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DRAFT Wood Bison Management Plan for the Lower Tanana River Drainage, 2025

C. Tom Seaton and Luke R. Rogers
with input from The Lower Tanana Wood Bison Planning Team

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Alaska Department of Fish and Game Division of Wildlife Conservation

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This Wildlife Special Publication was reviewed and approved for publication by Ryan Scott, Director for the Division of Wildlife Conservation.

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Cover Photo: Adult bull wood bison at the Alaska Wildlife Conservation Center. ©2009 ADF&G. Photo by Doug Lindstrand.

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1.0 Introduction

There is continued local, state, national, and international interest in restoring wood bison (*Bison bison athabascae*) to Alaska to enhance Alaska's wildlife resources, provide subsistence, recreational and economic benefits, and assist in the recovery and conservation of this subspecies. During 2023 and 2024, the Alaska Department of Fish and Game (ADF&G) worked with multiple interest groups to develop a site-specific plan for release of wood bison in the lower Tanana River drainage. Due to the threatened status of wood bison under the Endangered Species Act (ESA), and the Nonessential Experimental Population (NEP) designation of wood bison in Alaska, this management plan is a required component of the wood bison restoration process, as guided by the 2014 10(j) rule set forth by the U. S. Fish and Wildlife Service (USFWS) and ADF&G (Federal Register 2014).

In 2023, the Commissioner of ADF&G directed staff to work toward a wood bison release in the lower Tanana drainage beginning in 2024 and requested that the planning team provide recommendations based on that direction. This plan includes input and recommendations from 9 days of meetings in 2023 and 2024 where 36 interest groups gathered to make recommendations.

The intent of this effort is to establish a free-ranging wood bison population on State-owned public lands with suitable habitat, targeting the Minto Flats State Game Refuge (MFSGR), but recognizing that the larger river valley surrounding MFSGR is predominantly state public lands and also contains suitable habitat. The MFSGR was established in part to ensure the conservation of fish and wildlife and, therefore, is a sound and logical release location, fulfilling the intent of the refuge. Wood bison will be released at the location that was regarded by the Lower Tanana Wood Bison Planning Team as a highly favorable area for wood bison with the least opposition. This area appears to encompass a large area of suitable habitat and minimizes potential human-wildlife conflicts between bison and vehicles, railroad traffic, and residential areas.

1.1 Goals and Objectives of Wood Bison Restoration in Alaska from the Environmental Assessment (ADF&G 2013)

The 2013 Environmental Assessment (EA) established the following goal for the wood bison restoration effort:

> Restore wood bison populations to portions of their former habitat in Alaska so that they are again an integral part of Alaska's wildlife, providing Alaskans and others the opportunity to enjoy and benefit from this ecologically important northern mammal.

The Alaska wood bison restoration program includes objectives designed to:

- Increase the number of wood bison in free-ranging herds and enhance the survival of the species in the wild.
- Reestablish wood bison in suitable habitats within their original range in Alaska.
- Reestablish a cultural connection between wood bison and people in Alaska.

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- Reestablish wood bison populations that can be harvested on a sustained yield basis in the future.

- Reestablish a renewable resource and provide a regulatory framework that allows for sustainable development, including opportunities for local tourism and, in the future, hunting and guiding businesses; and

- Provide an opportunity to monitor the long-term ecological effects of a large grazing mammal as global climate change occurs, possibly shifting northern ecosystems toward grasslands.

2.0 Background

Wood bison are a subspecies of bison with an original range that included Interior Alaska and Northwest Canada. According to Alaska Native oral history from the area that includes Tanana village to Fort Yukon, wood bison herds disappeared from Interior Alaska in the past few hundred years; the last individuals were seen and killed around 1918 (Stephenson et al. 2001). While it is unknown exactly why wood bison disappeared from Alaska, the most plausible theories suggest that climate-induced habitat change and hunting by humans were the primary causes (ADF&G 2013). Their absence has left an open niche for a large, lowland grazer in the ecosystem of present-day Interior Alaska.

In 1993, ADF&G shared with the public what was known about wood bison and asked for comment, through a feasibility study, whether the state should pursue restoration of wood bison in Alaska. The comments were overwhelmingly supportive of the effort, which set the course for the State to restore wood bison in portions of its former range in Alaska.

There are currently 5 wild, free-ranging bison populations in Alaska, maintained for the public trust by ADF&G. Four of the 5 populations are the plains bison (*Bison bison bison*) subspecies, which were established from a 1928 importation from the National Bison Range in Montana. There is currently only one free-ranging population of the wood bison subspecies in the United States, which is in Alaska and was sourced from a disease-free population at Elk Island National Park in Canada.

Plains and wood bison historically hybridized in central Alberta, Canada, with wood bison occupying the range to the north, in northern Canada and Alaska, and plains bison occupying the range to the south in the Great Plains, contiguous United States, and northern Mexico. Despite historical geographic differences, both subspecies of bison are generalist grazers and serve similar ecosystem functions. The 5 bison populations in Alaska demonstrate large variability in performance, from the highest that can be expected for an Alaska big game population of any species to the lowest. Having bison in Alaska for almost 100 years has shown that bison can do well in Alaska if they develop a pattern of use in suitable habitat and environmental conditions. Experimental wood bison populations that become established in suitable habitat and environmental conditions within their original range in Alaska have a high probability of long-term success.

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Because wood bison are listed as a threatened species under ESA, their restoration is guided by 2 main documents, the 2013 EA and the federal Nonessential Experimental Population 10(j) Rule. USFWS listed wood bison as endangered throughout its range under the precursor to the ESA in 1969. The status was changed to threatened in 2012. ESA requires a range of protections for listed species and their habitats. Concerns about these protections and associated management requirements resulted in some opposition to restoring wood bison in Alaska, primarily related to potential restrictions on development. In response to these concerns, ADF&G worked with USFWS to develop a federal rule, published in 2014 (Federal Register 2014). This rule designated wood bison in Alaska as a nonessential experimental population, or NEP, under ESA section 10(j). The rule includes provisions under ESA section 4(d), which allow certain kinds of take, including hunting, to provide for the conservation of the species. The federal rule also gives ADF&G primary management responsibility for leading and implementing the restoration effort.

The final rule for the 10(j) NEP under ESA was published 7 May 2014 by USFWS and titled "Endangered and Threatened Wildlife and Plants: Establishment of a Nonessential Experimental Population of Wood Bison in Alaska" (Federal Register 2014). The full text of the final rule can be viewed at http://www.fws.gov/policy/library/2014/2014-10506.pdf.

The federal rule includes the following provisions:

- Regulated hunting under sustained yield principles is allowed.
- Activities such as resource development, hunting, trapping, and recreation are allowed within the range of wood bison.
- Designation of "critical habitat" under the ESA is not allowed (this provides additional assurance that other land uses will not be affected by the presence of wood bison).
- If a reintroduction effort fails, or in the unlikely event that litigation changes their legal status, the animals may be removed from the landscape.
- ADF&G will be the lead agency in reintroductions and, using scientific knowledge and experience, will have primary responsibility for bison management.
- Management of wood bison in the NEP area will be guided by provisions in:
    1. The federal final rule: http://www.fws.gov/policy/library/2014/2014-10506.pdf (Federal Register 2014).
    2. The associated final environmental assessment: http://www.adfg.alaska.gov/static/species/speciesinfo/woodbison/pdfs/environmental_assessment_designation_experimental_population_wood_bison_interior_alaska_2013.pdf (ADF&G 2013).
    3. The ADF&G environmental review: http://www.adfg.alaska.gov/static/species/speciesinfo/woodbison/pdfs/er_no_appendices.pdf (ADF&G 2007).
    4. Site-specific management plans for wood bison restoration developed through the use of a public planning process (e.g., this document).

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In addition to other provisions, the federal final rule (Federal Register 2014:26180) states:

> ADF&G will use public planning processes to develop implementation and management plans for wood bison restoration. Planning groups will include representatives from local communities, regional population centers, landowners, Alaska Native interests, wildlife conservation interests, industry, and state and federal agencies, as appropriate for each area. Draft management plans will be circulated for public review, and final plans will be presented to the Alaska Board of Game and Federal Subsistence Board for review and approval.

An important step before release was that ADF&G would employ a public planning process to get input from interest groups to form a site-specific implementation or management plan. This management plan documents the public planning process followed by ADF&G to fulfill this requirement in the federal rule. The MFSGR was one of 3 potential release areas evaluated in the EA (referred to as "Minto Flats"). As explained in more detail below, the planning team provided their preference of potential release locations in and around the MFSGR, and the location with the lowest opposition was a place still within the MFSGR but outside the original habitat study area from 2006.

3.0 Public Planning Process

Since the inception of wood bison restoration in 1994, ADF&G staff have spent a considerable amount of time conducting outreach and education on wood bison history, biology, and restoration in Alaska. ADF&G staff have attended village council meetings, Fish and Game advisory committee meetings, regional advisory council meetings, local events, and community gatherings and hosted outreach events at schools and local venues. This includes many communities in the Lower Tanana River drainage, such as Fairbanks, Nenana, Minto, Manley Hot Springs, Tanana, Rampart, Anderson, Clear, Healy, McKinley, and Lake Minchumina. The reason to include such far-reaching communities is that wood bison may roam or expand someday, and all communities that have a reasonable chance to experience their presence in the long term should be included from the start. These efforts were intended to provide sufficient background information to leaders of planning team organizations as well as the general public for them to use in making informed decisions during the public planning process.

The planning process chosen for the Lower Tanana area was the same one chosen for wood bison restoration in the Lower Innoko-Yukon River area (Innoko). ADF&G used the Applied Human Dimensions Facilitated Workshop Approach (AHDFWA), an innovative visual process of facilitation coordinated by an independent facilitator. The approach is based on effectively listening and involving a diverse group of interests brought together to create recommendations to decision-making bodies like the Alaska Board of Game (BOG) and ADF&G. Here, the recommendations are noted and built into this wood bison management plan. This process was used successfully to develop the original Lower Innoko-Yukon River Alaska Wood Bison Management Plan, which guided the first release of wood bison into the wild in Alaska, and subsequent revisions to the initial plan. The process has also been used successfully in Yukon, Canada, and Germany, where diverse interest groups created wood bison and European bison management plans, respectively. The facilitator, Dr. Alistair Bath, has more than 30 years of international experience in facilitating groups toward solutions on a variety of wildlife and

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environmental challenges (www.bathanassociates.ca). Interest groups invited to participate were identified in the 10(j) rule and through input of the planning team itself. Interest groups selected their own representatives to attend the meetings. All discussion topics were recorded throughout the process.

In the EA and 10(j) rule, 3 areas are evaluated for wood bison release: the lower Innoko–Yukon River area, Minto Flats, and Yukon Flats. These sites were highlighted as areas with high potential for a successful wood bison reintroduction based on substantial research on habitat quality and quantity, as well as the potential effects of establishing wood bison there (ADF&G 2013). Site-specific planning is either ongoing (Innoko) or has been initiated (Lower Tanana and Yukon Flats) for the 3 areas. The planning effort in the Innoko area has resulted in 3 consecutive management plans and establishment of a free-ranging wood bison population with multiple releases. The information and experience gained with on-the-ground management of wood bison in the Innoko has changed perspectives on some wood bison management topics and has provided insight on how to proceed with planning in the Lower Tanana River and Yukon Flats areas.

For the Innoko Planning Team, the topic of greatest importance was harvest prescription. The Innoko Planning Team assumed a certain level and timeline of bison population productivity based on Canadian wood bison and Alaska plains bison population history. The team spent 9 total days in 2014 developing a complex management plan of harvest allocation and land access fees, and even a scholarship fund as recommendations to the BOG, ADF&G, and local landowners. However, as the subsequent 8 years went by, the variable performance of the herd and the ever-changing perspectives of the nearby private landowners influenced the group to change the harvest allocation prescription recommendations and the land access protocols every time they met.

In contrast, when the Yukon Flats planning team first met in December of 2023, participants discussed harvest prescriptions—but came to the realization that all harvest allocation decisions for historically released populations (i.e., Delta Junction plains bison, Cordova moose, Kodiak deer, Seward peninsula muskox, etc.) are made in real time by the people that live in the time frame when a harvestable surplus is available, rather than by the people who released the animals decades before. For example, recommendations on harvest allocation for Delta Junction bison were not set by a team of interest groups in 1927 before the herd was established but are continuously revisited. Recommendations from the planning teams are implemented through the public Board of Game process inside the bounds of current legal structure.

Despite the substantial research that has been done to identify areas in Alaska where wood bison restoration would likely be successful, new experimental bison populations may have high or low productivity, and annual harvestable surplus could range from a few bison to hundreds annually. Similarly, the legal structure of harvest allocation changes over time. For example, prior to 1989 and the McDowell decision (White 1994), BOG and ADF&G could issue permits based on location of residency in Alaska. After the McDowell decision, this was no longer the case. Federal hunting structures in Alaska, first implemented in 1989, also change over time. What the legal structure will be 20 to 30 years into the future is unknown, and new opportunities and challenges for harvest of wood bison may arise.

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Considering these uncertainties and the current understanding that harvest of a new population is unlikely to start less than 20 years after establishment, one course of action is to establish experimental populations of wood bison and record all the values, concerns, recommendations, and guidance that are voiced presently to provide the current generation's intent to future generations to consider when making their harvest management decisions in the future.

Below, we describe the meetings and outcomes of the Lower Tanana River planning effort that has resulted in this management plan.

3.1 Lower Tanana River Public Planning Meetings

During the first public planning meeting for the Lower Tanana River drainage, a group of 25 participants met for 3 days on 25–27 January 2023 in Fairbanks, Alaska. ADF&G provided transport, accommodation, and per diem to participants. Of the 33 organizations invited, 24 organizations were present (Appendix A, Table A1). Most Individuals participated in person, but a few participated through videoconference. Additionally, ADF&G staff Tom Seaton, Luke Rogers, Tony Hollis, and Jesse Coleman were present.

During a second public planning meeting, a group of 38 participants met for 3 days on 14–16 November 2023 in Fairbanks, Alaska. ADF&G provided transport, accommodation, and per diem to participants. Of the 40 organizations invited, 27 organizations were present (Appendix A, Table A2). Most Individuals participated in person, but a few participated through videoconference. Additionally, ADF&G staff Tom Seaton, Luke Rogers, Ryan Scott, Chris Krenz, Alida Trainor, Jesse Coleman, Tony Hollis, Sky Guritz, and Jeff Wells were present.

During a third public planning meeting, a group of 36 participants met for 3 days on 20–22 February 2024 in Fairbanks, Alaska. Of the 37 organizations invited, 25 organizations were present (Appendix A, Table A3). Most Individuals participated in person, but a few participated through videoconference. Additionally, ADF&G staff Tom Seaton, Luke Rogers, Ryan Scott, Chris Krenz, Todd Nichols, Clint Cooper, Sky Guritz, Tony Hollis, Jeff Wells, and Lincoln Parrett were present.

4.0 Management Plan as a Living Document

Wood bison restoration is a long-term process that spans generations of people. The achievable step of this generation is to establish a population and record all of the Team's values and concerns. An ammended management plan will be created by a future planning team when success, productivity, and established location of the herd are known, and harvestable surplus can be estimated and predicted.

In the first gathering of the interest groups for the Lower Tanana River area in January 2023, Planning Team members pointed out that a "management plan" was not the right fit, and it was proposed to call the plan for the Lower Tanana River a "conservation plan." These concerns arose in part because of the uncertainties associated with the "harvest management" of a nonexistent, experimental population with unknown productivity and unknown home range in relation to communities within the recovery area. In addition, there was recognition that the perspectives of the organizations represented on the Planning Team were likely to change over

time as occurred with the Innoko Planning Team, and that the regulatory structure for harvest management decisions may be different in the future too. In order to stay within the regulations laid out by the 10(j) and EA while meeting the desires of the Planning Team, ADF&G has summarized the management intent laid out by the working group members, recognizing that wood bison restoration is a long-term process that spans generations of people. The main concern of this generation is to establish a population and record all the Team's values, concerns, recommendations, and guidance for future generations. Further elements of the management plan, especially harvest management, will be shaped by the planning team in the future when the bison herd's success, productivity, and location are known and there is a harvestable surplus that can be estimated and predicted.

The purpose of a site-specific wood bison management plan is to provide a description of the input and recommendations from a broad segment of the public that guides restoration and management activities for wood bison in a given area (in this case the Lower Tanana River drainage), and for ADF&G to provide management details and intent of the restoration effort back to the public. Each site-specific wood bison management plan includes information for the process of establishing the herd of free-ranging wood bison in the area, monitoring, herd assessments, addressing human-wildlife conflicts, and providing information to guide future harvest management. Human-wildlife conflict topics may include interactions with agriculture, social carrying capacity (i.e., population objectives driven by issues other than biology), and other issues that arise over time. The management plan will be a living document with amendments and updates made when appropriate. For example, a critical update will be after the population is established, when herd productivity, land status surrounding the bison's seasonal movements, and potential for sustained yield will be better understood. At that point the planning team will work together to make recommendations to the BOG and ADF&G through a harvest management update to the plan, with the intent of using harvest as a key tool to help manage the population.

Once the Lower Tanana Management Plan is drafted, it will be presented to BOG and FSB, and be available on the ADF&G website. After the plan is approved, it will be published and available through the online ADF&G publications library. Annual updates about progress towards plan goals will be provided on the ADF&G website and by e-mail to the planning team groups. The planning team will be gathered virtually or in person to provide input after significant events such as a release or major population change, which will be at least every 5 years, and reflects the living nature of this management plan.

5.0 Release Area and Potential Future Habitat Area

The lower Tanana River drainage, and specifically MFSGR, has an abundance of suitable bison habitat and moderate snow conditions, making it likely to support a successful wood bison population. We are referring to this as the plan for the "Lower Tanana" rather than "Minto Flats," as described in the EA and 10(j) rule because bison will be released in MFSGR as suggested in the EA, and the intent is to establish a population there. Being wild and free ranging, there is a chance they may settle in some other portion of the lower Tanana River drainage. However, substantial effort will be put into anchoring the bison to the refuge including an extended soft release period in 2024 and 2025. Because of this potential for herd dispersal or expansion in the future, all the local interest groups of the lower Tanana drainage were invited to

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the planning team meetings for the broad area from Fairbanks to Tanana and Minchumina to Rampart.

