.gov/mountain-prairie/refuges/wy_ner.php.

2.4 Alternatives Considered, but Dismissed from Further Consideration

2.4.1 Miller Site

This site was removed from consideration for the following reasons:

- Would draw fewer visitors due to its location away from highway 98 and distance from town.
- Would require relocating volunteer RV pad complex, associated buildings and facilities.
- Significantly farther from sleigh ride boarding facility.
- Negative impacts on existing wetland and undisturbed habitat.
- Potential displacement of elk from a primary feed area.
- Disturbance of neighborhoods due to greatly increased traffic on East Broadway.
- Need for significant changes to existing North Elk Refuge Road to improve access to site.

2.4.2 Refuge Headquarters Site

This site was removed from consideration for the following reasons:

- Would draw fewer visitors due to its location away from highway 98 and distance from town.
- Would require relocating five employee houses, one 2-car garage, one 5-stall garages, one bunk house, one employee residential quadplex, two employee residential duplexes, volunteer RV pad complex, associated facilities.
- Significantly farther from sleigh ride boarding facility.
- Disturbance of neighborhoods due to greatly increased traffic on East Broadway.

2.4.3 Sleigh Ride Boarding Area

This site was removed from consideration for the following reasons:

- Ingress and egress of highway 89 would present significant challenges and require complete redesign of that portion of the highway.
- Potential displacement of elk from a primary feed area.
- Fewer wildlife viewing opportunities – no wetlands near site.
- Safety concerns with being on multi-use pathway.

2.4.4 Fish Hatchery

This site was removed from consideration for the following reasons:

- Ingress and egress of highway 89 would present significant challenges and require complete redesign of that portion of the highway.
- Greatly increased disturbance to hatchery.
- Disturbance to hatchery employees living on site.

3 Affected Environment and Environmental Consequences

This section is organized by affected resource categories and for each affected resource discusses both (1) the existing environmental and socioeconomic baseline in the action area for each resource and (2) the effects and impacts of the proposed action and any alternatives on each resource. The effects and impacts of the proposed action considered here are changes to the human environment, whether adverse or beneficial, that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives. This Draft EA includes the written analyses of the environmental consequences on a resource only when the impacts on that resource could be more than negligible and therefore considered an "affected resource." Any resources that will not be more than negligibly impacted by the action have been dismissed from further analyses.

The Refuge consists of approximately 24,778 acres (38.7 square miles) in Teton County, Wyoming. The Refuge is primarily native grassland and sagebrush shrubland. For more information regarding the Refuge, as well as the current environment and resources described below, refer to the Refuge's CCP at https://www.fws.gov/mountain-prairie/refuges/wy_ner.php.

The following resources either (1) do not exist within the project area, or (2) would either not be affected or would be only negligibly affected by the proposed action: wilderness, special use areas and floodplain. As such, these resources are not further analyzed in this Draft EA.

Impacts identified in this analysis are based specifically on the activities associated with the construction of new facilities. Anticipated impacts to the resource due to a lack of adequate facilities is referenced in the Purpose and Need section of this document.

3.1 Wildlife and Aquatic Species

3.1.1 Affected Environment

The Refuge is widely known for supporting an abundance and diversity of wildlife and fish species in the Greater Yellowstone Ecosystem.

The proposed site location contains a mixture of previously altered wetlands connected to Flat Creek on the east portion and developed and mowed non-native grass and trees on the west portion. The wetlands are dominated by bulrush, cattail, and sedge species, and host a variety of migrant and non-migrant wetland birds including numerous species of waterfowl, trumpeter swans, and other water birds. Other common wildlife species groups utilizing the wetlands, wetland edge, and associated shrub habitat include terrestrial birds, small mammals (including beaver and muskrat, occasional moose, reptiles, and amphibians). In addition, the wetlands are connected to Flat Creek, which is an important spawning stream for Snake River fine-spotted cutthroat trout, a species native to the Snake River drainage.

The heavily impacted western portion of the proposed project mainly harbors numerous species of mid-story and over-story migratory bird species, some small mammals, and reptiles, and serves as a loafing site for numerous Canada geese which nest in the wetland/shrubland edge.

Threatened and Endangered species whose range overlaps with the proposed action include grizzly bears (*Ursus arctos horribilis*), Canada lynx (*Lynx canadensis*), yellow billed cuckoo (*Coccyzus americanus*), whitebark pine (*Pinus albicaulis*), long-billed curlew (Numenius americanus), western glacier stonefly (*Zapada glacier*), Colorado pikeminnow (*Ptychocheilus lucius*), and humpback chub (*Gila cypha*). Only the grizzly bear is known to occur on the Refuge. Additional information on these species historical presence in the project area is included in Appendix D.

Species of Special Concern whose range overlaps with the Proposed Action include gray wolf (*Canis lupus*), bald eagle (*Haliaeetus leucocephalus*), greater sage-grouse (*Centrocercus urophasianus*), and trumpeter swan (*Cygnus buccinator*), all of which are known to occur on the Refuge. Additional information on these species historical presence in the project area is included in Appendix D.

Potential impacts to the proposed project due to climate change are not fully understood and are challenging to predict. The Refuge would continue to participate in studies and climate monitoring to help better understand and evaluate impacts.

Development on private lands within the Jackson Hole area is continual and increasing, leading to further habitat loss and fragmentation. Although management can do nothing to stem this trend, refuges and the wildlife and aquatic species that they harbor will become even more important as repositories of biodiversity.

3.1.2 Potential Impacts to Wildlife and Aquatic Species

Alternative A

No new impacts to wildlife and aquatic species are expected.

