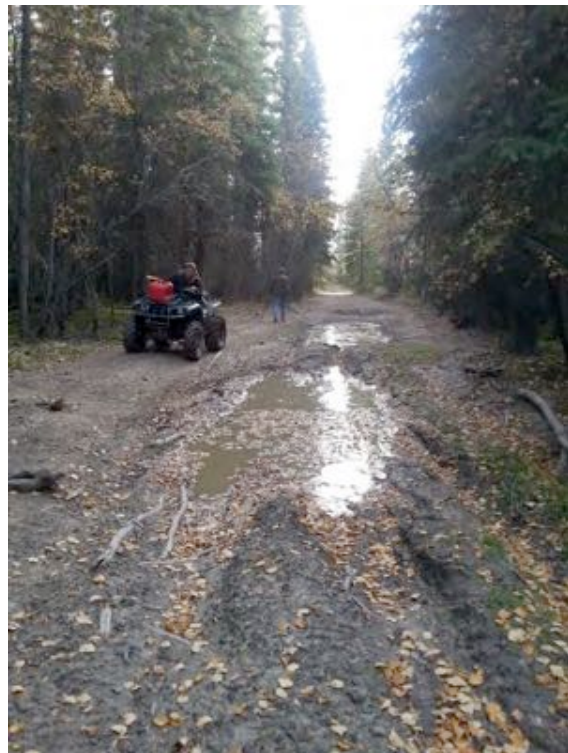


## ***Bluff Cabin Trail: Assessment & Prescription***

The Bluff Cabin Trail is approximately 4.9 miles in length, traversing both state and private lands, contained within the much larger recreational trail easement ADL 400064 (30+ miles). The trail is multi-season, multi-use, and heavily used by ATV's, 4x4 vehicles, and snow machines. From the trailhead on Tanana Loop Extension (64.1345N 145.7103W), the trail extends north to Bluff Cabin Lake and north-east to Bluff Cabin Slough on the Tanana River. The Bluff Cabin Trail provides excellent year round recreational opportunities including fishing, skiing, biking, dog mushing and wildlife viewing. It also provides access to remote land parcels in the Bluff Cabin Lake area. This trail meanders through spruce and birch forests, up and over steep hills and offers scenic views and exciting trail riding for all types of users. Soils are loess overlying fractured schist bedrock. This trail ranked 6th in importance from 35 trails surveyed during the public scoping sessions held by Delta Junction Trails Association.



