

Proposed Actions at Denali National Park and Preserve in 2024: National Historic Preservation Act (NHPA) Assessments of Effects

April 2024

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Visitor Resource Protection (VRP)/Superintendent's Office

1. Seasonal Installation of Two FAA Weather Cameras, Kahiltna Glacier (2022-2026)

Description: This project would permit seasonal installation and removal of two weather cameras for up to 5 years (2022-2026), following a successful trial period of operation during the 2015 - 2016 seasons and a successful 5-year implementation during 2017-2021. The previous iteration of this project included a location on the Ruth Glacier. This project only addresses the location on the Kahiltna Glacier.

The cameras are located outside of designated wilderness at ~6,200-feet on the Kahiltna Glacier, proximate to the Kahiltna Ice fall. Working in conjunction with the FAA, park staff would purchase and seasonally place the 2-camera devices on the flank of the southernmost spur of the West Ridge of Mount Hunter (see coordinates below). The batteries would be removed around mid-September each year. From this location, the cameras provide near real time weather information that allow NPS staff to make accurate go/no-go decisions for aviation operations. This information would also be made available, via the FAA website, to the public.

The location selected provides views of an area that is often the point in which flights must turn around due to poor weather conditions. In addition to increasing operational safety and efficiency, it is expected that such information leads to less overflight noise as pilots are able to use this information prior to takeoff avoiding the need to get 'eyes on' therefore reducing the number of aborted flights.

The size of the temporary weather camera/station is about 3 square meters.

Locations: Kahiltna: 62° 55.91' N, 151° 12.84' W

NHPA Assessment of Effect: No Potential to Cause Effect.t.

2. Backcountry Use Monitoring with Trail Counters and Cameras (2022-2026)

Description: Denali's 2006 Backcountry Management Plan (BCMP) outlines indicators and standards to assess important Resource and Social Conditions related to wilderness character and the visitor experience. Monitoring in the 2022-2026 seasons will build on previous monitoring efforts and include ongoing field observations of informal trails and campsites, backcountry impacts (litter, encounters with modern equipment, aircraft noise dose, and water quality), as well as encounters with other groups while hiking and camping. These observations are made by backcountry rangers and other NPS staff using human powered non-intrusive techniques.

Two proposed monitoring efforts have a potentially greater impact on wilderness character and the visitor experience as they involve placing temporary installations each year in areas of high visitor use in the Frontcountry and backcountry, including a few in designated Wilderness.

1) Monitoring trail use by installing infrared trail counters at 10-20 formalized and informal trails each season that will mostly rotate every few years. This data will help inform the Denali Trails Strategy as

well as understand trends in use levels for the management and resources program. Trail counter installation and maintenance would be accomplished by NPS staff from various work groups but mainly the Resources staff. Trafos IR counters will be used and hidden from view as much as possible. These counters are in camouflaged cases 4.3 inches by 2.8 inches and have a 4.3-inch scope that is attached by a 3 ft black cable (see attached document from Trafos). In areas where the counters cannot be well hidden, small white tags will be attached to inform visitors what they are and that they should be left in place. Year-round installations for the next 5 years would be kept at: Horseshoe Lake (the busiest trail monitored by the program) and the East side of the Savage Alpine Trail, near Mountain Vista (to monitor year-round use at this relatively new trailhead). Both of these locations are outside of Wilderness and well hidden in the spruce forest.

Locations: Throughout the park

NHPA Assessment of Effect: No Adverse Effect

3. 2024 Denali National Park and Preserve Superintendent's Compendium

Description: This project addresses the 2024 Denali National Park and Preserve Superintendent's Compendium. The Superintendent's Compendium is the summary of park specific rules implemented under the discretionary authority of the park Superintendent. The park compendium is updated annually and is a written compilation that addresses designations, closures, permit requirements, and other restrictions and/or specifications imposed under the discretionary authority of the superintendent. The Superintendent's Compendium is prepared in accordance with the delegated authority contained within the regulations in Title 36, Code of Federal Regulations, Chapter I, Parts 1 through 7, as authorized by Title 54, United States Code, Section 100101 and 100751, and establishes regulatory provisions for Denali National Park and Preserve. Parts 1 through 6 are general regulations applicable to all areas of the National Park System, and Part 13 contains special regulations specific to individual parks in Alaska.

Proposed changes to the Superintendent's Compendium for 2024:

5.4 Commercial passenger-carrying motor vehicles

Change "Denali Park Railroad Depot" to "Denali Visitor Center".

13.930 Do I need a permit to operate a motor vehicle on the Denali Park Road west of the Savage River?

Change "from the conclusion of Road Lottery and closure of the road" to "from the conclusion of transit service until closure of the road".

13.976 Fire

Add "or in portable smokeless self-contained fire pits within established campsites within designated campgrounds" to "Lighting or maintaining a fire is prohibited in the FDA except (a) In established receptacles within designated campgrounds".

13.5 Closures and Restrictions - Mask Wearing to Prevent the Spread of COVID-19

Removal of existing language from the Superintendent's Compendium.

13.934 (b) Denali Park Road permits

Remove “Kantishna Air Taxi” and change “North Face Lodge/Camp Denali” to “Camp Denali”.

13.976(c) Frontcountry Developed Area conditions for lighting or maintaining fires

Replace existing language with “The following housing areas are designated for the lighting or maintaining of fires by NPS employees in established receptacles: C-Camp, Headquarters, Toklat Road Camp”.

Location: Throughout the Park.

NHPA Assessment of Effect: No Potential to Cause Effect.

4. Maintenance of Telecommunication Facilities in DENA Wilderness

Description: This project proposes to replace mission critical radio components in Denali National Park and Preserve, correcting deficiencies in existing radio/base/repeater sites. Components that would be replaced and upgraded include cabling, towers, repeaters, duplexers, amplifiers, repeaters, and electrical components. The structures that house the components would also be evaluated and replaced as needed. In 2024 replacement of failing radio repeater components would be completed at the Healy, Thorofare, Cantwell, Bald, Tokosha, and West Fork of the Yentna River Sites. Additionally, the radio frequencies at the Mt. Healy, East Branch, Eielson VC (base station), Double Mountain, Wickersham, and ARCC sites would be re-programmed to comply with NTIA and FCC requirements.

Location: Existing radio repeater sites throughout the park.

NHPA Assessment of Effect: No Adverse Effect.

5. Removal of Non-Historic Materials and Downed Aircraft from Glaciated Environments in Denali National Park and Preserve (2020-2029)

Description: This project would allow the removal of non-historic materials, including downed aircraft, from glaciated areas of Denali National Park and Preserve for up to ten years (2020 - 2029). Actions taken under this authorization would be reviewed annually during the ten-year period. Such removal efforts may require a variety of actions, including but not limited to overnight stays by removal personnel, use of fixed wing aircraft, use of helicopters for sling loads, and helicopter landings. Activities addressed by this project include:

- Removal of materials and structures, including downed aircraft, from glacial environments. Glacial environments include glaciers, moraines, and adjacent areas of exposed bare rock. Removal of debris from areas of the park covered in soil or with a higher potential for the presence of cultural resources are not included in this project and would require additional compliance.
- Removal of only non-historic materials and structures. Removal of historic materials requires additional review and compliance.

- The use of helicopters for debris removal including in designated and eligible wilderness.

Activities not addressed by this project that would require additional compliance include:

- Activities likely to affect cultural resources (such as if digging or disturbance of soil is required)
- Activities that would normally require a special use permit that are not specifically included in the list of activities addressed by this project
- Installations in wilderness, including monitoring equipment

Additional requirements guiding the removal of materials and structures from glacial environments may be imposed with a special use permit, additional project-specific compliance, or other mechanism on a case-by-case basis.

Locations: Glacial environments throughout the Park

NHPA Assessment of Effect: No Adverse Effect.

External Affairs

6. Release Prospectus for Mountain Guide Concessions Contracts (2019-2028)

Description: This project proposes to release a prospectus to advertise the business opportunity for commercially guided climbing on Denali and other peaks in the Alaska Range located in the former Mt. McKinley National Park (Old Park). Up to 5 contracts may be awarded and will be ten years in length. This contract cycle follows the previous contract cycle of commercially guided mountain services in this area of the park. Contracts were awarded to 7 concessioners, not 5 as stated in the Project Description. Each concessioner is required to follow a set of requirements that specific to the operator as well as conditions that are common to all, see copies of contracts in the file. Operating Plans are reviewed on an annual basis and updated as needed.

Location: Old Park/ Mountains

NHPA Assessment of Effect: No Potential to Cause Effect.

7. Release Prospectus for Dog Sled Passenger & Dog Sled Freight Hauling Services (2017-2027)

Description: Denali National Park and Preserve intends to release a prospectus for the solicitation of interested parties to compete for one Category II concession contract to provide Dog Sled Passenger Services and Dog Sled Freight Hauling Services. These services were previously competed under two Category III contracts, CC-DENA018-05 and CC-DENA003-05. Both expire on June 15, 2015, and were extended through August 31, 2017. These services for these two contracts will be covered by a single contract that will go into effect on September 1, 2017, and last for a period of ten years.

Changes in the new contract include the following: concessioner will be authorized to enter and exit the park on the north side of the Alaska Range at any location when beginning or ending overnight dog sled trips as well along the park boundary in the Cantwell area. The previous contract allowed only entry and exit from the northeastern boundary between the east side of the Toklat River and the park road corridor. Concessioner will be authorized to operate four trips simultaneously; the previous contract authorized only two trips simultaneously. Concessioner will have exclusive and unlimited use of the two Dalle-Molleville cabins along with four quinzees for overnight stays with clients during the mushing season; the previous contract authorized the use of only two park cabins.

Location: Throughout the Park

NHPA Assessment of Effect: No Potential to Cause Effect.

8. Release a Prospectus for Glacier Landing Air Taxi and Glacier Landing Scenic Air Tour Services (2020-2030)

Description: Denali National Park and Preserve intends to release a prospectus to advertise up to four (4) concession contracts for Glacier Landing Air Taxi and Glacier Landing Scenic Air Tour Services. The park user groups for these services are primarily climbers (air taxi) and tour participants/independent travelers (scenic). There are currently four concessioners offering these services, and their contracts will expire on December 31, 2019. The draft contracts to be offered will be ten years in length and will span the time frame of January 1, 2020, through December 31, 2030. There will be no changes in authorized scope from the current contract. Maps included clarify the Glacier Landing Areas open for Scenic Air Tour and Air Taxi Services.

Locations: Throughout the glacial areas of the park.

NHPA Assessment of Effect: No Potential to Cause Effect.

9. Issuance of Commercial Use Authorizations (2024-2028)

Description: Concessions Management Specialists will conduct an initial review of permit applications to determine whether the proposed action is allowable under NPS policy, and consistent with the park planning documents and the Commercial Service Strategy. This project proposes to cover: the issuance of new CUAs which cause no more than minimal impact to park resources and values; extension, renewal, reissuance or minor modifications of previously approved CUAs not entailing new construction; changes or amendments to approved actions or plans involving CUAs; renewal of CUAs not involving new environmental impact; other activities approved on a case-by-case basis and documented in CUA stipulations (fuel, storage, temporary shelters, transportation, navigation aids, etc.).

Authorized CUAs will:

- Be consistent with the purpose and significance of Denali National Park and Preserve
- Adhere to federal, state, and local laws and regulations and all National Park Service policies.
- Maintain public health, safety, and well-being through:

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- Carrying appropriate insurance meeting all federal, state, and local health and safety codes and regulations
- Providing relevant safety instructions to visitors
- Where applicable, be provided by certified individuals and businesses.
- Avoid unacceptable impact to park resources and values and is consistent with management plans, given existing use in the area.
- Provide enjoyment appropriate to the park while not unduly conflicting with park programs or activities, traditional or subsistence activities, or existing NPS commercial services.
- Not exclude the general public from participating in limited recreational opportunities

2024 Updates to Summer Guided Hiking CUA (May 11th – Sept 30th):

- Group size increase from 12 to 20 for CUA-authorized, non-wilderness trails.

2024 Updates to Winter Activities CUA (Oct 1st – May 10th):

- Updated definition to clarify primary activity is transportation.
- Hiking and snowshoeing continue to be allowed as incidental activities.
- Removed guided skiing.
- Clarified non-guided trips which exclusively visit the MSLC do not need a CUA.
- Added use of Mountain Vista Trail
- Added requirement for CUA holders to provide their own snowshoes for guided hikes.
- Clarified no group size limit at Kennels, Mountain Vista Rest Area, and Mountain Vista Trail (still limited to 12 on the McKinley Station, Roadside Bike, Roadside, and Rock Creek Trails)
- Removed requirement for human waste containment bags (winter activities areas are only open to public when SSTs are open)

Locations: Park wide

NHPA Assessment of Effect: No Adverse Effect.

