



United States Department of Agriculture

# Treadwell Ditch Trail Bridges Construction

## Environmental Assessment



Forest Service  
Alaska Region

Tongass National Forest  
Juneau Ranger District

R10-MB-794

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Cover Photo: Collapsed bridge over Eagle Creek. The dam is the remaining structure from the 1880's construction of the Treadwell Ditch. It was used to elevate water levels of Eagle Creek so they flowed into the ditch and to the Treadwell Mine Complex

For more information contact:  
Michelle Putz, Project Team Leader  
204 Siginaka Way, Sitka, AK 99835  
907-747-2708  
[mputz@fs.fed.us](mailto:mputz@fs.fed.us)

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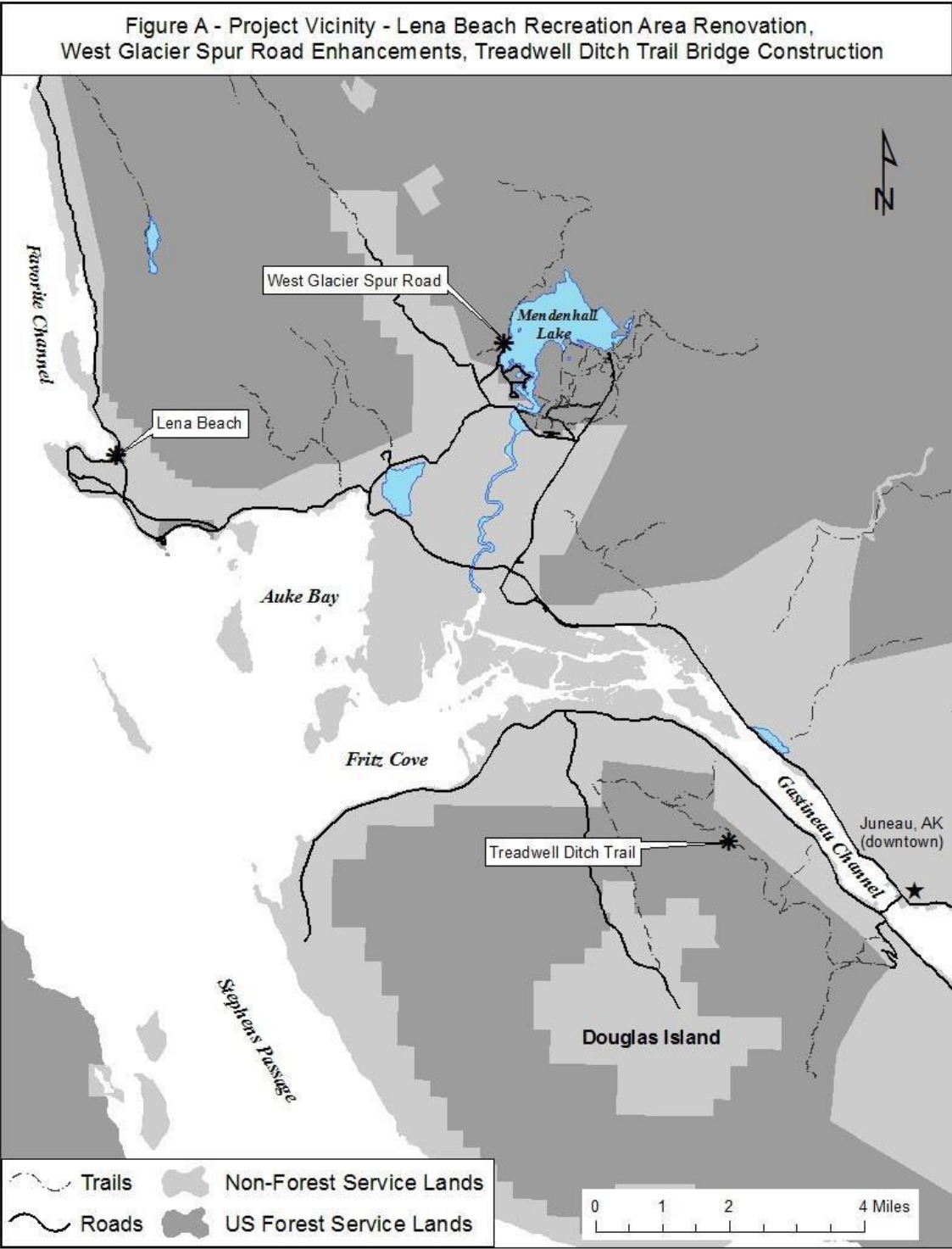
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## Summary Table

<b>What action is proposed?</b>	<p>The Juneau Ranger District proposes to:</p> <ul style="list-style-type: none"> <li>• Improve 38 crossings on the Treadwell Ditch Trail between the Blueberry Hill Access Trail and the Bonnie Brae Access Trail;</li> <li>• Excavate borrow pits at some locations. Recreate the berm using borrow pit material in those areas where the berm has washed out;</li> <li>• Replicate the ditch and diversion structure framing in a section of ditch near Kowee Creek. Include an interpretive panel describing the history and function of the Treadwell Ditch;</li> <li>• Construct a bridge over a failed section of berm north of the Eagle Creek crossing or construct approximately 350 feet of new trail to reroute around the failed section of berm.</li> <li>• Fill up to 300 feet of ditch and stabilize the bank on the south approach to Eagle Creek;</li> <li>• Reconstruct an existing informal 1,175-foot long reroute which bypasses a steep gorge section just south of Bonnie Brae; and</li> <li>• “Harden” approximately 500 feet of muddy trail section by installing gravel tread through a muskeg just north of the Kowee Creek Bridge.</li> </ul>
<b>Why?</b>	<p>This project is needed because the condition and design of the Treadwell Ditch Trail presents safety concerns and does not provide a quality recreation experience. Additionally, the Treadwell Ditch and Maintenance Trail historic site was recently determined to be eligible for listing on the National Register of Historic Places. Deterioration of bridges is leading to the destruction of historical structures along the Treadwell Ditch Trail</p>
<b>What other action would meet the same need?</b>	None.
<b>What would it mean not to meet the need?</b>	<p>The Treadwell Trail could become unsafe for hikers and other members of the public utilizing the trail. This presents a hazard to public safety. Continued deterioration of trail bridges will lead to further destruction of historic features of the site.</p>
<b>What factors will be used when making the decision between alternatives?</b>	<p>This environmental assessment does not identify any significant environmental consequences of the Proposed Action. However, adverse environmental consequences of the alternatives will be considered along with benefits of improved safety and recreation experience.</p>
<b>Are there any ways to mitigate adverse effects?</b>	<p>The primary method for reducing adverse effects is through the implementation of Design Criteria and application of Best Management Practices. However, to mitigate effects to trail users, closure or delay notices will be posted and public service announcements made. Weed infestations will be discouraged by revegetating and rehabilitating disturbed areas as needed following construction.</p>
<b>What monitoring is required?</b>	<p>Monitoring will be needed to assure design elements and Best Management Practices are being implemented. Monitoring for weeds and trail condition will also be required.</p>

# Location and Background

The Treadwell Ditch Trail (NFS Trail # 33718) is a historic trail on Douglas Island near Douglas, Alaska. Downtown Juneau, Alaska is about 3 miles to the southeast (see Figure A for project vicinity). The trail lies generally atop the overburden of a ditch constructed in the 1880's. The ditch was designed to collect and transport water to the Treadwell Mine Complex in Douglas where it was used to generate electricity for mining operations.