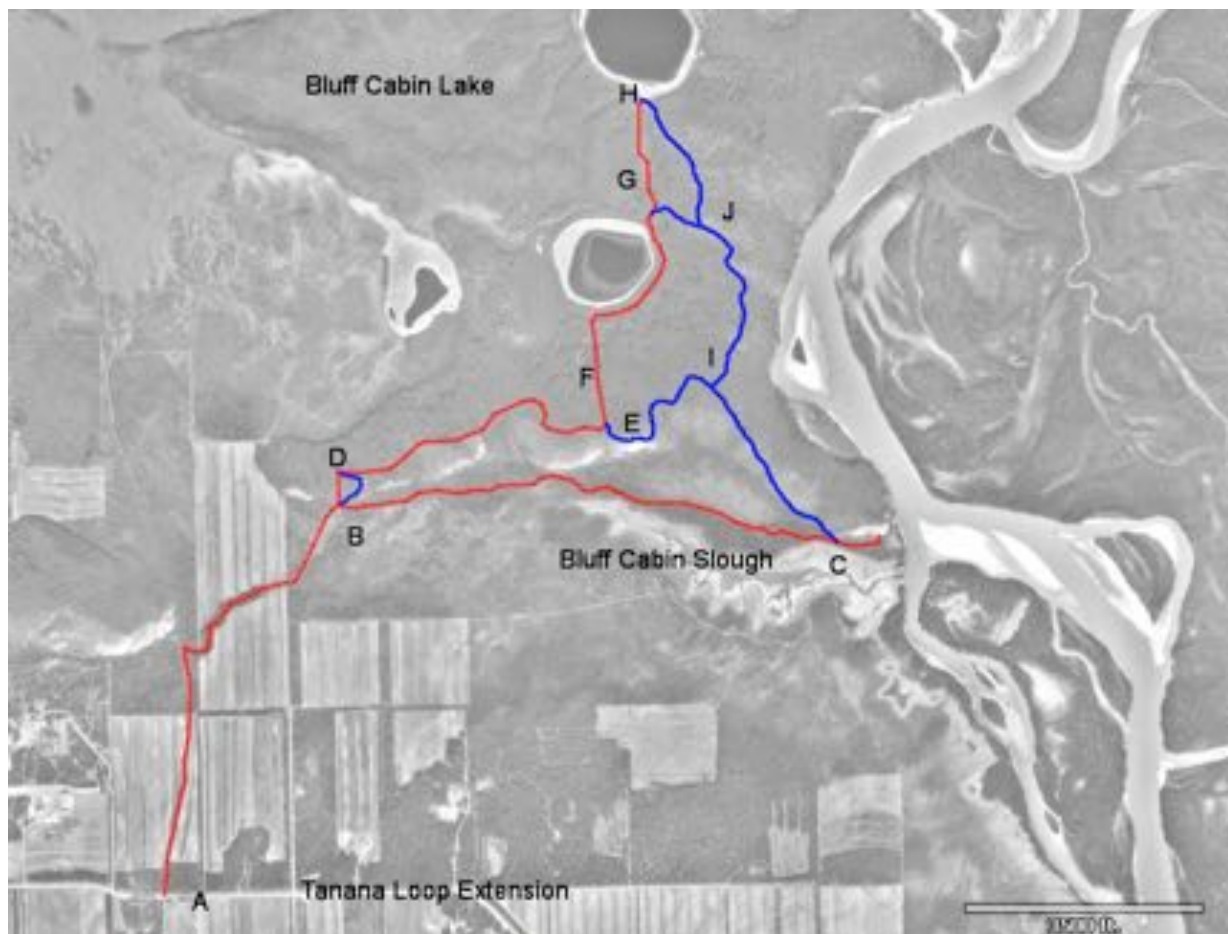
Motorized vehicles heavily use this trail, including full sized 4-wheel drive trucks, outdoor recreational vehicles and ATV's. The trail is badly damaged with large, deep ruts and mud holes in many places making travel difficult and unsafe. The trail has also become braided as people leave the established trail to avoid impassible sections of trail. Historical use by ATVs, snowmachines and dog teams has been seriously impacted by the effects of larger and heavier 4-wheel drive trucks. The recreational trail easement has recently been clarified to exclude vehicles wider than 5'. In addition, portions of the trail do not conform to the recorded easement location and some sections are on private property. Previous trail surveys were conducted by the Salcha-Delta Soil Water Conservation District (2012 & 2015) and the Alaska Department of Fish & Game (2015); limited sections were hardened by Salcha-Delta Soil Water Conservation District in 2012.

## Assessment

Under contract to the Delta Junction Trails Association, Geoff Orth (Stray Dogs LLC) and Jon Underwood (Happy Trails Inc.) performed a trail assessment on 6 and 7 October 2016. During the survey, the weather conditions were excellent: temperatures 20-40°F, no precipitation and ground snow free. The recent good weather had dried out the trail tread, and tread was partially frozen. During the assessment, with the exception of Bluff Cabin, no cultural resources were observed. No activity is intended in the immediate Bluff Cabin vicinity.

Soils are composed largely of typical Tanana Valley loess (silt loam) which is a durable tread material at low moisture levels. During the summer in Interior Alaska, it typically forms a minimally erosive, hard surface that provides good traction for users. It loses cohesion and becomes dusty when dry. In spring and in wet conditions it is very soft and makes the trail vulnerable to erosion, rutting and potholing. Many land managers close silt-treaded trails in the spring until the tread becomes firm.

On the north and east sides, Bluff Cabin Lake area is bounded by the Tanana River. On the west side there is a large area of low, swampy ground that is likely frozen underneath the vegetation mat. On the south side there is permafrost as well, which accounts for the deep rutting on the slough segment B-C (see map). The possible trail line is affected by all these natural boundaries and also by private property boundaries, especially between A and B. The best summertime access is found at point B, where the trail currently enters the area. No other access point is recommended.