10. Release Prospectus for Hunting Guide Services in Denali National Park and Preserve (2018-2027)

Description: Denali National Park and Preserve intends to release a prospectus to advertise up to two (2) concession contracts for Hunting Guide Services. These services are offered to the public and take place in the southwestern corner of the Denali National Preserve.

There are currently two (2) concessioners offering these services, and their contracts will expire on December 31, 2017. The draft contracts to be offered will be ten years in length and will span the time frame of January 1, 2018 through December 31, 2027. There will be no changes in authorized scope or location from the current contract.

Locations: Preserve areas of the Park

NHPA Assessment of Effect: No Adverse Effect.

11. Eldorado Mining Special Use Permits (2019-2026)

Description: This serves as programmatic compliance for Special Use Permits issued per the 2016 Eldorado Creek Mining Plan of Operations Environmental Assessment. Special Use Permits and conditions will be reviewed and uploaded annually.

Kristopher E. DeVault, an agent for Eldorado Creek LLC, submitted a plan on May 22, 2015 to use a 6-inch suction dredge in 2015 on the 118 acres of valid unpatented placer mine claims Liberty #9 and Liberty #13 through #20 on Eldorado Creek. An 8-inch dredge could be used in future years. Housing for this operation would be at the Comstock Cabin. Access will be by the Denali National Park Road 90 miles back to Kantishna. The Liberty Claims are located 1 mile south of Kantishna. Beginning 1.25 miles upstream from its confluence with Moose Creek and continuing up Eldorado for 2.25 miles. The existing road crosses the lower part of Moose Creek to reach the Eldorado / Slate Creek access road. The Eldorado / Slate Creek access road crosses Eldorado Creek more than 20 times from its confluence with Moose Creek and runs through all the Liberty Claims. Eldorado / Slate Creek access road has been in existence prior to the claims being withdrawn from mineral entry. Access will also be from the Kantishna airstrip which is located 1.25 miles SW from Kantishna and the confluence of Moose Creek and Eldorado. An average of 15 park passes are requested for mining operations per season. At this time a minimum of 10 and maximum of 20 trips are anticipated depending on weather, resupply trips, emergencies, initial mining operation start up, beginning of year and end of year trips. Annual road maintenance will be needed to keep the road in usable condition and will be the responsibility of the mining operator.

Locations: Kantishna

NHPA Assessment of Effect: No Historic Properties Affected.

12. Access to Rainy Creek (ANILCA inholding) Special Use Permit (SUP) for construction of Guest Facilities (2023-2024)

Description: Denali National Park and Preserve is preparing to issue a two-year special use permit (SUP) for the activities requested by Hank Swan on behalf of the Kantishna Hills LLC owners who are initiating construction of 5-10 cabins and employee dorm, renovation of an existing cabin, and construction other structures as part of a lodge facility on their three private parcels (13 acres total) on Rainy Creek. The applicants are requesting use of national park lands to stage equipment and construction materials, permission to use a helicopter to sling-load construction materials from two of the requested staging areas on NPS land to their property, permission to use a helicopter to transport employees to the Kantishna airstrip if stranded by high water on Moose Creek, brushing of roads and staging areas, and use of a snowmachine and groomer to create a fixed-wing aircraft winter landing strip on NPS land near their property and a snow machine trail stretching between Glen airstrip and Rainy Creek inholding property.

The helicopter use is in support of construction only with constraints on daily operation timing. Sling-loads would allow transport of materials during the early season (June) period when the volume of water in Moose Creek is typically high making crossing the creek multiple times with high-clearance vehicles unsafe. Sling-load operation would also be allowed during the rest of the summer season with constraints on daily or weekly timing to minimize noise intrusions on Moose Creek area hikers. Use of the helicopter sling-loads will provide for more efficient delivery, facilitating summer construction, which would likely reduce the amount of and length of time materials are stored on NPS lands. The applicant will be encouraged to use the end of visitor season period (after Road Lottery) to use the road access to pre-stage materials for the following winter and spring prior to the start of visitor season.

Locations: Kantishna

NHPA Assessment of Effect: No Potential to Cause Effect.

13. Special Use Permits: Special Events, First Amendment Activities, Commercial Filming, and Still Photography (2024-2028)

Description: The NPS proposes to issue Special Use Permits (SUP) for special park uses and events occurring within Denali National Park and Preserve.

Activities that would be permitted include:

- charity sporting events (road runs or bicycle events),
- weddings/ceremonies
- military training exercises
- first amendment activities (non-facility)
- commercial filming
- still photography
- other special events as approved by the Superintendent

This project would only cover activities that have No Potential to Cause Effect.

Locations: Throughout the Park

NHPA Assessment of Effect: No Potential to Cause Effect.

14. Military Crash Site Reconnaissance, Helicopter Use, Eldridge Glacier

Description: The NPS proposes to issue a special use permit to the Pacific Forces Regional Support Center at Joint Base Elmendorf-Richardson for annual helicopter (UH-60 Blackhawk) searches and landings on the Eldridge Glacier between May and October annually beginning in 2023 through 2027. The purpose of the activity is to conduct a reconnaissance to search for human remains or crash debris in the vicinity of 1952 crash site of USAF C-119 Boxcar. The crash site is located in eligible wilderness. If evidence is discovered in aerial reconnaissance, the US Air Force would like same-day permission to land and conduct a ground search with aircraft crew (up to 20 personnel). No installations or weather stations is being requested with this permit application. Expected time in the park to be two hours of overhead flight/loiter time to include touch and go with no intent to land and debark without cause.

Locations: Eldridge Glacier

NHPA Assessment of Effect: No Adverse Effect; Separate NHPA consultation was sent in June 2022.

15. Greg LaHaie/Kantishna Air Taxi Land Use SUP 2022-2024

Description: The NPS received special use permit application from Greg LaHaie (President/Owner of Kantishna Air Taxi, Inc. and Skyline Lodge; Kantishna inholder) requesting continue use of NPS lands in Kantishna. The NPS proposes to issue a two-year special use permit (through September 2024) to allow the uses at Kantishna as requested. When the Park Road is repaired and road access to Kantishna is possible, he intends to return to use the tanks and storage buildings. The specific requests are to park his personal vehicle year-round adjacent to the airstrip and to use an airplane tie-down area for storage of his airplane, small shed building and a fuel supply. The fuel supply (Avgas) stored at the airstrip location is in a 2,000-gallon double-wall fuel tank, currently appropriately vented with overfill protection and hoses are disconnected.

Locations: Kantishna airstrip

NHPA Assessment of Effect: No Adverse Effect.

16. New Construction of Concessioner Employee Housing

Description: This project is an effort to address the employee housing needs of park partner Doyon/Aramark Denali National Park Joint Venture Concession (JV) through construction of new concessioner housing. Seasonal employee housing in Denali National Park and Preserve's Concessioner Land Assignment (CLA) is at a premium. There is insufficient concession employee housing year after year and decreasing availability of housing outside the Park. This project is a revision of a previous plan to construct concessioner housing in the CLA (1997 Front Country DCP & EIS, 2001 Entrance Area EA, and 2011).

The specific project key objectives are to construct a two-story manager housing building to be approximately a 3,300 gross sq. ft. in area, two-story, 12-bedroom total building with a common laundry room and combination living room and kitchen on each floor. One ADA compliant bedroom (with a design emphasis on accessibility/universal design throughout) will be on the first floor. Each unit will have a private 3/4 bathroom. The new housing will be constructed North of and adjacent to the Sugarloaf Employee Dining Hall in order to be on the CLA's winter water utilities (largely within the footprint of the Fitness Center's originally proposed location). A dedicated gravel parking lot for 12 vehicles with winter plug-ins inclusive of two additional accessible parking spaces.

Locations: Concession Land Assignment at Mile 1.0 Denali Park Road

NHPA Assessment of Effect: No Adverse Effect; expected to initiate consultation in 2024:

Facilities

17. Routine maintenance of historic / cultural sites, structures, objects, utilities, and grounds (programmatic compliance: 2023-2027)

Description: This project covers the routine maintenance and repairs to historic and cultural structures, sites, utilities & grounds. For NHPA, projects would be reviewed on a case-by-case basis. Complex projects or projects with ground disturbance may require additional compliance. Project leaders must consult with the NHPA coordinator to ensure that their project falls under this Programmatic Compliance. In 2024 this work may include: Electrical Arc Flash Repairs (C Camp Rec Hall, HQ Steam Plant, A frame cabins), Annual Structural Fire ITM system repairs, Upgrade Electrical Service at 4 Helipads at INR (archeological monitor present for trenching), Re-paint and Re-stain Exteriors of Five Historic Buildings (Upper Windy Cabin, Lower East Fork Cabin, Lower Savage Cabin, HQ Headquarters Office B21, and HQ Residence P26), Removal of the upstairs carpet and restoration of the original parquet flooring underneath in HQ Apartment 51D, installation of a new air intake to exterior of HQ Office B103, Repaint Interior and Exterior Walls of HQ Administration Office B123, Repaint Interior and Replace Flooring in the HQ Interpretation Office B101, Replace carpet and repaint walls in the HQ Resources Office and Conference Room B102, Rehab exterior finishes (door and window replacement in kind) on P171 Doty house, Busia Cabin stovepipe replacement.

Location: Throughout the Park

NHPA Assessment of Effect: No Adverse Effect.

18. Routine maintenance of non-historic structures, utilities, and grounds (programmatic compliance: 2023-2027)

Description: This CE is for non-historic structures, sites, & grounds in which no digging occurs. (To be eligible for this programmatic CE, the activities cannot be considered undertakings per the NHPA and must have an NHPA assessment of effect of, "No Potential to Cause Effect. (800.3(a)(1))" Non-historic structures, sites, utilities & grounds that are located in, near, or whose APE extends into Historic Properties (for example the Mt. McKinley Historic District, Park Road Historic District, or the Kantishna/ Wonder Lake Cultural Landscape) are excluded from this programmatic compliance document as the work could potentially affect historic properties. In 2024 the following projects are proposed: Electrical Arc Flash Repairs (arch monitor present for trenching), Replace Inefficient & Aging Front Country Emergency Generator, Annual Structural Fire ITM system repairs, Inspection, Repair, Relining and Painting of Front Country Above Ground Water System Tank, Reseal Exterior of Eight C Camp Cabins "in kind", Replace Inefficient VFD Water Pump Controls in the Rock Creek Water System, Upgrade Fuel Master Systems at Two Fuel-Dispensing Locations, Replace Two Fuel Tanks and One Pump at McKinley Airstrip Fuel Dispensing Systems "in kind", Replace Eleven Outdated Pumps in Four Eastside Water and Wastewater Systems, Replace Outdated Furnaces in Six Administrative Buildings, Emergency Rock Creek Pumphouse Electrical Repairs, Repair and Replace Benches in the Denali NP Entrance Area, Upgrade DENA frontcountry networked fire alarm system for remote monitoring, Replace Roof on Duplex P252.

Location: Throughout the Park

NHPA Assessment of Effect: No Potential to Cause Effect.

19. Kantishna Airstrip Routine Maintenance and Minor Upgrades - Programmatic Approval (2024-2028)

Description: This project covers routine maintenance and minor upgrades on the Kantishna Airstrip, located at the western terminus of the Denali Park Road.

Routine Maintenance includes the actions listed below; streamlined activities per the 2008 Section 106 Programmatic Agreement.