Today, the trail is popular for hiking, mountain biking and cross country skiing. The trail is currently a Trail Class 3, designed for hikers. Bicycling and skiing are allowed uses. Motorized use is prohibited except for the first 0.28 miles (beginning at the junction with the Blueberry Hills Access Trail) where motorized use is regulated based on snow cover in the winter. The trail crosses City and Borough of Juneau, State of Alaska, and National Forest System land for a total length of about 14 miles. About 10.4 miles of the trail are on National Forest System land (see Figure A). The 2006 Juneau Trails Plan, prepared by Trail Mix, Inc., lists the Treadwell Ditch Trail as the highest priority trail to the community of Juneau for receiving maintenance and upgrades. Despite the popularity of the trail, it has suffered from a lack of maintenance over the years.

## Purpose and Need for the Proposal

The purpose of this proposal is to improve the condition of the Treadwell Ditch Trail by reducing the number of long muddy sections of trail, providing drainage crossing structures that are easy and safe to cross, protecting the stream bed and banks at stream crossings, and to preserve and protect the features of the historic site known as the main branch of the Treadwell Ditch and Maintenance Trail. The Tongass Forest Plan directs managers to “construct, reconstruct, and maintain existing trails and waterways serving local community needs and tourist centers as part of the Forest transportation system.” In addition, managers should “design and construct bridges to support the maximum expected snow and ice load, construction or maintenance equipment, and anticipated user equipment.” With respect to historic sites, the Forest Plan states that the heritage program should “preserve and protect heritage resources”.

This project is needed because the condition of the Treadwell Ditch Trail presents safety concerns and does not provide a quality recreation experience or resource protection for the following reasons:

1. There are 38 stream crossings or other obstacles between Blueberry Hills access and Bonnie Brae access of the Treadwell Ditch Trail that do not have stream crossing structures. Trail users have to scramble down steep slopes to cross the larger creeks. This can be difficult and leads to erosion of the stream banks. (In the initial scoping letter, 39 crossings were referred to here. That was an error.) (See Figure B below for all trail crossings)
2. A now abandoned section of the historic trail south of Bonnie Brae encounters an impassible gorge over which a historic trestle supported wood flume once crossed. The structure long ago collapsed leaving an open gorge and an informal reroute now traverses upslope of the gorge passing through a muskeg. This approximately quarter-mile section of trail is wide and muddy and not well marked where it leaves the Treadwell Ditch Trail. (See Figure D below)
3. Additionally, in an area just north of Kowee Creek, the trail is very muddy as it goes through a muskeg.
4. Deterioration of bridges is leading to the destruction of historical structures along the Treadwell Ditch Trail and past trail work has obliterated some historic structures.
5. Recently a Determination of Eligibility for listing on the National Register of Historic Places has been completed for the Treadwell Ditch and Maintenance Trail historic site. This is the base document that will be used to analyze effects to the historic site.
6. Additionally, the District recently successfully competed for funds to replace three to four major bridges on the trail.

The Purpose and Need Section of this EA was expanded beyond what was stated in the scoping letter to highlight the importance of the trail as a heritage resource.

## Regulatory Framework

Guidance for this trail project comes from the Tongass National Forest Land and Resource Management Plan and the National directives on trail management.

The Land and Resource Management Plan provides Management Prescriptions for each Land Use Designation (LUD). The LUD of the project area is Semi-Remote Recreation. Based on the Forest Plan, the objectives for this LUD are to manage recreation and tourism to the Semi-Primitive Recreation Opportunity Spectrum (ROS) classes. Helicopter use is permitted in this LUD.

Recreation Opportunity Spectrum describes a range of opportunities for recreation experiences. ROS is a classification system that characterizes the recreation activity, setting and experience of recreationists. The system uses 7 indicators to classify the ROS class and monitor the effects of a proposed action on that classification. The indicators are access, remoteness, visual characteristics, site management, visitor management, social encounters, and visitor impacts.

#### **Forest Service Manual (FSM) 2353.03 – Relevant Policy**

4. Emphasize long-term cost effectiveness and need when developing or rehabilitating trails.
7. Provide a trail system that is environmentally, socially, and financially sustainable.

#### **Forest Service Handbook (FSH) 7708.56b Transportation Structures Handbook Ch. 84 – Structure Life:**

1. Generally use long-term materials such as steel, concrete, aluminum, or appropriate preservative-treated wood. Untreated logs may be used in some situations, such as short-term uses or for temporary bridges. However, treated wood or naturally decay-resistant wood will last significantly longer.
2. Design permanent structures to last at least 50 years. Design short-term structures for a lifespan appropriate for their intended use and in conformance with the TMOs for the trail.

## **Description of Alternatives**

Two alternatives were considered for this analysis, Alternative 1 - No Action and Alternative 2 - the Proposed Action.

### **Alternative 1 - No Action**

The No Action alternative would result in no change to the existing trail and management on the Treadwell Ditch Trail Bridges. Maintenance would continue, but no additional ground disturbing activities would occur.

The existing trail and stream crossings would continue to degrade in the area. The undesirable conditions described under Purpose and Need would be expected to continue.

### **Alternative 2 - Proposed Action**

The scoping letter sent in February, 2014 included a preliminary description of the Proposed Action for this project; that letter provided the basis for the actions described here. The Proposed Action, now also known as Alternative 2, has been refined and adjusted to incorporate some of the suggestions and recommendations made by the public during scoping, to incorporate additions or adjustments to reduce costs, preserve the historical character of the trail, and educate trail users about local history, and to further explain or clarify the proposal. These changes are important to understanding and explaining the project.

Alternative 2 is designed to meet the purpose and need for the Treadwell Ditch Bridge Replacement project and the project-specific desired conditions shown in the Purpose and Need section of this EA. Alternative 2 includes all Best Management Practices, Design Elements, Mitigation Measures, and Monitoring described below.

In this refined Proposed Action, one addition was made to fulfill interests identified by the public: recreating a section of ditch and diversion structure in combination with interpretive signing to provide educational opportunities about the history of the trail. Other adjustments are clarifications of, or additions to, the original description, such as excavating borrow pits, the potential to bridge a failed section of berm north of Eagle Creek (See Figure C at the end of this EA), and adjustments to crossings. These adjustments are designed to reduce costs, protect remaining heritage sites, or help the reconstructed berm better resemble the historic berm. Finally, we corrected a mistake in the Proposed Action description. Improvements are only needed at 38 crossings, not 39 as stated in the scoping letter.

To address the concerns and improve the Treadwell Ditch Trail the Juneau Ranger District proposes to:

- Improve 38 crossings on the Treadwell Ditch Trail between the Blueberry Hill Access Trail and the Bonnie Brae Access Trail. Construction activities will include building structures such as shallow water fords, culverts, or bridges or trail reroutes that will avoid the crossing. Approximately 6 of the 19 historic diversion structures will be addressed with culverts or fords because these six have very little remaining historic integrity. The 13 remaining diversion structures will be addressed with bridges that don't impact the historic structures. Figure B at the end of this EA displays the entire trail and the 38 crossings.
- Excavate borrow pits at some locations where culverts are used. Imported gravel will be used to bed the culverts and the borrow material will be used to recreate the berm when back-filling culverts in those areas where the berm has washed out. Borrow material will not come from the berm;
- Replicate the ditch and diversion structure framing in a section of ditch near Kowee Creek. Include an interpretive panel describing the history and function of the Treadwell Ditch;
- Construct approximately 350 feet of new trail to reroute around a failed section of berm atop which the trail tread runs north of the Eagle Creek crossing (Figure C). Another option being considered at this location is to bridge the failure in the berm. This option requires more analysis to determine feasibility and cost;
- Fill up to 300 feet of ditch and stabilize the bank on the south approach to Eagle Creek to compensate for a section of berm that has slid into the river ravine;
- Reconstruct an existing informal 1,175-foot long reroute which bypasses a steep gorge section where there was historically a wooden flume just south of Bonnie Brae (see Figure D at end of EA);
- "Harden" approximately 500 feet of muddy trail section by installing an 18 inch wide gravel tread through a muskeg just north of the Kowee Creek Bridge; and
- Install trail signs, where needed, for navigation or safety.