Alternative B

Short term impacts to wildlife and aquatic species include disturbance and displacement as well as direct mortality of less mobile wildlife from demolition and construction activities. Visual and noise disturbances could disrupt normal wildlife behavior for the duration of construction and demolition activities. Sufficient dispersal habitat exists on three sides of the designated footprint to accommodate wildlife that may be affected by the Proposed Action. Construction and demolition activities will occur in phases over the course of approximately one year.

Grizzly bears and gray wolves have not been known to use the proposed site, therefore there would be no effect to either species.

Bald eagles are not known to nest on or near the proposed site. Bald eagles may occasionally use trees on the site for resting and may forage in the area. Disturbance to bald eagles would be minor, temporary, and negligible.

Greater sage-grouse and long-billed curlew do not utilize the habitat in this portion of the Refuge, therefore there would be no effect.

Trumpeter swans utilize the portion of the Flat Creek Marsh complex on the east and north portion of the site as a feeding and resting area. The closest known swan nesting location is on an artificial nest platform located approximately 750 meters north and east of the site, in the Flat Creek Marsh complex. Demolition and construction activities may disturb swans feeding and resting immediately adjacent to the site; however, the nest location site will likely not be disturbed due to the distance from the project site. Swans using this portion of the Refuge appear to be somewhat "acclimated" to the relatively high level of human disturbance and highway traffic on the adjacent highway, multi-use pathway and wildlife observation pull out. Demolition, construction, and restoration activities may result in minor, temporary, and negligible disturbance to trumpeter swans.

Other Threatened and Endangered species and Species of Special Concern do not occur on the Refuge, therefore there would be no effect.

Removal of several trees (approximately 20) from the site may impact some tree-nesting bird species by removing potential nesting sites. These direct impacts would be negligible to species populations and mitigated by removing trees during non-nesting periods and replanting the site with native tree species in accordance with the site plan (Appendix B).

Construction and demolition activities would include use of heavy equipment, machinery, and labor to construct and demolish new facilities, and restore site vegetation and wetlands. Vehicular traffic to the work site, as well as foot traffic and heavy equipment operations, have the potential to temporarily disturb birds, other wildlife, and aquatic species. These short-term direct effects would be temporary since sufficient habitat is available to provide security to displaced wildlife in the immediate vicinity of the project and roads used to access the site.

Direct effects such as mortality could affect less mobile wildlife like reptiles and small mammals who are not able to avoid construction and demolition equipment (i.e. tractors, excavators, and vehicles).

Once construction is complete, long-term indirect effects on wildlife are anticipated to be negligible. These effects would be similar to current disturbance levels at existing facilities and include everyday activities that occur in and around the facility. Vehicular as well as foot traffic at the new visitor center and associated grounds is anticipated to be similar to current conditions with continued annual increases in visitation anticipated. Wildlife and aquatic species occupancy, movement, and activity would resume and increase due to restored habitat conditions once construction and demolition are complete.

No impacts are expected outside of the project area.

3.2 Habitat, Vegetation and Wetlands (including vegetation of special management concern)

3.2.1 Affected Environment

The Refuge is widely known for supporting an abundance and diversity of vegetation, habitat, and wetlands in the Greater Yellowstone Ecosystem. Wetlands on the proposed site are associated with Flat Creek, which runs through the Refuge and originates in the Gros Ventre Range.

The Proposed Action is located on a previously disturbed riparian area that is now characteristic of an open park space harboring a majority of non-native vegetation interspersed with some native aquatic and riparian habitat.

Potential impacts to habitat, vegetation, and wetlands due to climate change are not fully understood and are challenging to predict. The Refuge would continue to participate in studies and climate monitoring to help better understand and evaluate impacts.

Development on private lands within the Jackson Hole area is continual and increasing, leading to further habitat loss and fragmentation. Although management can do nothing to stem this trend, refuges and the habitat, vegetation, and wetlands that they harbor will become even more important as repositories of biodiversity.

3.2.2 Potential Impacts to Habitat, Vegetation and Wetlands

Alternative A

There would be no construction and subsequently no impacts to habitat, vegetation and wetlands.

Alternative B

Impacts to habitat and vegetation will occur. The footprint of the new building (approximately 15,000 square feet) will be more than double the existing footprint (7,100 square feet), reducing potential habitat on the site by approximately 7,900 square feet. Based on the proposed site plan (Appendix B) the remainder of the location will be restored from its current state to native vegetation, and the associated wetland will be enhanced and restored, resulting in a net gain of native riparian and wetland habitat on the site and Refuge. This net gain will have a positive long-term impact on habitat and vegetation.

3.3 Geology and Soils

3.3.1 Affected Environment

More than 20 different soil types are found on the Refuge (USFWS 2015). Soils in the project area are composed of a combination of greyback gravelly loam on the west portion of the site and cryaquolls-cryofibrist complex and the east portion of the site. Greyback gravelly loam is found in mountain slope landforms within the gravelly (foothills and mountains) ecological site type. Cryaquolls-cryofibrist complex is found in floodplains within wetland (foothills and mountain) ecological site type.

Potential impacts to geology and soils due to climate change are not fully understood and are challenging to predict. The Refuge would continue to participate in studies and climate monitoring to help better understand and evaluate impacts.

Development on private lands within the Jackson Hole area is continual and increasing, leading to further habitat loss and fragmentation. Developmental impacts to geology and soils off-site are unknown. Although management can do nothing to stem this trend, refuges and the habitat, vegetation, and wetlands that they harbor will become even more important as repositories of biodiversity.

3.3.2 Potential Impacts to Geology and Soils

Alternative A

There would be no construction and subsequently no impacts to soils are expected.