1. Removal of non-historic, exotic species according to Integrated Pest Management principles when the species threatens cultural landscapes, archaeological sites, or historic or prehistoric structures.
2. In-kind regrading, graveling, repaving, or other maintenance treatments of all existing trails, walks and paths within existing disturbed alignments.
3. Minor realignment of trails, walks, and paths where the ground is previously disturbed as determined by a qualified archaeologist.
4. Changing the material or color of existing surfaces using materials that are recommended in an approved treatment plan or in keeping with the cultural landscape.
5. Existing roads, trails, parking, & associated features, that have been determined eligible for the National Register in consultation with the SHPO/THPO, may be repaired or resurfaced in-kind. The project, including staging areas, cannot exceed the area of the existing surface and cannot exceed the depth of existing disturbance (for the purposes of this entry the Kantishna airstrip is considered eligible for the National Register).
6. Limited activities to mitigate health & safety problems that can be handled without removal of historic fabric, surface treatments, or features that are character-defining elements, or features within previously disturbed areas or areas inventoried and found not to contain historic properties.
7. Testing of soil and removal of soil adjacent to buried tanks, provided the project does not exceed the area of existing disturbance and does not exceed the depth of existing disturbance, as determined by a qualified archaeologist.
8. Removal of both natural and anthropogenic surface debris following volcanic activity, tropical storms, hurricanes, tornados, or similar major weather events, provided removal methods do not include ground disturbance or otherwise cause damage to historic properties.
9. Maintaining existing vegetation on earthworks, trimming trees adjacent to roadways and other historic roads and trails.

Locations: Throughout the park

NHPA Assessment of Effect: No Adverse Effect.

20. Application of CaCl to Mitigate Dust on the Denali Park Road (Programmatic Compliance: 2023-2027)

Description: The objectives of the proposed action are to mitigate dust on the Park Road to improve concessions operations and visitor experience, as well as to reduce the quantities of gravel needed to maintain the road. This project will apply a binding agent (calcium chloride) to the unpaved portion of the park road to reduce blowing dust and fine gravel loss. Dust on the road detracts from the visitor experience and is considered to be a respiratory irritant. Dust reduces the visibility on the park road, creating a safety hazard and decreasing the wildlife viewing opportunities.

Based on past efficacy monitoring, the park will limit cumulative palliative applications such that any particular road segment does not receive accumulations more than 1.5 lbs/yd² during any 4-year period. The park will continue to limit palliative applications along 'high-risk' road segments such as (1) tight curves where large surface areas drain to smaller points, concentrating chloride (i.e., milepost 18.6) and (2) locations where road embankments are particularly steep (> 25% grade) and runoff is likely to occur quickly (i.e., milepost 15.2, 28.8). And the park will consider use of non-chloride-based dust suppression (i.e., water) or alternate road stabilization products in the Teklanika and Igloo Forests areas, where white spruce is showing considerable decline and stress that is related, at least in part, to chloride uptake.

Location: Along the Park Road that is graveled (Mile 15 to 43 in 2024)

NHPA Assessment of Effect: No Adverse Effect.

21. Denali Park Road Routine Maintenance and Repair (Programmatic Compliance: 2023-2032)

Description: The purpose of these maintenance activities is to preserve the unique character of the Park Road Historic District, improve the visitor experience for bus passengers, and minimize disruptions to park operations. Without cyclic maintenance, the condition of the road would deteriorate and likely require major road reconstruction.

Activities must be eligible for NHPA streamline review to be included in this project (see 2020 Mount McKinley National Park Road PA and 2008 Nationwide PA) and activities will be reported to the SHPO on an annual basis by the NHPA compliance specialist. Activities that adversely affect the park road historic district, cultural landscape, or any other historic properties, such as permanent alterations to the appearance of the road (ex: road widening, bridge construction or removal) or new installations that are plainly visible to road users (ex: slope stabilization structures, new or larger culverts / drains, permanent signs), may be included but should be reviewed by the NHPA compliance specialist before undertaking. Activities that would affect wetlands or floodplains (ex: installation of new drainage structures that redirect streamflow) may require additional compliance or permits and should be reviewed by the NEPA compliance specialist before undertaking. Activities that would occur outside of the existing road prism, or in wilderness, are excluded.

Locations: Along the entire Park Road.

NHPA Assessment of Effect: No Adverse Effect.

22. Mitigate flood damage potential on Park Road (2022-2026)

Description: This project will address the creek bed material that has significantly reduced the flow on four major drainages along the park road. Over the past five years the small to medium annual flood events that have transpired in the summer months have created an excess amount of material around the intake and discharge sides of four major culverts along the Denali Park Road. These culverts now are half to two thirds full of gravel that has been carried down the creek during the high-water events. This gravel is constricting the flow of the culverts significantly and could soon restrict the flow enough to cause road damage or washouts if left in its current condition.

The culverts at Mile 9, 10, 11 & 61 are the four identified culverts at this time. Others could be discovered as flood like conditions continue during the summer months. The scope of the project would remove the excess material within the drainage 150 feet (or less) from center line of road on the intake and discharge side of the culvert. Only enough material would be removed to expose the bottom of the culvert and match the natural degree angle up to 150 feet in that direction from center line. The removal of the material will mirror the existing drainage landscape as to not impair the aesthetics of functionality of the drainage. Other techniques can be discussed with hydrologists if so needed.

Locations: Park Road

NHPA Assessment of Effect: No Adverse Effect.

23. Trails Maintenance Plan (2024-2028)

Description: This project covers the routine maintenance, repair, and operating standards for existing trail systems located within Denali National Park and Preserve as described in the associated “Trails Maintenance Plan”. Work may include brushing, the removal of downed vegetation, replacement of existing signs, “in kind” repairs to existing trail structures, re-grading, resurfacing, trail stabilization, and / or trail rehabilitation.

In 2024, NPS trail crews will remove brush and repair tread of approximately 2.8 miles of trail surface among the Savage Cabin, Savage Canyon and Mountain Vista Loop trails. Work will include brushing, making repairs to trail tread and existing rock and earthen drainage structures.

Locations: Throughout the Park

NHPA Assessment of Effect: No Adverse Effect.

24. Reduce Roadside Vegetation to Increase Safety and Visibility (2022-2024)

Description: Approximately 15 lane miles of un-natural growth will be removed per season resulting in road structure improvements, enhanced road structure maintenance, elimination of a barrier to wildlife crossing and enhanced visibility for drivers and visitors. Wildlife safety will be increased and the "tunnel effect" road experience for visitors will be eliminated resulting in a reduction in visitor complaints and

an increase in visitor satisfaction. This project will remove anthropogenic brush that grows within 5 meters of either side of the park road back slopes and fill slopes that are outside Denali's normal limited brushing maintenance. Anthropogenic brush is vegetation that has taken advantage of the extra moisture and the microclimate provided by the Park road. It is taller and/or of a different species and is more robust than the natural adjacent vegetation.

The work will be accomplished by three different methods. All will be day labor crews using both NPS owned and rental equipment. One method will be a brush crew using chain saws and a chipper. The brush will be hand cut following standards in the Denali Road Maintenance Standard manual. Brush will be chipped on site or chipped and recycled as vegetative mulch. The other method will be using an excavator to pluck the vegetation and then hauled to a stockpile via a dump truck for burning disposal by the Denali wildland fire crew. The last method will be using the parks tractor mower to put the finishing touches and maintain the areas for future years.

Locations: Along the Park Road.

NHPA Assessment of Effect: No Adverse Effect.

25. FY23-24 Toklat River Gravel Scrape

Description: This project would provide aggregate needed to support road maintenance and construction projects scheduled for the Denali Park Road during 2023 and 2024, particularly the Polychrome Area Improvements. Contractors would extract up to 22,200 cubic yards of material (total over two years) from the floodplain of the glacier-fed, braided Toklat River. The extraction would be restricted to the area between the riverbanks to the east and west, from 1000 ft downstream of the Toklat Bridges and Causeway (Park Road Mile 53.4) to the Wilderness Boundary to the north (total area = 185 acres). A 14- to 20-foot wide 0.75-mile gravel spur road from the park road to the Toklat Camp provides access to the edge of the floodplain. The material would be temporarily stored in the existing Toklat Road Camp stockpile area or transported directly to the Polychrome project site for use by the contractor. Unused gravel would be stored at Toklat until it can be processed for use by NPS for repairs and road surface rehabilitation of the Park Road. No gravel was extracted in 2023 and it is unlikely that it will be extracted in 2024.

Locations: Toklat River upstream of Park Road Bridge and Causeway

NHPA Assessment of Effect: No Potential to Cause Effect.

26. Nenana River Trails Construction (2023-2027)

Description: Construction of approximately 17 miles of trail along the Nenana River between Mile 231 and Mile 237 of the Parks Hwy is expected to take about 5 years and began in 2023. Of this total, approximately eight miles will be a multiuse trail open to both pedestrians and bicyclists. This trail will be approximately eight feet wide and will primarily have a crushed gravel surface.

Locations: Mile 231 Wayside to Nenana River

NHPA Assessment of Effect: No Adverse Effect.

27. Wooden Shelter (Quinzee Huts) Winter and Summer Locations (2024 - 2028)

Description: This project proposes to continue to temporarily place quinzee huts along the park road on a seasonal basis. NPS crews and equipment would transport and place the huts along the Park Road in the Fall for use by the winter concessioner and place the huts out of sight of the Park Road in the Spring for storage or administrative use during the summer. Placement and storage of quinzee huts must remain outside of Wilderness, must not be visible from the Park Road during summer visitor operations, and must be considered relative to the Park Road Historic District. Huts may not be permanently placed along the Park Road. No new ground disturbance is approved, and any necessary ground disturbance associated with hut placement requires review and possible monitoring by cultural and natural compliance staff.

Locations: Along the Park Road

NHPA Assessment of Effect: No Adverse Effect.

28. Polychrome Area Improvements Environmental Assessment - Construct a bridge over Pretty Rocks Landslide and other engineered solutions along miles 44-46 of the Denali Park Road (2023-2026)

Description: Separate NHPA consultation was sent in December 2021. Denali National Park and Preserve proposed improvements to the Park Road in the Polychrome Area to address several geologic hazards, including the Pretty Rocks Landslide, that are jeopardizing public safety and infrastructure. The project would focus on engineered solutions along approximately two miles of the Park Road (mile 44-46).

2023-2026: Construct an approximately 400-foot steel bridge over the Pretty Rocks landslide, including excavation to the east and west, and a retaining wall east of the landslide, on the uphill slope. Perform rock scaling and create a rockfall ditch.

Locations: Mile 44-46 of the Denali Park Road

NHPA Assessment of Effect: Adverse Effect.

29. Riley Creek Campground Host Site Improvements – Campground Host Site #2 Underground Wastewater Holding Tank Installation

Description: Project would involve installing a 1,000-gallon (68" wide x 52" tall x 108" long) polyethylene septic underground wastewater holding tank for Campground Host Site #2. Campground Host Site #1 had a steel 1,000-gallon underground steel wastewater holding tank installed in circa 2002.

Location: Riley Creek Campground Host Site #2

NHPA Assessment of Effect: No Adverse Effect (anticipated)

30. Replace the Outhouse at the Historic East Fork Cabin Site

Description: The NPS proposes excavation for a 500 or 1000-gallon steel holding tank that can be pumped out and construction of an accessible restroom facility (single hole) with a concrete floor and exterior access to also be able to conveniently dump canine waste in the winter. The Upper East Fork cabin outhouse is full, and the cribbing has deteriorated to the point that is no longer possible to pump it out. An alternative location for depositing human and canine waste in the area is needed. The outhouse is a historic property, and the outhouse and outhouse path are contributing features to the East Fork cultural landscape.

Location: Between the East Fork Cabin and the Dean Cabin, set back 15 ft from the access road
NHPA Assessment of Effect: No Adverse Effect.

31. C- Camp Shower House Replacement

Description: The shower house facility for C-Camp was originally built in 1975-1978, with an expansion in the mid-1990s, and rehabilitation improvement projects in 2004 and 2006. The existing shower house facility has exceeded its service life. A new shower house would be built in the C-Camp area and would include a laundry room with 8 washers and 8 dryers; a sink area for winter dishwashing; a water station for filling portable water containers; and a slop sink for disposal of graywater when the water system is shut off to C-Camp cabins.

Location: The proposed location is a previously disturbed area southeast of the Shaffer Building, on the north side of C-Camp.
NHPA Assessment of Effect: No Adverse Effect.

Resources

32. Cultural Resource Inventories (FY23-27 Programmatic Compliance)

Description: This project will encompass all activities that help fulfill the Park's legal responsibilities under Section 110 of the National Historic Preservation Act (54 U.S.C. 306102) to identify, evaluate, and protect historic Properties. Section 110 inventory activities include survey, evaluation, testing, and protection of cultural resources (archeology sites, historic structures, cultural landscape, museum objects, and ethnographic resources).

Survey: Whenever possible survey areas will be accessed on foot or by non-motorized watercraft. Remote locations (greater than 8 miles for roads) may be accessed via fixed wing or rotor aircraft. The number of helicopter landings will vary per year based on 110 survey area needs. As of 2022 less than 2% of the park has been surveyed for cultural resources.