The major components of the historic site are the ditch, the berm, and associated wooden structures such as the ditch walls and top, and the diversion structure framing. Together these structures make up the historic character of the site. It is our intent that future work and maintenance will ensure that those structures define the character of the trail as well. Except where proposed, the berm will remain unchanged and the trail tread will maintain its narrow natural character. The trail class, designed use, allowed and prohibited uses will not change under this proposal. To maintain the historic character of the trail, the trail will stay a hiking trail, and not be designed or developed for other uses.

Ongoing maintenance of the trail, including some tree and brush trimming or removal of down logs, would occur and would continue.

### ***Time and Duration of Activity***

Two or three major crossings are expected to be addressed during the summer of 2016 depending on final cost estimates and available funds. Work on the reroute and limited tread work repairs may also begin in 2016 and last up to 2 years. The remaining crossings will be addressed in subsequent years, contingent on acquiring funds.

Parts of the trail will be closed to public use during construction as long as necessary to safeguard the public, personnel, and equipment used to improve the crossings.

### ***Best Management Practices, Design Elements, Mitigation and Monitoring***

Project design and implementation will adhere to the following Best Management Practices (BMPs) and site-specific design elements to avoid or reduce impacts of the Proposed Action.

#### ***Alaska (Region 10) Best Management Practices***

*12.6 Riparian Area Designation and Protection* - Special attention shall be given to land and vegetation approximately 100' from the edges of all perennial streams, lakes, and other bodies of water. No management practices causing detrimental changes in water temperature or chemical composition, blockages of water course, or deposits of sediment shall be permitted within these areas which seriously and adversely affect water conditions or fish habitat.

*12.8 Oil Pollution Prevention and Servicing/Refueling Operations* - Oil delivery and storage facilities will be located, designed, constructed, and maintained in a manner that minimizes the potential for contamination of surface or subsurface soil and water resources. Locate refueling sites well away from wetlands and stream channels.

Contractors should follow the guidelines in the Soil and Water Conservation Handbook (1996) regarding storage and servicing/refueling of oil and hazardous substances.

*12.17 Revegetation of Disturbed Areas* - Provide ground cover to minimize soil erosion. This practice is used to stabilize the surface of disturbed or barren areas by establishing vegetation. Site-specific erosion control plans will be developed by the contractor and the Contracting Officer.

*13.16 Stream Channel Protection* - Provide site-specific stream protection prescriptions: maintain natural flow regime; provide for unobstructed passage of rainfall flows; maintain integrity of the riparian buffer to filter sediments and other pollutants; maintain natural channel integrity to protect aquatic habitat; prevent adverse changes to the natural stream temperature regime.

*14.2 Location of Transportation Facilities* - Ensure soil and water resources protection measures are considered when locating roads and trails. Avoidance of sensitive or fragile areas is a primary consideration incorporated into the location of transportation facilities. Avoid riparian areas, wetlands, and floodplains to the extent practicable.

*14.3 Design of Transportation Facilities* - Incorporate site-specific soil and water resource protection measures into the design of roads and trails. The trail should be designed to meet safety requirements and minimize soil movement and sedimentation. Trails should be designed to drain with the appropriate use of drainage structures.

*14.5 Road and Trail Erosion Control Plan* - Develop Erosion Control Plans for road or trail projects to minimize or mitigate erosion, sedimentation, and resulting water quality degradation prior to the initiation of construction and maintenance activities. Ensure compliance through effective contract administration and timely implementation of erosion control measures.

Sedimentation is minimized by effectively planning for erosion control. Roads and trails require a variety of erosion control measures. Many erosion control practices will not only protect water quality, but also maintain road prism integrity and reduce maintenance costs, and improve usability.

*14.6 Timing Restrictions for Construction Activities* - Minimize erosion potential by restricting the operating schedule and conducting operations during lower risk periods.

*14.9 Drainage Control to Minimize Erosion and Sedimentation* - Minimize the erosive effects of concentrated water flows from transportation facilities and the resulting degradation of water quality through proper design, and construction of drainage control systems. Stabilizing the road prism and adjacent disturbed areas to minimize degradation of water quality from sediment generated by the erosive effects of surface runoff.

*14.12 Control of Excavation and Sidecast Material* - Erodible material will not be deposited in surface waters. End-haul material away from site as designated by the Forest Service Administrator.

*14.14 Control of In-Channel Operations* - Remove any construction-caused debris from the stream immediately in a manner that will cause the least disturbance to the stream course.

*14.17 Bridge and Culvert Design and Installation* - Structures shall be designed to minimize streambed and stream bank erosion to maintain water quality and fisheries resources. Bridges and bottomless arches are preferred structures on Class I and II streams.

*14.18 Development and Rehabilitation of Gravel Sources and Quarries* - Minimize sediment from borrow pits, gravel sources, and quarries, and to limit channel disturbance from gravel sources permitted for development within floodplains.

*16.1 Recreation Facilities Planning and Location* - Protect soil and water resources through appropriate planning, design and location of recreational facilities. Wetlands, meadows, and stream banks are particularly susceptible to damage from foot traffic and need special attention when constructing trails, campsites, and



cabin sites. Trails are also susceptible to erosion from runoff that increases when hikers make shortcuts off the main trail (See BMP 16.4).

*16.4–Trail Construction and Maintenance* - Minimize soil erosion and water quality problems originating from trails and their drainage structures. Use standard engineering practices (see BMP 14) that include location, construction, maintenance, restriction of use, relocation, and so forth. A variety of techniques can be used to harden trails and campsites in wet areas, and to reduce erosion on hillslopes.

Each District will develop a trail maintenance plan that determines level, timing, and frequency of maintenance.

### **National Best Management Practices (BMPs)**

*AqEco-2:* Avoid, minimize, or mitigate adverse impacts to water quality when working in aquatic ecosystems.

*AqEco-3:* Design and implement pond and wetlands projects in a manner that increases the potential for success in meeting project objectives and avoids, minimizes, or mitigates adverse effects to soil, water quality, and riparian resources.

*AqEco-4:* Design and implement stream channel and lake shoreline project in a manner that increases the potential for success in meeting project objectives and avoids, minimizes, or mitigates adverse effects to soil, water quality and riparian resources. Add or remove rocks, wood, or other material in streams only if such action maintains or improves stream condition, provides for safety and stability at bridges and culverts, is needed to avoid or minimize excessive erosion of streambanks, or reduces flooding hazards. Choose vegetation appropriate to the site to provide streambank stabilization and protection adequate to achieve project objectives.

*FAC-6:* Avoid or minimize short- and long-term effects to soil and water resources by preventing releases of hazardous materials.

*Plan-2:* Use the project planning, environmental analysis, and decision-making processes to incorporate water quality management BMPs into project design and implementation.

*Plan-3:* To maintain and improve or restore the condition of land around and adjacent to waterbodies in the context of the environment in which they are located, recognizing their unique values and importance to water quality while implementing land and resource management activities.

*Rec-1:* Use the applicable recreation planning process to develop measures to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources during recreation activities.

*Rec-4:* Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources by controlling soil erosion, erosion of trail surface materials, and water quality problems originating from construction, maintenance, and use of motorized and nonmotorized trails.

*Road-1:* Avoid or minimize adverse effects to soil, water quality, and riparian resources from fuels, lubricants, cleaners, and other harmful materials discharging into nearby surface waters or infiltrating through soils to contaminate groundwater resources during equipment refueling and servicing activities.

### **Project Design Elements**

The following are features of the design intended to address BMPs and reduce the potential for degradation of habitat and resources during project implementation.