5.1 KANTISHNA RELEASE SITE

The EA and 10(j) discuss "Minto Flats," and they specifically describe MFSGR and the 2004 habitat study areas, which encompass the northern MFSGR, as the focus of the analysis. There is no required release site in the EA or 10(J). The EA and 10(j) rule do not state that bison must be released in the 2004 habitat study areas or the northern MFSGR; they simply describe those areas as good habitat with supportive land-use designations. While ADF&G has interpreted and continues to interpret the EA and 10(j) as enabling the department to release wood bison within the NEP, the department acknowledges that the USFWS has a different interpretation and believes the intent of those documents was for a release within the 2004 habitat study areas. The EA evaluated the 3 broad potential areas (Yukon flats, Minto flats, and Innoko flats) for purposes of complying with the National Environmental Policy Act (NEPA). The releases could have been implemented under a Categorical Exclusion, a lesser category of NEPA documentation. In the 10 years since the EA was published, ADF&G and wood bison interest groups have recognized that the northern part of MFSGR that is within the 2004 habitat study area comprises an area with some highly controversial wildlife issues, mostly focused on moose allocation and harvest. When the Lower Tanana Planning Team was asked to indicate their preference on where to release bison in the area, they chose areas outside but near the northern part of MFSGR. The area with the most support and lowest level of concern from the team was in the southwest portion of MFSGR, just 6 miles from another potential release site in the northern portion of MFSGR. The perimeter of the potential reintroduction area presented to the public in the EA and 10j rule did not encompass the Kantishna site, but we believe the range and scope of effects to be the same as what was previously analyzed. We discuss the Kantishna release site as follows.

5.1.1 Release Site with lowest Opposition by Planning Team

After considerable discussion and with recognition that ADF&G was on a path toward a release in the region, the Lower Tanana Planning Team was presented with 5 potential release sites of highly favorable habitat within and proximate to MFSGR. Although some planning team members were not supportive of a release at this time, all planning team members participated in discussions about the various negative and positive attributes of each site and were asked to indicate which sites they preferred and which sites they opposed. Recognizing that some team members did not prefer any of the reintroduction sites offered at the time, the highest rated location with the least opposition was the Kantishna site; 13 approved the location and 1 person opposed. When the person with the negative vote was asked why they voted that way, they said that they had no problem with the Kantishna site; they just preferred a different site closer to their community. The release site with the second lowest opposition and highest support was the lower Tolovana site, with 8 people preferring the location and 2 people opposed to it. Next was the Tanana Flats site, which had equal amounts of support and opposition (4 each). There was more opposition than support for the original northern MFSGR sites discussed in the EA. After the November 2023 planning team meeting, ADF&G biologists had follow-up discussions with Chief Andrew Jimmie, who at the time was the traditional Chief of Minto and the Second Traditional Chief of all Interior Alaska, and he supported the site selected by the team and reaffirmed that if ADF&G was going to do a release in the Lower Tanana that the Kantishna site

should be used for release. A point of consideration is that the Kantishna site is not specifically identified in the EA and is a few miles outside of the portion of MFSGR and the bison habitat study area described in the 2013 EA. To support the planning team's preference to release at the Kantishna site, ADF&G provides the following supporting context and information.

In the 2013 EA, a prevailing concept was for wood bison releases to be located near villages to provide the most benefit to local people, that benefit being harvest. Through meetings and the formal planning process, ADF&G learned there is a fear that bison being close to villages will bring more nonlocal hunters to the traditional hunting areas near those villages. Many local people described that they felt like their traditional moose hunting areas were already overcrowded during moose hunting season. In addition, there were concerns that having wood bison near the village would not result in benefits to community members in the form of harvest.

The Kantishna release site is named such because it is 3.5 miles upstream of the mouth of the Kantishna River, on the southeast side of the Tanana River, within MFSGR. The site is 6 miles south of the 2004 habitat study area and within the southern portion of MFSGR. The Kantishna release site provides a location that is away from private lands and traditional moose hunting areas of Minto, Nenana, and Manley residents, but it is still accessible to residents of these villages and other Alaskans if the population of bison does succeed and provide a harvestable surplus. Thus, the single potential release site pictured in Fig. 5 of the 2013 EA is no longer reasonable (Fig. 1 in this document).

5.1.2 Habitat in the Southern MFSGR

Habitats in and around northern MFSGR were surveyed for bison forage in 2004 and found to be good to excellent habitat (Gardner et al. 2007). New remote-sensing habitat technology that was not available in 2004 (Nawrocki et al. 2021) allows the comparison of the 2004 bison habitat study area (Fig. 1) with Southern MFSGR. The comparison indicates that bison habitat in the southern MFSGR has similar or greater potential to support wood bison than habitat in the northern MFSGR. This is indicated by several measures.

Wood bison are generalist grazers. In boreal systems, they prefer lowland sedges as winter forage. In summer, they forage on a much broader range of meadow plants. To assess the potential for wood bison habitat in a given area, we assume that the abundance of lowland sedges is an indicator of habitat quality. The following excerpt from Gardner et al. (2007) describes wood bison forage selection and also describes suitable bison habitat:

> Wood bison are bulk feeders that select for sedges and grasses (Reynolds et al. 1978). They use a variety of habitats throughout the year but show an affinity for wet and mesic sedge-grass meadows (Larter and Gates 1991, Berger et al. 1995). Bison do not occupy areas where sedge-grass meadows are absent (Gates and Larter 1990). Compared to other northern grazing ungulates, bison are less selective and can utilize available graminoid forage more fully. They use a variety of forage species, seasonally selecting for those that yield the greatest amount of protein (Larter and Gates 1991). The diet of the Slave River wood bison herd included 29 different plant species and 12 species contributed over 1 percent of the diet during at least one season (Reynolds et al. 1978).

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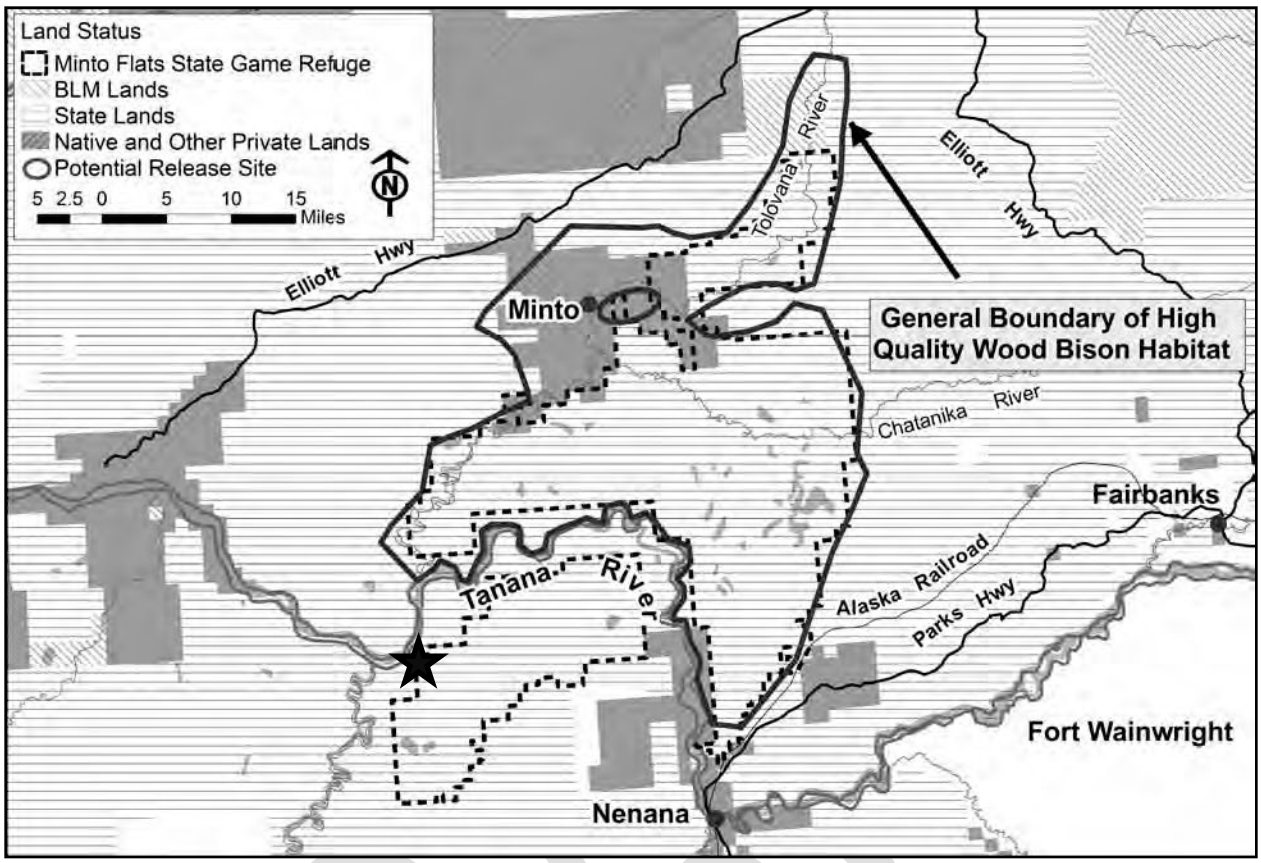

Figure 1. Map from the 2013 Alaska Wood Bison Environmental Assessment (EA) with updated release site. This map appeared as Fig. 5 in the EA. The oval circle represents a potential release site based on discussions at that time. The black star shows the more recently established Kantishna release site, which was added to the EA figure for illustration in this plan.

With this information and observations of the seasonal diet of the Lower Innoko-Yukon Rivers wood bison herd, ADF&G continues to evaluate wood bison potential habitat based on wet sedge habitats. Nawrocki et al. (2021) published "Continuous Foliar Cover of Plant Species and Aggregates in North America Beringia," which has a cover map of wet sedge habitats for all of Interior Alaska. This wet sedge foliar cover map is arguably the best depiction of wood bison winter habitat available to date. Winter months are the period of forage scarcity when lack of proper forage could lead to bison mortality. Bison can range into many types of meadow habitats in the summer, but the distribution of wet lowland sedge provides a window into the places that bison are more likely to include in their future long-term distribution. Fig. 2 depicts wet sedge habitats in MFSGR, which indicate good wood bison winter habitat. This map and the history of how other herds have moved about the landscape can help predict where bison released in MFSGR might move or expand their range. As shown from the Innoko population, dispersing bison and bison going on exploratory forays most often follow favorable bison habitat in their movements and turn back when they encounter unfavorable habitats such as miles of canopy forest.

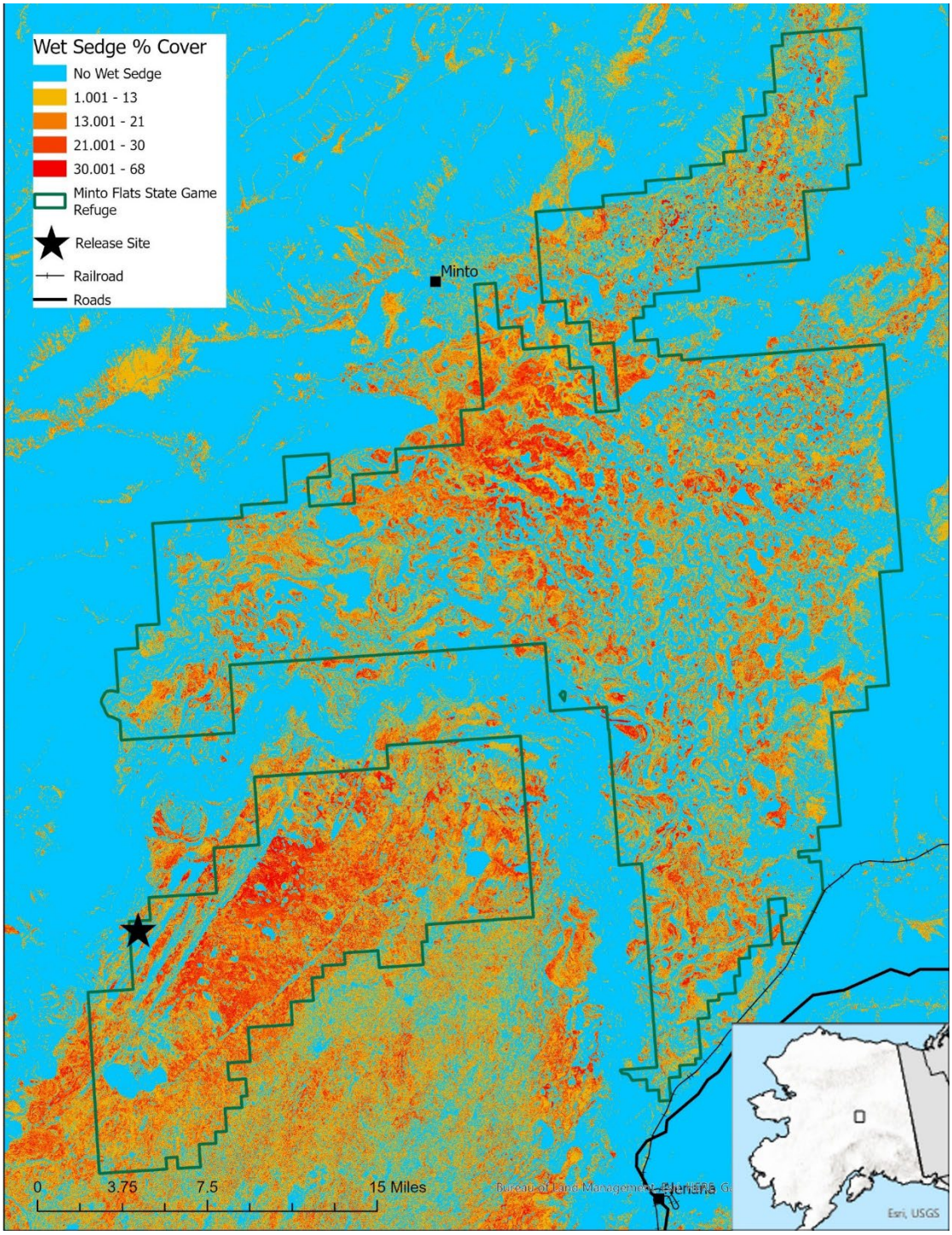

Figure 2. Predicted percent foliar cover of wet sedge from Nawrocki et al. (2021). The black star represents the wood bison release location. Wet sedge represents important winter bison habitat based on studies in other populations.

WET SEDGE HABITATS

Comparing southern MFSGR wet sedge habitats with northern MFSGR wet sedge habitats using the Continuous Foliar Cover Map (Fig. 2), the same or better-quality bison habitats occur in the southern portion of the refuge. The Continuous Foliar Cover Map is broken down into 10m×10m pixels, with blue indicating pixels with no wet sedge present, and the yellow through red spectrum indicating increasing percent wet sedge foliar cover for those pixels that are predicted to have wet sedge. A greater proportion of the southern MFSGR pixels are predicted to have wet sedge (59%) compared to the northern MFSGR (36%). The average percent wet sedge foliar cover of all pixels is also predicted to be higher in the southern MFSGR (12%) than in the northern MFSGR (6%). Of the pixels with wet sedge present, the average percent wet sedge foliar cover was predicted to be 21% in the southern MFSGR and 18% in the northern MFSGR. Therefore, the southern portion of MFSGR may have better bison habitat in many ways, including a higher proportion of the landscape with desirable forage and a higher amount of desirable forage where preferred habitat exists. In June of 2024, ADF&G surveyed bison forage species composition in the southern MFSGR, employing similar methods used in Gardner et al. (2007), and confirmed that the southern portion of the refuge holds the same desirable forage species that exist in the northern refuge (Cooper et al. *In prep*).

Fig. 3 depicts MFSGR and wet sedge habitats at a large scale across the entire lower Tanana drainage. Broad bands of favorable habitat (depicted in yellow to red color) are present that could be used by wood bison to disperse into other favorable habitat. If they disperse, the bands of good habitat lead toward Minchumina, Tanana Village, Tanana Flats, and the northern MFSGR. The remaining uplands and canopy forests of the drainage have poor habitat for wood bison and will likely be avoided.

Based on observations of bison using wetland meadows in the Innoko, bison prefer to feed in the wetland meadows and loaf in the dry areas nearby. The southern portion of MFSGR has Pleistocene relic sand dunes throughout the area that provide dry uplands in a pattern that looks like waves with wet meadows in between (Fig. 4). This can provide proximate juxtaposition for feeding and loafing areas during summer months while providing large amounts of sedge habitats in the winter.

The southern and northern portions of MFSGR are separated by 2–5 miles in most locations, meaning that the 2 portions of MFSGR are separated by less than the distance a bison can walk in a day. In bison movement terms, the Kantishna release site is only 6 miles from the original habitat study area of 2004 but contains as good as or better forage resources overall. Bison can move 6 miles in less than an hour. Movement rates may vary seasonally, and crossing the Tanana River may be easier in some seasons than others. The Innoko wood bison have demonstrated that large rivers are readily crossed, which is relatively new information because large rivers were thought to be barriers to dispersal at the time the EA was written. As a result, the Kantishna release site provides bison with access to functionally the same places as a release site within the 2004 habitat study area.

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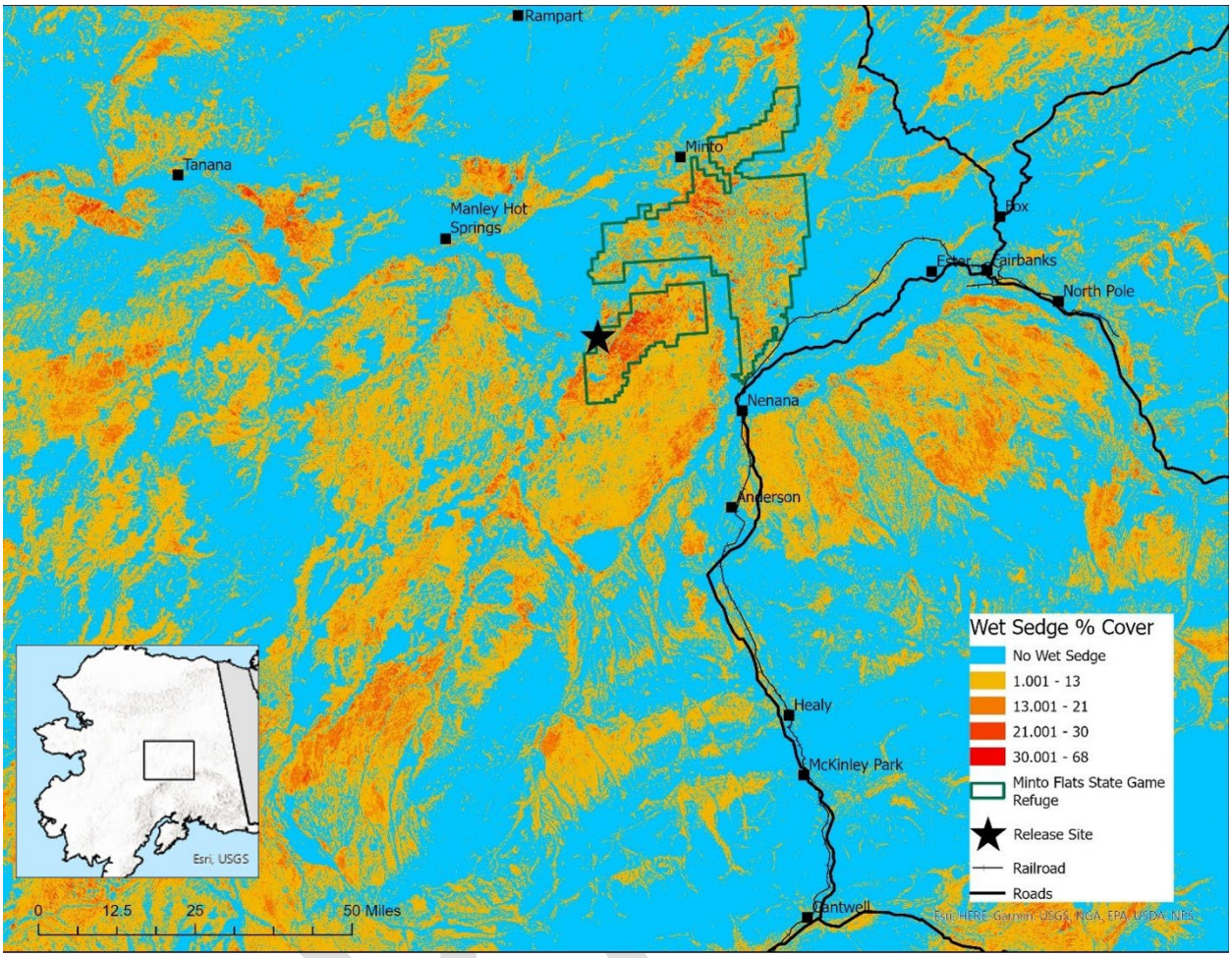

Figure 3. Predicted bison habitat using percent foliar cover of wet sedge habitats from Nawrocki et al. (2021) in the entire lower Tanana valley, Interior Alaska. The black star represents the proposed wood bison release location.