Subsurface Testing: Subsurface testing will be limited to what is needed to establish deposition context at sites. Shovel tests will be 30x30cm in diameter. Test Units (1x1m) may be excavated on a very limited basis with Park Archeologist approval. When conducting condition assessments of sites additional shovel tests may be excavated to help determine site significance and eligibility for the National Register of Historic Places.

Collections: In general, surface collections will not be made unless the artifacts are of distinct material or form or are in danger of being looted, destroyed, or removed. All items found in subsurface contexts will be collected. All collections will be cataloged and accessioned into the DENA collections by DENA staff.

Locations: Throughout the Park

NHPA Assessment of Effect: No Potential to Cause Effect.

33. Fuels Reduction and Fire Mitigation (2023–2027)

Description: The proposed fuels reduction plan and subsequent maintenance includes treatments units within the Wildland Urban Interface (WUI) communities and road corridor areas of the park, also known as critical and full protection options and designated sites (i.e., other areas that meet comparable selection criteria) as referenced and defined in the DENA FMP (2004 and 2021 draft date) and Alaska Interagency Wildland Fire Management Plan (2021 AIWFMP). Fuels reduction work will follow guidelines listed in the compliance documents and when along roadways, will occur within an appropriately determined buffer to maintain fuel breaks, capable of reducing fire behavior and providing viable evacuation routes for wildfire emergencies. Work will be completed in phases (also known as progressive treatment) to allow for stand hardening and resilience against windfall. Treatment using chainsaws, small power tools and hand tools to reduce fuel loading build-up by thinning of dense vegetation, piling, and burning of dense vegetation (in pile form approx. 6x6 in size). Once vegetation is felled and piled, it will be allowed to dry and cure so that it burns cleanly and efficiently under specific prescription parameters.

Pile locations will be recorded by unit so that they are burned at the appropriate time. Fuels treatment units will require re-treatment at intervals determined by fire management staff and per fire ecologist & monitoring prescription data. They may also require pre- and post-monitoring. This rotation and treatment prescription is vetted and supported by years of fire ecology & monitoring data.

2024 Treatment Units:

Firewise Units (High priority) = JV 01, JV 02, EA 04 (MSLC, Dining Hall, and Wilderness Center areas)

Front Country Units (High Priority) = Mechanical Units 11, 12, and 1 (C-camp and Headquarters area)

Back country Cabins (Low Priority) = Upper and Lower Windy

Pile Burning Units = All Units above plus Firewise Units EA 02a (Mercantile area), and EA 07 (Wastewater treatment area)

Location: Throughout the park.

NHPA Assessment of Effect: No Adverse Effect

34. Monitoring Passerine bird populations in Denali National Park and Preserve, Alaska by the Central Alaska Network Vital Sign Monitoring Program (2022-2026)

Description: Our primary objective is to detect changes in a series of metrics associated with distribution, presence, relative abundance, and peak detection times of a suite of passerine birds over time. The following metrics will be measured annually: 1) first, peak, and last annual detection dates, 2) peak detection times within daily and annual sampling periods, 3) relative abundance, and 4) occupancy (presence), and 5) community structure. This work has occurred annually in Denali since 1992.

Location: Along the Denali Park Road and within 6km of the Park Road.

NHPA Assessment of Effect: No Historic Properties Affected.

35. Plate Boundary Observatory (PBO) stations - Denali, monitor tectonic and magmatic process using high precision (GPS) (2022-2026)

Description: EarthScope is a program of the National Science Foundation (NSF) that deploys thousands of seismic, GPS, and other geophysical instruments to study the structure and evolution of the North American continent and the processes that cause earthquakes and volcanic eruptions. It involves collaboration between scientists, educators, policy makers, and the public to learn about and utilize exciting scientific discoveries as they are being made. The Plate Boundary Observatory (PBO) is the geodetic component of the EarthScope project, designed to study the 3D strain field across the active boundary zone between the Pacific and North American tectonic plates in the western United States. Data from PBO's integrated network of GPS stations, strainmeters and seismometers, coupled with aerial and satellite imagery, are providing important temporal constraints on plate boundary deformation and are improving our knowledge of the fundamental physics that govern deformation, faulting, and fluid transport in earth's lithosphere.

Location: WIKR Wickersham Dome (63.55273, -150.92221; co-located with seismic and radio repeater equipment); AC33 North Denali, Tokosha (63.67113, -150.68460; co-located with radio repeater equipment)

NHPA Assessment of Effect: No Historic Properties Affected

36. Long-Term Acoustic Monitoring: Denali Triple Lakes (2022-2026)

Description: NPS acoustic inventories have been conducted in many park units, but only a few parks (including Denali) have explored the implications of detecting change by using a series of monitoring records through time. One of the longest-running studies in the NPS is the Denali Triple Lakes trail site, sampled: {2009, 2016, 2017, 2018, 2019, 2020, 2021}. We propose continued measurements for the next five years, every year: {2022, 2023, 2024, 2025, 2026} at this location.

Locations: Between the second and third lake of Triple Lakes, near the Triple Lakes Trail.

NHPA Assessment of Effect: No Potential to Cause Effect.

37. Programmatic Compliance Stream Assessments (2022-2026)

Description: This project seeks 5-year approval for stream assessment activities conducted throughout Denali National Park and Preserve that are routine in nature and do not involve ground disturbance; including non-destructive data collection, inventory, study, research, and monitoring activities, 2022-

2026. These activities must be covered under the 2008 Programmatic Agreement between the NPS and the SHPO or be activities which do not have the potential to cause effect to historic properties. Project leads must consult with the Section 106 Coordinator on a project by project basis.

The following activities are covered. Activities not listed, but similar in scope and scale, may be covered via specific approval with the compliance team and park management. Activities located in culturally significant areas to tribes are not covered under this approval without additional tribal consultation.

- Physical habitat surveys
- Stream morphology surveys
- Pebble counts
- Floodplain assessments
- Flow measurements
- Macroinvertebrate sampling with dip nets, kick-netting, bottle trapping, and other methods
- Collecting water samples for eDNA (environmental DNA) and water chemistry testing

The following Installations when no ground disturbance occurs:

- Installation of temperature and environmental conditions logging devices
- Temporary installation of survey benchmarks (consult with 106 coordinator)
- Temporary installation of trail cameras for monitoring purposes (consult with 106 coordinator)
- Temporary installation of hydrophones (underwater microphone)

Location: Throughout the park.

NHPA Assessment of Effect: No Adverse Effect

38. Spring Abundance Surveys for Willow and Rock Ptarmigan (2024-2028)

Description: Both willow and rock ptarmigan can be hunted with liberal season dates and bag limits. Game Management Unit 13 (GMU; specifically, 13B and 13E) receives among the most hunting effort for ptarmigan than any other GMU in Alaska (Merizon and Carson 2013). Surveys would occur between 1 and 31 May for a total of 3 to 4 days. Within each day surveys will occur during two time periods. One, sunrise and continuing for up to 2 hours after sunrise. Two, 2 hours prior to sunset and continuing to sunset. Sunrise and sunset tables will be used for Denali National Park to determine specific start and stop times. Each survey transect will be repeated twice during the peak of display activity.

Locations: Along the Park Road.

NHPA Assessment of Effect: No Historic Properties Affected

39. Wolf and Coyote Monitoring in Denali NPP (2022-2026)

Description: Capturing and radio collaring wolves each year to maintain at least 2 radio collared wolves in each pack whose home range is at least partly within the designated wolf population monitoring zone. Wolves will be captured by means of immobilizing darts fired from a low-flying helicopter and equipped with radiocollar containing either conventional VHF transmitter beacons or satellite-linked GPS locators. Collared wolves will be located by aerial radiotracking from single-engine airplanes approximately twice monthly during March - September, and opportunistically during winter. Collared wolves are monitored most intensively during early summer (May - June) to locate dens and estimate pup production. In addition to the wolf monitoring project, we will capture and radiocollar up to 5 coyotes per year along the northeast boundary of Denali. This project has been going since the 1980s.

Location: Within Denali National Park and Preserve located primarily north of the Alaska Range including the Windy Creek watershed. Aircraft, motor vehicle, and/or foot travel from the Park Road. Entry into closed areas is not expected to be needed except on rare occasions, and approval will be obtained from the park's wildlife management coordinator before closed areas are entered.

NHPA Assessment of Effect: No Historic Properties Affected

40. Continued implementation of a long-term inventory and monitoring program for the streams and rivers of Denali (2022-2026)

Description: Water sampling of rivers and streams in the Park; this work has been ongoing since 2008.

Locations: Throughout the park

NHPA Assessment of Effect: No Potential to Cause Effect.

41. Dynamics of the Denali Caribou Herd (2022-2026)

Description: The overall goals of this research during FY2022 - FY2026 are to continue monitoring long-term population trends, vital rates, and other population characteristics that determine the status of the Denali Caribou Herd, and to complete research on survival patterns and habitat selection of male caribou.

OBJECTIVES

1. Estimate the population size and composition in late September each year;
2. Determine productivity, survival patterns and age structure of adult females;
3. Assess calf production and recruitment;
4. Investigate the patterns of survival and habitat selection of male caribou;
5. Relate caribou population status, trends, and vital rates to climatic variables and predator population characteristics.

Summary of proposed field methods and activities:

Capture and Radiocollaring: Female caribou are captured by helicopter darting and radio collared to monitor survival, productivity and movements, and composition surveys and herd counts. In March, we instrument female calves to provide recruits for the age-structured sample and to monitor productivity of young age-classes. Females captured as 10-month-olds but not recruited into the age-structured sample have their collars removed at about 4 years of age.

We use thiafental/xylazine hydrochloride for immobilizing. A Supercub working with the helicopter locates caribou for darting, monitors darted caribou during induction, and checks on caribou captured on previous days. Once a caribou is immobilized, it is fitted with a radiocollar and standard body measurements are taken. Once processing is completed, caribou were given naltrexone hydrochloride and yohimbine hydrochloride to antagonize the effects of immobilants.

Radiotelemetry: Radio collared caribou are relocated by radiotracking from fixed wing aircraft every 2 months. In addition, female caribou are located to assess natality (mid-May), and to aid in composition surveys and the annual census.

Pregnancy assessment: In mid-May, all radio collared cows ≥ 2 -years-old are located by helicopter and observed to assess their pregnancy status based on a calf at heel, udder distension, or hard antler presence.

Composition surveys: We conduct 2 helicopter surveys to assess the age/sex structure of the herd annually (early June, late September). During these surveys, a search area based on the distribution of radio collared caribou immediately prior to the survey is intensively searched and all caribou encountered are approached at close range with a helicopter and classified by age and sex.

Population estimation: Annual herd size is determined from an estimate of the number of adult cows in the population based on post calving survey results. We intensively search each survey block by helicopter without the aid of radiotelemetry. Caribou groups encountered are counted and classified, and we determine the occurrence of marked individuals within groups via radiotelemetry. Simultaneously, a Supercub locates all radio collared females in or adjacent to the survey block. Periodically through the survey, we compare notes between the 2 aircraft crews to determine marked groups missed by the helicopter in areas already surveyed; those groups are then relocated by the helicopter and counted. In addition to adding these caribou to the totals counted, this information provides an assessment of sightability relative to group size during the survey. Because most cows and calves tend to be in large groups at this time of the year, sightability is generally very high and strongly related to group size.

Locations: Throughout the Park and Preserve

NHPA Assessment of Effect: No Potential to Cause Effect.

42. Vertebrate ichnology and paleoenvironments of the Upper Cretaceous Cantwell Formation, Denali National Park and Preserve: insights from North America's most prolific, high-latitude dinosaur track assemblage (2022-2026)

Description: The goal of this work is to better understand the taxonomic richness and paleoecology of dinosaurs and other vertebrates that are known from abundant trace fossil evidence preserved in the Cantwell Formation and is a continuation of previous dinosaur fossil research. During the field seasons (June 1-September 11) we intend to continue our work to better document known dinosaur track sites as well as locate new fossiliferous sites in the Cantwell Formation (CF).

Significant specimens will be photographed, and a subset will be imaged using photogrammetry. Silicone peels (Silputty) will be made for some tracks when size, weather and preservation are appropriate. In addition to possibly collecting tephra (volcanic ash) samples for radiometric dating (approximately 1 gallon of sediment, volumetrically), we also request the option to physically collect a small number of fossils when necessary. We will do this sparingly and will limit our collections to body fossils (bones/teeth) or particularly significant track specimens that will be at risk of being lost due to erosion. When possible, we will inform the park geologist or his representative before collecting. To date, our collections have been very minimal.