- Crossings and trail work will be designed to protect heritage resources. Bridges less than 10' long and bridges over diversion structures will have a width of 3'. Bridges greater than 10' long and those where historical structures won't be impacted will have an approximate width of 5'. Longer bridges are intended to be wider for ease of passage; whereas people are less likely to encounter others on a shorter bridge. Culverts or fords may be installed where historic features or fisheries won't be adversely affected.

- If a previously unidentified archaeological or historic site(s) is encountered, the contractor shall discontinue work in the general area of the site(s) and notify the contracting officer immediately. The contracting officer will notify a Forest Service archeologist to determine further action.
- Taller guard rails will be constructed on the larger bridges that are elevated high above stream channels to provide enough guard rail for use when deep snow is on the bridge. At least one guard rail will be constructed on smaller crossings to aid in crossing when the bridge deck is crowned with snow.
- Trail design will include the following:
  - Possible bridge materials under consideration – pressure treated lumber, pressure treated glu-lam, Fiber Reinforced Polymer (FRP)
  - Trail tread width - maximum width of 18 inches
  - Trail surface material - Typically native, though where protrusions are greater than 3 inches and continuous, contributing to difficult walking conditions, or where the tread is degraded into muddy conditions, an imported gravel surface will be used to repair the tread. Where possible, the tread will be realigned atop the berm if it has migrated off the top of the berm.
  - Vegetative clearing height – 8 feet, vegetative clearing width – 6 feet
  - Signage – route identification/destination signage at junctions, creeks identified at major bridge crossings (Kowee, Eagle, North Fork Eagle, Falls, Neilson), interpretive signs in a few key locations. Refer to the Forest Service sign and poster guidelines (EM-7100-15) the recreation opportunity spectrum design guidelines for signage direction.
- Prevent invasive plant establishment during construction by washing tools and equipment prior to first entering an un-infested area, or when re-entering an un-infested area from an area infested by invasive plants.
- Designate refueling, service, and staging areas well away (>10 feet) from surface waters and utilize fuel absorbent pads under gas tanks during refueling to minimize potential for soil and water contamination from fuel spills. Have additional fuel and oil absorbent pads on site and accessible in the event of a fuel or oil spill.
- Recommend the use of vegetable oil or other biodegradable fuel for chainsaw bar lube when practicable during construction near surface waters.
- Schedule, to the extent practicable, construction activities to avoid direct soil and water disturbance during periods of the year when high precipitation is likely.
- Coordinate with fisheries and wildlife biologists to determine appropriate construction timing windows.
- Utilize erosion and sediment material such as silt fences and jute logs while construction activities are taking place.
- Use coconut fiber matting for erosion control as an alternative to straw bales when available and practical.
- Routinely inspect construction site to verify that erosion controls are implemented and functioning as designed.
- Use native material when available. See current seeding guidelines (FSM 2080 TNF Supplement, Exhibit 2) for detailed procedures and appropriate mixes.
- Prevent invasive plant establishment during construction by washing tools and equipment prior to first entering an un-infested area, or when re-entering an un-infested area from an area infested by invasive plants.

- Helicopter flights bringing materials to project sites should avoid eagle nests by 1000 feet during the breeding season per the USFWS Bald Eagle Management Guidelines.
- Prior to March 1, provide the wildlife biologist with planned areas of work for the year, and estimated dates of work to allow for scheduling of goshawk surveys, if needed. Juneau wildlife staff will survey for goshawk nesting if the following occur: trail work is scheduled to occur 1) in a location with high probability of nesting 2) during the nesting season, or if 3) sightings and behavior of goshawk suggest nearby goshawk nesting.
- If any previously undiscovered endangered, threatened, proposed, or sensitive species or key habitats for any Management Indicator Species or other species identified in this document are encountered at any point in time prior to or during the implementation of this project, or a District Biologist would be consulted and appropriate measures would be enacted.
- Include cross drains when building gravel trail in wetlands.

### **Mitigation**

- Closure or delay notices will be posted in advance at trailheads. Public service announcements will be made to warn users to plan accordingly.
- Properly stabilize or rehabilitate disturbed areas following construction.
- Revegetate bare soil resulting from project activity if prompt natural regeneration is not expected.

### **Monitoring**

- Inspect areas where gravel or other materials (including seed) have been imported for 2-3 years afterwards to ensure no invasive plants are present. See item number 10 in FSM 2080 TNF Supplement, Exhibit 1.
- Trail crews will monitor use and trail conditions for 3 – 5 years after bridge replacement begins under this proposal to determine future trail work needs in locations with unimproved sections of tread.
- Design elements described in this EA will be incorporated into specifications that will drive detailed planning and actual work. Forest Service Recreation planning staff will monitor work at each of the crossings, and monitor regularly during all phases of the project. Heritage program staff will closely coordinate with recreation planning staff doing periodic field visits as necessary to ensure work is aligned with elements in the EA that protect heritage resources. Monitoring will also assure Best Management Practices are being applied

## **Permits and Other Requirements**

The Forest Service would obtain concurrence from Alaska Department of Fish and Game for inwater work in fish bearing streams, including bridge replacement and culvert removal. In Alternative 2, a Nationwide section 404 Permit will be required from the U.S. Army Corps of Engineers for the fill needed along the trail reroute.

## **Environmental Impacts of the No Action and Proposed Action Alternatives**

The direct, indirect and cumulative environmental impacts of the No Action and Proposed Action Alternatives are described below. The discussion focuses on resources most likely to be affected by the alternatives. Resources affected are listed alphabetically. The effects on resources other than those discussed here were analyzed and are available in resource reports in the project record.

## Botany

**Alternative 1, No Action** – The project area has been historically subject to disturbance from logging, mining activity, and water works construction. Previously modified vegetation is now largely returned to its natural state, and the area impacted by the trail is minor. The no action alternative would not affect botanical resources, because no additional ground disturbance would occur, and no threatened or endangered plants, or rare or sensitive plants, occur in the area. No high-priority invasive weed species have been recorded in the area, and no invasive plants have been documented in the project area.

**Alternative 2, Proposed Action** – Despite the disturbance caused by this project, the effects of implementation of this project on alteration of habitat are expected to be similar to current conditions. All project activities will occur in areas that have already been altered by infrastructure development. Reconstruction of the trail crossings will disturb a minor amount of existing natural vegetation and expose or re-expose mineral soil. Re-routing of short sections of trail will involve some ground disturbance during trail construction.

No threatened or endangered plants will be affected since they do not occur in the area. Since no rare or sensitive plants were found and suitable habitat is not present, the project as described will not adversely affect any sensitive or rare plants. The closed-canopy forest will largely remain undisturbed during project activities, which will inhibit infestation of most invasive species. Infestations could spread into areas of ground disturbance unless appropriate mitigation measures are implemented. However the likelihood of infestation under closed-canopy forest is low. The overall risk of invasive plant establishment from implementation of this project is low.

**Cumulative Effects** – Since there are no direct or indirect effects expected on sensitive or rare plants, there are no cumulative effects on these plants. In terms of invasive plants, under the No Action Alternative there would be no change in the existing conditions. No current invasive plant infestations exist. The project area is currently used mainly for recreation, including hiking and cross-country skiing. Recreational impacts are currently limited mostly to the immediate trail corridor. Invasive propagules could be imported inadvertently by trail users. However the likelihood of infestation under closed-canopy forest is low.

## Fisheries and Watershed

**Alternative 1, No Action** – If no action is taken to make improvements to the Treadwell Ditch Trail, moderate effects to fisheries or aquatic resources are expected. Dolly Varden char have been located at 11 different sites along the proposed project area. These fish are present in the main streams as well as water filled ditches along the trail itself not associated with a stream. These water filled ditches are most likely remnants of the flume where the wood has degraded but retained water.