Alternative B

Impacts to soils associated with construction and demolition are expected. Impacts within the designated footprint of the project (Appendix B) will include removal of vegetation and topsoil to clear areas for construction and disturbance due to demolition and removal of demolition materials. Vegetation removal and disturbance will include exposing soils to the elements and increasing vulnerability to runoff, sedimentation, and windblown soil loss. Short-term impacts from the construction, demolition, and habitat restoration (clearing areas for new facilities, small sections of roads, parking lots, and utility lines) are anticipated. Most soil disturbances would be temporary until construction, habitat restoration, and landscaping efforts are finalized. BMPs designed to minimize the impact on soils would be utilized in all construction phases of the project.

Minor and insignificant soil loss on the site is expected. Impacts associated with this alternative would result in disturbance to soils from construction, demolition, and habitat restoration on a maximum of six acres within the 10-acre site.

Habitat restoration, including wetland restoration, on the site (Appendix B) would minimize long-term soil damage and loss.

3.4 Air Quality

3.4.1 Affected Environment

The air quality of the Jackson Hole area is generally considered high.

The use of prescribed fire on the Refuge is an important habitat management tool. The Refuge will continue to utilize prescribed fire for habitat and fuel reduction purposes into the foreseeable future. The National Elk Refuge Fire Management Plan (USFWS 2019) conforms to all federal, state, and local air pollution control requirements. Negative effects to air quality from this practice on the Refuge and surrounding area are minor and insignificant.

Continued and increasing visitation on the Refuge and associated increase in vehicular traffic on the Refuge's gravel road system will result in annual increases to dust generation during the summer and fall dry periods. The increase in dust production will likely result in a negligible and temporary decrease in air quality on the Refuge and surrounding area.

3.4.2 Impacts on Air Quality

Alternative A

There would be no construction and subsequently no impacts to air quality.

Alternative B

Short-term negative impacts to air quality during the construction and demolition phases of the project may occur. These impacts are associated with the use of heavy equipment for site preparation, construction, and demolition. Impacts to air quality would be a result of emissions from construction equipment such as tractors, vehicular traffic, and transporting equipment and resources to project sites, and dust generated during the use of this equipment for construction, demolition, and habitat restoration. These activities will result in minor and temporary effects to air quality.

3.5 Visitor Use and Experience

3.5.1 Affected Environment

The Jackson Hole area hosts millions of visitors per year, with 320,000 visits at the Refuge visitor center in fiscal year 2019. Visitor use on the National Elk Refuge is relatively high year-round. Table 3-1 summarizes data from the Refuge Annual Performance Plan from Fiscal Year 2021 for the number of participants in wildlife-dependent recreation.

Table 3-1. Summary of Annual Visitor Use

Activity	*Visits per Year*
Big game hunting visits	2,200
Fishing visits	5,000
Wildlife observation visits	177,000
Photography visits	34,000
Environmental education programing visits	2,000
Interpretation visits	35,673

For more information regarding visitor services and use on the Refuge, please see Section 3.6 of the CCP, which can be found here: www.fws.gov/mountain-prairie/refuges/wy_ner.php.

Local opportunities for recreation in the Jackson Hole and Greater Yellowstone Ecosystem include two ski slopes, two National Parks, one National Forest, a seasonal multi-use pathway, and numerous local cultural events and shows.

3.5.2 Impacts on Visitor Use and Experience

Alternative A

There is potential for negative impacts on the visitor experience. Due to size and design limitations, the USFWS struggles to help visitors understand the mission and purpose of the Refuge. Further, the USFWS is unable to welcome all visitors because the building does not meet accessibility standards. Deteriorated facilities require staff and resources for constant repairs. This can take away from the Refuge's ability to support other programs like maintaining visitor use infrastructure.

Alternative B

The proposed visitor center would be constructed to meet the USFWS's needs and the conservation education needs of the local community. The goal is to create a welcoming space where new audiences can be introduced to the Refuge, the opportunities that the Refuge provides for wildlife-dependent recreation, the Refuge's role in providing wildlife habitat, and the broader conservation goals of the National Wildlife Refuge System. The new visitor center will be a stepping-stone to broader engagement with visitors. It will be the front door of the National Wildlife Refuge System within the Greater Yellowstone Ecosystem.

Under the proposed action, the proposed approximately 15,000 square foot visitor center would be constructed within the 10-acre project area, adjacent to the footprint of the existing visitor center. The existing visitor center would be removed once construction of the proposed facility is complete.

In addition, the proposed plan transitions the majority of the currently maintained lawn to more native ecosystems. Proposed interpretive paths through the restored habitats would provide visitors

with an immersive education experience. The proposed plan also includes a program lawn and discovery area adjacent to the building that would support a variety of educational activities, along with a large deck on the north side of the facility that would frame the expanse of the Refuge.

As previously stated, the new visitor center would serve as a gateway for visitors to the Greater Yellowstone Ecosystem. The visitor center would be a national model of interagency and community partnerships that sustain and amplify the conservation missions of all partners. Visitors of all abilities and backgrounds would deepen their connections to the natural world through interactive and hands on exhibits. The visitor center would be a significant conservation learning facility in the region and would connect users to the Greater Yellowstone experience. Visitors to the center would be encouraged to explore and experience the Refuge and other public lands and inspired to support the missions of all partners.

The Grand Teton Association would operate a nature store in the proposed 1,500 square foot retail area and maintain offices and storage space within the proposed facility.

Parking areas would be expanded to accommodate more visitors at one time. Approximately 60 parking spaces and three to five bus or RV parking spaces would be included in the proposed action, a 30% capacity increase over the current parking area.

3.6 Cultural Resources

3.6.1 Affected Environment

A complete archeological resources survey of the entire proposed project site will be conducted by appropriate USFWS cultural resources staff prior to disturbance of the site and will assess the impacts of demolition, construction, and restoration. If cultural resources are found, their disposition and handling will conform to all federal, state, county, and city rules and regulations regarding cultural resources. Results of the survey will be submitted to the Wyoming State Historic Preservation Officer for consultation and project resolution prior to any groundbreaking.

