



FISH HABITAT PERMIT

FH18-III-0193

ISSUED: August 30, 2018
EXPIRES: Upon Mine Closure

Daniel Graham
Donlin Gold
4720 Business Park Blvd.
Suite G-25
Anchorage, AK 99503

Dear Mr. Graham:

RE: Snow Gulch Habitat Reclamation
Snow Gulch
Sections 14 and 23, T23N, R 49W, SM, Iditarod A-5
Location coordinates (WGS84): 62.0783 N 158.2008 W

Pursuant to AS 16.05.841 (Fishway Act), the Alaska Department of Fish and Game (ADF&G), Division of Habitat, has reviewed your proposal to rehabilitate habitats in Snow Gulch. We received your application information on December 29, 2017.

Project Description

Donlin Gold LLC is proposing the development of an open pit, hardrock gold mine. The proposed Donlin Gold project would require three to four years to construct, and have an active mine life of approximately 27 years. Construction and operation of the mine will result in the reduction of fish habitat in American Creek (FH18-III-0191) and Anaconda Creek (FH18-III-0190), and a temporary blockage of fish in Snow Gulch (FH18-III-0189). This project is intended, in part, to offset the fish habitats lost or affected in these drainages during construction, operation, and closure of the mine.

Placer mining in the upper Crooked Creek/lower Donlin Creek drainage has resulted in altered fish habitat in the lower reaches of Snow Gulch. Snow Gulch currently flows through a series of mine cuts into Donlin Creek. Fish use is limited by the relatively small size of the drainage, from compromised fish passage in an old diversion channel, and by beaver dams in pond inlets and outlets. Past fish

sampling in the stream has identified low numbers of Dolly Varden with an annual average of three fish per 300 ft. at two locations upstream from the most recent mining. During fall 2016, coho salmon adults were observed trying to move up past the diversion channel; however, previous aerial surveys did not detect coho salmon in Snow Gulch.

During early phases of mine construction or preceding mine construction, the lower part of Snow Gulch from the mouth to approximately 3,000 ft. upstream would be modified to improve fish habitat and to restore fish passage. This reclamation project includes restoration of existing stream channels between the upper and middle ponds, restoration of part of the middle pond outlet channel, and creation of a new channel connecting the middle and lower ponds. The new channel would eliminate the diversion channel that currently restricts flow at high water levels and flows over a large delta feature and restricts fish movement. The current upper and middle ponds are controlled by beaver dams that also restrict fish movement. Dams would be constructed at the outlet of the middle and upper ponds to maintain water surface elevations at or near their current heights. The stream bed of the disturbed channels downstream from each pond would be raised and graded, or a series of step pools installed, to provide fish passage. Below is a summary of habitat features to be constructed or modified:

- The upper pond would be enlarged with minor excavation to the south of the existing pond and a dam installed at the outlet.
 - The outlet channel would be graded between the outlet and crossing of the existing access road to provide fish passage.
- A small excavation would be made to connect the stream to an existing depression in the valley to add additional habitat.
- The middle pond would be enlarged with minor excavation to the south of the existing pond and a dam installed at the outlet.
 - The outlet channel would be regraded to meet with a new connection channel flowing to the lower pond.
 - Approximately half of this channel is a historic channel of Snow Gulch.
- The diversion channel would be blocked off to divert Snow Gulch into the new channel, and the diversion channel filled in and recontoured with placer tailings.
- The lower pond would be recontoured to partially remove a peninsula that could inhibit fish movement between Snow Gulch and Donlin Creek during low water, and to increase pond habitat.

The end result of habitat modifications would be approximately 5 acres of accessible productive pond habitat and approximately 5,500 ft. of productive stream habitat that also would provide for fish passage. Lower Snow Gulch has viable salmon spawning substrates and possibly adequate winter flow to support

coho spawning. It is therefore possible that, in addition to rearing habitat, this reclamation work could create spawning habitat.