Many of the crossings identified in the purpose and need along the Treadwell Ditch trail have been identified as “ditch” drains, remnants of the flume or intermittent streams. These are areas where ditch diversion devices were installed during mining days. Most of the diversion devices were made from wood and have degraded and failed. Due to these missing or damaged crossings, hikers and bicyclists have to walk or ride through the stream itself. This causes resource damage to the stream bed, fish habitat and decreases the water quality downstream.

Under Alternative 1, there would be no change in sedimentation rates and therefore damage to the fisheries habitat and water quality would continue at the same rate. Foot traffic and bicycle traffic along the trail would continue to generate sediment from stream bank and stream bed destabilization at the water crossings. Sediment would continue to be transferred downstream and damage to the muskeg areas would continue.

**Alternative 2, Proposed Action** – In the short term, the Proposed Action would result in minor adverse effects to water resources in the form of increases in sedimentation at construction sites. Once bridges and culverts are installed, sedimentation rates would decline, so there should be an overall improvement to fish habitat. Watershed damage would be limited to work in the muskeg areas. Hardening of the trail areas going through muskegs would keep hikers on the trail and not walking around muddy areas creating more resource damage. By implementing the Proposed Action, resource damage would improve over the long-term. During

construction there will be a need to deal with sediment issues and a need to keep fuel refueling stations away from flowing water and muskeg areas.

Federally listed salmon (e.g. Puget Sound Chinook salmon- *O. tshawytscha*) and steelhead stocks (*O. mykiss*) are not present within the project area; they are found only on the outer coast of the Tongass National Forest. These stocks are not within the project area and would thus not be affected by the proposed activities. No Federal or State listed or proposed threatened and endangered (T&E) fish species occur on the Juneau Ranger District.

Fish impacts may result if the project affects critical, unique, or limiting habitats used for spawning, rearing, feeding, migration, etc. The National Marine Fisheries Service defines Essential Fish Habitat (EFH) as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. “Necessary” means the habitat required to support a sustainable fishery and a healthy ecosystem; and “spawning, breeding, feeding, or growth to maturity” covers a species full life cycle.

The Forest Service determines there will be no effect to Essential Fish Habitat. Project activities will avoid or minimize negative effects to EFH by implementing Forest Plan standards and guidelines and applicable Best Management Practices along with articles from the Alaska Administrative Code Regulations. Salmon downstream will not be affected due to the implementation of the Best Management Practices to reduce sedimentation.

**Cumulative Effects** – The cumulative effects of this project include the existing condition combined with the direct, indirect, and any cumulative effects that could occur with foreseeable actions. Overall the cumulative effects of the project would be less sedimentation in the long-term (>1 year) as well as less destruction of the wetlands. This would be an improvement over current conditions.

## Heritage

**Alternative 1, No Action** – The Treadwell Ditch and Maintenance Trail (JUN 756) is a significant historic site that is commonly enjoyed by the public as a recreational trail. It provides a unique window into the history of Juneau's early mining industry. The Trail is a historic property eligible for the National Register. It crosses lands managed by the USDA Forest Service, the City and Borough of Juneau, and the State of Alaska. It was constructed between 1882 and 1899 to supply power and water for the Treadwell Mines, the largest gold mining complex in the world at the time.

The Treadwell Mine Complex was the first of series of large scale mines in Juneau, establishing Juneau as the center of major industry in the state and eventually leading to the move of the State Capital from Sitka to Juneau in 1906. This would not have been possible without the hydroelectric power generation capabilities provided by the ditch.

Under the No Action alternative, there would be no direct action induced effects to either the Treadwell Ditch and Maintenance Trail (JUN 756) and associated features nor to other nearby historic properties; particularly the Treadwell Ditch Tenders Camp (JUN-216). However, the ongoing effect due to neglect of upkeep on crossings will continue, and likely worsen. As footbridges built in the 1980s that span diversions structures and, in places the ditch itself, continue to deteriorate, the historic structures will be increasingly at risk. Similarly, current berm washouts and slumps will not be addressed, and additional damage may occur. The Forest Plan directs archaeologists to “preserve and protect heritage resources.” This protection would not happen under the No Action alternative.

Given that the planned replica ditch segment and interpretive signs, along with other area improvements, would not be implemented under the No Action alternative, the anticipated beneficial effects of public education and the hoped for increased interest in and concern for historic properties in general, and those directly in the area of potential affect, would not be realized.

**Alternative 2, Proposed Action** – Having been developed in consultation with agency archeologists and aligned with recommendations made in documentation establishing the “Treadwell Ditch and Maintenance Trail, Main Branch: Fish Creek to Penstock #1: JUN-756” as eligible for inclusion on the National Register (Myron and Boily 2007), the project, as described in the Proposed Action will not

adversely affect historic properties. Importantly, design elements are included that are intended to assure the integrity of JUN-756, and to avoid impacts to the historic dams and other features at major crossings. In many ways, the project will in fact, serve to help preserve the integrity of the site. For example, the proposal to use small footbridges to span 13 of the water diversion features along the route will protect those features; particularly given that current footbridges are in poor condition and in some cases, failing altogether, forcing hikers to rely on the unstable features underneath for footing. The major bridges planned at Kowee, Eagle Falls and Neilson Creeks are being carefully planned in advance. Forest Service engineers have consulted with heritage program staff to determine where the foot bridges will be placed to minimize any potential for effect.

Negative indirect effects are possible, however design elements and monitoring requirements significantly help reduce the potential. In the proposed action, damage could occur to historic features, particularly the berm, if mountain bicycle traffic substantially increases. The likelihood of at least some increase in this use is high. The trail today is popular among mountain bike adventure enthusiasts, but due to the narrow tread and the deteriorated bridges, their numbers are low. It has been observed that where wide foot bridges have been installed on portions of the trail outside of federal ownership, bike traffic has increased and broad areas of incised muddy ruts atop the berm have developed, particularly at bridge approaches. For the portion of the trail in the current analysis, two design elements are intended, in part, to help prevent this. The first is the requirement that bridges, be narrow - three feet wide if less than ten feet in length and five feet where longer and the second, that where the tread corresponds to the berm, it remain mainly unaltered, or if “hardened” where necessary with gravel, the width be at most eighteen inches. These design elements are expected to reduce the likelihood of a substantial increase in bike use and resultant effects.

On the positive side, an indirect beneficial effect is the provision in the EA to include construction of a short replica segment of ditch as well as interpretive signage regarding the history of JUN 756. As a result, there may be an increase in interest in and concern for historic properties in general, and specifically those directly in the area of potential affect.

For the reasons described above, the archeological review has resulted in a determination of “no adverse effect” for the Proposed Action alternative. Consultation with the Alaska State Office of Historic Preservation on this determination is ongoing.

Under the No Action alternative, long neglect of crossing features would occur and, as deterioration of existing footbridges continues, the features underlying them will be increasingly impacted by foot traffic.

Cumulative effects could occur if project dollars for maintenance of recreation facilities on the Tongass National Forest continue to fall. Although the improved crossing will help for the short term, long term maintenance will need to continue or in a number of years, we will be back to where we are today. As bridges crossing historic features fail, underlying features may be damaged.

**Cumulative Effects** - Given the planned improvements, the number of people using the segment of trail under analysis will likely increase. Hence, the access trails at either end of the segment will also see more use. The trail at Bonnie Brae is of long term concern in that, despite recommendations made in 1981 that the then proposed access trail avoid a puncheon surface associated with the Treadwell Ditch Tenders Camp (JUN 716) (Moss and Zager 1981), the current trail does overlie it. That puncheon has deteriorated significantly leaving its integrity compromised. Added traffic will continue to degrade it. Although we will monitor this trail, given the realities of decreasing Forest Service funds for recreation projects, as well as other known higher priorities, it is unlikely this cumulative effect will be addressed.