3.6.2 Impacts on Cultural Resources

Alternative A

There will be no impacts to cultural resources.

Alternative B

No impacts to cultural resources are anticipated. Although a pre-construction archeological survey will be conducted, there is a possibility that new sites could be located during the course of the project. An archaeological monitor will be on-site during demolition, construction, and restoration to prevent and minimize new cultural impacts.

Archeology mitigation measures will be incorporated into the demolition, construction, and restoration phases of the proposed action to ensure the protection of any potential previously undocumented sites. All mitigation measures discussed in consultation efforts with the Wyoming State Historic Preservation Office would be strictly administered.

3.7 Socioeconomics

3.7.1 Affected Environment

The Refuge is in Teton County, Wyoming, adjacent to the north side of the town of Jackson. As of the 2020 Census, Teton County and the town of Jackson had populations of 23,331 and 10,760 respectively.

The median household income in the county is $84,678 and 2.08 percent of families have a household income below poverty level. Minorities make up 18.66 percent of the population. The median household income in Jackson is $73,411 and 1.72 percent of families have a household income below poverty level. Minorities make up 27.11 percent of the population. For more information regarding socioeconomic environment of the area and Refuge please see Section 3.7 of the CCP, which can be found here: www.fws.gov/mountain-prairie/refuges/wy_ner.php.

The visitor center, located just outside the town of Jackson on the southwest corner of the Refuge, serves as a contact for six governmental, non-profit, and private agencies, including the National Elk Refuge, Grand Teton National Park, Bridger-Teton National Forest, the Jackson Hole Chamber of Commerce, the Wyoming Game and Fish Department, and the Grand Teton Natural History Association. In 2019, an estimated 320,000 visitors came through the visitor center. Visitation is expected to continue to increase annually. At the visitor center, visitors can access information or make purchases related to trip planning, hunting and fishing licenses, annual park passes, off-road vehicle and snowmobile permits, firewood and Christmas tree permits, trail maps, bear canister rental, and fires as well as view wildlife exhibits and tour the wildlife observation deck.

Economic impacts are generated through the spending of money within a local community, and while the information provided to visitors by the Refuge staff at the visitor center has an associated economic value, estimating specific economic impacts directly related to visitor center visitation is difficult, in part due to the interagency nature of the facility. Economic impacts may be generated by the visitor center if individuals are inspired by their visitor center experience to spend additional time and money in the area, thus generating additional nonlocal spending. A 2010 statewide survey of Wyoming visitor centers conducted by Randall Travel Marketing indicated that after stopping at a visitor center and receiving information, a portion of visitors stayed in Wyoming at least one more day (Randal Travel Marketing 2010). This additional day spent within Wyoming by visitor center guests demonstrates that not only do visitor centers have an important educational component, but these centers can also help generate economic activity through increased visitor spending.

Given that it is unknown where visitors may spend an additional day and in what activities they may participate, the economic impacts of visitation to the visitor center cannot be quantified. While directly quantifying the economic impacts of the visitor center is difficult, the importance of the center itself, as well as the value of the service and information provided to visitors by Refuge staff, should not be overlooked or discounted. Spending in the visitor center through the nonprofit cooperating association (Grand Teton Association) was not included in the study. In 2019, the Grand Teton Association generated over $812,900 in sales at the visitor center.

3.7.2 Impacts on Socioeconomics

Alternative A

There will be no new impacts to the socioeconomics of the area.

Alternative B

The project may contribute slightly to the local and regional economy. Replacing the visitor center with a larger and more accommodating visitor center may translate to increased purchases and longer stays by visitors and other tourists in the area.

3.8 Environmental Justice

3.8.1 Affected Environment

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities.

Within the spirit and intent of Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations, and Low Income Populations, no actions considered in this Draft Environmental Assessment would disproportionately place any adverse environmental, economic, social, or health effects on minority or low-income populations when compared to the public.

The USFWS is committed to ensuring that all members of the public have equal access to the Nation's fish and wildlife resources, as well as equal access to information that would enable them to take meaningful part in activities and policy shaping.

3.8.2 Impacts on Environmental Justice

Alternative A

Under Alternative A, there will be no adverse impacts to minorities and low-income families.

Alternative B

The Proposed Action would not adversely impact minorities and low-income families. Additional opportunities for outdoor recreation, education, and interpretation for all members of the public would be improved.

3.9 Summary of Analysis

Alternative A

As described above, the No Action alternative would result in no new impacts on wildlife and aquatic species; threatened, endangered, and other special status species and their habitats; habitat, vegetation and wetlands; geology and soils; air quality; visitor experience; cultural resources; socioeconomics; and environmental justice.

The No Action alternative would not meet the purpose and need of the USFWS to provide a high-quality visitor experience at the National Elk Refuge. In addition, it would not eliminate the deferred maintenance backlog of approximately $7 million, and annual maintenance costs at the National Elk Refuge would continue to increase.

Alternative B

As described above, the proposed action may result in minor short-term impacts and direct mortality to wildlife and aquatic species (non-population level effects); minor, temporary and negligible impacts to bald eagles, and trumpeter swans; no effect to grizzly bears and timber wolves; minor, temporary and insignificant impacts to habitat, vegetation, and wetlands that result in an overall positive net gain of habitat; minor and insignificant impacts to geology, soils, and air quality; improvements to the visitor experience; and no effects to cultural resources, socioeconomics, or environmental justice.

The proposed action would meet the purpose and need of the USFWS by providing a high-quality visitor experience, eliminating the deferred maintenance backlog by an estimated $7 million, and reducing annual maintenance costs at the National Elk Refuge.