Construction of modified channels and ponds could be conducted during winter or open-water conditions; however, channel modifications would likely require diversion of the stream around the work area and would have the highest likelihood for success during open-water conditions. Because local soils consist of placer mine tailings, a dam-and-pump operation is likely the best method to dry the work areas.

Estimates of fill and construction sequencing would be provided as designs are finalized.

Because the area of the proposed mitigation habitats is downstream from the Snow Gulch FWD, there will be a period of unknown but reduced flow during reservoir filling between two years pre-gold production and Year 2 of gold production. In addition, there is potential for periods of reduced flow during operations if water needs draw the reservoir down to below the spillway elevation. Benefits of any newly created habitats would be realized temporarily during most of the mine life and then long-term post closure. However, winter discharge in Snow Gulch would be anticipated to increase as result of increased winter groundwater discharge as a result of the reservoir behind the dam. As a result, fish overwintering and coho spawning habitat in the reclamation project area would be altered by the FWD.

Monitoring of all civil work at outlets, diversion channels, and channel fill locations would be conducted at least annually. During the initial years after construction, monitoring would be done annually and after any major high-water event. Biological success monitoring would be conducted annually until a lower frequency of sampling is indicated and would focus on documentation of fish use within the created habitats. Biological data would be used as a trigger for adaptive management, as it would provide indication of failures in physical aspects of channel design or outlet structures to provide for fish passage. If fish use is not documented, additional civil work to ensure fish access is provided could be conducted.

Fish Resources

Snow Gulch in the area of your project supports resident species of fish such as Dolly Varden. Your project as proposed should improve the efficient passage and movement of fish and provide new habitat for fish.

Determination

In accordance with AS 16.05.841, project approval is hereby given subject to the project description above with the following stipulations:

1. Donlin Gold shall submit final plans and specifications to the Division of Habitat for review and approval, noting any deviations from the preliminary plan set submitted for this permit.
2. Donlin Gold or its contractor shall provide plans for any diversion, dewatering, or bypass pumping needed for habitat reclamation for review and approval by the Division of Habitat before these activities occur.
3. Biomonitoring to document fish use at a site in the Snow Gulch reclamation habitats will occur at a frequency sufficient to document habitat reclamation and/or to identify additional civil work needed. Biomonitoring would include an evaluation of changes to winter flow and/or aufeis resulting from the construction of the FWD.

You are responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project. For any activity that significantly deviates from the approved plan, you shall notify the Division of Habitat and obtain written approval in the form of a permit amendment before beginning the activity. Any action that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any stipulation contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is the responsibility of the Division of Habitat. Therefore, it is recommended you consult the Division of Habitat immediately when any deviation from the approved plan is being considered.

For the purpose of inspecting or monitoring compliance with any condition of this permit, you shall give an authorized representative of the state free and unobstructed access, at safe and reasonable times, to the permit site. You shall furnish whatever assistance and information as the authorized representative reasonably requires for monitoring and inspection purposes.

This letter constitutes a permit issued under the authority of AS 16.05.841 and must be retained on site during project activities. Please be advised that this determination applies only to activities regulated by the Division of Habitat; other agencies also may have jurisdiction under their respective authorities. This determination does not relieve you of your responsibility to secure other permits; state, federal, or local. You are still required to comply with all other applicable laws.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. The Division of Habitat reserves the right to require mitigation measures to correct disruption to fish and game created by the project and which was a direct result of the failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

Any questions or concerns about this permit may be directed to Habitat Biologist Maria Wessel at 907-459-7281 or emailed to maria.wessel@alaska.gov.

Sincerely,

Sam Cotten, Commissioner



BY: Audra L. J. Brase, Regional Supervisor
Division of Habitat
Alaska Department of Fish and Game

ecc: John Chythlook, ADF&G SF, Fairbanks
Douglass Cooper, USFWS, Fairbanks
Ben Soiseth, USACE, Fairbanks
AWT Northern Detachment, Fairbanks
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