## Recreation

**Alternative 1, No Action** – Under the No Action alternative, the trail and bridges would remain in their current condition. Safety concerns, deferred maintenance, and the functionality of the trail would not be addressed. All 38 crossings would continue to exist with either no crossing structure or deteriorating crossing structures that pose safety hazards for users. The informal reroute south of Bonnie Brae would remain wide, muddy and not well marked where it leaves the Treadwell Ditch Trail. The demand for repairs to one of Juneau’s longest trails will go unmet.

Funding through the Secure Rural Schools Act has been approved for this project and is obligated in an agreement with a partner. Under the No Action alternative that money will be lost.

**Alternative 2, Proposed Action** – Under the Proposed Action safety concerns, deferred maintenance, and the functional challenges of the trail would be addressed. The demand for repairs to the trail would be met. However, the trail won't be as rugged and challenging as those seeking that type of activity would like.

Under the Proposed Action, the Secure Rural Schools Act funding currently obligated in an agreement with a partner will pay for the replacement of some major bridges on the Treadwell Ditch Trail. The ROS class will remain unchanged as Semi-Primitive non-motorized and in fact the quality of the visitor impact indicator will improve. The bridge material and aggregate surface tread material will meet Forest Service direction.

Replacing bridges, especially rotting stringer bridges will provide a safer trail experience. With new crossing structures on the trail, more people may begin using the trail. Because of this increased parking congestion could occur on the city streets in the Bonnie Brae neighborhood near the Bonnie Brae Access trailhead. This could begin the year after initial construction and steadily increase over time.

If the trail improvements result in more people using the trail, there is a chance the unimproved sections of tread on Forest Service land may begin to degrade under the greater traffic load. This degradation would occur through displacement and erosion. The tread on non-Forest Service land along the Bonnie Brae access trail will likely also degrade further with greater use. It may be several years before this effect is noticed. Trail conditions can be monitored and maintenance and repairs planned in response to tread degradation.

The design parameters for the bridge widths will be a compromise between maintaining the historic character of the trail and providing safe crossings in the winter. The shorter bridges will be 3' wide and have at least one handrail to grab while crossing. The larger bridges will be approximately 5' wide with two handrails. An effort will be made to create ramped approaches to bridges when feasible.

With the replication of the ditch and diversion structures and accompanying interpretive panel, anyone who ventures past that section of trail (just south of Kowee Creek) and is interested can learn about the history of the trail they are using.

Bridging the failed berm section north of Eagle Creek will provide the most direct and efficient route along that section of trail compared to constructing the reroute. If the reroute option is chosen there is a chance that it will be experienced as an inefficient diversion. This could lead users to avoid the reroute and continue to scramble around the failed berm section. This could lead to further erosion of the berm. However, a well-designed and constructed reroute could present an enjoyable recreation experience. Filling the ditch south of Eagle Creek will also provide ground for a firm tread and provide for greater safety through this area.

The route around the open gorge will have a different feel to it than the rest of the Treadwell Ditch Trail. The ditch will be crossed, grades will change several times, and there will be no sign of the ditch and berm along the reroute. Most trail users who are familiar with the trail will likely be pleased with the improvements to the tread so they don't have to struggle through the mud. The reroute is currently an informal reroute, containing no constructed features. The reroute construction will formalize the reroute with an 18" gravel tread to eliminate the muddy trail. Hikers can stay on the gravel tread so the impacted areas can revegetate naturally.

The hardening of the muskeg trail north of Kowee Creek will occur on the original alignment of the historic trail so no reroute is required. This will contribute to the feeling of continuity for trail users. The repaired tread will be 18" wide. The muddy section has widened to 8' to 10' as people spread out trying to avoid the worst muddy sections. The area looks heavily impacted aesthetically. It is expected that the vegetation will reestablish either side of the gravel tread once people are not tracking through it any longer.

New trail signs will mark creek names, destinations and distances to destinations. This will help people know where they are along the route. With the replacement or installation of more bridges, trail users may go along the trail far from trail heads. The farther in the trail from a trailhead the more difficult it can be for people to have a sense of where they are along the trail. Labeling the creek names will also help give trail users a sense of place which can lead to a richer recreation experience. Some users may view the addition of signs as detracting from the rustic semi-remote character of the trail.

Helicopters will be used to deliver tools and materials to bridge sites. Helicopter related effects will come from the noise of the helicopter and from the need to maintain safe zones around the helicopter sling sites. The effects will differ in duration between large bridges and small bridges. Noise from a helicopter will have an adverse effect on the solitude of hikers and home owners in the area as the helicopter is operating within hearing range. The effect will be intermittent since the helicopter will be moving between the pickup site and the drop off site and likely won't be audible for the whole range of its round trip. The sling operations will last for up to an hour for smaller bridges 20 ft. long and less, and up to 3 hours for bridges larger than 20 ft. The magnitude of the effect will be minor given the short duration of the sling loads and also because of a reasonable expectation of aircraft noise in the area. The Treadwell Ditch Trail runs parallel to the shoreline of Gastineau Channel. This area is a main corridor for aircraft and especially tourism related aircraft. That air traffic noise is fairly constant throughout the day during the busy summer tourism season.

The need to maintain safe zones around helicopter sling operations will result in temporary closure of trail sections under the flight path of the helicopter. These closures would only last as long as the helicopter operation is under way, typically 1 – 3 hours. These closures could affect a longer section of trail than the closures at the bridge sites, depending on the flight path of the helicopter.

Trail closures will occur during bridge construction in the vicinity of that construction and will last one to two weeks depending on the bridge length and complexity of the project. This will have the effect of interrupting some users' recreation experience of using the trail. Closures will reduce the risk of injury to trail users in the area of construction. Delays will be minimal for the shorter crossings. Closure or delay notices will be posted in advance at trailheads and public service announcements can be made to warn users to plan accordingly. These efforts can minimize the effects on trail users.

**Cumulative Effects** – Neglect over the years has accumulated to result in many crossing structures failing or already failed. However these effects will be corrected with the proposed action. Neglect of some of the historic structures has led to their demise. A loss of historic structures along the trail leads to a loss of historic character of the trail. This diminishes the quality and richness of the recreation experience. The proposed action seeks to renew the historic character of the trail through replicating a section of ditch and diversion structure, coupled with an interpretive panel. Some past maintenance activities such as brushing, logging out and installation of culverts has had a beneficial effect on keeping the trail open and allowing water to pass under the trail without washing it out, though in a few cases improper culvert installation has led to larger blowouts of the berm than may have been likely without the improper culvert installation.

All the Treadwell Ditch Trail work conducted by the City and Borough of Juneau, including bridge construction and tread improvements, is certainly bringing more interest in use of the Treadwell Ditch Trail. That base of interest and use generated by work on the City managed portion of the trail may lead to a more rapid increase in use of the Forest Service managed portion of the trail than would have happened if the only work done on the trail was that included in this proposed action. That more rapid increase in use could lead to an accelerated deterioration of tread between the new bridges between Blue Berry Hills and Bonnie Brae, creating a need for tread reconstruction. Use and trail conditions should be monitored for 3 – 5 years after bridge replacement begins under this proposal to determine future trail work needs.

The Determination of Eligibility for the Treadwell Ditch and Maintenance Trail provides a wealth of information that will help to protect and enhance the historic character of the trail. This work will provide a richer recreation experience.

Future improvements to the Bonnie Brae access trail, if they occur, could bring more people to the trail, thereby increasing degradation of the unimproved sections of tread.

## Soils/Wetlands

**Alternative 1, No Action** – The no action alternative would not impact any soil resources nor fill any wetlands. The existing trail is on a berm of excavated soil adjacent to a historical ditch. This ditch was used to bring water to a mine since the 1880's. Since this is a historic trail, it was not built to current USFS standards and portions are failing. Deterioration of bridges is leading to the destruction of historical structures along the



Treadwell Ditch Trail. Also, the condition and design of the Treadwell Ditch Trail presents safety concerns and does not provide a quality recreation experience.

