



FISH HABITAT PERMIT

FH18-III-0192

ISSUED: August 30, 2018

EXPIRES: Upon Closure

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

Dear Mr. Graham:

RE: Ruby and Queen Gulch Habitat Reclamation
Ruby and Queen Gulches
Sections 22, 23, 26, and 27, T23N, R49W, SM, Iditarod A-5
Location coordinates (WGS84): 62.0625 N 158.2183 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 Ruby and Queen Gulches. We received your application 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); fish habitat within Crooked Creek between Snow Gulch and Omega Gulch could also be affected by mine development via pit dewatering. The purpose of the Ruby Gulch/Queen Gulch reclamation project is to partially mitigate losses and potential losses of fish habitat described above by constructing productive, stable, and accessible fish habitats. Construction would likely occur either during early phases of mine development or could be initiated prior to mine construction. The total reclamation project would provide approximately 12 acres of pond habitat and 2,931 feet of enhanced and new stream habitat.

Historical placer mining in the upper Crooked Creek drainage has resulted in disturbed fish habitat in lower Ruby Gulch and Queen Gulch. Ruby Gulch flows through previous placer mined areas and remains in a disturbed condition. Ruby Gulch flow crosses an access road to Snow Gulch and then flows south through a series of disturbed mine cuts into a drainage ditch where it ultimately connects to Crooked Creek. Queen Gulch flows into the same ditch downstream from the old mine cuts. Both Ruby Gulch and Queen Gulch currently provide limited to no fish habitat value and only ninespine stickleback have been consistently observed, although coho salmon adults were observed in the drainage ditch during the receding hydrograph of a high-water event in Fall 2016. The lower 500 feet of the drainage ditch is functionally a backwater of Crooked Creek and has been identified in the ADF&G *Catalog of Waters Important for the Spawning, Rearing or Migration of Anadromous Fishes* as coho salmon rearing habitat. Ruby and Queen gulches are low-discharge systems and the drainage ditch likely freezes solid each winter. Reclamation of the lower portions of Ruby and Queen gulches would be designed and constructed to produce shallow productive fish-rearing habitats in the form of stabilized shallow ponds, limited deep-water habitat in portions of those same ponds, and stable stream channels to allow fish access to and from Ruby and Queen ponds.

The zone of influence of pit dewatering is predicted to extend from the proposed mine pit to the Ruby and Snow Gulch drainages. The Ruby Gulch/Queen Gulch mitigation fish habitats will be outside of but on the margins of this area; however, flows into the new habitat areas from higher in the drainages could be affected. Approximately 1,950 feet of the drainage ditch currently carrying flow from both Ruby and Queen Gulches will be backfilled during this reclamation. The lower 500 feet of anadromous backwater habitat will be left in place during recontouring of the remainder of the ditch and will continue to function as backwater rearing habitat. The Ruby and Queen pond portions of the reclamation habitats will be kept separated, with the exception of the lower portions of their outlet channels, via fill placement in the existing connection channel.

Queen Gulch will be rerouted across the existing access road by first constructing a channel between Queen Gulch and the Queen Pond area then diverting Queen Gulch into the newly constructed channel. The Queen Pond area would be flooded to approximately 119-meter (390 ft.) (above mean sea level [amsl]) and outflowing drainage would be routed to an existing abandoned channel in the northwest corner of Queen Pond and out to Crooked Creek. The outlet itself would be armored to resist scour and erosion. Queen Gulch flow would be allowed to establish its own channel within the existing abandoned channel. The water surface elevation increase in Queen Pond would backwater north and fill existing deep cuts and create a combination of shallow and deep water habitat upstream to nearly Ruby Pond, creating Upper Queen Pond. Queen Pond would be approximately 1.65 acres and Upper Queen Pond would be approximately 1.24 acres. Approximately 2,450 ft. of the drainage ditch would likely be recontoured or backfilled, while 320 ft. of channel would be modified in Queen Gulch. The final

configuration of the discharge structure in Crooked Creek and the freeze protection used will be determined during the detail engineering phase in coordination with the ADF&G.

The Ruby Gulch reclamation habitats will be initiated by constructing the outlet channel at the southwest corner of Ruby Pond. The new outlet will be constructed to maintain water surface elevations of about 119 meters (390 ft.) AMSL in Ruby Pond and outflow would be routed to an abandoned channel. The new outlet would be armored to resist scour and erosion. Some grading and fill placement may be needed within the channels near the outlet structures to meet grades for fish passage; however, outflow from Ruby Pond will generally be allowed to form its own channel geometry within the abandoned channel. Ruby Pond will create approximately 4.3 acres of pond habitat with about 60% of the habitat 3 ft. deep, or shallower. In total, 1,735 ft. of new stream habitat will be created via the outlet channels from Ruby Gulch and Queen Gulch. Additional contouring around and within each pond could be conducted to increase shallow water habitat and also to produce adjacent wetlands.

Because portions of the upper Queen Gulch and Ruby Gulch drainages are located in the potential zone of influence of proposed pit dewatering, it is possible that flow would be reduced in the Queen and Ruby drainages during mine life, particularly at the maximum drawdown period peaking around Year 20 of gold production. Under this scenario, benefits of the newly created habitats could be realized temporarily during most of the mine life and then long-term during post closure.

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 could be provided.

Fish Resources

Ruby and Queen Gulches in the area of your project support resident species of fish such as ninespine stickleback. Your project as proposed should not obstruct the efficient passage and movement of 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 Ruby and Queen Gulch reclamation habitats will occur at a frequency sufficient to document habitat reclamation.

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
Lee McKinley, ADF&G-JPO, Anchorage
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AB/mlw