Based on observations by ADF&G staff, local residents, planning team members, and the 2004 habitat assessment, northern MFSGR (especially the eastern side) has more fens, soft bogs, and flooding that may impede bison movement in the summer. However, in the winter, the frozen wetlands of the northern refuge should be accessible as foraging areas for bison (Gardner et al. 2007). Southern MFSGR and surrounding areas provide more dry uplands and less flooding than northern MFSGR. MFSGR as a whole has diverse habitats that can provide the life requisites for bison throughout the seasons.

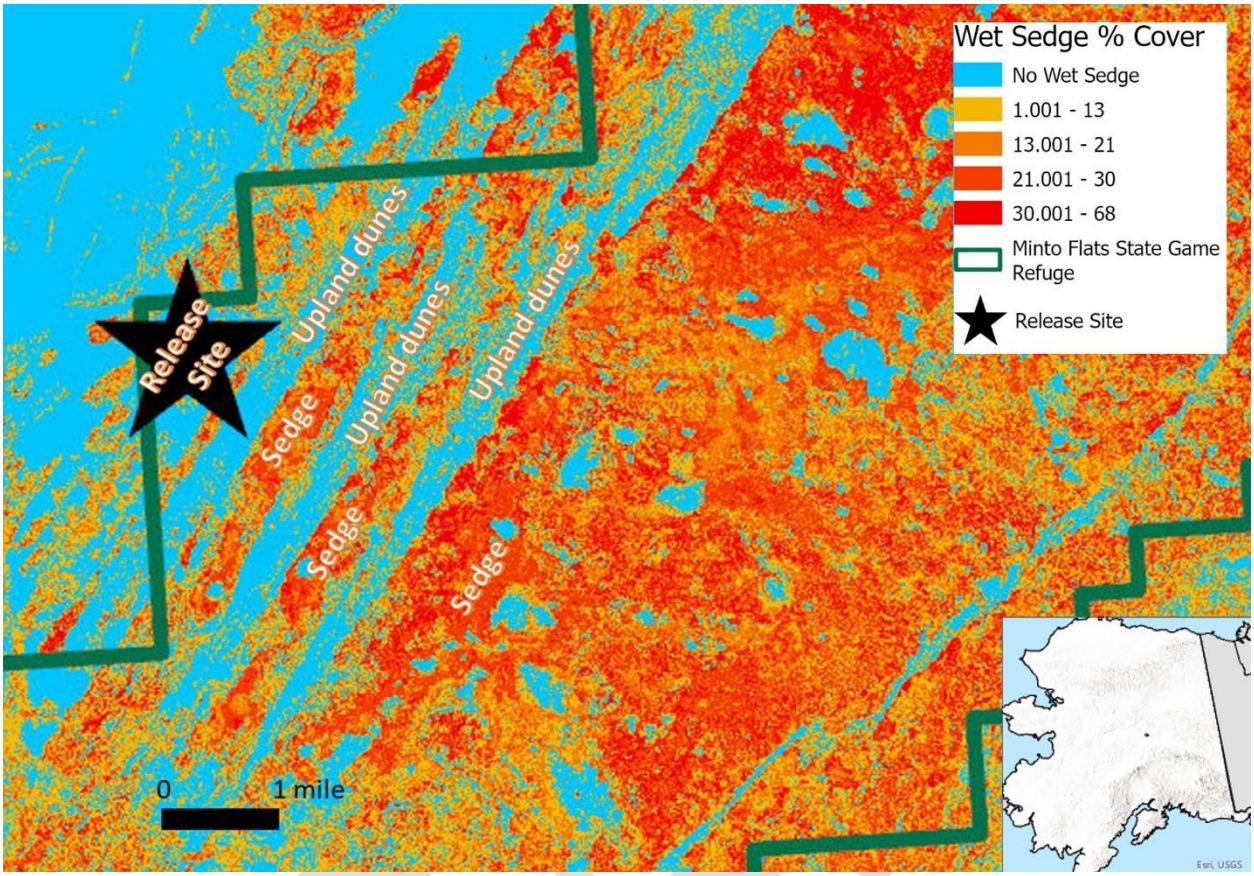

Figure 4. Kantishna release site proximity to an optimal mix of uplands and lowlands conducive to bison foraging, Interior Alaska.

BURNS

Burned landscapes can be beneficial to bison because they tend to temporarily convert mature canopy forest, which does not contain much bison forage, to meadow habitat, which supports bison forage plants. The more recent the burn, the better the habitat is likely to be for bison.

There have been several recent burns covering most of the southern MFSGR. There are also some smaller-scale recent burns in the northern MFSGR, some very close to the release site (Fig. 5). The southern MFSGR historically has experienced a shorter fire return time than the northern portion. If that trend continues, we can expect fire to play a part in maintaining good bison habitat in the southern MFSGR in the future.

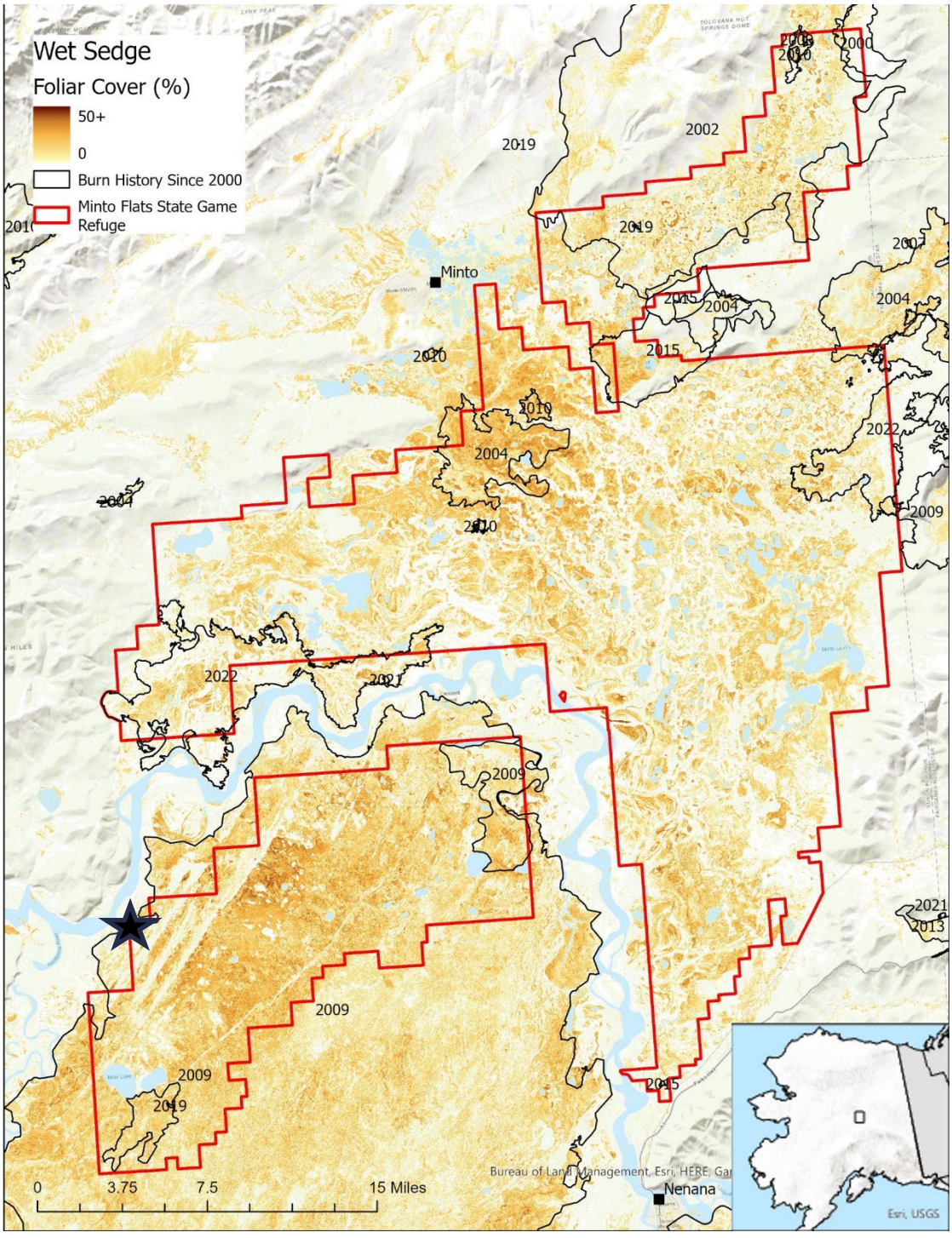

Figure 5. Wet sedge foliar cover (brown scale) and burn perimeters with burn year since year 2000 for the MFSGR area. Wet sedge foliar cover indicates important winter habitat for wood bison. The black star is the Kantishna release site.

SNOW

Monitoring the Innoko wood bison herd since release suggests that deep snow and ice layers in the snowpack can significantly affect later winter survival of wood bison. There are limits to the depth of snow, ice layer hardness, number of ice layers, and duration of both that bison can survive due to impeding locomotion and foraging. The Innoko herd has experienced declines 3 times in the last 9 years. The declines occurred when snow depth, hardness, number of ice layers, and duration of ice and snow exceeded what some of the bison could survive. Recent weather data indicates that western Alaska has had more than double the late winter snow than historical averages since the herd was released (Thoman 2024). A preliminary assessment of snow conditions in and around MFSGR with respect to potential wood bison habitat was completed in 2004 by Gardner et al. (2007):

> Snow conditions at Minto Flats are commonly influenced by wind. Many of the large meadows and lakes from Big Minto Lake to Swanneck Slough and south to the Tanana River are often kept snow free, or nearly so, by wind, which exposes extensive areas of open meadows for foraging. Drifting does occur in sheltered areas but not to a degree that would impede travel by bison. The combination of wind and relatively low snowfall allows access to abundant forage in many areas.

Portions of southern MFSGR are known for these same consistent winds, which wane south of Black Bear Lake. This assessment suggests that snow conditions in MFSGR will likely be favorable for bison foraging in late winter. The catastrophic snow conditions that occurred 3 of 9 years in the Innoko area are exceedingly rare in MFSGR. Both wind and low snow levels have historically created snow conditions in MFSGR that are conducive to bison survival in late winter.

5.1.3 Fewer Infrastructure Conflicts

Another benefit of the Kantishna release site is that it is the farthest proposed release site from infrastructure (e.g., roads, railroads) and residential areas. This approach is distinctly different from the 2013 approach for selecting a release site and reflects the evolving concerns of the public. The distance from human activity will minimize the potential for human-wood bison conflicts and is a key aspect of this management plan.

Bison released in the Kantishna area have a low chance of interacting with road traffic, which reduces the chances of vehicle accidents and road-killed bison. The lower exposure to roads is a survival benefit to the bison both during the release phase and over the long term as the population grows and learns about the obstacles in their habitat.

In the future, if harvest occurs in this population, the association that bison make between vehicles and the act of hunting may contribute to these bison having an avoidance of roads. This hypothesis is supported by the low number of vehicle collision mortalities that the Delta bison herd experiences. The Delta herd contains 300–600 plains bison that face heavy hunting pressure annually. This herd lives on both sides of 2 major highways—the Alaska Highway and the Richardson Highway (near Delta Junction). Despite crossing roads, sometimes on a daily basis, roadkill is uncommon in this herd, outside of extreme winter conditions.

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5.1.4 Eventual Herd Distribution

The available habitat and history of previous bison releases suggests that the slight change in release site location is unlikely to change long-term herd distribution. There have been 6 other bison populations established in Alaska and Yukon Territory in the last 96 years. For 3 of those populations, the core distribution of the herd includes the release site, and they range 20–60 miles from the release site (Table 1). For 5 of the 6 populations, part of the long-term, core herd distribution is within 10 miles of the release site, which is about one day's walk for a bison. The Copper River herd is the exception. The Copper River herd has settled in an area that is 47 to 82 miles from the release site. The maximum distance of the core herd distribution from the release site for all releases was 20 to 94 miles, with a mean of 56 miles and a median of 50 miles. With this history in mind, it is highly likely that bison released at the Kantishna site will establish a long-term distribution that includes the northern and southern portions of MFSGR. If the herd disperses far, they will likely still include parts of MFSGR but may range as far as Tanana village, Minchumina, or Blair Lakes in the Tanana flats over the long term. When considering how potential forage is distributed within that 94-mile range from the release site, bison are unlikely to establish a distribution in the forested areas of the drainage, including the hills north of the Tanana River. Bison released at the Kantishna site would have essentially the same options available to establish their long-term distribution as bison that would have been released in the Northern MFSGR.

Table 1. Distance from release site to established core range of the 6 bison herds established in Alaska and Yukon Territory.

Herd	Minimum	Maximum	Year released	Subspecies	Population size
Delta	0	40	1928	Plains	300–600
Innoko	0	60	2015	Wood	70–150
Farewell	0	20	1965	Plains	200–500
Aishihik	8	94	1988	Wood	2,000
Chitina	10	40	1962	Plains	17–60
Copper	47	82	1950	Plains	100–200

Note: Minimum and maximum are the distance between the release sites and the closest and farthest edge of the core range of the herd in miles.

Many strategies can be employed to "anchor" bison to a release site and influence the bison's long-term selected home range. First, bison can be released in a general area with ample forage. Second, bison can be held in a soft release pen long enough that they identify the soft release area as their home range. Third, bison can be held long enough for adult cows to calve in or near the soft release pen because the calving location is most often included as part of a cow's long-term home range. Fourth, an effort can be made to provide ample food and supplements and minimize stress in the soft release pen so that bison remember it as a positive place to be. And fifth, bison can be released at a time when wild forage resources provide an abundance of high-quality forage choices just outside the pen (early summer), and long-distance movements are not necessary to meet their daily needs upon release. History suggests that all of these strategies can influence long-term home range, but after release, bison will be free to choose their home range based on their daily needs for forage, snow, shelter, and predator avoidance.

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There are roughly 9,000 square miles of lowland habitats in the lower Tanana Valley from the Elliot Highway to Minchumina and from Fairbanks to Tanana village, and most of it is state public lands. All previous experiences with bison releases in Alaska and Yukon suggest the final range distribution of Lower Tanana wood bison will be somewhere in the lower Tanana valley if released at the Kantishna site, and it is highly likely that MFSGR will be part of their long-term distribution.

The range of effects outlined by a wood bison release described in Section 5.1 of this management plan is within the range of effects outlined in the EA.

5.2 Potential for Agricultural Conflict

5.2.1 Pros and Cons of Wood Bison and Agricultural Overlap

Not all interactions between bison and agriculture are negative. The following is a list of the pros and cons regarding the spatial overlap of bison and agriculture.

Pros of bison presence near agriculture:

1. Improved access for hunters to harvest bison.
2. Ability to manage a given bison population intensively. Good access helps hunters achieve desired management goals for a population, resulting in optimal bull-to-cow ratios and optimal productivity for a herd on a given range.
3. Improved forage options for bison will likely result if canopy forest is converted to grassland.
4. Extra income to agricultural project landowners through fees paid by hunters to access their lands to hunt bison.

Cons of bison presence near agriculture:

1. Crop damage by bison.
2. Disease and parasite risk to wild bison from domestic livestock
3. The cost of increased mitigation measures like fencing that would separate bison from crops that may sustain damage.
4. Hybridization risk from domestic plains bison (if domestic plains bison are being raised within wood bison range)

5.2.2 Bison Conflict Prevention and Mitigation

We have identified areas in the lower Tanana wood bison recovery area where conflicts between wood bison presence and agriculture could potentially develop. Identifying these areas now will allow all vested interests to be cognizant of the potential and to prepare for excluding bison or protecting agricultural areas from wood bison presence. There is currently very little agriculture in the lower Tanana valley, with 3 potential areas for conflict. One area is the Kobe agricultural project near the Parks Highway bridge over the Nenana River. The Kobe agricultural project was

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created decades ago and is about 25 square miles in size. Today, about 0.1 square miles of the Kobe project (less than 1%) are in production, primarily for hay.

Another agricultural project off the Parks Highway by Nenana has about 1.8 square miles in hay production and less than 10 acres in berries and flower crops. The third area, the Nenana-Totchaket Agricultural Project (NTAP), borders the southern portion of MFSGR (Fig. 6). The NTAP has been planned for several decades but is undeveloped at this time. Phase 1 of NTAP project has begun, and land is being privatized. The Kantishna release site is a similar distance to NTAP, as several portions of the northern MFSGR are to NTAP. In addition, the Tanana River is unlikely to be a barrier to dispersal as originally thought in the EA because we have learned from the Innoko herd that bison will cross large rivers regularly. Because of this, the chance of conflicts with agriculture is similar when comparing the Kantishna release site and release sites within the northern MFSGR. Conflicts with agriculture in NTAP can be avoided and/or mitigated. The following is a history of an agricultural project that was developed within the range of an established wild bison herd and an analysis of the prevention and mitigation of bison-agriculture conflicts.