**Alternative 2, Proposed Action** – All of the proposed activities are dedicated uses of the soil resource and are not subject to the soil quality standards (FSM 2554). Improving the 38 stream crossings will reduce the footprint of the trail to the minimum width necessary to safely cross streams. This will reduce sediment entering waterbodies and prevent widening of the trail. The reroute section near Eagle creek is located in SMU 61T. National Wetland Inventory (NWI) wetlands nearby are PEM1B or PEM1/SS4B (open sphagnum muskeg and scrubby shore pine muskegs). The reroute is in the conifers adjacent to the open wetlands. The proposed activities would fill about 0.07 acres of wetland. A Corps of Engineers 404 permit will be required for any filling of wetlands or stream crossings. All activities will have to implement BMPs to prevent soil erosion and maintain soil quality (Appendix A, FSH 2509.22). Although these proposed facilities and trails are a dedicated use, they are not necessarily irreversible or irretrievable uses of the land. Most trails sites can be rehabilitated, replanted, and returned to their natural condition.

Most of the proposed activities are located in uplands. The longest reroute (1,175 feet) hardens an informal route that avoids an eroding section in a gorge on the northern end of the trail. This reduces impacts to a waterbody, and reduces the impacts to the soil resource by eliminating a section of worn trail. This section is located in uplands. The informal reroute is additional disturbance in this corridor and effectively doubles the disturbance from this trail. By hardening this reroute and eliminating the eroding section, the impacts are lower than the existing condition. The reroute near Eagle Creek, filled ditch near Eagle Creek, and trail hardening in Kowee creek are all located in wetlands. They are mapped by the Chatham area soil inventory (USFS 2003) as SEC wetlands. These are a complex of scrubby wetland forest and open sphagnum muskeg. The soils are deep wet organic soils and deep, wet mineral soil. Both of these have low bearing strength and tend to rut easily—this is probably why the trail is failing here and needs hardening and support. The portion of the trail getting hardened with gravel at Kowee Creek is mapped as open palustrine wetland by NWI.

**Cumulative Effects** – The past and future activities are confined to the existing trail foot print and do not affect soils and wetlands. Present activities are the same at the direct and indirect effects. The proposed activities would reduce existing erosion into waterbodies by creating 38 crossings. The 1,175 foot proposed reroute near Bonnie Brae Trail would reduce erosion into a gorge.

## Wildlife

**Alternative 1, No Action** – The project area is located in Wildlife Analysis Area (WAA) 2722, and Value Comparison Unit (VCU) 330. This VCU is considered the analysis area for this project.

Under the no action alternative, there will be no effects on any threatened or endangered species; those species do not occur in the analysis area. There will be no effects on Aleutian terns, dusky Canada goose, Kittlitz' murrelet, and black oystercatchers, as these sensitive species do not have any habitat or are known to occur along the trail.

Queen Charlotte goshawks are known to have used the area in the past, and it is possible there is an active nesting territory in the area. Existing levels of human activity would remain, with the potential to disturb nesting and foraging goshawks. This disturbance is expected to be rare based on existing human uses in the area. Any goshawks using this area may have habituated to existing human uses or avoid the area. Negligible direct or indirect effects are expected. No reduction in suitable goshawk habitat is expected, and disturbance is considered unlikely.

Existing uses of the trail are not expected to be measureable in the marine environment. Existing activities do not disturb marine species (whales and sea lions). No direct or indirect effects are expected.

No additional habitat for Management Indicator Species (MIS) would be altered. Existing human uses of the area would continue. This could result in temporary disturbance and/or displacement of individual animals, although they may be habituated to human presence and activities in the project area. Disturbance would be intermittent and localized. No population level effects or threats to viability for any MIS are expected due to the lack of habitat changes and that few individuals are expected to be disturbed by ongoing recreation activities.

Impacts to migratory birds and bird species of concern are expected to be negligible. The No Action alternative would have no impacts on any species' viability.

**Alternative 2, Proposed Action** – Construction activities would result in minor short-term adverse effects to freshwater resources in the form of sedimentation. These effects are minimized through the implementation of Best Management Practices. After construction, sedimentation rates from the trail are expected to be less than for the No Action alternative. As a result, effects on essential fish habitat and whale and sea lion prey populations are not expected as a result of construction related sedimentation. Therefore, no direct or indirect effects on those or other marine species are expected.

Similar to Alternative 1, there will be no effect on any threatened and endangered species and no direct or indirect effects to Aleutian terns, dusky Canada goose, Kittlitz' murrelet, and black oystercatchers.

No substantial changes to habitat quality for Queen Charlotte goshawks are expected. A small number of trees could be removed within suitable nesting habitat but they would be removed from areas adjacent to the existing trail footprint. Much of the trail is within suitable habitat so some disturbance could occur to nesting or foraging goshawks during construction activities. This disturbance is expected to be localized and temporary (weeks at any given work site). The trail already receives some human activity so goshawks in the area may have either habituated to the activity or avoid the area. After construction, potential disturbance from human activities along the trail are expected to be similar to the No Action alternative. Minor direct and indirect effects are expected. Implementing design elements would protect nesting goshawk.

No substantial habitat alterations for MIS species are expected. Some trees and shrubs would be removed but this would primarily occur in the immediate vicinity of the trail. Individuals could be temporarily displaced during construction activities; however, these activities will be localized, intermittent (variable levels of noise and activity per day), temporary (generally less than 2 weeks per site), and occur in an area that already receives regular human activity. After construction, human uses would be similar to or may increase compared to the existing condition (No Action, Alternative 1). Mountain goats do not occur in the analysis area, so no effects are expected. Wolves and brown bears may occur in the analysis area, but are unlikely and no effects are expected. Bald eagles and otters occur in the analysis area, but generally would not be in the vicinity of project work sites. Helicopter flights bringing materials to project sites should avoid eagle nests by 1000 feet during the breeding season per the USFWS Bald Eagle Management Guidelines. The remaining MIS are expected to occur in the vicinity of project activities. Negligible to minor direct and indirect effects are expected due to construction related disturbance for the MIS that would occur in the immediate vicinity of the project. The Proposed Action alternative is consistent with TLMP Standards and Guidelines for these species and no impacts on any species viability are expected.

A negligible amount of suitable habitat for migratory birds might be altered. However, vegetation manipulation would occur in the immediate vicinity of the trail and birds would not be expected to be nesting there because of existing human activity. Construction work would occur during the breeding season. Individuals could be temporarily disturbed or displaced during construction activities; however, these activities will be localized and occur in an area that already receives regular human activity. Since construction would occur within the already disturbed footprint it is considered unlikely for a nest(s) to be destroyed or abandoned during construction activities. After construction, the level of human activity would be similar to or may increase compared to the existing condition. The Proposed Action would have negligible to minor effects on migratory birds and bird species of concern. No impacts to any species' viability are expected.

**Cumulative Effects** – No cumulative effects to humpback whales, western DPS Stellar sea lions, or other marine species are expected under any alternatives. Both alternatives are not expected to cause any cumulative effects to Aleutian tern, dusky Canada goose, Kittlitz' murrelet, or black oystercatcher habitat. Alternative 2 would contribute a small amount to the overall human presence in goshawk habitat in the analysis area. The primary effects to goshawks and their habitat in the analysis area are loss of habitat and disturbance related to "urbanization" associated with the growth and expansion of the Juneau population and business area. The action alternative would also contribute a small amount to the overall human presence and disturbance of MIS animals in the analysis area. Alternative 2 would contribute a small amount to the overall human presence and disturbance of migratory birds in the analysis area. The primary effects to migratory

birds and their habitats in the analysis area are loss of habitat and disturbance related to “urbanization” from the greater Juneau area.

