



FISH HABITAT PERMIT

FH18-III-0191

ISSUED: August 30, 2018
EXPIRES: Upon Mine Closure and
Rehabilitation of the Site

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

Dear Mr. Graham:

RE: American Creek Waste Rock Facility and Open Pit
American Creek (Stream No. 335-20-16600-2671-3056)
Sections 31 and 32, T23N, R48W; Sections 25, 26, 34, 35 and 36, T23N, R49W; Sections 5, 6, 7,
and 8, T22N, R48W; and Sections 1, 2, 3, and 12, T22N, R49W, Seward Meridian,
Sleetmute D-6
Location coordinates (WGS84): 62.0416 N 158.2510 W

Pursuant to AS 16.05.841 (Fishway Act) and AS 16.05.871(b), the Alaska Department of Fish and Game (ADF&G), Division of Habitat, has reviewed your proposal to construct an open pit mine and a waste rock facility in the American Creek drainage. We received an initial copy of your application on December 29, 2017.

Project Description

Donlin Gold is proposing the development of an open pit, hardrock gold mine (Donlin Gold project). The proposed Donlin Gold project would require three to four years to construct, and have an active mine life of approximately 27 years. The proposed mine will develop two pits, [the American Creek Magnetic Anomaly (ACMA) and the Lewis Pit,] that will, over time, merge into a single pit. Each pit would be mined in phases starting out as separate pits, and joining together later in the mine life. The combined pit would ultimately be approximately 2.2 miles long by 1 mile wide and would encompass

1,462 acres of the drainage. During the course of pit development, the lower American Creek drainage would be mined and the upper drainage filled by development of the waste rock facility (WRF). Flow in American Creek, below the pit area to the mouth at Crooked Creek, will decrease significantly beginning two years before gold production, and will decrease to no flow by Year 5 of gold production.

Development of the Lewis and ACMA pits will involve pit dewatering to facilitate standard truck-and-shovel mining methods. Pit dewatering is modeled to create a cone of depression with an area of potential drawdown that reaches upstream along Crooked Creek to the Snow Gulch headwaters, downstream along Crooked Creek to the Anaconda Creek headwaters, and across Crooked Creek to the northeast of the Ultimate Pit. Reduction in flow from Anaconda Creek, and Lewis, Queen and Omega gulches, and removal of flow from American Creek, along with pit dewatering, are modeled to reduce Crooked Creek flows during summer and winter. Base flows from all drainages east of Crooked Creek within the project area are predicted to be reduced. The greatest reductions of relative flow are predicted to occur between Omega Gulch and Crevice Creek and during winter under low flow conditions. Greatest potential reductions regardless of season are predicted to occur beginning in Year 20 of gold production. The best estimate of maximum monthly winter flow reductions in Crooked Creek within the mine area are modeled to range from 18% to 23% during January and from 8% to 21% during summer of Year 20 of gold production. Predicted losses to habitat availability in Crooked Creek between American Creek and Crevice Creek range between 1% and 6% during summer and 2% and 12% during winter.

The WRF would be constructed in the American Creek drainage, east and upgradient of the open pit, extending to near the headwaters of American Creek. The footprint of the facility would cover approximately 3.5 square miles of the drainage and would contain approximately 2,460 Mst of waste rock. The materials placed in the WRF would consist primarily of a mixture of siltstones, shales, and greywackes, with lesser amounts of intrusive rock. Up to 8% of the materials placed in the WRF, by volume on an annual basis, would be overburden. This would include approximately 46 Mst of overburden not required for reclamation purposes. The first lift of the WRF would begin at the start of the preproduction period.

A series of three dams would be constructed early in mine life to facilitate development and operations within the pit and WRF and to segregate freshwater from mine facility areas. Initial development of the dams will capture most American Creek flows. Two of these dams, the American Freshwater Diversion Dam and the Upper Contact Water Dam, would be above any documented fish use. The third dam, the Lower Contact Water Dam, would be at the base of the WRF footprint and would have a crest elevation of 673 ft amsl, a height of 151 ft, a crest length of 2,300 ft, an earthworks volume of 1.5 million cubic yds, and a storage capacity for the 24-hour probable maximum precipitation (PMP) for the American Creek catchment area. Construction of the Lower CWD would be completed by the end of first year

before gold production. The current mine plan calls for a large ore stockpile and haul road to be located directly downstream of the Lower CWD, and a sump located downstream of the stockpile. Resident Dolly Varden have been documented in the vicinity of the Lower CWD.