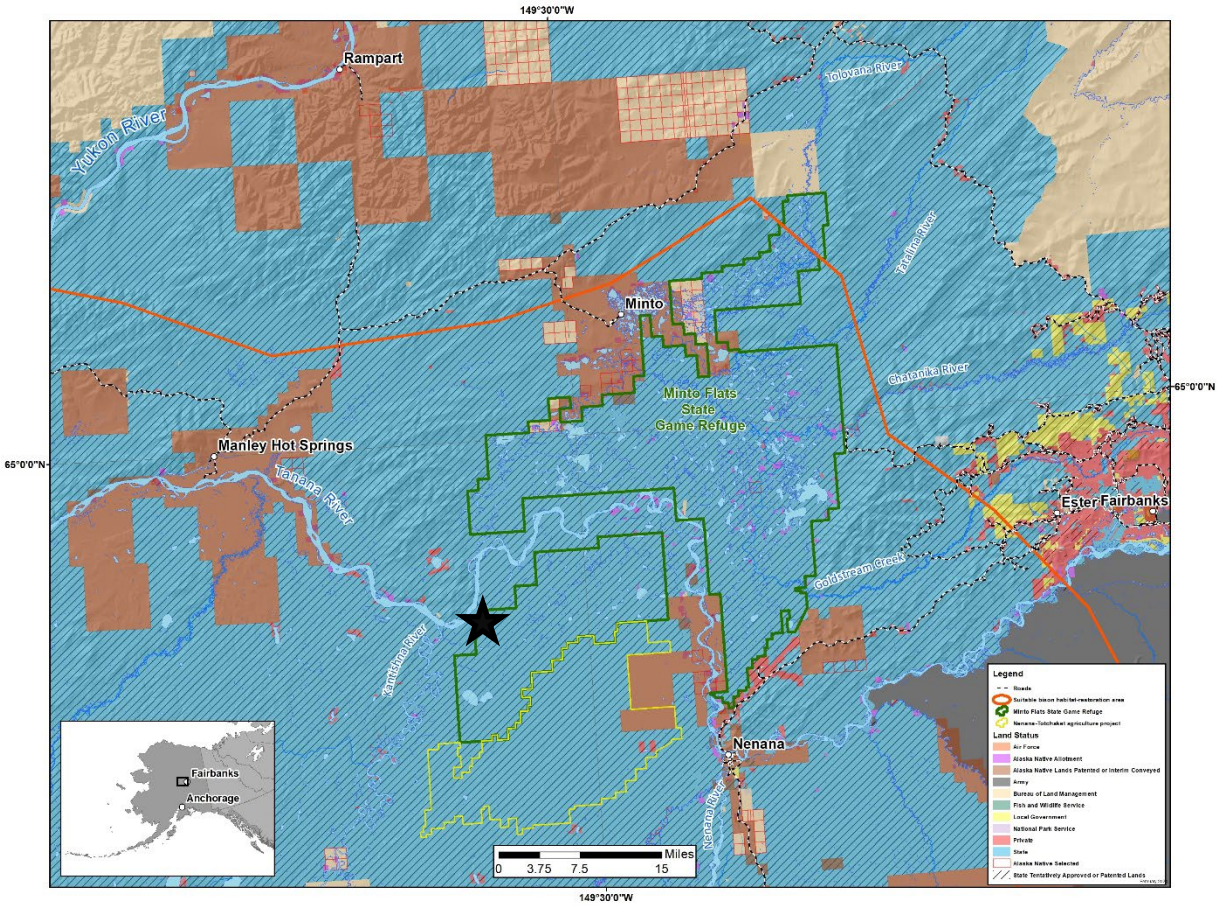

Figure 6. Land ownership and status of the MFSGR area, including the undeveloped Nenana-Totchaket agricultural project outlined in yellow. The black star is the Kantishna release site.

A Comparison to the Delta Bison Herd

Conflicts between the Delta Junction plains bison population and the Delta Junction agricultural project are sometimes cited as an indication that similar conflicts could arise in the lower Tanana Valley. However, there are major differences between the Delta area and the lower Tanana area, and the potential for these conflicts to arise.

In the Delta Junction area, bison were established 50 years before the agriculture project was established there. In those 50 years, bison were wintering in the lowland meadows of the valley. In the 1970s, the Delta Junction Agriculture Project was developed on the existing bison wintering grounds. Bison had already developed a pattern of using the area, and it was an easy transition for them to start using the agricultural habitats because the agricultural effort of changing areas from forest to agricultural lands tended to make those lands more favorable for bison. Since the agricultural project was developed, some of the agriculture operations have reported conflict with bison, including trampling or feeding on crops and feeding on unsecured hay. By 2022, conflicts between Delta bison and agriculture in the Delta Junction area were alleviated where adequate fencing was used, although the rare and severe winter of 2021–2022 brought about conflicts with some landowners.

In the lower Tanana area, wood bison can be managed to avoid developing a pattern of use of NTAP. Bison can be hazed from the area, fenced out, or selectively removed in targeted hunts so that they do not develop a pattern of using NTAP.

Space Available for Wood Bison and Agriculture to Coexist

Alaska bison tend to utilize valley bottom and lowland habitats. The Delta Junction area has a narrow valley consisting of about 530 sq mi of lowland bison habitat with about 285 sq mi of that valley consisting of agricultural project, residential area, and developed military complex. Thus, 54% of the valley habitat at Delta Junction consists of areas where bison may come into contact with human infrastructure including agriculture. Within their core habitat area, the potential for Delta bison to intersect with human infrastructure is high.

Comparatively, the lower Tanana valley is a much larger area than the river valley habitat of the Delta bison herd. The lower Tanana valley contains about 9,000 sq mi of lowland areas that wood bison may use. MFSGR itself is about 1.5 times bigger than the entire valley bottom in the Delta Junction area. The lowland potential bison habitats in the lower Tanana valley total about 17 times larger than the entire valley bottom near Delta Junction. With the minimal presence of agriculture in much of the lower Tanana valley, fencing, hazing, and removal of individual bison may mitigate bison conflicts in agricultural areas and prevent a pattern of use in agricultural areas from becoming established.

Bison Will Establish Their Long-term Distribution Before the NTAP is Fully Established.

After the Innoko wood bison release, movements of bison were explorative for the first 2–3 years, then the herd settled into a much smaller distribution for the long term. It is assumed that this was the process of the bison finding the best parts of the habitat that they wanted to occupy.

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All 6 populations of bison in Alaska and Yukon Territory have had a very consistent pattern of movements after they settled into their long-term distribution. Fig. 7 depicts the attractiveness of bison habitats around the NTAP to bison. To estimate attractiveness of habitat to bison, we observed the average percent cover for wet sedge in the southern MFSGR; then we looked at all pixels with an amount of wet sedge greater than that average in both NTAP and southern MFSGR. This analysis shows that NTAP habitats are less attractive than nearby MFSGR habitats, suggesting that bison will prefer MFSGR habitats as they develop their long-term home range over the first couple years after release. During the years we anticipate bison will be actively exploring, we expect NTAP will not be fully developed as an agricultural area with potentially attractive habitats, and bison will be more attracted to and settle into MFSGR. If and when crops in the agricultural areas become a significantly large part of the habitat in NTAP, bison may have already established their normal home range and patterns elsewhere.

Habitats in NTAP

NTAP is mostly burned forest, and there are relatively few meadows within this agricultural project perimeter that would attract bison. NTAP does have some wet sedge habitats (Fig. 7), but much of the wet sedge in this area is likely a product of the post-burn response in the vegetation, making it temporary. As the forest regenerates after the burn, it will become less and less inviting to bison as the canopy captures the light before it gets to the ground-level plants that are bison forage. The exception is the lands that will be converted to agriculture. Currently, less than 10 acres of land in NTAP has been converted to agriculture, but the development is in process.

Fencing Has a History of Success

Fencing has been used successfully on the Delta Agricultural Project to exclude bison from agricultural parcels where they are not tolerated. However, it has been demonstrated on the Delta Agricultural Project that only regularly maintained fence of adequate height and strength will consistently exclude bison.

Hazing Has a History of Success

Wood Bison were held in a soft release pen and released north of Shageluk in 2015, within a mile of the Shageluk airport. Areas alongside the runway were kept in grass for the purpose of aviation safety. The airport property and the surrounding habitats contain abundant sedges and grasses and were attractive to bison. ADF&G trained local people with the techniques to properly haze bison using a curriculum developed by ADF&G and named the Bison Guardian program. The concept is to condition wild bison to have a negative experience near human infrastructure and an avoidance reaction to infrastructure during future encounters. ADF&G paid Bison Guardians to haze bison whenever they were present at the Shageluk airport. The number of days bison were seen near the airport decreased annually for the time period 2016 through 2021 (Fig. 8), and within 4 years, bison sightings from the airport were once a year or less.

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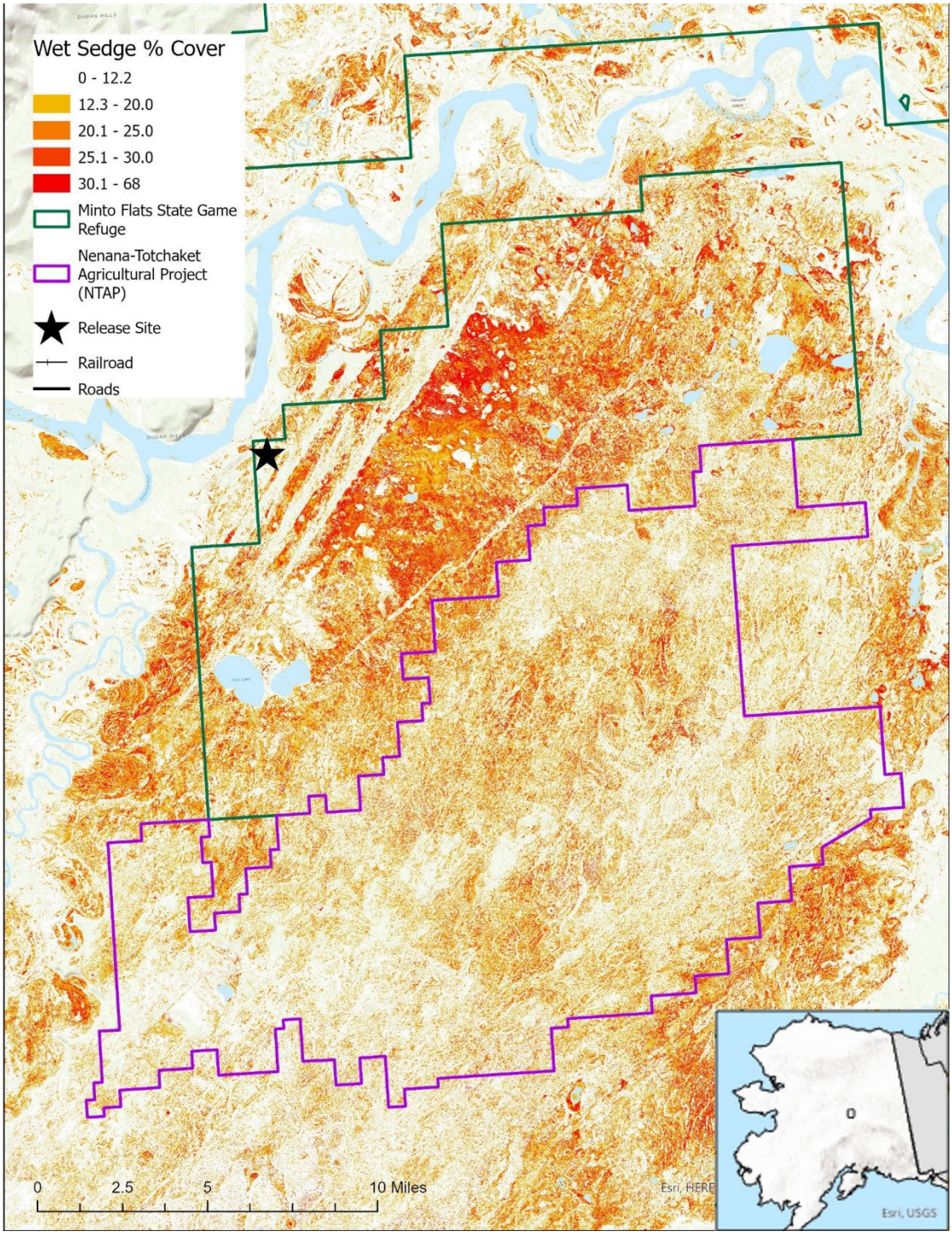

Figure 7. Comparison of wood bison habitat attractiveness, southern MFSGR and NTAP, based on percent cover of wet sedge. Increasing value of percent wet sedge cover is predicted to increase bison habitat quality.

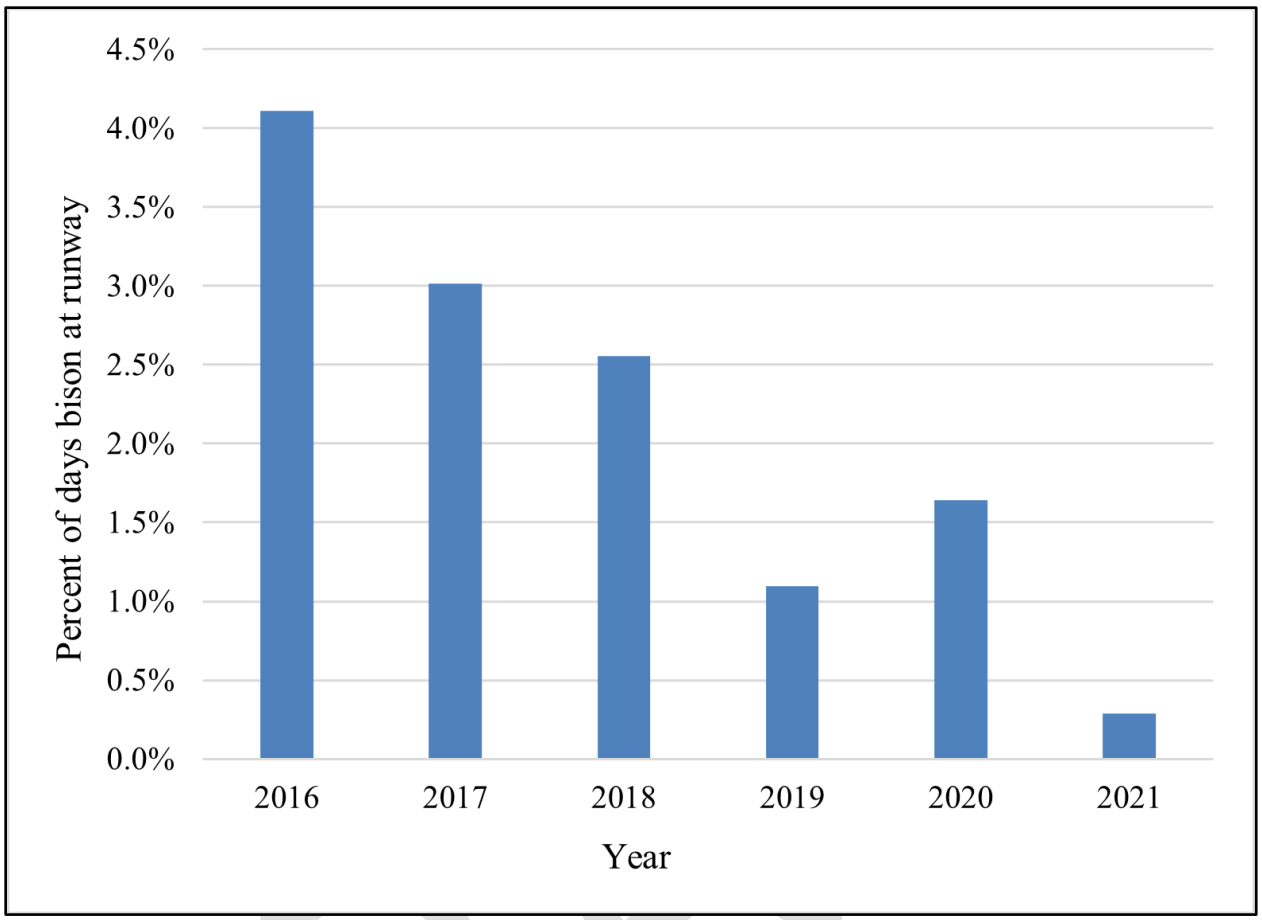

Figure 8. The reduction in use of the Shageluk airport area by wood bison after hazing as part of the Bison Guardian program.

Targeted Hunts Have a History of Success in Modifying Bison Distribution

Targeted Hunts may be an option to address bison presence. Targeted Hunts are hunts where hunters apply to get on a list for a hunt that may or may not take place. If the decision is made to remove bison from areas of human infrastructure such as NTAP, individual hunters can be accompanied by ADF&G staff or sent to a specific area to remove individual bison in an effort to apply aversive conditioning to the remaining bison.

A similar concept has been applied with the Aishihik wood bison herd between Kluane Lake and Whitehorse, Yukon Territory, Canada. This herd numbers around 2,000 animals, and the Alaska Highway and other roads exist within the range of the herd. Hunter harvest is around 280 bison a year from this herd in long winter seasons. Hunts are opened near the roads first in an effort to deter bison from establishing use patterns along roadways. This has been very effective (Tom Jung, Government of Yukon Department of Environment, personal communication) at keeping bison away from roads and other human infrastructure. Another strategy that has been employed in the Aishihik herd to discourage bison presence near human infrastructure is to target specific individual bison for harvest, which in turn impacts the social structure of the wood bison matriarchal groups. According to a First Nations representative from the Aishihik area who was

interviewed during an Alaska wood bison planning team meeting, killing the two-year-old cows in the matriarchal group has a profound effect, encouraging the matriarchal groups to leave the area. Targeted hunts in MFSGR recovery area would only be considered as an option if fencing and hazing are not adequate in alleviating bison conflicts.

5.2.3 Summary of Potential Agricultural Conflicts.

In regard to agricultural production, the EA stated that "The Service and ADF&G believe that the protection for these and other land uses provided by the NEP designation and special rule, and the mitigation measures outlined in the EA, will allow wood bison restoration to proceed without interfering with these potential agricultural developments." The EA discussed the agricultural lands north of Nenana and the proposed NTAP agricultural development. The EA described habitat in NTAP as currently supporting little bison forage and that even if significant crop lands are created in NTAP at a future date, any conflicts that might occur there could be mitigated through proper fencing, hazing, and removal of individual bison. The EA does discuss the idea that bison will be unlikely to leave the high-quality habitats in MFSGR north of the Tanana unless their population density gets to the high level of 1.5 to 2 bison per square mile.

This management plan describes a release on MFSGR south of the Tanana River in a location of equal or greater high-quality wood bison habitat as the initial proposed release site in the north part of the refuge. This area is closer to NTAP, but ADF&G believes that wood bison restoration can proceed without interfering with potential agricultural projects. As was learned with the lower Innoko-Yukon rivers wood bison herd, bison are capable of swimming large rivers like the Innoko or the Tanana on a daily basis, so bison will be able to pass freely between the north and south side of the Tanana. Section 5.1.4 of this management plan describes how a release of bison in the southern MFSGR has roughly the same long-term distribution potential as a release in the northern MFSGR, and the southern release currently has more support from the planning team. Whether bison are released in the northern or southern MFSGR, ADF&G believes they will not interfere with potential and existing agricultural projects, and the mitigation measures described above can be employed to resolve any significant conflicts that may arise. The range of effects for bison and agricultural overlap outlined in this management plan are within the range of effects outlined in the EA.

6.0 Post-Release Goals, Objectives, and Actions

Goal 1: Increase or grow the wood bison herd in the lower Tanana area and manage it for long-term viability.

Restoring wood bison in Alaska is a conservation opportunity of local, state, national, and international importance, providing a broad range of benefits to hunting and nonhunting interests alike. The planning team recognized the importance of hunting as a management tool.