Locations: Big Creek drainage, Tattler Creek, Cabin Peak areas.

NHPA Assessment of Effect: No Potential to Cause Effect.

43. Monitor physical and biological components of permafrost on burned and un-burned sites near Gosling Lake, Denali National Park and Preserve (2024-2028)

Description: This sampling period (once every three years), the research project will utilize the platform of an unmanned aircraft system (UAS) with a swappable payload to carry a multi-spectral sensor and a radiometric thermal sensor. The UAS will be operated between 100 and 120 meters AGL, at speeds of 10-15 mph over both transect sites. There will be ~ 8 take-offs and landings per transect site (~50 acres each), and each flight segment lasting 10-12 minutes each, totaling ~ 2 to 2.5 hours of flight time for the entire research area. Other UAS operations related to natural and cultural resources best practices, digital security, etc. can be referenced through the Small Unmanned Aircraft Systems in NPS Operations Programmatic Approval 2024-2028.

Locations: Northwest area of the Park

NHPA Assessment of Effect: Potential to Cause Effect to Historic Properties

44. Small-Mammal Monitoring at The Rock Creek Legacy Plots in Denali National Park and Preserve by CAKN (2020-2024)

Description: Small mammals or voles have been monitored using mark-recapture methods via live-trapping techniques in Denali National Park and Preserve (DNA) since 1992. The objective of this project is to continue in perpetuity the long-term monitoring of small-mammal population dynamics, including estimates of density and abundance, on the Rock Creek legacy plots in DNA. The monitoring involves mark-recapture sampling via live-trapping of three species of voles (*Myodes rutilus*, *Microtus oeconomus*, and *Microtus miurus*) on four long-term monitoring plots established in 1992 (21 years ago). Each plot is approximately 0.8 ha in area and is comprised of a 10m x 10m grid containing 100 Sherman live-traps placed 10m apart in a square configuration. We conduct small-mammal trapping for four nights in mid-August annually (usually around August 12). Our field procedures follow methodology described by Furtch (1995) and Rexstad (1996, 2005) in which traps are: baited with irradiated sunflower seeds (microwaved to prevent germination of the sunflower seeds in DNA); padded with biodegradable cotton bedding (nestlets) and down for warmth; and are covered with plastic trap covers to keep animals dry. The 400 traps we deploy are checked three times daily (0600, 1300 and 2000). When we capture animals, they are identified by sex and species, and we

determine their net weight and reproductive status. We implant unmarked individuals subcutaneously between the shoulder blades with passive integrated transponder (PIT) tags.

Locations: Alaska, Denali National Park and Preserve, Rock Creek Drainage

NHPA Assessment of Effect: No Potential to Cause Effect..

45. The Critical Connections Program: Studying the Full Life-Cycle of Denali's Migratory Birds (2020-2024)

Description: Document year-round movements of migratory birds that nest in Denali and assess how conditions across their year-round range affect their ability to return to their northern breeding grounds and successfully produce young. Summary of proposed field methods and activities:

1. Capture and remove tracking devices from individuals captured in previous years.
2. Individuals will be captured by luring them into mist nets using audio play-back calls.
3. After removing the tracking device, individuals will be released.
4. Non-target individuals captured will be banded with USGS aluminum leg bands. A blood sample will be collected for contaminant analysis.
5. Some non-target individuals will also be banded with plastic color-coded leg bands to help identify them in future years and for future studies.

Locations: Includes the area within 2 km of the Denali Park Road and within 2 km of park campgrounds.

NHPA Assessment of Effect: No Potential to Cause Effect.

46. Effects of Nest Predation and Predator Abundance on Habitat Quality for Nesting Birds Across a Rapidly Changing Landscape

Description: The overall goal is to identify the habitat characteristics and successional stages whereby habitat quality is maximized for birds nesting in a rapidly changing landscape in Denali by identifying habitat patterns in reproductive success of a suite of nesting birds across the range of habitats in which they occur in Denali, from forests to alpine shrub-tundra ecotone. Study sites will be in forested and shrub-covered habitats within 2 miles of the Denali Park Road between Mile 7 and Mile 43. They will attempt to place all study sites out of view of the Road. Final site selection in May 2023. The study areas will exclude all campgrounds, formalized trails, visitor facilities such as the Teklanika Rest Stop. They expect to monitor approximately 100 nests of all species combined each year. The primary method of nest monitoring will be miniaturized time-lapse digital cameras.

Locations: within 2 miles of the park road from mile 7-43.

NHPA Assessment of Effect: No Potential to Cause Effect.

47. Continue snow surveys in Denali as part of the Central Alaska I&M Network, (2021-2025)

Description: To efficiently obtain, manage, and disseminate high quality information on snow, water, climate, and hydrologic conditions. Snowpack information provides additional understanding of a large number of natural resource processes within the park including wildlife research such as population density, birth survival rates, herd movements, vegetation succession, as well as hydrologic information regarding surface water supply.

This project started as part of Denali National Park and Preserve's Long Term Ecological Monitoring (LTEM) Program and has continued since 2002 as part of the Central Alaska Inventory and Monitoring Network (CAKN). The snow surveys involve two methods of data collection, one is a ground-based survey and the other is an aerial survey. These surveys are done as part of an interagency agreement with the USDA Natural Resources Conservation Service (NRCS).

The ground-based survey is done at an established snow course, where there are five permanent markers installed in the ground. There are four of these in/near the park at: park headquarters, Kantishna, Minchumina, and Purkeypile Mine. The latter three are near remote airstrips. Three times per winter (Feb. 1, Mar. 1, and Apr. 1) a field crew will visit the sites and take snow measurements, including snow depth, density, and snow water equivalent, using a cylindrical snow tube. Access to the site requires a fixed-wing aircraft with skis or wheel/skis and then a short ski or snowshoe to the site.

The aerial surveys require low level passes with a fixed-wing aircraft to read the snow depth at an established snow marker, which is a 10–12-foot pole with alternating red and black crossbars spaced one foot apart. There are six snow markers on the south side of the Alaska Range in Denali at Dunkle Hills, Tokositna Valley, Ramsdyke Creek, Dutch Hills, Nugget Bench, and Chelatna Lake. There are also aerial markers at Kantishna and Purkeypile for those times when conditions prevent the plane from landing at the airstrip (aufeis, wind, daylight, etc.). These surveys are also done three times per winter often at the same time as the ground surveys. The snow survey window is the last three days of the month through the first two of the next month, i.e., the February 1 survey window is January 29-Feb 2.

Locations: There are four existing snow courses on the north side of the Alaska Range and six aerial snow markers on the south side of the Alaska Range. These sites were established in the 1980s and 1990s and have been measured continuously for several decades.

NHPA Assessment of Effect: No Historic Properties Affected.

48. Continue weather and climate monitoring in Denali NP&P as part of the Central Alaska I&M Network (2021-2030)

Description: To continue the long-term climate monitoring efforts in Denali. Climate patterns are key to understanding ecosystem processes, yet the available analyses, trends, and models for Alaska are based on relatively few observations. One of the fundamental ways the Central Alaska Network is helping to assess climate change is by operating remote climate stations that continuously record temperature, precipitation, wind speed and direction, soil temperature, relative humidity, snow depth, and solar

radiation, throughout the park. These climate stations are providing critical quantitative data for current and future research and management decisions. The objective of the climate monitoring program is to monitor and record weather conditions at representative locations in order to identify long and short-term trends, provide reliable climate data to other researchers, and to participate in larger scale climate monitoring and modeling efforts beyond park boundaries.

Summary of proposed field methods and activities:

There are six climate stations in the park that were installed in 2004 and 2005 with long-term monitoring as the goal. It is important to maintain the stations so that they will continue to collect the data we need. An annual site visit to each station in the summer allows us to download the data, calibrate and swap out sensors, and troubleshoot any problems. Two sites are accessible along the park road (Toklat and Eielson Visitor Center), while the four additional sites are in more remote locations and require access by air (Stampede, Wigand, Ruth Glacier, and Dunkle Hills). Details related to the selection of the sites, the process for data collection, the station design, data processing, and data dissemination are documented in the Central Alaska Climate Monitoring Protocol and Standard Operating Procedures: Sousanes PJ. 2018. Climate monitoring protocol for the Central Alaska Network: Denali National Park and Preserve, Wrangell-St. Elias National Park and Preserve, and Yukon-Charley Rivers National Preserve, Version 1.01. Natural Resource Report. NPS/CAKN/NRR—2018/1599. National Park Service. Fort Collins, Colorado. Available at:

<https://irma.nps.gov/DataStore/Reference/Profile/2251883>.

Locations: The six CAKN climate stations are located at Toklat, Eielson Visitor Center, Dunkle Hills (above the old mine site), Ruth Glacier (in the Tokosha Mountains above Ruth Glacier) Stampede Airstrip, and Wigand Creek (in the Toklat basin just north of the wilderness boundary near the confluence of the Toklat and East Fork of the Toklat). The locations of the sites we maintain in cooperation with others are: Fire RAWS: McKinley River (near Hot Slough), Wonder Lake (at the WL Ranger Station), Denali Visitor Center RAWS near the park entrance., and Minchumina NRCS Snotel: Kantishna (just north of the Denali Backcountry Lodge) and Tokositna Valley (at the confluence of Ramsdyke Creek and the Tokositna River). NOAA CRN: Denali 27N located above the Wonder Lake campground on the service road near the water tower. NWS COOP site: McKinley Park at the kennels /park headquarters and at Eielson VC (co-located with CAKN station).

Denali Mountain sites: At 7K and 14K camps on Denali.

NHPA Assessment of Effect: No Historic Properties Affected

49. CAKN Permafrost Monitoring in Denali National Park and Preserve (2021-2031)

Description: The purpose of this proposal is to initiate long-term monitoring of the thermal and physical state of permafrost within DENA while also building on previous research campaigns. The CAKN permafrost monitoring program aims to focus on three main field sites: Toklat Basin: active layer thickness and soil surface elevation were measured at six transects in the Toklat Basin in 2013 (Reitman and Schirokauer, 2013). These transects (or a portion thereof) will be repeated as part of this program. Gosling Lake: permafrost degradation between burned and unburned areas near Gosling Lake has been

studied through field campaigns in 2005 and 2019. This program will repeat active layer thickness measurements, elevation surveys, and download temperature dataloggers from the site. (See PEPC 87051 for previous compliance completed for work at this site). DENA Park Road: It is proposed that two long-term monitoring grids be established at Wonder Lake and Murie Flats to measure active layer thickness, soil surface elevation, and soil temperature. As part of the CAKN program, these sites will be remeasured every 3 years. Because this is long-term monitoring through the CAKN program, we would like to request a 10-year permit.

Locations: Six sites listed above

NHPA Assessment of Effect: No Adverse Effect.

50. Spruce Beetle Population Monitoring (2021-2025)

Description: A spruce beetle outbreak in Southcentral Alaska has moved swiftly through the forests of the region since its initial detection in 2016, impacting many aspects of life including infrastructure, safety, recreation, and tourism. Trapping within Denali National Park and Preserve would consist of one to three Lindgren funnel traps, which are a standard tool for bark beetle monitoring. Trap locations would be flagged for ease of collection. Traps would be installed around May 1 and preferably checked at 2-week intervals through early September, at which point all traps, flagging, or any other trap-related items would be removed.

Traps are baited with a spruce beetle lure and the collection cup at the bottom of the of the funnel set will either be filled with propylene glycol (wet trapping - preferred) or have a Vapor Tape II insecticide strip placed in it (dry trapping). If possible, the traps are placed approximately a tree length from the nearest host trees to avoid localized spillover attacks from beetles coming into the traps; these traps only draw in beetles in the general vicinity. All propylene glycol or pesticide strips used during the trapping will be removed from the field. Lures may or may not need replaced during the season (manufacturer-dependent). Collections will be stored in Ziplock bags in a freezer until they can be sorted and counted. Traps will be installed by AKDOF staff and maintained by AKDOF or Federal cooperators.

Locations: Front Country within first 15 miles of Park Road, not visible from road. Specific locations to be determined after consultation with Denali National Park and Preserve staff.

NHPA Assessment of Effect: No Historic Properties Affected.

