National Park Service
U.S. Department of the Interior

Denali National Park and Preserve
Alaska

Eldorado Creek Mining Plan of Operations Environmental Assessment May 2016

As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural and cultural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to assure that their development is in the best interests of all. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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I. PURPOSE AND NEED

The National Park Service (NPS) is considering approval of a Mining Plan of Operations (MPO) which was submitted by Kris DeVault (DeVault) for the purpose of accessing and conducting a suction dredge placer gold mining operation on the Liberty #9 and Liberty #13 through #20 (Liberty) unpatented mining claims located in the Kantishna Hills area within the 1980 park additions of Denali National Park and Preserve (DENA). Plan approval would include approval of access to the claims as provided for by 43 CFR 36.10(c). DeVault, operating as a lessor for Eldorado Ventures, LLC, the claimant, submitted an MPO in July 2015 after consultation with NPS geologists, as required by Title 36 of the Code of Federal Regulations (CFR), Part 9A, detailing their proposed means and methods. Copies of the lengthy MPO are available in NPS offices in Denali National Park and Anchorage per the Federal Register Notice of February 26, 2016 (Vol. 81, No. 38, p. 9881). The mineral rights to the Eldorado Creek claims (Eldorado #F059196 and #F059200-F059207) are owned by Eldorado Ventures, LLC.

This environmental assessment (EA) examines and analyzes the proposed action and reasonable alternatives to ensure that it satisfies the requirements of 36 CFR 9.10, and would not injure or adversely affect federally owned land. This EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended, regulations of the Council of Environmental Quality (40 CFR 1500-1508), the Mining in the Parks Act of 1976 and its implementing regulations (36 CFR 9A).

Background

Prospectors first looked for gold in Eldorado Creek in 1904-05. Any discovery would have been part of the general discovery and stampede to the Kantishna Hills (Figure 1 and 2) in 1904, peaking in 1905. Almost all of the traffic in the Eldorado Creek valley was travel upstream from Moose Creek to Slate Creek, where lode miners extracted stibnite to ship to smelters outside of Alaska for reduction to antimony, a strategic metal. On Eldorado Creek, lode mining for gold on the Comstock (Neversweat) claims, which formerly covered parts of Liberty #16, did not produce recorded quantities of gold or other minerals between WWII and 1985. The last of the Comstock claims was declared null and void in 2007**.** Placer mining using heavy equipment occurred on lower Eldorado Creek along Moose Creek between 1975 and 1982, below the Liberty claims.

The Liberty claims (Figure 3) were staked in June 30, 1969 by Dorian A. Rither and Larry E. Eddington for Northwest Exploration, Incorporated. Eugene Desjarlais bought the claims on April 30, 2002 from Dan Ashbrook, a former partner of Northwest Explorations, Inc. The current claimants of record, Eldorado Ventures, LLC, acquired the Liberty placer claims on November 22, 2004 from Desjarlais, though he continues to be a partner in Eldorado Ventures, LLC. These claims are the last unpatented claims in DENA and encompass approximately 118 acres. The claims were found to be valid in 1999 in a Mineral Report signed by officials of the NPS and Bureau of Land Management (BLM) (NPS 1999). No mining operations have been conducted or approved by the NPS on the Liberty claims since the Kantishna Hills were added to Denali National Monument in 1978 and DENA in 1980.

A mining access road (access road) extends from Moose Creek up the Eldorado Creek valley all the way to uppermost Slate Creek and winds from one side of the Eldorado Creek valley to the other and back with over 20 of crossings of Eldorado Creek. The access road, also called the Eldorado Tractor Road, is historic and is a contributing feature to the Kantishna/Wonder Lake Cultural Landscape. The access road has seen only sporadic traffic since 1983. A rockfall at a narrow part of the valley closed the lower end of the access road to even 4-wheeler traffic after 2000, though management requirements made it necessary to remove the rockfall in 2006 and again in 2010**.** A major flood in June 2014 made the access road impassable for the full length of the road.

Little evidence of mining on the Liberty claims is noticeable to the casual visitor. A few test pits remain from the 1988 and 1992 NPS validity surveys and a couple of test pits from the pre-1986 claimants are in evidence. The Comstock unpatented lode claim block overlapped the Liberty claims just upstream of Reinhart Creek, and the adits, tailings, cables and other abandoned mining equipment on the Comstock claims are unrelated to placer mining on Eldorado Creek. The Comstock Cabin was constructed in 1955-56 for use by the Comstock claimant. The Comstock claims were declared null and void in 2007 and the cabin is now park property. Since the cabin is also on the Liberty claims, it is proposed for use by the placer operators as part of this MPO.