Objective 1: Release wood bison and add animals whenever feasible and move animals where appropriate to grow this population.

Objective 2: Continue to closely monitor and conservatively manage these wood bison to better understand how the herd adapts to its surroundings including occasional deep snow and flooding.

Objective 3: Conduct ongoing field surveys to monitor the status of the herd.

ACTION 1 — Conduct field surveys to collect biological data on population size, calf production, bull-to-cow ratios, survivorship, age structure, body condition, seasonal movements, and dispersal.

ACTION 2 — Encourage local residents to share information about known locations of bison with one another and ADF&G for management purposes.

Objective 4: Ensure that future harvesting of the herd is maintained at a level that does not prevent growth and expansion of wood bison into adjacent areas where suitable habitat exists.

Objective 5: Maintain separation between wood bison and plains bison to prevent interbreeding.

Objective 6: Conduct routine disease testing to monitor the health of wood bison and associated wildlife.

Goal 2: ENSURE ADEQUATE STAFFING AND FUNDING FOR ALL PHASES OF WOOD BISON MANAGEMENT.

Objective 1: Continue to support a dedicated ADF&G biologist to intensively monitor wood bison while the herd becomes established in the wild and to ensure well-informed management decisions after the herd has been established.

Objective 2: To the extent possible, ensure available funding is adequate to support robust wood bison management and monitoring.

Goal 3: MINIMIZE CONFLICTS BETWEEN HUMANS AND WOOD BISON.

Much has been learned about conflicts between people and wood bison in Canada. Wood bison rarely attack people and are less likely to do so than moose. Like moose, bison want to move away or avoid people, but if cornered, could become aggressive.

Lethal removal or harassment of problem wood bison will be guided by state regulations (5 AAC 92.410 “Taking of game in defense of life or property”; 5 AAC 92.033 “Permit for scientific, educational, propagative, or public safety purposes”) and also by federal regulations (50 CFR 17.84 (x)(5)(iv) “What take of wood bison is allowed in the NEP area?”).

Objective 1: Continue to educate all interest groups about wood bison and their interactions with people.

Objective 2: Continue to employ established procedures to accurately identify and resolve problem-bison situations.

ACTION 1 — Lethal removal of wood bison will be allowed in the defense of human life.

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ACTION 2 — Nonharmful harassment of wood bison, in coordination with ADF&G, will be allowed in defense of property.

Objective 3: Maintain the cooperative effort between ADF&G and local communities and individuals to develop procedures and train personnel to deal with problem wood bison (Bison Guardian program).

Goal 4: MONITOR WOOD BISON INTERACTIONS WITH OTHER WILDLIFE SPECIES AND THE ECOSYSTEM.

Much information exists on interactions between wood bison and other wildlife species in the boreal forest environment in Canada. Many of the studies that contain this information are described or cited in the May 2014 federal rule (Federal Register 2014) that provides for the establishment of nonessential experimental populations of wood bison in Alaska, the November 2013 environmental assessment (ADF&G 2013), and the 2007 ADF&G environmental review of wood bison restoration in Alaska (ADF&G 2007). Wood bison are an indigenous species that evolved along with other animal and plant species in the boreal forest. No significant negative impacts of wood bison on species in this environment have been documented to date in Canada or Alaska.

We can learn about interactions between wood bison and other species in the Alaska ecosystem by observing the plains bison in Alaska. As a result of a plains bison introduction effort in Alaska that began in 1928, there are 4 different populations of plains bison in Alaska, totaling over 1,000 bison. There have been no significant negative effects documented from plains bison in Alaska during the 96 years since 1928. This further supports that wood bison are unlikely to have negative effects on the environment and other species because the 2 subspecies of bison interact with their environment in essentially the same way.

Objective 1: Ensure that only certified weed-free feed is used for feeding bison at soft release sites as part of the release process.

Objective 2: Conduct surveys to monitor the diet selection of the herd in its habitat.

Objective 3: Monitor wood bison interactions with their habitat and other species.

Goal 5: ENCOURAGE CONTINUING COMMUNICATION AMONG ALL INTEREST GROUPS.

Communication is critical to the success of the wood bison restoration project. In addition to biological parameters, social and political considerations also must continue to be explored.

Objective 1: Maintain positive working relationships among the diverse interest groups to help resolve future concerns and issues.

ACTION 1 — Provide an update to the planning team at least once a year.

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ACTION 2 — Share updates and reports on the status of the wood bison herd and management program with the planning team.

Objective 2: Incorporate local knowledge by listening to all interest groups about their views toward wood bison and how wood bison interact with people and their habitat.

Objective 3: Involve new communities and interest groups near areas where wood bison might expand.

Objective 4: Recognize that this plan is adaptive and shall be amended to reflect what has been learned in the years following the release.

Objective 5: Continue and encourage additional efforts devoted to helping the public learn about wood bison, the role they play in the northern ecosystem, and the restoration program.

ACTION 1 — Disseminate existing educational programs, such as those developed by ADF&G for grades K-12 and by the Alaska Wildlife Conservation Center and Bear Trust International for grades 7–8.

ACTION 2 — Make skeleton kits available to school-aged children to learn about bison anatomy and function.

ACTION 3 — Continue to develop and disseminate new materials as appropriate to educate the public about wood bison.

6.1 How Many Bison?

One question that has been posed in the planning team meetings is, "How many bison could the lower Tanana hold?" The northern portion of MFSGR was estimated to support more than 400 bison (Berger et al. 1995). If wood bison are successful in MFSGR, there is substantially more habitat in the Lower Tanana River area for them to expand into. The overall wood bison population in the lower Tanana Valley will be regulated in future generations based on the following factors:

1. Productivity of wood bison in the lower Tanana Valley habitats.
2. Weather and climate factors such as the frequency of catastrophic snow events and the potential for seral change of habitat.
3. The public's desire for harvest.
4. Nutritional limitations observed through population monitoring.
5. Mitigation of human-wildlife conflicts.
6. Distribution of the bison populations in the area over time.

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7.0 Long Term Visions from the Planning Team

In the 2023 meetings, the Lower Tanana Planning Team took the time to break into small groups and draw images and make statements about their future, 30-year visions of wood bison in the lower Tanana drainage. This section displays all those visions (Fig. 9a–e, Fig. 10a–g).

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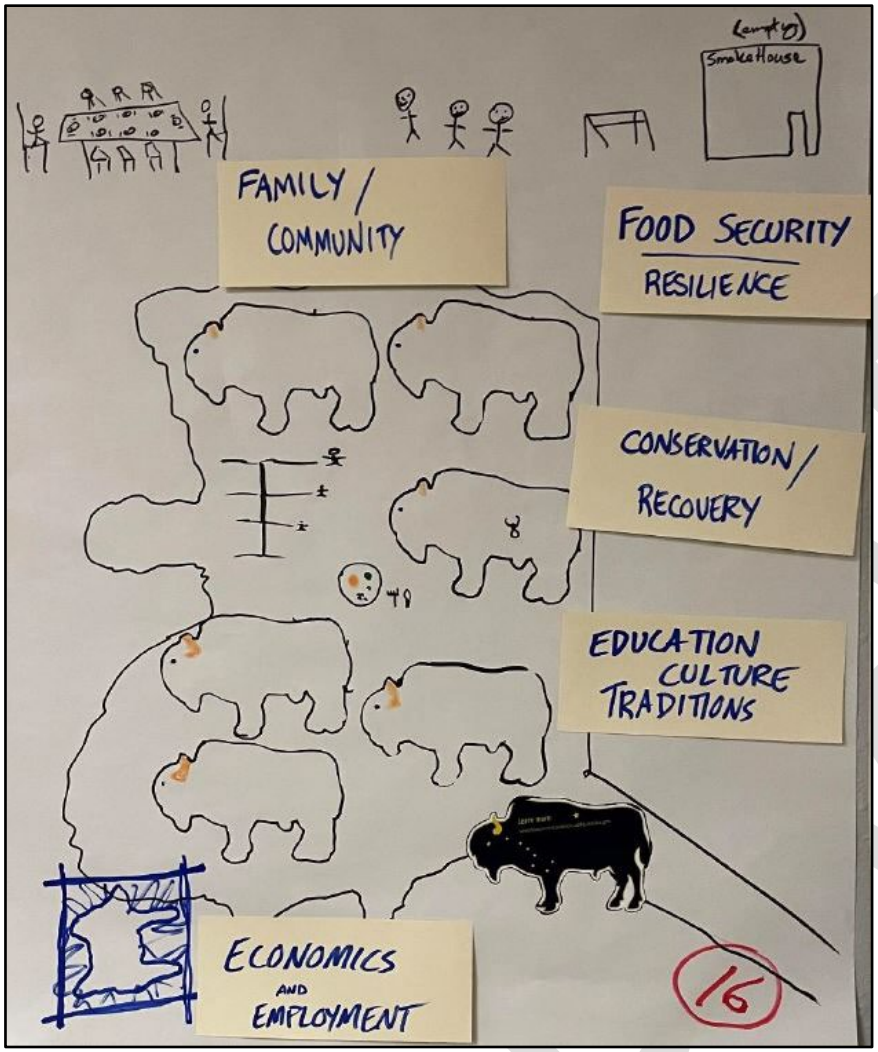

Figure 9a. Drawings of future visions, Lower Tanana Planning Team, January 2023, Fairbanks, Alaska.

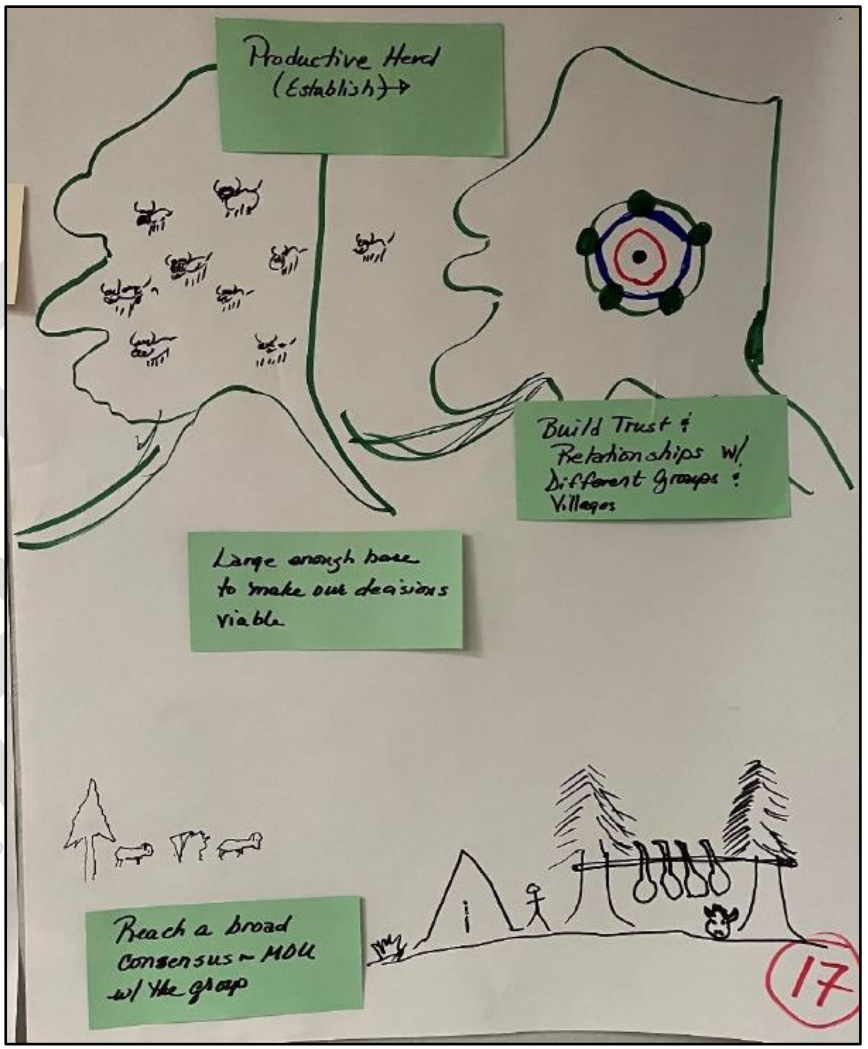

Figure 9b. Drawings of future visions, Lower Tanana Planning Team, January 2023, Fairbanks, Alaska.

Figure 9c. Drawings of future visions, Lower Tanana Planning Team, January 2023, Fairbanks, Alaska.

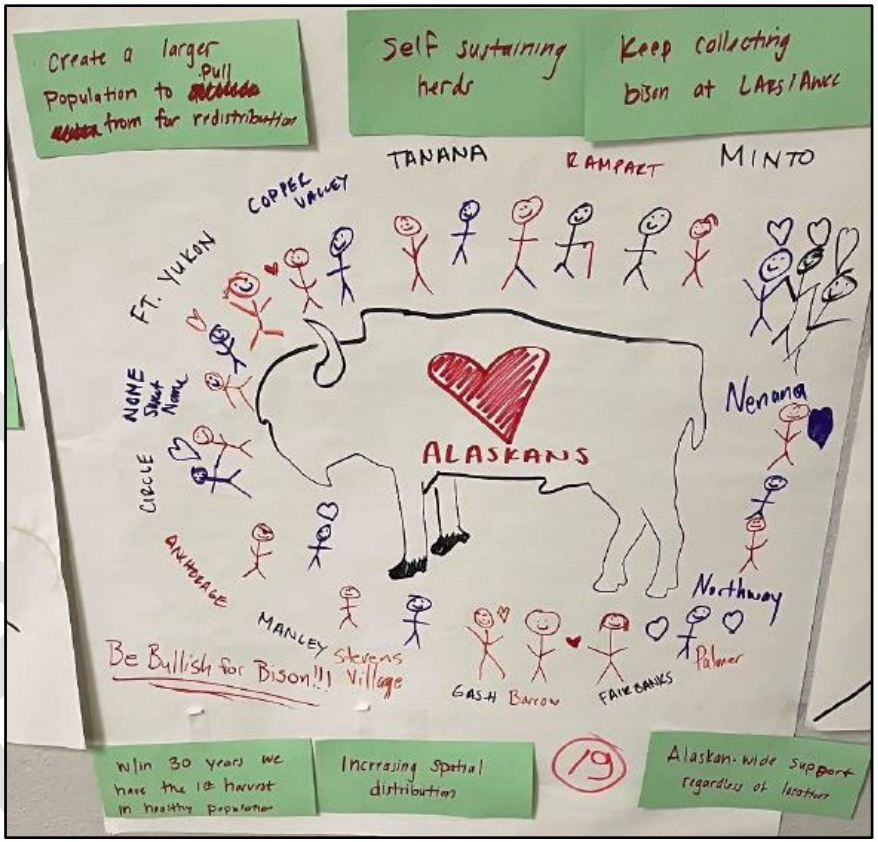

Figure 9d. Drawings of future visions, Lower Tanana Planning Team, January 2023, Fairbanks, Alaska.

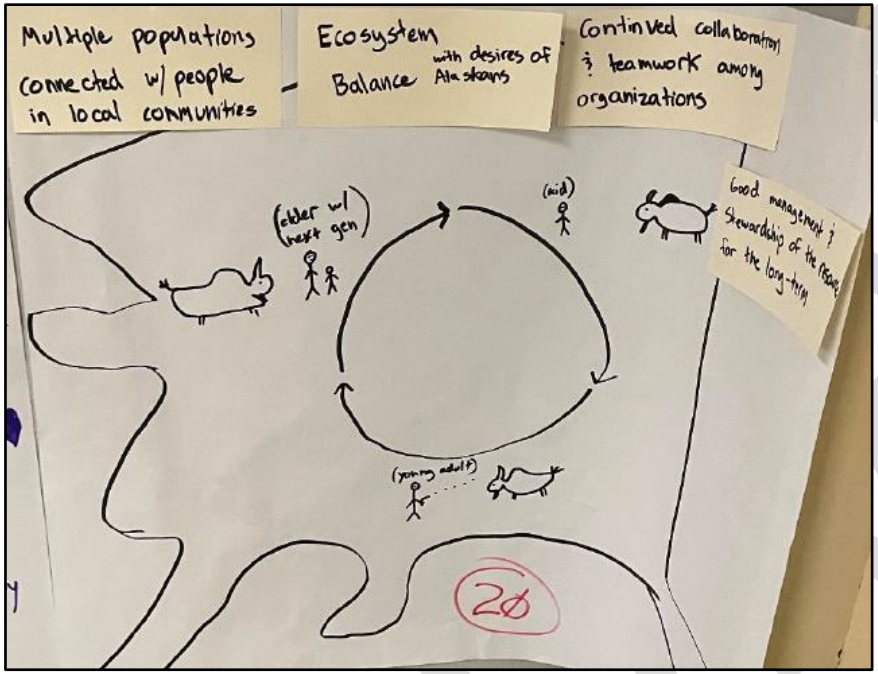

Figure 9e. Drawings of future visions, Lower Tanana Planning Team, January 2023, Fairbanks, Alaska.

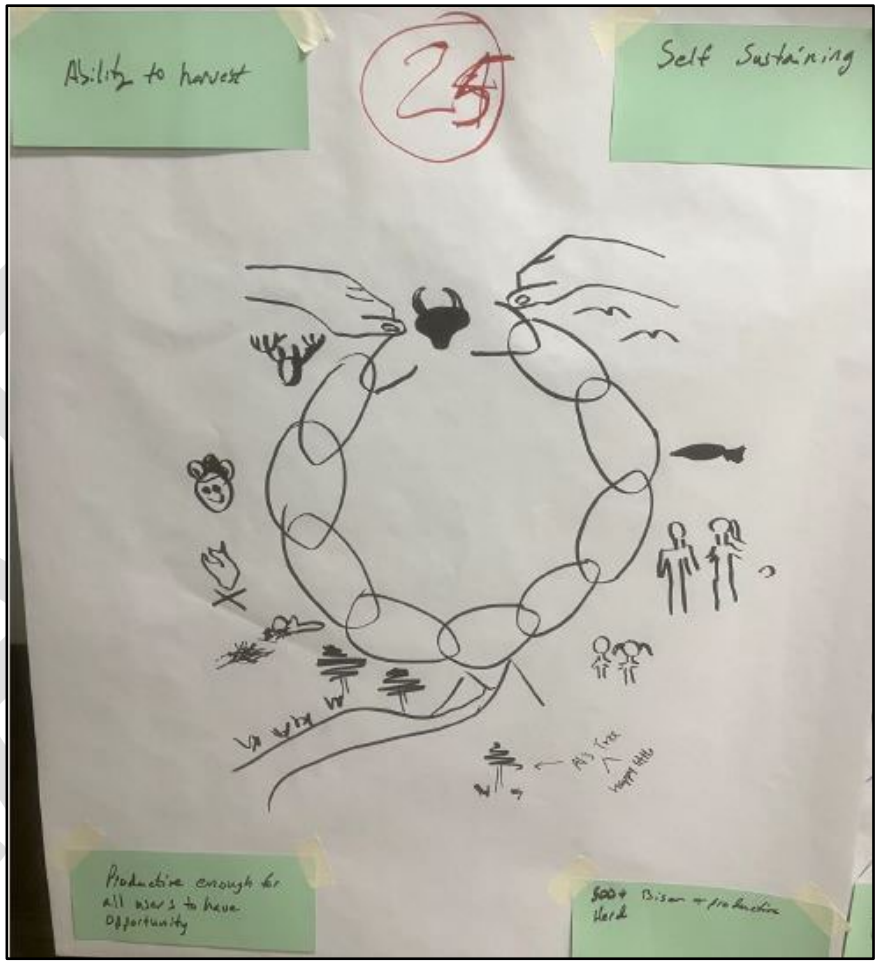

Figure 10a. Drawings of future visions, Lower Tanana Planning Team, November 2023, Fairbanks, Alaska.