4 Determination and Signatures

This section will be filled out upon completion of the public comment period and at the time of finalization of the Environmental Assessment.

- ☐ The U.S. Fish and Wildlife Service's action will not result in a significant impact on the quality of the human environment. See the attached **"Finding of No Significant Impact".**
- ☐ The U.S. Fish and Wildlife Service's action **may significantly affect** the quality of the human environment and the USFWS will prepare an Environmental Impact Statement.

Submitted By:

Project Leader Signature:

Date:

Concurrence:

Refuge Supervisor Signature:

Date:

Approved:

Regional Chief, National Wildlife Refuge System Signature:

Date:

5 References

Randall Travel Marketing. 2010. Wyoming visitor center study: June-October 2010.

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6 List of Preparers

Frank Durbian, Project Leader

Raena Parsons, Visitor Services Manager

Appendix A: Applicable Statues and Regulations

This Appendix lists all applicable statutes, regulations, and executive orders not otherwise addressed in this EA.

Cultural Resources

American Indian Religious Freedom Act, as amended, 42 U.S.C. 1996 - 1996a; 43 CFR Part 7

Antiquities Act of 1906, 16 U.S.C. 431-433; 43 CFR Part 3

Archaeological Resources Protection Act of 1979, 16 U.S.C. 470aa-470mm; 18 CFR Part 1312; 32 CFR Part 229; 36 CFR Part 296; 43 CFR Part 7

National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470-470x-6; 36 CFR Parts 60, 63, 78, 79, 800, 801, and 810

Paleontological Resources Protection Act, 16 U.S.C. 470aaa-470aaa-11

Native American Graves Protection and Repatriation Act, 25 U.S.C. 3001-3013; 43 CFR Part 10

Executive Order 11593 – Protection and Enhancement of the Cultural Environment, 36 Fed. Reg. 8921 (1971)

Executive Order 13007 – Indian Sacred Sites, 61 Fed. Reg. 26771 (1996)

Fish and Wildlife

Bald and Golden Eagle Protection Act, as amended, 16 U.S.C. 668-668c, 50 CFR 22

Endangered Species Act of 1973, as amended, 16 U.S.C. 1531-1544; 36 CFR Part 13; 50 CFR Parts 10, 17, 23, 81, 217, 222, 225, 402, 450

Fish and Wildlife Act of 1956, 16 U.S.C. 742a-m

Lacey Act, as amended, 16 U.S.C. 3371 et seq.; 15 CFR Parts 10, 11, 12, 14, 300, and 904

Migratory Bird Treaty Act, as amended, 16 U.S.C. 703-712; 50 CFR Parts 10, 12, 20, and 21

Executive Order 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds, 66 Fed. Reg. 3853 (2001)

Natural Resources

Clean Air Act, as amended, 42 U.S.C. 7401-7671q; 40 CFR Parts 23, 50, 51, 52, 58, 60, 61, 82, and 93; 48 CFR Part 23

Wilderness Act, 16 U.S.C. 1131 et seq.

Executive Order 13112 – Invasive Species, 64 Fed. Reg. 6183 (1999)

Appendix B: Conceptual Design Package

This appendix contains maps relevant to the alternatives and affected environment in this EA.

Figure 1. Proposed Site location in relationship to Jackson, Wyoming.