*Red denotes existing location, Blue denotes proposed realignment.*

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Tanana Loops Extension (A) to Junction Segment (B), as depicted in the above map: Contractor, MVPs LLC, has brought the damaged tread on this 1.34 mile segment up to grade with imported pit-run gravel, underlain with geofabric.

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Bluff Cabin Slough Segment (B-C): Geoblock has not been installed correctly: ruts were not leveled prior to installation, panels are seamed rather than inter-locked, lack of weatherproof plywood backing plates at connections, zip-ties have not been clipped (screw fastening into the backing plates, rather than zip-ties would have reduced the flexing of the geoblock). Trail segment is deeply rutted and entrenched and un-maintainable to ~500yds of terminus.

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Bluff Cabin Lakes Segment: At the junction (B), this section has a 24-25% fall-line alignment; after the junction, from point D to point E, the trail is acceptable, but will require limited attention to berms and drains, and maintenance is likely to increase in the future as use increases. At point F, un-maintainable fall-line segment over an underlying seep, showing severe erosion and braiding. At point G, un-maintainable segment, showing severe erosion and braiding. Portions of the trail adjacent to both lakes are in adequate condition.

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### ***Prescription***

The soil is underlain by rock and bedrock in higher areas and by permafrost and ice lenses in low areas and on low north slopes. Both bedrock and frozen soil have been avoided in the recommended trail corridor, and must be avoided when laying out the final trail line. Alignment along exposed ridgelines should be avoided to minimize cultural resource impacts. Fall-line alignments in areas of thawed permafrost and ice lenses have resulted in the worst damage to the current trail.

While trail segments are advised to be abandoned, no segment, except B-D, should be physically closed without public input since they may provide access to traditional trapping, duck hunting and subsistence activities.

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Bluff Cabin Slough Segment (B-C, as depicted in the above map): Abandon this segment and create realignment, from point E to point C (~1.1 miles). Consider salvaging geoblock for future use.

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Bluff Cabin Lakes Segment: Trail at points B-D requires realignment, w/ 25' radius sweep turns at 10-12% grades (0.2 miles); original alignment needs to be physically closed. Trail to points D-E, remove berms and install drains at low points in the trail. Trail after point E needs to be abandoned. A new trail constructed north on Bluff Cabin Ridge, from point I to the northern lake (H, ~1.2 miles), with a spur down to southern lake at point J (~0.2 miles).

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In total, approximately 2.7 miles of new trail constructed.

Hardening the Slough or Lakes Segments is not cost effective and would impact the portion of the Lakes Segment which is in acceptable condition. Transport of gravels would also impact the recently restored segment, A-B. The cost of restoring segment A-B with pit-run (3" minus) gravels is approximately \$89,000 per mile, while the cost of new construction is \$27,000 per mile.

Design and construction of realigned segments should follow standards established by Alaska State Parks and Alaska Trails, and adhere to modern sustainability requirements for alignment, grade, integrated water control, and durable tread. Design specifications should target Snowmachine Trail Class 3, 6-7 feet in width (DPOR, Trail Management Handbook, attached), which will be adequate for other uses. To minimize construction costs and environmental impact, mechanized equipment (Sutter 500 and mini-excavator) should be used.

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**\*\* Photo captions are keyed to the points on the above map \*\***



**A-B (1).** Segment restored w/ gravel fill & cap.





**A-B (2).** Segment restored w/ gravel fill & cap.



**A-B (3).** Segment restored w/ gravel fill & cap.



**B-D.** Entrenched, w/ 24-25% fall-line alignment.



**B-C (1).** Geoblock installation.





**B-C (2).** Geoblock installation.



**B-C (3).** Entrenchment & rutting. (*Credit: ADF&G, Brandy Baker*)



**C.** Proposed junction.



**F.** Un-maintainable, fall-line segment, showing severe entrenchment, erosion and braiding.





**G.** Un-maintainable segment, showing severe erosion and braiding.