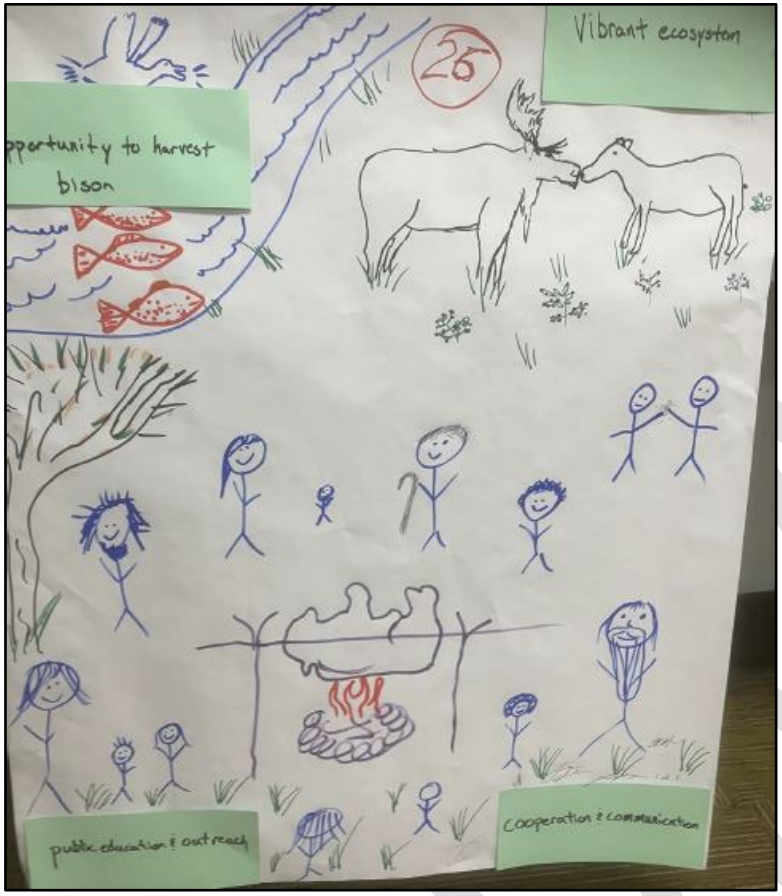

Figure 10b. Drawings of future visions, Lower Tanana Planning Team, November 2023, Fairbanks, Alaska.

Figure 10c. Drawings of future visions, Lower Tanana Planning Team, November 2023, Fairbanks, Alaska.

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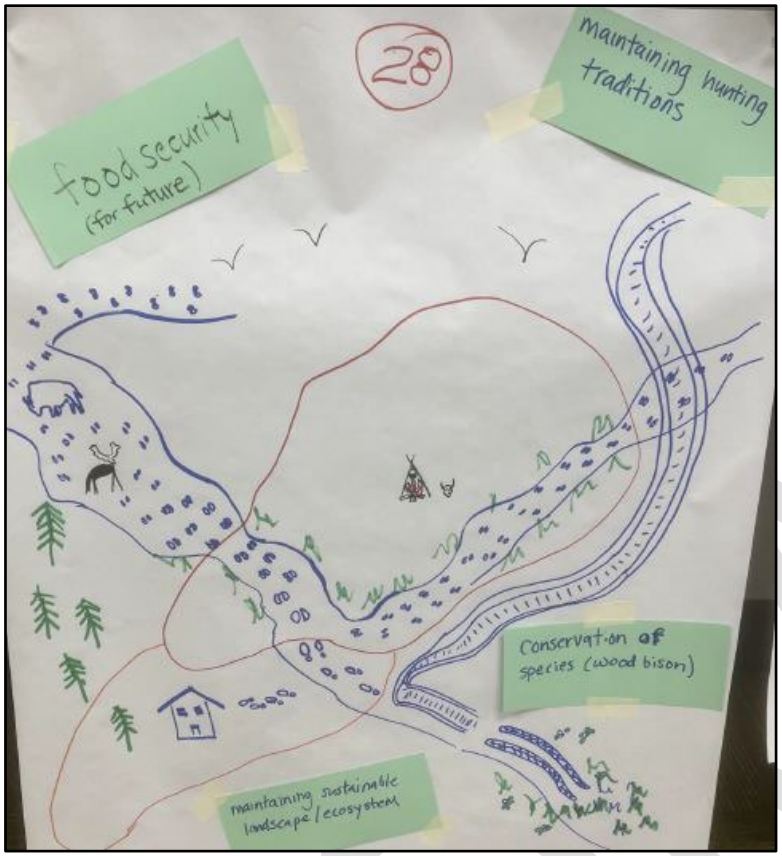

Figure 10d. Drawings of future visions, Lower Tanana Planning Team, November 2023, Fairbanks, Alaska.

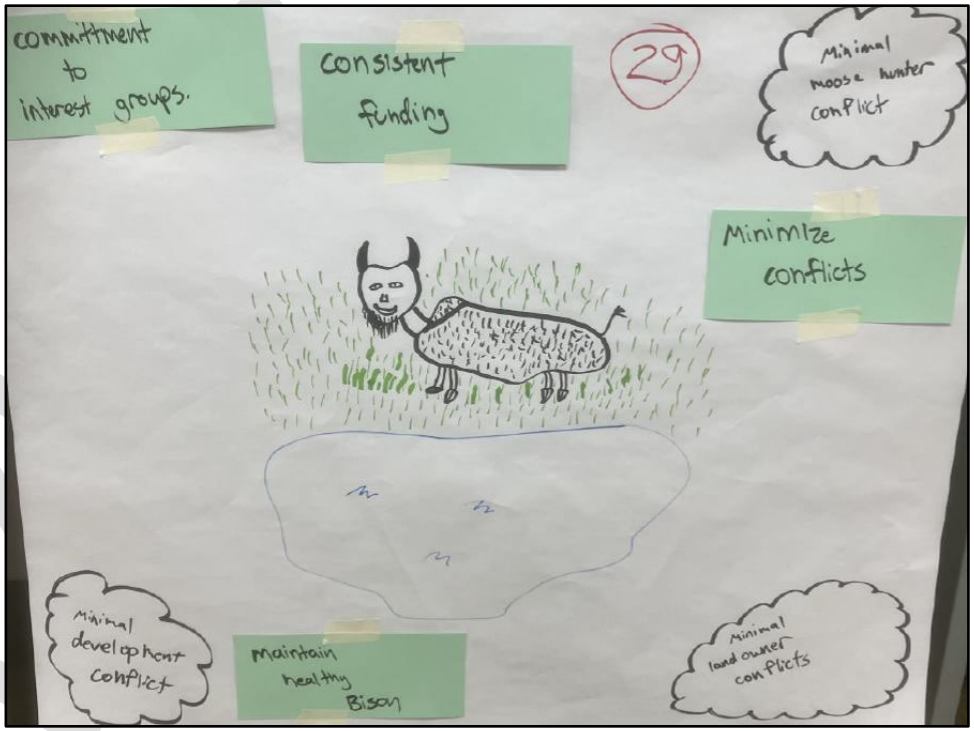

Figure 10e. Drawings of future visions, Lower Tanana Planning Team, November 2023, Fairbanks, Alaska.

Figure 10f. Drawings of future visions, Lower Tanana Planning Team, November 2023, Fairbanks, Alaska.

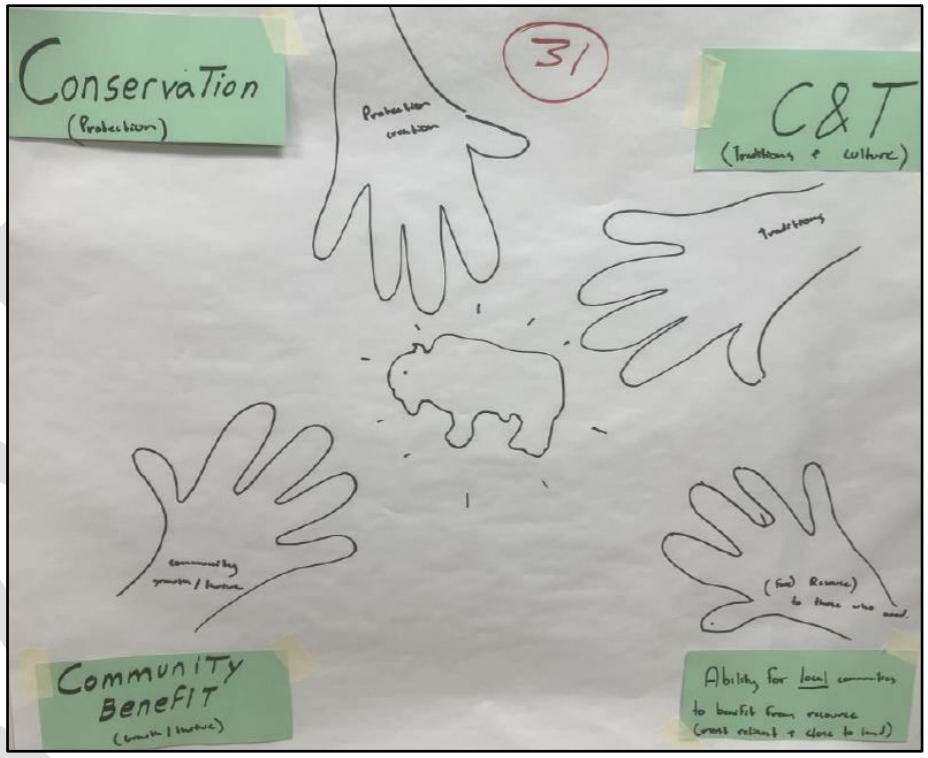

Figure 10g. Drawings of future visions, Lower Tanana Planning Team, November 2023, Fairbanks, Alaska.

7.1 Statements of Future Visions

Vision statements from planning team members were developed at the January and November 2023 Planning Team meetings.

January 2023 Vision Statements

"Proving life, love, and balance for the future of Alaska. Protecting the future for family, neighbors, and communities by restoring wood bison."

"Through education, communication, and collaboration we envision wood bison providing a sustainable resource for future generations to benefit from via economics and employment, food security, culture and traditions, community building, and ecosystem health."

"Collaborating with neighbors and user groups. Build sustainable wood bison herds statewide which will provide economic opportunities, educational opportunities, and food for all."

"Spark and sustain transparent relationships to restore wood bison to their native range for the next seven generations and beyond."

"Establish sustainability for wood bison for everyone."

November 2023 Vision Statements

"Restoring bison and tradition."

"Got bison?"

"Establish and maintain a healthy thriving wood bison herd, striving for consistent and ongoing public outreach, input, and support."

"A vibrant and viable wood bison population, built on trust, respect, and tradition. For remembering our elders with us, and the children who haven't been born yet."

"Wood bison restoration: restore what matters – trust, empowered local communities, and resilient ecosystems."

"Through unity and equity establishing a healthy herd of wood bison for all Alaskans and future generations."

8.0 Summary of Public Comments and Responses from ADF&G

The bulk of this Management Plan consists of responses to discussion topics brought up in planning team meetings, but the following topics were also proposed by planning team members, either during the planning team meetings, in subsequent meetings, or in letters to ADF&G. The topics in this section are ordered by their importance, with the most important being first. The importance was gauged by the number of times that it was raised by planning team members and where the participants placed it when they voted on particular importance of issues during the meetings.

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8.1 HARVEST ALLOCATION

Harvest allocation was the most significant identified obstacle for achieving the vision of bison restoration at both the January and November 2023 planning team meetings, receiving 3 votes at the January 2023 meeting and 9 votes at the November 2023 meeting. At the February 2024 planning team meeting, harvest allocation was the most voted reason for being against wood bison restoration in the lower Tanana River drainage, receiving eleven votes. ADF&G received formal comments and resolutions from 3 planning team organizations following the February 2024 meeting that stated harvest allocation was a major issue regarding the restoration of wood bison in the Lower Tanana River drainage. The Team debated many issues, and the more the team explored all issues, the more it seemed that harvest allocation was at the root of all of the contentious issues listed in sections 8.2 through 8.13.

As stated in section 4.0 of this document:

> The purpose of a site-specific wood bison management plan is to provide a description of the input and recommendations from a broad segment of the public that guides restoration and management activities for wood bison in a given area (in this case the Lower Tanana River drainage), and for ADF&G to provide management details and intent of the restoration effort back to the public. Each site-specific wood bison management plan includes information for the process of establishing the herd of free-ranging wood bison in the area, monitoring, herd assessments, addressing human-wildlife conflicts, and providing information to guide future harvest management. Human-wildlife conflict topics may include interactions with agriculture, social carrying capacity (i.e., population objectives driven by issues other than biology), and other issues that arise over time. The management plan will be a living document with amendments and updates made when appropriate. For example, a critical update will be after the population is established, when herd productivity, movements, land status surrounding the bison's seasonal movements, and potential for sustained yield will be better understood. At that point, the planning team will work together to make recommendations to the BOG and ADF&G through a harvest management update to the plan, with the intent of using harvest as a key tool to help manage the population.

Despite not knowing when there will be harvestable surplus, how much harvestable surplus there will be, where exactly the herd will be located, the land status of their future range, or the legal and regulatory structure surrounding bison harvest at that future date, members of the planning team still wanted to discuss harvest allocation more than any other subject. This is understandable because bison have the potential to provide large benefits to citizens through harvest. The discussion about harvest allocation is a way for interest groups to confirm that they want to be the beneficiaries of that potential harvest. The importance of the harvest allocation discussion in all the planning team meetings indicates that most participants believe in the benefits that wood bison restoration can provide for people and are trying to make sure that their interest group gets part of those future benefits.

Alaska has a highly structured system to determine how wildlife resources are allocated to the people. It starts with the equal access clauses in the state constitution, article VIII sections 3 and 17, which indicate that all Alaska citizens have equal access to wildlife resources (White 1994). The Alaska Constitution provides that hunting under state regulations is subject to common use

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and equal access provisions. This means that hunting regulations cannot discriminate between Alaskans based on any trait of a resident (race, residence, etc.) who would like to participate in an opportunity to harvest wildlife. All wild wood bison established through wood bison restoration efforts are similar to all other big game species like moose and caribou in that they are public trust resources managed by the State of Alaska under the Alaska Constitution, through the BOG and ADF&G. The Alaska Constitution applies to all game species, and it will apply to any wood bison population that is established through restoration efforts.

During the planning team meetings and many discussions with interest groups before and after, some interest groups have requested that their group get allocative priority over other groups because they live closer to the resource, or they identify as a certain race, or they have contributed more funding to get the resource started, or they have a stronger connection to the animal. While these are all legitimate reasons to desire more of the potential future benefits that bison could provide, granting these desires simply is not possible within the current legal framework. The desire to provide one interest group with more wildlife allocation than another interest group is fundamentally an Alaska Constitutional issue and cannot be solved within the planning process for wood bison restoration. However, BOG does have the authority to level the playing field with the goal of ensuring certain groups are not denied opportunity. For example, registration permits that are only available locally still provide opportunity for all but make the permit more convenient and more likely attainable by local people,

This constitutional harvest allocation issue, as discussed in the planning team meetings, applies to all species of game in Alaska and is a common topic at wildlife harvest meetings for all species. Because of the lack of existing regulations for wood bison and the open forum for discussion during wood bison planning meetings, it is not uncommon for interest groups to engage on this constitutional issue in the context of wood bison. Satisfying some of the specific desires for allocation through this management plan or a future amendment to the management plan may not be possible without a change to the Alaska Constitution. As an indication of the team's perspective on the subject, in the February 2024 planning team meeting, the team supported a constitutional amendment favoring rural hunting preference. Many planning team members believed it was important that people living near the bison should receive benefits from the bison through harvest.

Regardless of allocative discussions and desires, there will be no harvest of wood bison to allocate in the absence of a restoration effort. None of the benefits that interest groups have conflict over are possible without that first step. If the experimental population provides a harvestable surplus, individuals of all interest groups will all have opportunity to benefit from the bison. That is why some Planning Team members have suggested that our job in this generation is to simply start the population and that the job of the next generation is to work out harvest allocation based on all the known details of the bison when and if they succeed. ADF&G does not want to debate a harvest prescription before any details are known regarding whether or not this herd will be successful, where it will be distributed, how much harvestable surplus is available, or the legal structure that will be in place when that happens. As designated in the 10(j) rule, the State has primary management authority for wood bison in Alaska. Under the presumption that a bison population established in the lower Tanana drainage will be successful and eventually provide a harvestable surplus, the current Alaska law ensures that all individuals will get the opportunity to benefit from (hunt) bison. For example, even with the smallest

possible hunt, which would be one drawing permit, all Alaska residents can apply for the permit and have the same chances to get that permit as anyone else. If the harvestable surplus builds, then there are many other options that the BOG could adopt through proposals. They could include locally issued registration permits, general season hunts, registration hunts, targeted hunts, ceremonial harvest, governors tags, and others. The different hunt structures can affect the distribution of permits to hunters.

The establishment of a wood bison herd under this management plan would be as a public trust resource for the benefit of all Alaskans under the regulatory authority of the BOG. If bison in this herd happen to move onto federal public lands, they will still be managed by the BOG because the FSB gets its authority from the Alaska National Interest Conservation Act (ANILCA), and ANILCA does not supersede the ESA with respect to management of listed species like wood bison. As designated in the 10(j) rule, the State has primary management authority for wood bison in Alaska. The process by which Alaska wildlife harvest is allocated is inclusive of all interest groups of the public and provides equal opportunity for all individuals to participate in the harvest of wildlife resources. If the herd established through this management plan provides a harvestable surplus, the process to determine harvest allocation will be the same as any caribou or moose population. If and when the lower Tanana wood bison population produces a harvestable surplus, then the Lower Tanana Planning Team will provide recommendations to the BOG on how harvest should be allocated. The range of effects on harvest allocation outlined by a wood bison release described in this management plan are within the range of effects outlined in the EA. The recommendations of the planning groups that have been brought forward may be addressed through the BOG regulatory process.

It has been suggested that section 10(e) of the ESA, previously used for marine mammals, could be applied to wood bison. Section 10(e) of the ESA does not apply to wood bison because the FWS, by adopting the 50 CFR 17.84(x), restricted the harvest of wood bison to that authorized by the BOG and ADF&G.