Construction would occur year-round and could entail winter and summer stream crossings. Summer stream crossings within the fish bearing reaches of American Creek, prior to elimination of the creek, would be made with appropriate crossing structures in coordination with the ADF&G. Blasting during pit development would be conducted consistent with the ADF&G blasting standards. During mining, the closest fish bearing waterbody to the combined pit would be Crooked Creek, and no blasting would occur closer than 750 horizontal ft from the creek. As the pit develops, the vertical set back would increase the offset distance substantially. Blast plan evaluations would be provided to ADF&G as requested.

During closure, the slopes of the WRF would be regraded, and the water in the Lower CWD and the Upper CWD would be pumped to the pit, the dams would be breached, and the areas re-contoured along with the WRF. Boulders uncovered during the resloping process would be left on the surface to provide topographic diversity and microhabitats for wildlife and vegetation. Once the area is recontoured, a minimum of 1 ft of terrace gravel and/or colluvium will be spread over the surface, followed by a layer of growth media consisting of organics. The WRF would be seeded and mulched, as necessary, following physical preparation. It is anticipated that broadcast-seeding methods would be utilized for this facility. Additionally, during late phases of mining and closure, approximately 467 Mst of backfill (primarily overburden and waste rock from continued development of the Lewis Pit and stockpiled potentially acid generating 7 material) would be placed in the ACMA pit. Additional backfill may be placed in the Lewis Pit as required to stabilize areas after mining is complete. Pit highwalls would be stabilized, which would promote raptor nesting. It is estimated that it would take approximately eight years from the time pit dewatering is discontinued at the end of Year 25 of gold production for the void areas in the backfill material to fill from groundwater and surface water inflows and placement of TSF water in the pit following process plant closure at the end of Year 27 of gold production. After that, the pit lake will slowly increase in depth over a period of approximately 50 years, to an ultimate managed elevation of 328 feet and a surface area of approximately 1,070 acres.

Preliminary plans were included in the December 29, 2017 application.

Anadromous Fish Act

American Creek has been specified as being important for the spawning, rearing, or migration of anadromous fishes pursuant to AS 16.05.871(a). The creek in the area of your activity provides rearing habitat for coho salmon. Resident fish species captured in the vicinity of your project include Dolly Varden, slimy sculpin, burbot, and Arctic grayling. Your project as proposed will have adverse effects

on anadromous fish or their habitat and will obstruct the free passage of fish. American Creek will be eliminated from approximately 0.25 miles upstream from its mouth to the headwaters. Your proposed plans include provisions for restoration of aquatic habitats in Ruby, Queen, and Snow Gulches which have been disturbed by historic placer mining. Fish Habitat Permits FH18-III-0192 and FH18-III-0193 have been issued for this restoration. This mitigation is intended to offset habitat losses in American Creek.

In accordance with AS 16.05.871(d), 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. A monitoring plan shall be developed in consultation with the ADF&G to continue to collect information comparable to baseline data collected in the project area beginning in 2004, in order to document conditions within the aquatic communities with potential to be changed by project operations. Monitoring shall be designed to provide data to evaluate changes potentially caused by development and operation of the project, including flow reductions in Crooked Creek. Results of monitoring should allow for temporal analysis between and among sites as well as for comparisons to baseline data. The objectives of the aquatic biomonitoring should be to:
 - a. monitor for major changes to aquatic communities;
 - b. monitor for smaller scale and incremental changes to aquatic communities; and
 - c. guide results based refinement to the monitoring program.
3. Biomonitoring to document fish use and invertebrate populations at a site in lower American Creek within the anadromous fish reach will occur as long as fish habitat is present at the site.

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 a 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 AS 16.05.871 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 department 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.

Portions of this permit decision may be appealed in accordance with the provisions of AS 44.62.330-630.

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
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