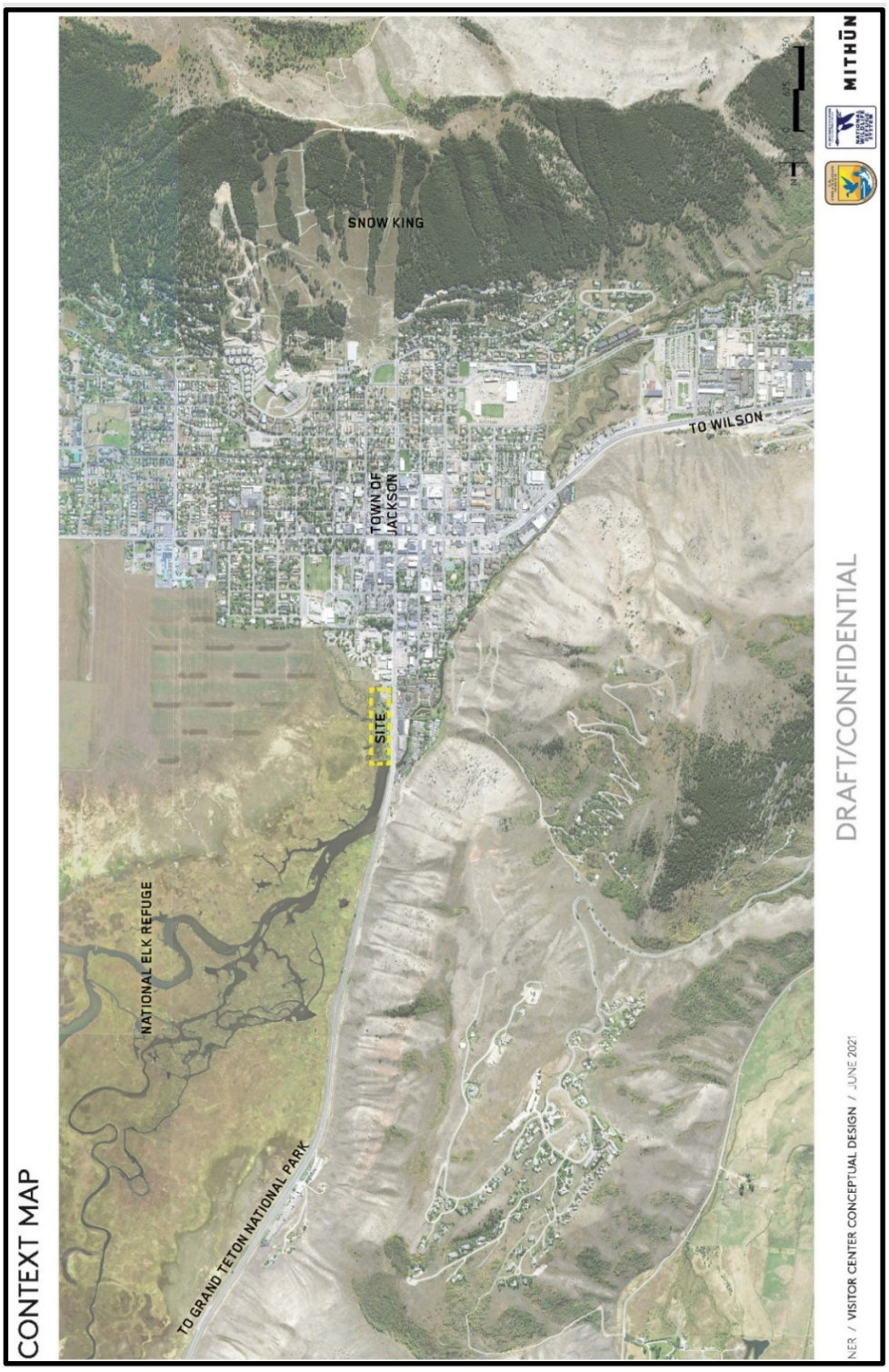
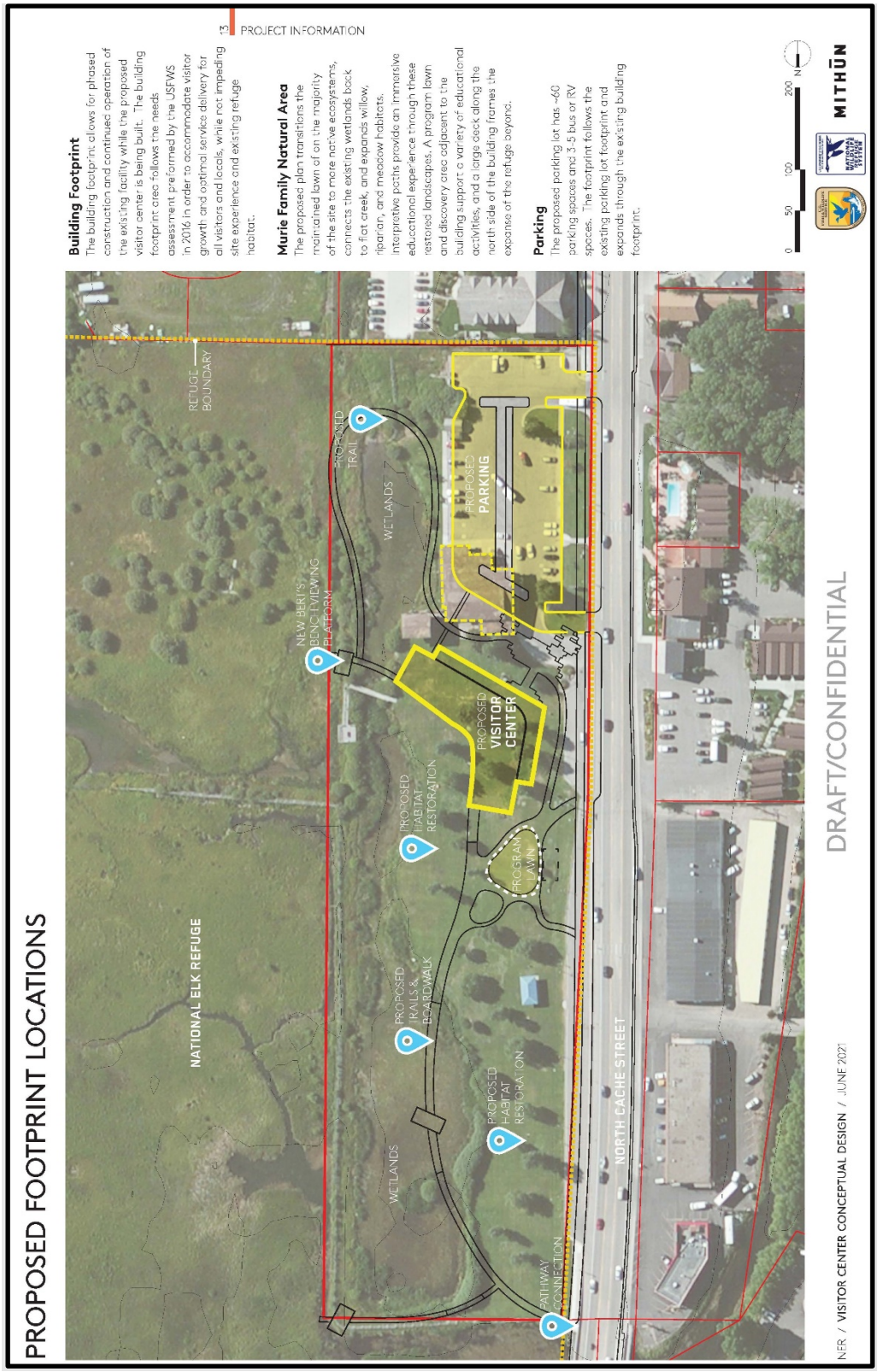


Figure 2. Proposed site location including current and proposed new structure location.