8.2 Land Management

At the January 2023 planning team meeting, land issues were identified as an obstacle to achieving the vision of wood bison restoration in the Lower Tanana River drainage, receiving one vote. At the November 2023 planning team meeting, “Land Management Issues” were voted to be the second-most important obstacle to achieving the vision of wood bison restoration in the Lower Tanana River, receiving 11 votes. Land management issues were also identified as one of the biggest reasons for being against wood bison restoration in the Lower Tanana River drainage at the February 2024 planning team meeting, receiving 5 votes. ADF&G received formal comments and resolutions from 3 planning team organizations following the February 2024 meeting that stated land management was a major issue regarding the restoration of wood bison in the Lower Tanana River drainage.

At the heart of all land management discussions was the concern that the eventual harvest of wood bison in and near the MFSGR will lead to increased use of the area by nonlocal hunters and a sense of frustration with the current levels of use, mainly by moose hunters. Those concerned felt that this could lead to increased competition for local hunters and increased trespass on private lands, including Native corporation lands and Native allotments. Some discussions in the planning team meetings regarding trespass indicated that when private lands

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are patrolled by the landowner, the incidence of trespass is significantly reduced. Some participants indicated that private lands should be patrolled by the state government. Patrolling and signage on private lands is currently the responsibility of the landowner in remote areas of Alaska.

If bison do begin to use Native corporation lands near MFSGR, then the Native corporations who own those lands would have the right to restrict the access of all hunters on their lands. Native corporations could also charge land use fees on private lands, and those fees could be used to pay for the patrolling of trespass by hunters in pursuit of all species.

The number of hunters that would come to hunt bison in all the area surrounding MFSGR would be very few compared to the average annual users of that landscape over the last 40 years. An analysis of annual use of the area was completed using the hunter reporting data based on uniform coding units (UCU). UCUs used in the analysis were all the UCUs that intersect the boundary of the MFSGR (Fig. 11).

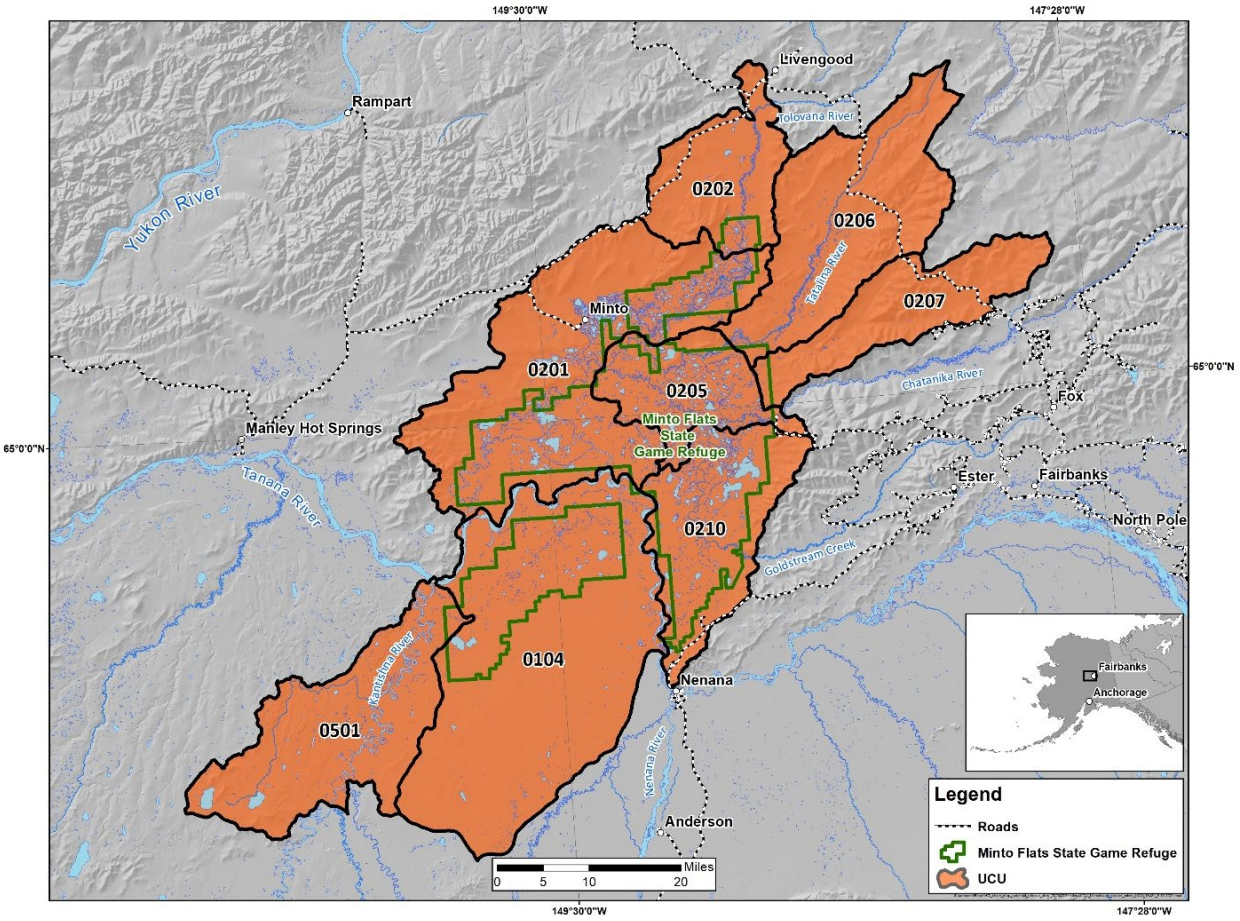

Figure 11. The uniform coding units (UCU) that intersect the MFSGR boundary, used in the analysis of hunter use of the area.

The reported range of big game (moose, caribou, and black bear) hunters (via harvest ticket) using the area per year was 259 to 1,014 during 1984 to 2023 (Fig. 12). This includes moose, caribou, and bear hunters, but does not include fishermen, duck hunters, boaters, campers, dog mushers, and trappers for which there are hundreds using the same area per year but for which no specific land use data is available. Therefore, the use of this landscape by all people is most likely more than double what these data suggests. User conflicts during moose hunting season were the most discussed land use conflict in the planning team meetings, and these data depict moose hunter participation well.

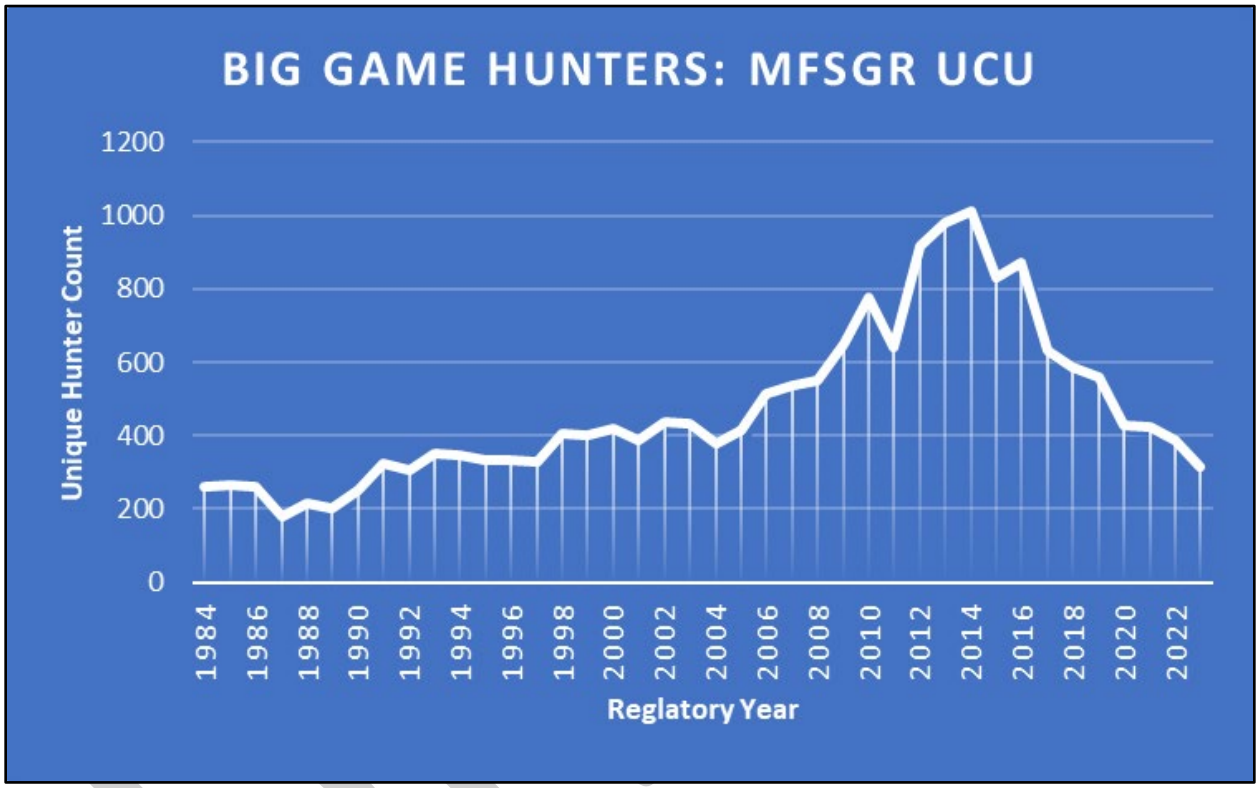

Figure 12. Long term reported use of MFSGR area by big game hunters since 1984.

Additional use that could be created through bison hunting depends on potential population growth and eventual harvest rates. Under a modest growth scenario (5% per year), with first harvest at a population of 250 bison, the first hunts would occur approximately 25 years post-release and could reach 80 hunters within 100 years of release. Under a more generous growth scenario (10%), again starting harvest at a population of 250, the first hunts would occur approximately 15 years post-release. An additional 80 hunters could be accommodated within 35 years of release. The number of bison and hunters beyond that would depend on social and biological carrying capacity of the release area. For the first 35–75 years post-release, it could be expected that bison hunting could add hunters, and that number of new hunters is within the annual variation observed in this area between 1984 and 2022. The number of people in the field will be higher than the number of permits distributed, as many hunters choose to go out with companions, especially when working with large game species. As suggested by the planning team, this small number of hunters can be required to participate in hunter orientation requirements prior to hunting. In both scenarios, the number of hunters per year in the first 30

years after release would be 1–12% of the 40-year average of number of moose, caribou, and black bear hunters in the area (471).

Several planning teams have suggested that moose and bison seasons shouldn't overlap to avoid hunter interactions in the field. Bison harvest could occur in seasons not overlapping with moose seasons. The moose season has been identified in planning team meetings as the most congested time of the year when the highest number of people use the landscape. Most bison hunts in Alaska are winter hunts and do not conflict with moose season. If winter hunts for the lower Tanana bison herd were ever to occur, participation in that hunt would not increase hunters in the field during the fall moose season.

Much of the discussion surrounding land management has described use by nonlocal people as undesirable to local people. In Alaska, all people are allowed equal access to public lands. The small number of nonlocal people that hunt MFSGR because of a bison permit will likely be on the landscape in a time of year (winter) when very few other people are out, and thus not posing a crowding issue for local people during summer or moose season.

Some planning team members have proposed that the entire lower Tanana drainage, including the Minto Flats area, is ancestral hunting grounds of local people, regardless of current land status, and that access should be restricted for nonlocals. However, state public lands, including MFSGR, are legally available to all people, and a change to the legal land designation would be required to restrict nonlocal people. The local/nonlocal user conflict seems to be prevalent in all natural resource allocation issues. Resolving this conflict by changing the ownership status of public lands or changing the equal access clause in the constitution is beyond the scope of the planning effort for wood bison restoration in the lower Tanana River drainage. The range of effects on land management outlined by a wood bison release described in this management plan are within the range of effects outlined in the EA.

8.3 Privately Owned Captive Bison

Some local interest groups have suggested that the wood bison herd established by the state under this management plan should be owned and harvested exclusively by only one or a few interest groups rather than all people. The intent of the wood bison restoration effort is to establish a public trust wildlife resource for the benefit of the species and the benefit of all people, just like caribou, moose, and all wildlife species. Any public trust wildlife population will be managed by the system outlined under state statute and regulation, which is currently the all-public inclusive system of advisory committees, BOG, and ADF&G. The state of Alaska cannot discriminate based on race, location, or interest group regarding ownership of wildlife.

Private ownership of plains bison has been legal in Alaska for more than 50 years. Local landowners can legally contain and maintain private bison herds on their property. Raising privately-owned plains bison is considered agriculture and can be done at the desire of the landowner. ADF&G does not have authority to regulate agriculture or the ability to establish a population of wildlife for the sole ownership of individual interest groups. Granting privately owned bison to specific interest groups is beyond the scope of the wood bison restoration project. Wood bison cannot be privately owned in Alaska because of the regulatory constraints of ESA.

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8.4 Oil, Gas, and Mining Resource Development

One interest group has expressed their concern that ESA listing of wood bison might someday affect oil, gas, or mining resource development. The State of Alaska and the US Fish and Wildlife Service, with the input from interest groups, spent 5 years negotiating the NEP rule to ensure that the listing of wood bison does not affect the development of oil, gas, and mining resources. The NEP rule precludes the designation of critical habitat and other ESA protections for wood bison in Alaska, removing ways that ESA protections could be applied to limit impacts to wood bison and their habitat from oil, gas, and/or mining resource development. The State of Alaska government funding and much of its economy is based on resource development. The state would not pursue wood bison restoration if it believed that the listing of wood bison had any chance of threatening resource development. In addition, wood bison prosper in disturbed habitats, such as burn areas and mining areas, because the disturbance creates the conditions that stimulate the growth of their favored forage plants, grass, and sedge. The NEP rule protects resource development. It is virtually impossible for oil, gas, or mining development to be inhibited by the establishment of wood bison populations in Alaska under the NEP. The 2013 EA analyzes this topic in sections 4.1.2, 4.4, and 12.0.

The range of effects on resource development outlined by a wood bison release described in this management plan are within the range of effects outlined in the EA.

8.5 Cultural Sites Near Soft Release Enclosure

The soft release enclosure will be based on a swampy meadow between 400 meters and 1,500 meters away from the bank of the Tanana River. In the process of acquiring the permit to use the state land for the Kantishna soft release site through DNR, the Office of History and Archeology (OHA) was provided with notice during the agency review period and did not comment, indicating that no response was necessary for this project site. The details can be observed in the Memorandum of Decision of permit number LAS 34951. No heavy equipment is expected to be used to excavate or move fill dirt during the construction and use of the soft release site, and use of the site by bison (hoof prints and feeding behavior) will be similar to use by other wildlife in the area. Any sensitive cultural sites discovered at the soft release site will be reported, avoided, and preserved.

8.6 Tribal Government-to-Government Consultation

During and after the planning team meetings, two interest groups issued a statement stating that ADF&G lacked proper government-to-government consultation in the wood bison restoration process. The Alaska Department of Fish and Game has been committed to transparency and open communication with Alaska Native governments since wood bison restoration began in the early 1990s. This commitment has continued through the planning process for recovery of wood bison in the Lower Tanana region.

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The consultation efforts have included:

- Two-way dialogue between official representatives of Tribal Governments and official representatives of ADF&G.

- Notice of details of wood bison recovery actions and meetings were provided to Tribal Governments in advance of meetings and in advance of management actions. Meetings between Tribal Governments and ADF&G staff, with in-person meetings were scheduled when feasible, ADF&G provided travel expenses for Tribal Government representatives to reduce barriers to in-person meetings.

- Records of the proceedings of the meetings in the form of notes and reports.

- Communication from Tribal representatives to ADF&G and from ADF&G to Tribal leaders on how their input was incorporated into planning and implementation.

For Lower Tanana River wood bison recovery planning, ADF&G biologists have made multiple in person visits to each community in the recovery area over the course of years, attended dozens of meetings in recovery area communities, and had dozens of communications with community and tribal council members and leaders via telephone, video chat, electronic mail, and social media. Over the same time frame, the department has provided informational literature, reports, data, and presentations to recovery area communities, organizations, councils, and individuals. Tribal leaders and representatives were prioritized invitees and participants in the 3 formal planning meetings for Lower Tanana River wood bison restoration. These efforts meet the intent laid out in the department policy on tribal consultation (ADF&G and Alaska Boards of Fisheries and Game 2002).

8.7 Concerns About Inter-specific Wildlife Conflict

For an understanding of how bison coexist in Alaska with other wildlife, we can look to the many decades of bison and other ungulates thriving together. This topic was covered in the Environmental Assessment of 2013. To summarize, prior to the last Alaska wood bison being shot in the early 1900s, modern bison had been living with all Alaska ungulates for approximately 10,000 years. Bison first came back to the state with the Delta Junction plains bison herd in 1928, which now has been in Alaska for 96 years. Since then, wild plains bison and wood bison have been released in 4 other areas of Alaska with no negative effects on other Alaska wildlife observed. Several private plains bison populations exist across Alaska, too. We know of no studies that suggest that wild bison or bison in Alaska have a negative impact on other wildlife species. On the contrary, many studies suggest that bison do not compete with other wildlife but contribute positively to their ecosystems, helping many species of plants, animals, and insects with their activities, waste, hair, and carcasses. Bison do not take away from the existing Alaska ecosystems; they add a large grazer to lowland meadow environments where there is currently an open niche. The range of effects on interspecific wildlife outlined by a wood bison release described in this management plan are within the range of effects outlined in the EA.

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8.8 Innoko Herd Success as a Criteria for Subsequent Releases

Some planning group participants have suggested that no additional releases should occur unless the Innoko Herd proves to be a successful release. The Innoko release and any subsequent releases should be considered experimental. Six populations of bison occur in Alaska and Yukon Territory with a broad range of productivity from very high down to low productivity compared to other Alaska ungulates. The Delta Junction population has the highest productivity with more bison harvested per land area than any other Interior Alaska ungulate. The Aishihik wood bison herd in Yukon Territory is the same distance from Fairbanks as the Innoko herd and was released in 1988. It is estimated at 2,000 bison and has a reported harvest of around 280 bison per year, which is extremely high productivity and harvest for a northern ungulate.

Three times in the last 9 years, snow conditions detrimental to bison have resulted in declines in the Innoko population. Some weather data indicate that western Alaska has had more than double the late winter snow than historical averages since the herd was released (Thoman, 2024). Despite catastrophic snow conditions, the Innoko population is established and is a success for conservation of the subspecies even though harvest has not been initiated in the herd at this time. The Lower Innoko-Yukon Rivers Wood Bison Planning Team has requested to wait for a harvestable surplus of at least 10 bison before hunting is considered by the Board of Game. A smaller harvest of one or two bison annually has been possible for several years. Because the Innoko herd was intensively monitored and has experienced large swings in productivity associated with large swings in snow conditions, it is an extremely important research herd because it can illustrate exactly which snow conditions affect bison productivity in the north. ADF&G continues to apply information learned from the Innoko herd and the other 5 bison herds in Alaska and the Yukon Territory to additional experimental releases. The snow conditions that have been detrimental to bison in the Innoko area occur far less frequently in the lower Tanana area.