51. Unravelling historical climate records preserved in an Alaskan glacial ice core (2022-2026)

Description: The overarching aim of this research project is to reconstruct past atmospheric circulation and climate over the past 100 years from a mountain ice core in Denali National Park using local empirical modern isotope-climate relations. This research will benefit from collecting new precipitation on an event-basis and utilize two existing high-quality and original datasets that have been specifically made available to me for this research: (1) collect modern precipitation on an event basis, (2) use a long-term inventory of precipitation isotope measurements ($\delta^{18}\text{O}$ and $\delta^2\text{H}$) collected between 1989–2006 from Denali National Park; and (3) sub-annual $\delta^{18}\text{O}$ and $\delta^2\text{H}$ measurements from a 100 year ice core record retrieved from Mt. Hunter in Denali National Park, by a collaborative NSF-funded research team

in 2013. The project sampling has successfully been running for 4 years now, & we wish to continue these efforts to build up a long multi-year database of samples. We are now entering the final phase of the project, working closely with our collaborators at Dartmouth University to use these data to quantify isotope changes recorded in an ice core from Mt. Hunter in DNP.

Locations: Park Headquarters

NHPA Assessment of Effect: No Potential to Cause Effect.

52. Assessing the Effects of Traffic (and No Traffic) on the Behavior and Viewability of Grizzly Bears (2023-2026)

Description: The current road closure west of the Pretty Rocks Landslide presents an opportunity to assess grizzly bears' response to traffic by deploying a before-after-impact (i.e., BACI) study to assess changes in bear movement and habitat use along a 45-mile segment of the Denali Park Road. As of February 2023, a contract to construct a bridge has been awarded and the road is anticipated to open to traffic by 2025. The multi-year closure of the western half of the park road provides an opportunity to study the effects of high traffic volume on grizzly bears, using the same bears in the same area and thus controlling for major confounding effects. The non-traffic "control" period in 2023-24 will be compared to the impact or "treatment" period when high traffic levels resume in 2025-26.

Proposed capture and associated road closure dates for the bear study in 2023 are May 15-19 for the eastern study area including backcountry unit 29 (west of the Teklanika River), 31, 31, 6 (west of the Teklanika River), 7, and 8. Capture operations will occur during the beginning of the closure (May 15-16) with additional days of road closure to allow for sedated bears to recover. From June 5-9, all areas west of Polychrome will be closed to hikers, including backcountry units 8,9,10,11,12,13,14,18,19,31,32,33,34,35,36. Capture will occur June 5-6 (updated dates) with additional days of closure to allow for recovery of sedated bears.

During the study duration (years 1-4), fixed-wing radio-tracking flights will occur monthly (April - Oct) 2023-2026 and will co-occur with ongoing wolf tracking flights.

Summary of proposed field methods and activities:

1. Grizzly bears will be captured by aerial methods and instrumented with satellite tracking collars. Biological samples will be collected at the time of capture (hair, skin plugs, blood). Biological measurements will also be made at the time of capture.
2. Scat and hair samples will be collected throughout the study using non-invasive and opportunistic methods.
3. Remote cameras could be deployed along the park road and adjacent trails.
4. Field observations of grizzly bear behavior will be conducted along the park road
5. Plant phenology and berry abundance index data collection along roadside bear habitat

Location: Capture activities will occur within 10 miles of the park road. Hair, scat, and photograph collection will occur within 100 feet of the park road.

Project Impacts:

- Temporary restrict use within the study area (close backcountry units and the park road to hiking) during capture operation for up to 10 days during May and June of 2022 and May and June of 2024 to provide for visitor safety during and immediately after ACETA operations.
- At the end of the study in September of 2026 the radio collars will automatically release from the bears and be retrieved by hiking into locations or by helicopter if too far to access from the park road.
- There may be hike in non-destructive plant phenology monitoring (vegetation plots) associated with bear plant food sources during all years of the study.
- Collard bears will be visible from the park road for four years 2023-26
- The untrammled (capture), solitude (aviation noise) and undeveloped (installations) wilderness character will be degraded for the duration of the study. The natural quality of wilderness character will be improved. Wilderness impacts are documented in an MRDG.

Locations: Focus on area around mile posts 22-77 of the Denali Park Road.

NHPA Assessment of Effect: No Historic Properties Affected.

53. Integrating Snow Models with Mammal Movement Ecology (2021-2024)

Description: This study will address two main questions: (1) What is the relationship between snow properties and the movement of ungulates and their predators? Focal study species are moose (*Alces alces*), Dall sheep (*Ovis dalli*), wolves (*Canis lupus*), and coyotes (*Canis latrans*). (2) How well do landscape snow models capture relevant snow properties in a topographically complex montane region?

To investigate question 1 (snow impacts on mammal movement), we will survey fresh tracks in snow during winter seasons (early January through late March) 2022 and 2023. We will locate snow tracks from a species of interest (moose, wolves, coyotes, and Dall's sheep) and measure the sinking depth of 3 individual tracks. This location will be defined as a site. At each site, we will dig a snow pit that is 2 meters long and 1 meter wide to collect data.

For question 2 (calibrating snow models), we will measure snow properties at 2-3 fixed location sites that can be conveniently resampled throughout the season in winters 2022 and 2023. Our protocol will be identical to that used at animal track sites. Sites will be re-sampled after fresh snowfalls, or approximately every 2 weeks.

Locations: The eastern region of the park (west to approximately the Toklat River) and includes the Stampede corridor and Preserve lands east.

NHPA Assessment of Effect: No Historic Properties Affected.

54. Denali Seismic Monitoring Sites (2021-2025)

Description: To monitor seismic activity within Denali National Park and use seismic station in the park as part of the statewide seismic array to better locate and characterize seismic activity throughout Alaska. Applicants will continue operating and maintaining our four existing monitoring stations and three communications sites inside the park. They visit these stations only as needed for upgrades or repairs, which averages once every 2-3 years.

Locations: Castle Rocks (CAST): 63.4188, -152.0844, Kantishna Hills (KTH): 63.5527, -150.9233, Thorofare (TRF): 63.4502, -150.2893, MCK (McKinley Park): 63.73228, -148.93678, Double Mountain Repeater (DBL_R): 63.60657, -149.47013, Mt. Healy Repeater (HLY_R): At park radio facility on Mount Healy Murie Science Learning Center Receive (MSLC_R): At MSLC

NHPA Assessment of Effect: No Adverse Effect.

55. Denali National Park and Preserve Infrastructure: Landslide hazard assessment of the Denali Park Road (2022-2024)

Description: Landslide hazard assessment of the Denali Park Road including the role of permafrost thaw in landslide initiation. Results of this study will inform land managers for the Park about areas of potential future landslide events, as well as documenting the rate of change at existing landslides that are in close proximity to infrastructure (the Park Road, the Alaska Railroad, and the Savage Creek check station area).

Summary of proposed field methods and activities:

1. Accessing existing permafrost borehole sites between MP18 and MP89 to download data.
2. Installation of discrete markers to facilitate repeat GPS surveys of active mass movements in DENA
3. Installation of temperature sensors at 16' (3) and 10" (16) depth across a range of vegetation classes to identify the range of permafrost conditions in the park and explore the permafrost related processes that contribute to slope failure.
4. Installation of tiltmeters at three active landslides in DENA to monitor their movement and assess the rate at which they are approaching park infrastructure.

Locations: Throughout the park

NHPA Assessment of Effect: No Adverse Effect; monitoring may be required for some proposed locations.

56. Changing climate, warming permafrost, and infrastructure: Landslide hazard assessment in Denali National Park (2023-2025)

Description: This UAF study has three main objectives: 1) To better understand the permafrost mechanisms driving increased mass-movements in Denali National Park (DENA); 2) Monitor mountain permafrost in DENA; and 3) Map the extent of mountain permafrost along the Denali Park Road (DPR)

with the possibility of expanding our mapping effort to include entire DENA. Permafrost boreholes will be reestablished at Mile 18, 51, 69, and 89 of Denali Park Road. Two transects (Igloo Canyon and Highway Pass) perpendicular to the road will have 5-6 stations each with an air and ground surface temperature sensor, soil moisture sensor, trail camera and measuring rod (snow depth), and buried datalogger (30 cm x 30cm x 30cm).

Locations: Throughout the park

NHPA Assessment of Effect: No Adverse Effect; monitoring may be required for some proposed locations.

57. Subarctic Shifts: Snow-Soil-Vegetation Interactions in Interior Alaska (2022-2024)

Description: Subarctic vegetation communities are changing, partially attributable to their feedback with snow accumulation processes, which are highly heterogeneous and variable at small scales. Here I present a landscape-scale investigation of biotic-abiotic feedbacks, identifying how winter processes interact with the summer carbon and water dynamics in Denali National Park and Preserve (DENA). This study proposes an intensive critical zone investigation into snow-soil-vegetation interactions across a gradient of woody vegetation. This landscape-scale investigation aims to identify how winter processes interact with summer ecophysiology and soil dynamics in order to improve our understanding of vegetation fluxes in northern regions.

Locations: McKinley River & Lower Thorofare River, Primrose Ridge, and Rock Creek.

NHPA Assessment of Effect: No Adverse Effect; monitoring may be required for some proposed locations.

58. Shallow Lake Monitoring Project-CAKN renewal (2023-2028)

Description: The shallow lake monitoring project is part of the Central Alaska Network (CAKN) vital signs monitoring program. In 2024, the CAKN will continue the shallow lakes long term monitoring project in Denali National Park and Preserve. Between 70 and 100 lakes will be synoptically sampled within the park boundary. Lakes will be sampled July 6-10 using a helicopter based out of Whitefish Lake and July 7-18 using a floatplane. Each lake will be sampled for water quality, zooplankton composition and abundance, basic lake morphometry, vegetation composition, soil thaw depth. This information will be used in combination with remote sensed imagery to estimate surface water dynamics and determine the condition of shallow lake ecosystems. In addition, soundscape equipment will be used to collect wood frogs presence and abundance. Staff will use either a tent camp set up at the Lake Minchumina airstrip or the facilities at Friday Creek for our primary base camps.

Locations: Caribou Lake, Billberg Lake, and 161 lakes (near Minchumina Basin and Eolian Lowlands)

NHPA Assessment of Effect: No Historic Properties Affected.

59. Continued CAKN glacier monitoring in Denali National Park and Preserve (2023-2032) renewal

Description: This continuation of glacier monitoring on Kahiltna Glacier first conducted by in 2016, and more broadly by others since 1991. The goals of that program are to track annual changes in mass balance (snow accumulation and snow/ice melt), and to relate those changes to climatic (temperature, precipitation, etc.) and dynamic (changes in glacier geometry) forcings. To monitor glacier conditions at multiple sites at elevations of approximately 14,300', 10,000', 7100', 6300', and 3800' along the centerline of the Kahiltna Glacier, we have a glacier stake: a single, 1" diameter pole placed permanently vertically in the snow/ice surface of the glacier. We typically make measurements with GPS units and dig snow pits and/or drill shallow snow cores (using a hand-drill) to measure snow qualities. At the 10,000' site, we have no stake but we make the GPS measurements and do the snow pits/drilling.

Locations: Kahiltna Glacier

NHPA Assessment of Effect: No Potential to Cause Effect.

60. Monitoring the pattern and consequences of spruce bark beetle infestation on Denali white spruce forests (2023-2032)

Description: The purpose of this study is to create a baseline understanding of the variation in white spruce forest composition and structure in areas anticipated to be affected by an ongoing spruce bark beetle outbreak, and then monitor the consequences of this outbreak over time.

Summary of proposed field methods and activities (59 new SBB plots (May 15-Aug 25):

- a. 1. Installation of 59 center markers for plots: 3.25" metal button marker (akin to USGS benchmark monuments), flush with ground
- b. 2. Voucher specimen collection: expect <50 vascular and <50 nonvascular, majority destroyed, some may be kept as vouchers
- c. 3. Two (2) 0.25m by 0.25m plots to expose soil profile (per plot)
- d. - soil samples (push probe) at profile pits, 10-cm long, two cups of volume
- e. - up to one 2" (5cm) diameter soil sample extracted per 100m² unit
- f. 4. Up to four (4) 1/4" diameter tree cores per plot (non-motorized)

Locations: Throughout the frontcountry area of the park including Rock Creek, Riley Creek, Middle Teklanika River.

NHPA Assessment of Effect: No Adverse Effect.