## Agencies and Persons Contacted

An interdisciplinary team of Forest Service resource specialists was consulted in the development of this environmental analysis.

The Forest Service mailed a scoping letter requesting scoping comments on this project on February 27 and 28, 2014. The letter was mailed to over 200 individuals via email and postal mail.

The Douglas Indian Association and Goldbelt Incorporated were sent the scoping letter. Government-to-Government consultation was initiated via the scoping letter. The Douglas Indian Association, the federal recognized tribe for the Juneau area, was also offered ongoing, informal opportunities to discuss and consult on this project during tribal updates on July 25, 2014, March 31, 2014, and February 11, 2014. No formal consultation has been requested and no tribal comments have been provided to this point.

Groups contacted on this project included Trail Mix, Inc., and the Nordic Ski Club. We also consulted with several agencies on this project. We consulted with the Alaska Department of Fish and Game on fish tracking information at stream crossings. Consultation with the State Historic Preservation Officer on this project is ongoing.

A public service announcement regarding the project was published in the Juneau Empire soliciting input on the proposed project on the Treadwell Ditch Trail.

A public open house meeting about this and two other Juneau recreation projects was held on March 10, 2014. Approximately 40 members of the public attended the meeting to learn and ask questions about the projects.

## Comments Received

Eleven individuals and agencies provided comments on this project. A brief summary of the comments is included below; the full comments and brief responses are available in the project record for this project.

As discussed under Description of the Alternatives, Proposed Action, some of the comments were used to refine and adjust the Proposed Action and clarify the Purpose and Need for the proposal to incorporate suggestions and recommendations made by the public during scoping.

Whenever possible, we used the comments on this project to improve the project or the analysis. For example, a request to include an interpretative panel describing the history and function of the Treadwell Ditch was included as part of the Proposed Action.

Some comments were used to help us decide what information to provide in the EA.

Some comments asked us to avoid developments or actions that were not discussed in the Proposed Action. In these cases, because we don't currently need nor intend to do these actions, these items were not discussed as being part of the Proposed Action.

Some comments and suggestions were outside the scope of this analysis, due to their location or for other reasons.

Some comments suggested having earthen surfaces and ramps installed instead of stairs, better trail marking signs, and trail grades kept to 10 percent or less. While the trail is designed for hikers and steps to bridges are an appropriate design parameter for hiking trails, we intend to make accessible approaches to our bridge structures when feasible. Improved signage is included in the Proposed Action where it is needed for navigation and to improve safety. We agree that lower grades are better, and will try to keep the grade low enough to be comfortable for foot traffic and other users while retaining the historic character of the trail.

Some comments expressed concerns about public access to the trail during construction, concerns about the improvements, and heavy machinery. In response, we intend to close the trail only for safety reasons as

needed during operations. The trail will be open as much as possible. We intend to meet the need to preserve the historic character of the trail by building crossings that protect the remaining historic structures and by retaining as much of the historic trail as possible in its current, historic condition. We will not be using heavy equipment in trail construction.

Some comments suggested additional improvements outside the scope. While these improvements were discussed, they were determined not to be practical nor currently feasible.

Additionally, many comments were supportive of the Proposed Action or parts of the Proposed Action.

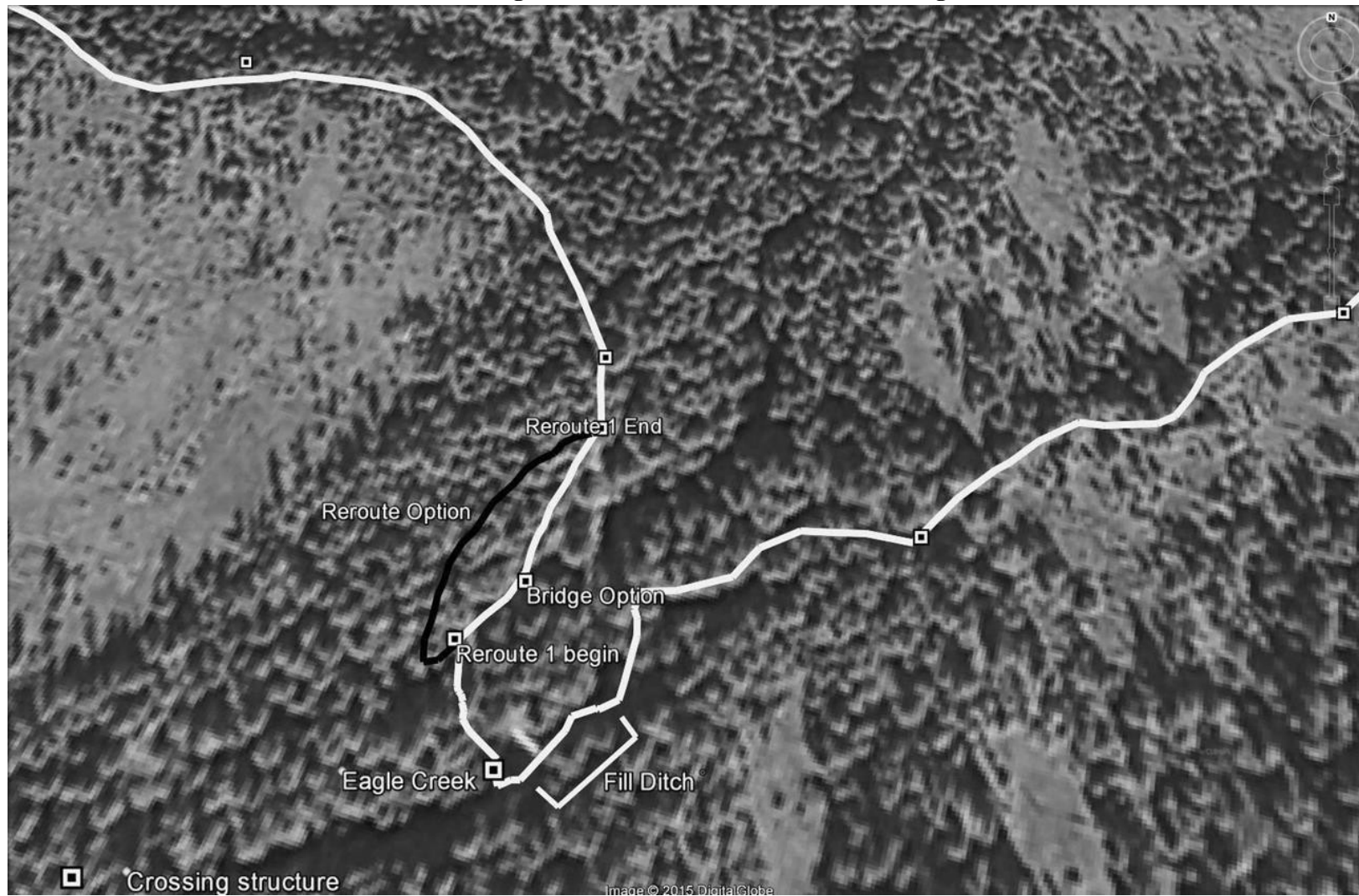
## **Future Public Involvement Opportunities**

This EA will be provided to all who commented on this project as well as to all those who remained on the electronic mailing list. A legal notice offering a 30-day comment period on the proposed action will be posted in the Juneau Empire, the newspaper of record, likely in December 2015. The new regulations at 36 CFR 218 now provide for a pre-decision administrative review rather than a post-decision appeal process. After the comment period on the EA, we will release a draft decision and will publish a legal notice initiating a 45-day objection period in the Juneau Empire. At that point, members of the public may file an objection seeking a pre-decisional administrative review of the proposed project and activities. No appeal period will be provided after the final decision is made.

**Figure B. Entire Treadwell Ditch Trail.**



Figure C. Reroute of failed berm above Eagle Creek.





**Figure D. Second Reroute at Treadwell Gorge.**