8.9 Animal Welfare

The goal of wood bison recovery is to establish free-ranging wild wood bison populations, which fulfill numerous values for people. When wild wood bison are purposely held in limited-duration captivity, it is the responsibility of ADF&G to care for all their needs, and their care is highly regulated by an Institutional Animal Care and Use Committee. Every process that the animals go through is completed with the utmost in humane care. Many veterinarians and biologists are involved in the care of wood bison through all the steps of wood bison restoration, and all of them are focused on quality animal welfare. However, when wood bison are in the wild, they fend for themselves, living in nature without human control or husbandry, like all wild creatures. Though wood bison mortalities are unfortunate, all populations of wild animals experience mortality, year in and year out. It is not uncommon to see declines in the 20–30% range in other ungulate species, and unusual weather or disease events can drive that number much higher. The fluctuations of the wood bison herd along the Innoko are within the range of other ungulates in Alaska.

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8.10 Updated Environmental Assessment

The 2013 EA is still applicable to the NEP of wood bison in Alaska and to the NEP recovery area. The assessment was crafted to be enduring and widely applicable to the entire NEP recovery area and to support the establishment of multiple subpopulations of wood bison in Alaska. It is appropriate to apply the 2013 EA to achieve the original purpose of establishing the NEP of wood bison in Alaska. The range of effects of a wood bison release described in this management plan is within the range of effects outlined in the EA.

8.11 Long-Term Impacts of bison

The 2013 EA analyzes the long-term effects of wood bison in several sections. These analyses can be found in sections 4.2, 4.3, and 6.0 of the EA. The range of effects regarding long-term impacts of wood bison originating from a wood bison release described in this management plan are within the range of effects outlined in the EA.

8.12 Education and Outreach

Education and correcting misinformation received the most votes as an obstacle to wood bison restoration in the lower Tanana during the January 2023 meeting. A proposed solution from the planning team was a marked increase in ADF&G outreach and education in villages. The solution put into action resulted in assistant wood bison biologist Luke Rogers spending 51 days in villages in summer 2023.

During the planning meetings of November 2023 and February 2024, education was no longer identified as a significant issue. However, ADF&G will continue to provide education and outreach materials in the future.

8.13 Trust Between Interest Groups and Government

Wildlife in Alaska is a public trust resource managed for all people through a public process. The diversity of interests and interest groups desiring benefits from wildlife can create conflict and competition between individuals and interest groups regarding wildlife allocation. Mistrust of other interest groups and the authority that manages allocation is commonplace and is one motivation for an open public process.

One issue that has been consistently brought up during the planning process is the lack of trust between some interest groups and the government. The department invites all relevant interest groups that have an opinion on the restoration of wood bison in the Lower Tanana River drainage to the public planning team meetings. These interest groups often have competing or opposing interests regarding future wood bison populations or a history of mistrust between their interest group and the government.

Meeting notes about trust between interest groups and government, including written descriptions of the issues, the record of voting on the issues, proposed solutions, and statements of ongoing actions taken by ADF&G over time (and to continue into the future) to address these issues are presented in Appendix B.

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9.0 Change Analysis

The purpose of this change analysis is to review any change in circumstances that developed in the public planning process outlined in this document since the original EA was finalized and explain if the potential effects of this plan are still within the scope and range of effects considered in the original analysis. The potential effects of wood bison restoration are described in sections 4.5 and 5.0 of the EA. The following are the points where ADF&G recognizes that there may be a perceived change in the potential effects of using the Kantishna release site in the southern MFSGR. However, the potential effects of wood bison restoration in the lower Tanana Valley, as outlined in this management plan, are expected to be consistent with the effects outlined in the original EA.

9.1 Releasing South of the Tanana River

Based on this management plan, wood bison will be released in the MFSGR on the south side of the Tanana River instead of the north side of the Tanana, as outlined in the EA. Section 5 of this plan discusses why wood bison will be released south of the Tanana River and how this slight change from the EA analysis is still consistent with the range of effects outlined in the EA.

9.2 Consultation with SHPO (OHA) and USACE

In the process of acquiring the permit to use the state land for the Kantishna soft release site through DNR, both the Office of History and Archeology (OHA) and the United State Army Corps of Engineers (USACE) were provided with notice during the agency review period and did not comment, indicating that no response was necessary for this project site. The details can be observed in the Memorandum of Decision of permit number LAS 34951.

9.3 Potential Conflicts with Agriculture

The EA considered impacts with the potential release area north of the river and explained that unless the herd grew well beyond 500 animals and expanded its range beyond the high-quality habitat north of the river, wood bison would be unlikely to affect agricultural developments south of the Tanana River (EA Page 46). The EA also offered mitigations should the bison herd expand and overlap with NTAP.

The management plan addresses this in the Summary of Potential Agriculture Conflicts. New information from the Innoko herd about wood bison and river crossings, as well as improved information about habitat suitability (Section 5.1.2) indicates that wood bison would likely establish in the same areas even if they were released within the Minto Flats boundary delineated in the EA, and that the long-term distribution of the herd would be the same as what was analyzed in the EA. Both the EA and the Management Plan presented mitigation options to reduce conflicts with agriculture projects.

9.4 Wildlife Diseases

The EA concluded that the possibility of wood bison contracting brucellosis from caribou would be very small due to the lack of range overlap. Caribou have used portions of the northern

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MFSGR only once in the past several decades. This happened during a peak in Fortymile caribou herd abundance, and the herd has since declined significantly in number and distribution. Caribou calving areas remain separated from bison by habitat type and distance. Caribou can carry *B. Suis* biovar 4, and the biovar that has been known to be pathogenic in bison is *B. abortus*. Although bison can be experimentally infected by direct injection with B. suis biovar 4, this strain did not cause abortions, disease, or shedding of the bacteria in pregnant bison and was deemed not pathogenic to bison (Bevins et al. 1996). Thus, the risk of natural exposure from caribou or reindeer to bison followed by any sustained transmission or subsequent disease appears to be extremely low.

9.5 Development Activities Around Minto Flats

The EA focused on the idea that bison are unlikely to occupy areas south of the Tanana River or impact development there. Although long-term distribution and the initial release site will include the southern portions of the MFSGR, concerns about the effects of bison on development are much less now than when the EA was written. This change has more to do with the development prospects and understanding of the 10j rule than changes in bison impacts.

9.6 Level of Controversy

When the original EA was conducted, there was relatively little controversy documented. As the project has moved closer to a release, public awareness and some opposition have become apparent. Although anticipated impacts to the human environment regarding the proposed action is essentially unchanged in that period, there is awareness and caution from some interest groups. Opposition to wood bison restoration appears to be rooted in concerns that the wood bison population would not sufficiently add to the food security of local tribes while increasing the number of nonlocal hunters in the Minto Flats area. This issue is not related to the release site being in the southern MSFGR instead of the northern MSFGR. In fact, utilizing the Kantishna release site was preferred because it reduced the potential for conflict with wood bison and nonlocal hunters (Section 5.1). While there is concern for additional hunters within the Lower Tanana area, the actual increase associated with the bison reintroduction is likely to be relatively small compared to fluctuations in the number of moose hunters in the area (Section 8.2). The concerns about a wood bison population not sufficiently adding to food security of local tribes, stems, at least in part, from the far broader concern that some tribal organizations have with some aspects of the State's management of wildlife resources, especially the inability of the State to be able to provide a rural preference for wildlife resources. The existence of some opposition to the wood bison release in the Lower Tanana that has become apparent is at least partly a reflection of broader wildlife management issues rather than being specifically about the wood bison reintroduction.

10.0 Summary of the Plan

This site-specific management Plan provides a description of the input from a broad segment of the public regarding restoration of wood bison in the lower Tanana drainage. It discusses how that public input shaped the wood bison restoration effort. The effort to restore wood bison in the lower Tanana drainage is an experiment. This plan will be used for recommendations to guide ADF&G, USFWS, and all interested parties regarding wood bison restoration in the lower

Tanana drainage. If the lower Tanana wood bison population experiment is successful, then the Lower Tanana Planning Team will develop amendments to this management plan with recommendations regarding harvest when harvestable surplus becomes evident.

11.0 Acknowledgments

We would like to thank the more than 60 representatives of interest groups and government agencies that participated in this site-specific planning process. Many long days were spent working together with careful effort to consider all group perspectives. We would also like to thank the many ADF&G and USFWS staff for providing edits in formation of this document, and Jen Roach, Nate Pamperin, and Jessica Wagner for contributing to the figures of this document.

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Appendix A. Participation in site-specific public planning meetings referenced in section 3.0.

Table A1. Organizations and their representatives during the January 2023 Lower Tanana planning team meeting.

Count	Organization	Representative
1	Alaska Department of Natural Resources - Division of Agriculture	Casey Dinkel
2	Alaska Outdoor Council	Invited but unavailable
3	Alaska Trappers Association	Bob Hunter
4	Anchorage Fish and Game Advisory Committee	Invited but unavailable
5	Baan O Yeel Kon Corporation – Rampart	Glenn Carlo
6	Bean Ridge Corporation – Manley	Dorothy Shockley
7	Big Game Commercial Services Board	Pete Buist
8	Board of Game	Al Barrette
9	Bureau of Land Management - Central Yukon Field Office	Invited but unavailable
10	Defenders of Wildlife	Christine Heun
11	Denali National Park and Preserve	Bridget Borg
12	Doyon, Ltd	Shondiin Mayo
13	Eastern Interior Regional Advisory Council	Invited but unavailable
14	Fairbanks Fish and Game Advisory Committee	Jeff Lucas
15	Federal Subsistence Board	Invited but unavailable
16	Manley Village Council	Invited but unavailable
17	Middle Nenana River Fish and Game Advisory Committee	Invited but unavailable
18	Minto-Nenana Fish and Game Advisory Committee	Carl Frank
19	Native Village of Minto	Cameron Winfrey
20	Nenana Traditional Council	Victor Lord
21	Rampart Tribal Council	Charlie Wright
22	Safari Club International - Alaska Chapter	Louis Cusack
23	Safari Club International - Kenai Chapter	Ted Spraker
24	Seth-De-Ya-Ah Corporation – Minto	Louis Silas/David Engles
25	Tanana Chiefs Conference	Ben Stevens
26	Tanana Village	Curtis Sommer
27	Tanana-Rampart-Manley Fish and Game Advisory Committee	Invited but unavailable
28	Toghotthele Corporation – Nenana	Donald Charlie
29	Tozitna, Limited – Tanana	Invited but unavailable
30	US Fish & Wildlife Service - Ecosystem Services	Doug Cooper/Carol Mahara
31	US Fish & Wildlife Service - Office of Subsistence Management	Kendra Holman

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Table A1. Organizations and their representatives during the January 2023 Lower Tanana planning team meeting, continued.

Count	Organization	Representative
32	Wild Sheep Foundation	Becky Schwanke
33	Wood Bison Scoping Team - Lower Tanana River	Christopher Sherry

Table A2. Organizations and their representatives during the November 2023 Lower Tanana planning team meeting.

Count	Organization	Representative
1	Alaska Department of Natural Resources - Division of Agriculture	Casey Dinkel
2	Alaska Outdoor Council	Rod Arno
3	Alaska Trappers Association	Bob Hunter
4	Anchorage Fish and Game Advisory Committee	Nicole Schmitt
5	Baan O Yeel Kon Corporation – Rampart	Glenn Carlo
6	Bean Ridge Corporation – Manley	Annie Silas
7	Big Game Commercial Services Board	Pete Buist
8	Board of Game	Al Barrette
9	Bureau of Land Management - Central Yukon Field Office	Invited but Unavailable
10	Defenders of Wildlife	Christine Heun
11	Denali National Park and Preserve	Bridget Borg
12	Doyon, Ltd	Andrew Tunnell/Molly Redilla/Sarah Obed
13	Eastern Interior Regional Advisory Council	Invited but Unavailable
14	Fairbanks Fish and Game Advisory Committee	Jeff Lucas
15	Federal Subsistence Board	Invited but Unavailable
16	Lake Minchumina Fish and Game Advisory Committee	Invited but Unavailable
17	Manley Hotsprings Community Association	Chuck Parker
18	Manley Village Council	Robert Erhart/Leah Woods
19	Middle Nenana River Fish and Game Advisory Committee	Invited but Unavailable
20	Minto-Nenana Fish and Game Advisory Committee	Louis Silas/Carl Frank/Charlie Titus
21	Native Village of Minto	Lindberg Charlie/Charlie Titus/Andy Jimmie/Phillip Titus
22	Nenana Traditional Council	Caroline Ketzler
23	Rampart Tribal Council	Invited but Unavailable
24	Safari Club International - Alaska Chapter	Invited but Unavailable
25	Safari Club International - Kenai Chapter	Invited but Unavailable

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Table A2. Organizations and their representatives during the November 2023 Lower Tanana planning team meeting, continued.

Count	Organization	Representative
26	Seth-De-Ya-Ah Corporation – Minto	Annie Silas/Louis Silas
27	Tanana Chiefs Conference	Michelle Quillin
28	Tanana Village	Invited but Unavailable
29	Tanana-Rampart-Manley Fish and Game Advisory Committee	Invited but Unavailable
30	Toghotthele Corporation – Nenana	Donald Charlie
31	Tozitna, Limited – Tanana	Invited but Unavailable
32	US Army	Dan Rees/Justin Smith/Matt Sprau
33	US Fish & Wildlife Service - Ecosystem Services	Doug Cooper/Carol Mahara
34	US Fish & Wildlife Service - Office of Subsistence Management	Invited but Unavailable
35	Wild Sheep Foundation	Rebecca Schwanke
36	Wood Bison Scoping Team - Lower Tanana River	Christopher Sherry

Table A3. Organizations and their representatives during the February 2024 Lower Tanana planning team meeting.

Count	Organization	Representative
1	Alaska Department of Natural Resources, Division of Agriculture	Invited but Unavailable
2	Alaska Outdoor Council	Rod Arno
3	Alaska Trappers Association	Invited but Unavailable
4	Anchorage Fish and Game Advisory Committee	Invited but Unavailable
5	Baan O Yeel Kon Corporation – Rampart	Invited but Unavailable
6	Bean Ridge Corporation – Manley	Annie Silas
7	Big Game Commercial Services Board	Pete Buist (virtual)
8	Board of Game	Al Barrette
9	Bureau of Land Management - Central Yukon Field Office	Invited but Unavailable
10	Defenders of Wildlife	Christine Heun
11	Denali National Park and Preserve	Bridget Borg (virtual)
12	Doyon, Ltd	Andrew Tunnell; Cheyenne Dibert
13	Eastern Interior Regional Advisory Council	Charlie Wright; Eva Burke
14	Fairbanks Fish and Game Advisory Committee	Invited but Unavailable
15	Federal Subsistence Board	Invited but Unavailable
16	Lake Minchumina Fish and Game Advisory Committee	Invited but Unavailable

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Table A3. Organizations and their representatives during the February 2024 Lower Tanana planning team meeting, continued.

Count	Organization	Representative
17	Manley Hot Springs Community Association	Chuck Parker
18	Manley Village Council	Raymond Woods
19	Middle Nenana River Fish and Game Advisory Committee	Leroy Sutton
20	Minto-Nenana Fish and Game Advisory Committee	Carl Frank; Olivia Irwin
21	Native Village of Minto	Charlie Titus Jr.; Lindberg Charlie; Lori Baker; Phillip Titus
22	Nenana Traditional Council	Caroline Ketzler; Kathleen Demeintieff
23	Public	Dorothy Shockley
24	Rampart Tribal Council	Charlie Wright
25	Safari Club International - Alaska Chapter	Invited but Unavailable
26	Safari Club International - Kenai Chapter	Invited but Unavailable
27	Seth-De-Ya-Ah Corporation – Minto	Cameron Winfrey; Louis Silas
28	Tanana Chiefs Conference	Brian Ridley; Robin Brown
29	Tanana Village	Invited but Unavailable
30	Tanana-Rampart-Manley Fish and Game Advisory Committee	Charlie Wright; Ray Woods
31	Toghotthele Corporation – Nenana	Donald Charlie
32	Tozitna, Limited – Tanana	Cynthia Johnson
33	U.S. Army	Justin Smith
34	US Fish & Wildlife Service - Ecosystem Services	Carol Mahara
35	US Fish & Wildlife Service - Office of Subsistence Management	Invited but Unavailable
36	Wild Sheep Foundation	Rebecca Schwanke (virtual)
37	Wood Bison Scoping Team - Lower Tanana River	Christopher Sherry

Appendix B. Meeting notes about trust from planning team meetings.

Meeting notes about trust between interest groups and government, including written descriptions of the issues, the record of voting on the issues, proposed solutions, and statements of ongoing actions taken by ADF&G over time (and to continue into the future) to address these issues.

January 2023 – 6 votes (second most votes of all the categories of concern)

- Issues:
    - Abuse of power, over promise/under deliver, unequal treatment of people, bad history
    - Hard to gain trust, easy to lose trust.
- Solutions:
    - Build relationships among interest groups
        - ADF&G has attempted to accomplish this through the planning team process, providing 9 days between 2023 and 2024 for interest groups to meet and build these relationships
        - ADF&G itself has tried to do this by spending time at interest groups' events and meetings
    - Remain consistent, transparent, and reliable
        - ADF&G is committed to maintaining these qualities. The Wood Bison Restoration Project biologists have been and will continue to be readily available for communication with any interest group

November 2023 – 18 votes (most votes of all the categories of concern)

- Issues:
    - Past events carry more weight than future promises
    - Over promise, under deliver
- Solutions:
    - Remain consistent, transparent, and reliable
        - ADF&G is committed to maintaining these qualities. The Wood Bison Restoration Project biologists have been and will continue to be readily available for communication with any interest group.
    - Honesty
        - Before and after the stated direction from the governor and commissioner to pursue wood bison restoration in the Lower Tanana River drainage, ADF&G has been very clear, honest, and transparent of the direction in the November 2023 planning team meeting and in individual meetings with interest groups.

February 2024 – 5 votes (tied for third most votes of all categories of concern)

Of note – trust between interest groups and government was not specifically mentioned in any public comments received by ADF&G.

- Issues:

    - History of mistrust with ADF&G, perceived poor management of other fish and wildlife resources
    - Perceived differences in respect for land and animals between interest groups
        - It is Alaska law not to harass, waste, disrespect land and animals.
- Solutions:
    - Invite interest groups to cooperate in the process
        - ADF&G has attended interest group meetings, ADF&G has invited interest groups to sponsored planning team meetings, ADF&G has provided reports, presentations, and data to interest groups, ADF&G has included interest groups in the on-the-ground operations for wood bison recovery and management.

Clearly, trust is a significant issue that encompasses many other topics of concern covered in this section. Also, it is not an issue that can be solved expeditiously and will require many years of consistent effort to overcome. Nonetheless, ADF&G is committed to building trust with and amongst these interest groups as it establishes wood bison as a public trust resource available to all people.


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