61. Gleaning Causal Information from a Public Broadcast for Backcountry Management (2023-2024)

Description: NPS project to test the viability of a passive acoustic monitoring program for flight tracking within the park. The Automatic Dependent Surveillance-Broadcast (ADS-B) is a public radio signal from aircraft. The NPS has developed a means to log the broadcast passively. With sufficient coverage, ADS-B information could eventually replace our current track submittal process and help relax the temporal sampling necessary to sustain an acoustic monitoring program. ADS-B logger

deployments would provide sufficient strategic coverage to detect aircraft along the typical routes from eastern portals to the mountain.

Locations: Mount Healy, Mount Thorofare

NHPA Assessment of Effect: No Adverse Effect

62. Denali Acoustic Monitoring Program (2023-2032) renewal

Description: This study would reauthorize repeat acoustic monitoring at 121 unique monitoring locations. The purpose of monitoring sites varies considerably, but core purposes have included: (A) ensuring compliance with Denali's 2006 Backcountry Management Plan, (B) observing the effectiveness of management actions [including adoption of quiet technologies, best practices, or contract stipulations], and (C) phenology studies. Other unforeseen management purposes might arise, but they are unlikely. We deploy equipment with a sparse 3 x 2 meter footprint and negligible ground disturbance (2x spiral anchors); at least one month in duration. We use signage to advise any visitors who may encounter the system.

Locations: Throughout the park

NHPA Assessment of Effect: No Potential to Cause Effect.

63. Collecting dragonfly larvae for mercury analysis as part of the nationwide Dragonfly Mercury Project (renewal) 2023-2032

Description: This study will be part of ongoing nationwide citizen science research that is evaluating the utility of dragonfly larvae (Odonata: Anisoptera) as indicators of mercury status in national parks. Groups of 15 or fewer staff members and citizen scientists will collect dragonfly larvae, water samples, and sediment samples from lakes and ponds along the park road corridor and the George Parks Highway. Access will be by foot, hiking to sites within 1.5 miles of the road corridor. A total of up to 80 dragonfly larvae will be collected in the park each year, from two or more sites.

Locations: Lakes and ponds within 1.5 miles of the Denali Park Road or Parks Highway

NHPA Assessment of Effect: No Potential to Cause Effect.

64. Long term ecological monitoring of streams (renewal) 2023-2027

Description: The goal of the study has been to conduct long term monitoring of a number of key streams along the Park Road corridor identified through the classification of streams carried out following an intensive study of 43 streams in 1995. In this way we are able to identify long term natural variation in stream communities to be used as a baseline with which to measure anthropogenic or long-term natural change (e.g., due to global warming). The study involves collecting six replicate samples with a Surber sampler at 10 study streams where we have long term records. Replicates will be collected randomly and preserved in ethanol prior to sorting and analysis. The sample sites will be at road crossings upstream of the bridge.

Locations: Savage Creek, Sanctuary Creek, Hogan Creek, Igloo Creek, N4, Tattler Creek, East Fork Tributary (near East Fork cabin), Highway Pass Creek, Little Stoney Creek West and Moose Creek. Clearly the sites Highway Pass Creek, Little Stoney Creek West and Moose Creek will not potentially be possible till 2025

NHPA Assessment of Effect: No Historic Properties Affected

65. Reconnaissance of prospective sites for earthquake hazard studies along the Park Road fault of Denali National Park & Preserve

Description: The proposal is to conduct reconnaissance studies along the Park Road fault in DENA to advance documentation of this fault to facilitate more robust incorporation of this fault in earthquake hazards assessments and to advance our understanding of the active tectonic framework of the region. This reconnaissance work has three primary goals, 1) refine the trace of the Park Road fault from the Nenana River to the Teklanika River, 2) collect topographic and ground-penetrating radar (GPR) surveys across the fault, 3) assess and identify prospective sites for future studies to constrain the prehistoric earthquake history and slip rate for this fault. The research plan is to collect data and observations along the Park Road fault to refine the location of the fault surface trace, constrain the near-surface fault dip, and as reconnaissance into the potential for establishing a fault slip rate and prehistoric earthquake record for this active fault. These field methods include, 1) mapping traverses up stream channels and along the fault trace, 2) laser scanning of key field sites, 3) GPR profiles across the fault trace, and 4) site assessment for potential preservation of prehistoric earthquake evidence.

Locations: Along the Park Road (Mile 3 to 35)

NHPA Assessment of Effect: No Adverse Effect.

66. Dendrogeomorphology in Denali National Park (2023-2025)

Description: This University of Alaska - Fairbanks, Institute of Northern Engineering research project seeks to understand past episodes of mass movement and permafrost thaw using the tree-ring record. The field methods include will deploying up to 50 HOBO inclinometers on trees at the Eider Landslide and along the Park Road between the Park Headquarters and the Savage River; deploy 10 dendrometers onto trees to determine the precise timing of stem growth in each area; and extract tree cores (5mm or 10 mm) from up to 100 white spruce trees in each of two areas.

Locations: Eider Landslide (north of McKinley Village and west of railroad tracks) and along the Park Road Miles 3 and 15

NHPA Assessment of Effect: No Historic Properties Affected.

67. LTER: Changing disturbances, ecological legacies, and the future of the Alaskan boreal forest (2023-2028)

Description: This project will determine how legacies constrain the response of the Alaskan boreal forest to climate change, how these legacies will affect future ecosystem trajectories, and what the local,

regional, and global impacts of these changes are now and in the future. Summary of proposed field methods and activities:

Abrupt thaw features with significant erosion will be sampled in the Toklat River area; At each site, collect samples from the outflow to analyze DOC, DIC, nutrients, bioavailability, and radiocarbon age of DOC. Each abrupt thaw site will also be monitored for rate of expansion using gps, as well as measuring the thaw depth, organic soil depth, vegetation height, and normalized difference vegetation index.

Locations: Throughout the park

NHPA Assessment of Effect: No Adverse Effect.

68. ADFG Anadromous Waters Cataloging and Fish Inventories of select drainages of the Tanana and Yukon rivers 2023-2024

Description: The purpose of this study is to sample streams in Alaska that have no limited or no known sampling effort for fishes. These streams are connected to waters supporting anadromous fishes (including Pacific salmon) that contribute to subsistence, commercial, and sport fisheries of the region. Under Alaska law (AS 16.05.871), streams supporting anadromous fishes are afforded protections associated with potential development. Twelve sites will be sampled using electrofishing over two days (July 24-28 window) with captured fish measured and released, axillary process clips for genetic profiles will be taken.

Locations: Up to 12 stream survey sites in the Northern Park Additions and Preserve in the Yukon/Tanana basin

NHPA Assessment of Effect: No Adverse Effect

69. Small Unmanned Aircraft Systems (sUAS) in NPS Operations (2024-2028)

Description: This programmatic approval for NPS UAS (Unmanned Aircraft Systems) operations in Denali Park and Preserve permits training flights, use in emergencies (e.g., Search and Rescue), and administrative flights as defined under both 1(b) of the Conditions and Exceptions clause of the NPS Director's Policy Memorandum 14-05, Unmanned Aircraft - Interim Policy and NPS Reference Manual 60 - Aviation Management, Chapter 17 and Appendix 7. Permissions for UAS flights under NPS operational control for administrative purposes, such as:

- g. Scientific study
- h. Search and rescue operations
- i. Fire operations, law enforcement
- j. Natural and cultural resource stewardship
- k. Education/interpretation
- l. Training flights

Locations: Throughout the Park

NHPA Assessment of Effect: No Adverse Effect

70. Alaska Range Dall's Sheep Ecology and Health Assessment, ADFG (2024-2027)

Description: The NPS proposes to issue a research permit to Alaska Department of Fish and Game, Department of Wildlife Conservation for a Sheep Ecology and Health Assessment study from 2024 to 2027.

Critical issues identified by managers of Dall's sheep in Alaska are: 1) identifying the drivers of recent population declines, 2) the potential effects of selective harvest over time, 3) the potential effects of climate change on sheep populations and their habitat quality and quantity and 4) the potential effects of the pathogen *Mycroplasma ovipneumoniae* (*M. ovi*) or other diseases introduced to naïve mountain sheep populations.

The control subpopulation is in designated wilderness in DENA, where ADF&G and NPS have conservation concerns due to declines in the Alaska Range sheep population. The minimum count (treatment) survey area on the east side of the Parks highway in the Central Alaska Range is proximate to DENA and has similar weather patterns, habitat, and sheep densities. The study areas are within the GMU's 20A, 20C6 that are negative for customary and traditional use. This study has been in planning for numerous years due to stakeholder concerns for the sheep population within the central Alaska Range. The study areas were further identified to replicate a collaborative study initiated in June of 2024 between ADF&G and NPS in the central and eastern Brooks Range.

In Denali, the study would occur in mostly wilderness areas on the north side of the Alaska Range. The survey area for DENA extends west from the Parks Highway to the Herron River drainage along the north side of the Alaska Range.

The general approach of this study is to GPS/VHF mark and maintain 30 rams and 30 ewes in two different study areas (up to 60 sheep per study area) and follow the individuals through the course of the study. The treatment study area described above is an area with a general season full curl hunting paradigm. The control study area within DENA has minimal hunting pressure as only federally qualified individuals are allowed to hunt in the area.

Location: Throughout the Park in Sheep habitat.

NHPA Assessment of Effect: Undetermined

71. Resampling permanent vegetation plots for the landscape scale vegetation monitoring program

Description: This project will detect, quantify, and investigate patterns in the distribution and abundance of plants species, as well as any changes in community composition and vegetation structure at a landscape scale. Work will remeasure attributes of vegetation in 26 study areas that were originally established and measured during the period 2001-2010. This is about half of the original study areas installed during the first phase of the program.

The measurements that we will make for the second iteration of sampling in our plots will be almost completely without impacts to vegetation or other resources. The plots installed in the first iteration of sampling have been marked using permitted monuments, additional monuments would be limited to replacements for existing ones that have gone missing. Soil observations (that required small excavations) are done only for the first iteration of sampling and these activities will not be repeated for any plots already sampled during this round of sampling.

Location: Throughout the Park

NHPA Assessment of Effect: No Adverse Effect

72. Spruce beetles as ecosystem engineers: Effects of spruce mortality on insect biodiversity and fire behavior in Denali (2024-2026)

The National Park Service proposes to approve a research permit for a US Geologic Survey (Upper Midwest Environmental Sciences Center) research project that will quantify how spruce bark beetle-induced tree mortality will impact pollinator and beetle biodiversity in the Denali boreal forest ecosystem and, secondarily, model how changing fuel loads may affect wildfire behavior in these forests. Field would start in May 2024 and include 2025 and 2026 summer field seasons.

Location: Work will focus primarily along the southern Park boundary and near the Visitor Center, where the spruce beetle outbreak is currently the most intense. But we will also sample from some 'control' sites within the park (including within the Wilderness area) along the Park road. Exact locations will be determined based on most recent outbreak information in the spring.

NHPA Assessment of Effect: No Adverse Effect.

73. Enhancing Pile Burning Strategies in Alaska's Boreal Forests - A Comprehensive Approach, 2024-2025

Description: The National Park Service proposes to approve a research permit for a Northern Arizona University (NAU) research project that will investigate the seasonal effects of fuels management debris pile burning in the frontcountry (entrance area fire management units) in cooperation with the Denali Fire Management Program staff. Prior to burning, Dead fuel moisture samples will be collected by hand from three size classes of fuel found within the pile (fine, medium, coarse wood) and analyzed in the laboratory for moisture content. Other significant disturbances proposed before burning include drilling small (4mm diameter) bore holes up to 30cm in depth from the mineral soil surface (Fig. 1). These bore holes will be created in order to insert temperature sensors into the soil profile below actively burning

piles. As part of drilling these small holes into the mineral soil, a 15x150x~25cm channel will be excavated from the organic soil layer in order to gain access to the mineral soil surface and protect sensors from excessive heat (Fig. 1). Finally, all charcoal and burned material will be collected by hand from the surface of the burn site within a 30x30cm area for laboratory analysis at NAU.

Location: Denali Frontcountry

NHPA Assessment of Effect: No Adverse Effect

74. Surveying wilderness experiences, perceptions, and drivers of visitation among Denali backcountry users and overflights

Description: The NPS proposes to issue a research permit for survey activities to support a one-year study of Denali wilderness backcountry and overflight users to be conducted by a researcher from the University Tasmania and designed through a collaboration with Pennsylvania State University and park staff. From April 13 - May13 2024, climbers will be interviewed on the first or last day of their trips. Surveys of customers returning from basic backcountry overflights (flightseers), and visitors returning from short glacier landing experiences will be conducted in Talkeetna, upon return from their air experiences.