Appendix C: Section 7 Consultation

Appendix D: Threatened and Endangered Species and Other Special Status Species Occurring within the Project Area

Threatened and Endangered Species

Grizzly bear *(Ursus arctos horribilis).* In the lower 48 states, grizzly bears were initially listed as threatened in 1975. While grizzly bears widely use the northern two-thirds of Grand Teton National Park, they can occur throughout the park and its surrounding areas. Grizzly bears had not been documented on the Refuge since 1994, until August 2013, when a sow and three cubs were observed feeding on a bison gut pile. There have been several other sightings of grizzly bears on the Refuge, with the most recent in the winter of 2020 to 2021, when a sow and four cubs spent approximately two weeks consuming offal from hunter-harvested elk on the Refuge. It is expected that grizzly bear use of the Refuge will continue to increase. As omnivores, grizzly bears feed on nutritious succulent vegetation, grubs, insects, fish, newborn ungulates, and carrion. By mid-May, they typically begin preying on newborn elk calves (USFWS 2015). Individual bears typically obtain their largest meals from adult moose and elk that are prey and from scavenged adult female bison (USFWS 2015). In Yellowstone National Park, from March through May, ungulate carrion (mostly elk and bison) remains an important food source for bears (USFWS 2015). However, this is not the case in Grand Teton National Park. Elk and bison in the Jackson herds have a low winter mortality rate due to the supplemental feeding program on the Refuge and in the Gros Ventre Range. Grizzly bears in Grand Teton National Park do not appear to depend as heavily on meat in the early spring compared to those living to the north in Yellowstone National Park. (USFWS 2015). This species is still listed as threatened.

Canada lynx *(Lynx canadensis).* The elevation of the National Elk Refuge ranges from 6,200 to 6,700 feet with no suitable habitat for Canada lynx, which utilize higher altitude habitats. The Refuge does not have any critical habitat designated. There have been no confirmed Canada lynx observations on the Refuge in 110 years of record keeping, and the USFWS does not anticipate any future habitat changes that would facilitate Canada lynx occupancy.

Yellow-billed cuckoo *(Coccyzus americanus).* There have been no confirmed yellow-billed cuckoo observations on the Refuge in 110 years of record keeping. This species does not occur on the Refuge.

Whitebark pine *(Pinus albicaulis).* The National Elk Refuge elevation ranges from 6,200 to 6,700 feet with no suitable habitat for whitebark pine. There have been no confirmed whitebark pine observations on the Refuge in 110 years of record keeping, and the USFWS does not anticipate any future habitat changes that would facilitate whitebark pine occupancy.

Long-billed curlew *(Numenius americanus).* The long-billed curlew is the largest North American shorebird and the State of Wyoming lists it as a species of greatest conservation need. This high level of concern results from the loss of the eastern third of the curlew's historical breeding range, apparent population declines, and loss of shortgrass habitat that the birds use to nest (USFWS

2015). Because they breed in short, dry grasslands common in the Refuge's irrigation project area, the USFWS is concerned that irrigation activities could disturb nests of this species. As a result, the Refuge staff surveys the irrigation project area to find breeding pairs and potential nest sites each spring. Irrigation activities are delayed around potential curlew nest locations until August, when the birds fledge. Typically, the USFWS identifies two to five potential breeding territories for long-billed curlew in the irrigation project areas each season (USFWS 2015).

Western glacier stonefly *(Zapada glacier).* The western glacier stonefly is a small, dark colored stonefly reported only within the habitats of glacial-fed streams in Glacier National Park, south to the Beartooth Mountains, and Grand Teton National Park. This species is found on relatively short reaches of streams near meltwater sources. National Elk Refuge does not contain adequate habitat for this species, which does not occur on the Refuge.

Colorado pikeminnow *(Ptychocheilus lucius).* The Colorado pikeminnow is a native fish of the Colorado River. It is adapted to warm rivers, requiring uninterrupted passage and a hydrologic cycle characterized by large spring peaks of snowmelt runoff and lower, relatively stable base flows. Reproducing pikeminnow adults seek white water canyons to spawn. Colorado pikeminnows appear to seek out river canyons receiving freshwater input from ground water seeping from sandstone or limestone. Adult pikeminnows return to previous spawning sites. After hatching, young pikeminnow larvae drift downstream and then move to shoreline areas and backwaters. Young-of-the year pikeminnows tend to congregate into receding backwaters that are formed in late summer. Young pikeminnows tend to occur downstream from areas occupied by adult Colorado pikeminnows. National Elk Refuge does not contain adequate habitat for this species, which does not occur on the Refuge.

Humpback chub *(Gila cypha).* Humpback chub inhabit discrete canyon areas of the Colorado River basin characterized by swift currents and rocky habitats, including portions of the Yampa, Green, and Colorado Rivers. National Elk Refuge does not contain adequate habitat for this species, which does not occur on the Refuge.

Species of Special Concern (Currently Not Federally Listed Under the Endangered Species Act)

Gray wolf *(Canis lupus).* Gray wolves were deliberately exterminated from the Greater Yellowstone Ecosystem by the 1930s and were placed on the federal endangered species list in 1973. After years of scientific research and public debate, 66 gray wolves from Canada were reintroduced into the Greater Yellowstone Ecosystem (31 wolves) in 1995 and central Idaho (35 wolves) in 1996 (USFWS 2015). They were classified as a nonessential, experimental population in accordance with the Endangered Species Act, indicating that the species was treated either as proposed for listing in a national forest, as threatened in a national park, or as threatened in a national wildlife refuge (50 CFR 17). This nonessential, experimental population designation allowed more flexibility to federal, state, and tribal agencies, as well as private citizens, in managing the wolf population. The wolf expanded rapidly under these protections, the population exceeded recovery goals, and wolves in Wyoming were removed from the Endangered Species

list in 2012. In 2014, they were returned to the Endangered Species list after a court case, and in 2017, wolves in Wyoming were removed from the list once again. The State of Wyoming leads management of the species.