Location: Primary backcountry survey site will be Kahiltna Glacier (Denali) basecamp. Other targeted in-situ survey locations may include: Sheldon/Ruth Amphitheatre, Pika Glacier, and/or Backside Lake.

NHPA Assessment of Effect: No Potential to Cause Affect.

75. Stabilize Hazards at Historic Slippery Creek Mine for Visitor and Wildlife Safety

Description: The NPS proposes to stabilize hazards at Slippery Creek Mine for visitor and wildlife safety. Slippery Creek Mine is a historic mine site which was determined eligible for the National Register on September 25, 1995, and significant on a local level as a physical representative of mining exploration and extraction in Denali National Park and Preserve. The property consists of former underground workings (adit), a multi-room cabin, airstrip, and connector road. The Slippery Creek Mine Cabin was built prior to 1941 - the three-room log cabin is unique in design and location for DENA. Work would include roof stabilization.

Location: Slippery Creek Mine

NHPA Assessment of Effect: No Adverse Effect.

76. Drilling related to GeoHazards Preliminary Response Plan

Description: Recent geohazard event frequency and magnitude have highlighted the need for additional planning. Safety and road resilience concerns may require monitoring and/or repairs at any of the more than 140 unstable slopes identified along the 92-mile Denali Park Road, as well as new sites as we identify them. The list of geohazard locations changes with time and weather and seismic events.

Project work could include:

Drilling and installation of subsurface instrumentation within the ROW without vegetation or ground disturbance beyond the drill hole and for the purpose of understanding geologic material integrity and its relationship to other geologic layers.

- m. Boreholes may be up to 10" in diameter, drilled no more than 200' deep, have caps flush with surface, and may have steel casing.
- n. Instrumentation and subsurface installations must be recovered when possible or safely abandoned in place when necessary.
- o. All holes without instrumentation will be backfilled at the conclusion of drilling and the grout at the surface will be stained to match the surrounding rock.

Location: Throughout the Park

NHPA Assessment of Effect: No Adverse Effect.

77. MONOSTAR - Modelling non-stationary tree growth responses to global warming

Description: The National Park Service proposes to approve a one-year, research permit for a Johannes Gutenberg University - Mainz research project that will extract tree cores from up to 50 white spruce and larch trees from areas along the Park Road. A subset of 20 of the 50 trees will be cored again with a 10mm diameter core for additional isotopic and wood anatomical analysis plus needle and twig samples. Soil samples and tree discs will be taken from each of the 50 sites.

Location: along the Park Road between Teklanika (Mile 29) and Igloo Campground (Mile 34)

NHPA Assessment of Effect: No Adverse Effect

78. AKR Invasive Plant Mgmt Team: Targeted Invasive Species Surveys and Removal

Description: The National Park Service proposes to conduct invasive species surveys (specific focus on Elodea) and removal (Elodea and Hawksbeard)

Location: Chilchukabena Lake, Backside Lake, Ruth Glacier (terminal lakes), Wonder Lake for Elodea surveys; Park Road intersection with George Parks Highway for invasive Hawksbeard removal work.

NHPA Assessment of Effect: No Historic Properties Affected.

79. Reconnaissance Program to Observe Permafrost Soils and Ground Ice

Description: The National Park Service proposes to issue a research permit to the researcher from USGS-Alaska Science Center for activities to assess permafrost dynamics along the Denali Park Road corridor to help NPS advance adaptation strategies for permafrost degradation and support decision-making. For this 2024 reconnaissance program, the main tasks are to: 1) measure thaw depths (up to 128 sites), 2) drill and sample permafrost soils and ground ice (up to 128 sites), 3) conduct geophysical surveying, and 4) install shallow (< 16 ft) ground temperature sensors at (up to 15 sites outside of wilderness). Methods include using a hand-held steel probe (0.4" diameter), auger (1" diameter), and

barrel drill (to collect cores of 2.5” OD). Identified 128 sites they may visit for probe and auger work. Installation will only occur in up to 15 sites. Three of the 128 proposed sites in Headquarters. Total of 10 days in field in late summer.

Location: along the Park Road from road from milepost 0 to 43.3.

NHPA Assessment of Effect: No Adverse Effect.

80. The Astro Seven Summits Project research on extremophiles and climate change

Description: The National Park Service proposes to approve a one-year, research permit to investigate extreme life forms (extremophiles) by collecting samples of snow, ice, rocks and soil samples at ten locations along the West Buttress summit route from Kahiltna Basecamp in May 2024. The researcher will use 15 x 50 mL Falcon tubes to collect snow and ice samples (maximum of 750 mL would be collected) and 10 x 200 mL sampling bags to collect small samples of microbes that live in rocks and soil (maximum of 2000 mL in volume).

Location: West Buttress summit route from Kahiltna Basecamp

NHPA Assessment of Effect: No Historic Properties Affected.

81. Evaluate Effects of Spruce Bark Beetle Outbreak on a Critically Endangered Lichen, 2024-2025

Description: The National Park Service proposes to remeasure established long-term vegetation plots with a focus on non-vascular species post-spruce bark beetle outbreak in cooperation with University of Northern Colorado in plots on the southeastern boundary of Denali National Park and Preserve. No ground disturbance or installation of permanent plot markers; camping for 7 days per sampling bout, 4 people in a crew, 4 sampling bouts total.

Location: Four sampling locations: One between the East and West Forks of the Yentna River, one near the toe of the Kahiltna Glacier, and two adjacent to Coffee River.

NHPA Assessment of Effect: No Adverse Effect.

82. Monitoring the Reproductive Success and Productivity of Golden Eagles in Denali National Park, expanded (2015-2024)

Description: The project is a continuation of long-term Golden Eagle monitoring started in 1988. Golden Eagles are a Vital Sign for the Central Alaska Network (CAKN). One of the largest reported nesting populations of Golden Eagles occurs in the northeast region of Denali National Park and Preserve, Alaska. Denali's long-term monitoring program revealed some of the ecological relationships between Golden Eagles, their prey and their habitat emphasizing the ecological role this species plays in the mountainous regions of Denali.

Study Objectives:

- (1). Annually document occupancy and reproductive success at all known nesting areas.
- (2) Annually estimate nesting phenology.

- (3) Determine age structure and turnover rates of territorial population.
- (4) Document year-round movements of eagles and constraints to their survival.

Data to document annual nesting territory occupancy (five to six days in late April) and reproductive success (1-2 days in mid-July) are collected using 2 standardized aerial surveys and additional ground-based observations as needed. In late March through mid-April, adult Golden Eagles are captured using a netlauncher or bownet baited with locally obtained carrion. Juveniles are captured at the nest. Captured eagles are banded, sampled, and tagged with a lightweight transmitter (2% of body weight). Holding time is 30 to 45 min. Capture and tagging techniques are effective, used across the species range and risk of mortality is very low. Capture stations are temporary and established out of sight of the park road, and only in areas with adequate snow cover.

Location: Northern foothills of the Alaska Range

NHPA Assessment of Effect: No Potential to Cause Effects

83. Construction of a Wildland Fire Management Housing Facility in the C-Camp Area

Description: NPS proposes to construct a facility that would be an eight-bedroom (single occupancy) dorm to support the park's Fire Management Program. The 2,375 square foot facility would be located in the C-Camp area, would be standard wood frame construction, built to meet the sub-arctic weather conditions of Alaska, using energy efficient windows, lighting, appliances, and high R-value insulation. The pre-approved floor plan has been used at Toklat Road Camp & C-Camp in Denali. The dorm would have a communal living area, dining/kitchen area, 2 full bathrooms, a laundry room, and a small covered front porch. It would be connected to the existing water, sewer and electrical systems at C-Camp and designed for year-round use. The structures would be constructed in accordance with all local and national building codes. All work would be completed by park day labor. Annual Operations & Maintenance costs estimated to be \$25,417 (FY21 estimate). Only planning work in 2024 and construction scheduled for outyears.

Location: C-Camp

NHPA Assessment of Effect: No Adverse Effect

Interpretation and Education

84. Construction of a Bus Turnaround and Temporary Installations in the East Fork Area (2022- 2024)

Description: Separate NHPA consultation was sent in December 2021. Due to the deterioration of the road at the Pretty Rocks Landslide (Mile 45.4 on the Denali Park Road), visitor transportation is not allowed west of the East Fork of the Toklat River (Mile 43) until safe and reliable access through the Polychrome area is restored. In the meantime, transit trips are offered as far as the East Fork Bridge and

the Tundra Wilderness Tour (TWT) is offered as far as the East Fork Cabin site. In 2022, NPS widened a small section of the Park Road and completed construction of a bus turnaround with an 85 ft turning radius on the east side of the bridge. No further work is anticipated at the Bus Turnaround for the remainder of this project.

The following temporary installations would be placed in the East Fork area each summer for the duration of the road closure: There would be an interpretation ranger and a dispatcher stationed at the bridge, which would require 1-2 movable hard sided structures (mounted on trailers) to be temporarily placed in the pullout next to the road for staff use and may include instruments and solar panels temporarily mounted on or near the structures for radio amplification. There may also be an open-air tent temporarily placed for interpretative and informational displays, as well as temporary visitor information signs. There would be a temporary emergency shelter (such as a parked bus) provided for visitors in case of inclement weather or wildlife safety concerns. This project would add temporary crowd control barriers on the East Fork bridge for visitor safety. Approximately five portable toilets would be temporarily placed in the area for visitor use. Space would be available for several vehicles to park. Temporary plastic parking curbs would be placed in pullout on west side of bridge - to be removed at end of summer. In order to reduce potential social trails forming, temporary closure signs may be posted, and a temporary staircase would be installed for visitors to access the west side of the East Fork River bar from the bridge area. A bike rack and food storage container may also be temporarily placed in the area. A temporary road closure sign would be placed on the road west of the bridge. Two portable toilets (one ADA) would be temporarily installed, with screening, near the Ghiglione Bridge for emergency use by JV tour bus passengers and gravel would be added to flatten the surface for safe ADA accessible approach. All of these temporary installations would be removed after use once road access farther west is restored.

Locations: East Fork Bridge and Site area, around mile post 43 of the Park Road.

NHPA Assessment of Effect: Adverse Effect to Historic Properties due to the widening of the Park Road at the East Fork Bridge.

85. Improve Visitor Navigation on Park Road Through Road Sign Updates

Description: This project includes a series of a comprehensive update to frontcountry directional roadside signs. Signs with outdated facility names such as the concessionaire operated Denali Bus Depot, formerly the Wilderness Access Center, and two signs referencing the Winter Visitor Center were updated in 2019 and a set of winter facility directional signs were updated in 2023 to correctly identify winter services instead of closed summer facilities. In 2024, we propose installing 4 new road signs at road junction locations that do not currently have signs, which would require digging for post installation at those locations. In 2025, we propose installing updated signs in the Riley Creek area.

Location: Denali Frontcountry

NHPA Assessment of Effect: No Adverse Effect

86. Strengthen Visitor Connections Through Innovative Printed Publications (2024-2025)

Description: Annual publications include the Unigrid, Summer Guide and Winter Guide.

Location: Publication

NHPA Assessment of Effect: No Potential to Cause Effect.

87. Connect Park Visitors with Key Safety and Orientation Messages at Kiosks and Waysides (2024-2027)

Description: Design and install new and updated information panels at the Denali Visitor Center Campus in 2024 and 2025. Future components of this project would involve installing similar signs in other frontcountry areas between Miles 0-15 to create a unified sense of welcome and clarity to trip planning and safety information wherever visitors enter the park in the frontcountry.

Location: Front Country of the Park

NHPA Assessment of Effect: No Potential to Cause Effect.

88. Design, Fabricate, and Install Sub-Trailhead and Trail Signage

Description: Complete design of sub-trailhead sign panels associated with the frontcountry trails. Directional posts and Trailhead signs are complete. This project finishes the sub-trailhead signs, which reinforce visitor wayfinding and safety messages at major trail junctions. Signposts are already installed.

Location: Front Country of the Park

NHPA Assessment of Effect: No Potential to Cause Effect

89. Create a Bicycle Safety Video and Pamphlet for Overnight and Day Users FY25

Description: Year one of two in design and production of a cyclist safety video.

Location: N/A

NHPA Assessment of Effect: No Potential to Cause Effect

90. Kennels Sled Room Exhibit redesign

Description: Begin planning for redesign of the Kennels building Sled Room exhibit design.

Location: Kennels Building, Park Headquarters Historic District.

NHPA Assessment of Effect: Undetermined.