Due to these changes in protected status, the wide-ranging nature of the species, and the potential impacts of wolves on elk numbers and distribution, the Refuge cooperatively monitors wolf populations with Wyoming Game and Fish Department and Grand Teton National Park. Wolves have been active on the Refuge since 1999, and the first wolves denned on the Refuge in 2005. The Pinnacle Peak pack consistently denned and produced pups on the Refuge from 2008 to 2014, and preliminary monitoring suggests that they denned on the Refuge in 2014. Visitors commonly observe members of the pack on the southern end of the Refuge during the winter. Over the last two to three years, members of four wolf packs (Pinnacle Peak, Huckleberry, Murie and Horsetail) have utilized portions of the Refuge.

Bald eagle *(Haliaeetus leucocephalus).* In July 2007, bald eagles were delisted from their federally threatened status, but remain protected under the Migratory Bird Treaty Act (16 U.S. Code 703) and the Bald Eagle Protection Act (16 U.S. Code 668). This species is also a priority two species of special concern for Wyoming. Most nesting territories in Jackson Hole are along major rivers, near lakes within three miles of their inlets or outlets, or along thermally influenced streams or lakes. Historically, two bald eagle nesting territories have occurred on the Refuge, but no territories are currently active. During the fall, as many as 100 bald eagles have been seen at one time in the cottonwood trees in the elk and bison hunting areas on the Refuge (USFWS 2015). These eagles feed on the gut piles left by hunters. Typically, 5-20 bald eagles may be active on the Refuge in winter, and these birds feed primarily on the carcasses of elk that die throughout the season. Bald eagle winter habitat is generally associated with areas of open water, where fish or waterfowl congregate (USFWS 2015), or ungulate winter range, where eagles scavenge on carcasses of the large mammals. Nearby food, suitable perches, and security from human activities are important habitat components for both nest and roost sites.

Greater sage-grouse *(Centrocercus urophasianus).* On March 5, 2010, the USFWS found that the greater sage-grouse warrants protection under the Endangered Species Act. However, the need to address other listing actions of higher priority precluded the task of listing the species under the act. As a result, the greater sage-grouse is a candidate species (75 Federal Register 13910). The northern portion of the Refuge contains significant wintering habitat for greater sage-grouse, and much of the north end of the Refuge falls within the State of Wyoming's core area policy for greater sage-grouse protection (Wyoming Executive Order 2011–5), including the Jackson core population area. Greater sage-grouse occupying the Refuge are part of the Jackson Hole greater sage-grouse population, which is isolated from larger populations in the Green River Basin.

The Refuge collaborates with Wyoming Game and Fish Department, Grand Teton National Park, and the Upper Snake River Basin Sage-Grouse Working Group to monitor population trends through conducting lek counts each spring. The Refuge hosts the North Gap lek and the Simpson lek, which are two of the 13 known, occupied breeding sites for the Jackson Hole greater sage-grouse population. Although sage-grouse use of the Simpson lek has been minimal in recent years,

the largest numbers observed on the North Gap lek reached 18 males in 2012 and eight males in 2013. The northern end of the Refuge contains valuable nesting and wintering habitat for the Jackson Hole greater sage-grouse population. Greater sage-grouse nest only in sagebrush shrubland habitat, using bunchgrasses and sagebrush plants as cover (USFWS 2015). Other important habitats include meadows and grasslands close to sagebrush shrubland habitat. In Jackson Hole, it was estimated that the greater sage-grouse population experiences a 2.2 percent annual decline and is at risk of elimination. Factors that may be contributing to this local decline include loss of habitat to human development, prescribed burning and wildfire on winter range, birds killed by collisions with aircraft at the Jackson Hole airport, and browsing and grazing by livestock and large numbers of elk and bison.

Trumpeter swan *(Cygnus buccinator)*. The 2010 Wyoming State Action Plan classifies the trumpeter swan as a species of greatest conservation need, which warrants increased management attention and consideration in Wyoming conservation planning. The U.S. Department of Agriculture Forest Service classified the swan as a sensitive species in its Regions 2 and 4. The Refuge manages swan habitat to meet objectives of the "Pacific Flyway Management Plan for the Rocky Mountain Population of Trumpeter Swans" (USFWS 2015). The trumpeter swan population on the Refuge is part of the core Tri-State Area flock. The Tri-State Area refers to Idaho and the portions of Montana and Wyoming within the Pacific Flyway.

Trumpeter swans were likely eliminated from Jackson Hole during the late 1800s, but in 1938, swans were reintroduced to the Refuge from Red Rock Lakes National Wildlife Refuge in Montana. A persistent breeding population has since been established, although nesting activity seems to fluctuate based on weather conditions. The Refuge provides the largest wetland habitat for nesting trumpeter swans in the Snake River drainage of Wyoming. In general, dry warm spring conditions are most favorable for trumpeter swan productivity.

Most trumpeter swan nesting occurs in Flat Creek Marsh southwest of Miller Butte, with occasional nesting activity in the Pierre's Pond and Romney Pond complexes on the northern end of the Refuge. In addition, there may be as many as 200 trumpeter swans on the Refuge during fall migration, and 50 trumpeter swans may winter on the Refuge. During the first two weeks of November, hundreds of swans congregate on Flat Creek Marsh until it freezes, when most swans disperse to other wintering sites. Fall staging behavior may play an important role in swan social structure, offering an opportunity for immature swans to initiate pair bonds. In recent decades, trumpeter swan production averaged around three nesting pairs, 7.3 cygnets hatched, and 6.3 cygnets fledged per year (USFWS 2015). From 2002 to 2012, swan pairs on the Refuge produced 66 mature young, which composed 43 percent of the total swan production in the Snake River core area of Wyoming (USFWS 2015).