The Kantishna Hills Mining District has been an intermittent gold producer. Gold production between 1905 and 1983 in the Kantishna Hills is estimated at 85,000 ounces. Gold mining essentially ceased in the Kantishna Hills after 1985. Pre-1986 mining directly impacted 1,555 acres of lands in the Kantishna Hills Study Area, with much more recent mining with heavy equipment re-mining areas that had seen only hand work previously. About 33 miles of riparian vegetation was disturbed by mining. Around 4.9 miles of stream downstream of Slate Creek mines were directly and indirectly disturbed by mining activities, including access roads (NPS, 1990).

Kantishna Mining Since 1985

As a result of a 1985 lawsuit filed by a group of environmental organizations, the U.S. District Court found that the NPS in Alaska had not fully complied with the 1976 Mining in the Parks Act and the 1969 National Environmental Policy Act. The Court ordered the NPS to prepare an Environmental Impact Statement (EIS) on the cumulative impacts of multiple mining operations within each of three Alaska park units - Denali National Park and Preserve, Wrangell-St. Elias National Park and Preserve, and Yukon-Charley Rivers National Preserve - and enjoined the NPS from permitting mining operations prior to completion and Court approval of the EIS. As a result of actions proposed in DENA's EIS, the NPS submitted a Record of Decision (ROD) to the Federal Court recommending acquisition of all patented and valid unpatented mining claims. However, the ROD (signed August 21, 1990) also stipulated that until such time as sufficient funds were available for acquisition, the NPS would continue to process mining plans of operations according to the regulations in 36 CFR Part 9A, and approve those plans that meet regulatory requirements. On December 28, 1990, the Federal Court approved the findings of the EIS (NPS 1990). Congress subsequently appropriated funds for acquisition of mining claims in DENA, and the NPS has pursued the acquisition of mining claims in DENA from willing sellers

since the early 1990s. Only one small scale MPO, in 1993, has been approved for mining in DENA since 1985.

The NPS, under authority of the BLM, conducted field mineral examinations of the Liberty claims in 1988 and in 1992; the NPS and the BLM approved the "Mineral Report - Validity Examination of Liberty #9 and Liberty #13-20 Federal Placer Mining Claims" in 1999. All of the Liberty claims were staked after a 1965 withdrawal in Kantishna by the BLM. Liberty #9 straddles the withdrawal line, so only 8.22 acres of that claim could be found valid. Liberty #s 13, 14, 15, 16, 17 are all 20 acre claims that were found valid. Only the downstream 10 acres of Liberty #18 was found to be valid. The upstream 10 acres of Libert#18 and Liberty #19 and Liberty #20 were found to be invalid.

The Liberty claimants of record did not accept an offer of appraised value from the NPS for the valid claims. Hence, the NPS is directed to process the proposed MPO and authorize an MPO which would not result in significant impact to park resources and values. DeVault developed and subsequently submitted a draft MPO to the NPS for placer mining operations on the Liberty claims in April 2015. The NPS determined that DeVault's MPO was essentially complete, and published a "Notice of Availability" for the MPO in the Federal Register on February 26, 2016.

The General Mining Act of 1872 authorized and governed prospecting and mining for economic minerals, such as gold, platinum, and silver, on federal public lands. This law codified the previously informal system of acquiring and protecting mining claims on public lands. All United States citizens 18 years or older have the right under the 1872 mining law to locate lode (hard rock) or placer (gravel) mining claims on federal lands open to mineral entry, and such claims may be recorded once a local mineral discovery is made.

The Mining in the Parks Act of 1976 closed six national park systems units to mineral entry following a congressional finding that if the application of the United States mining laws was not discontinued, they would conflict with the purposes for which individual parks units were established. Congress also directed that all mining operations in national parks should be conducted in a manner which prevents or minimizes damage to the environment and other park resources. Consequently, the Act also authorized the Secretary of the Interior to regulate mining and associated activities on federal mining claims located within all park units, including those subsequently established, such as those in Alaska established by ANILCA in 1980. These regulations, found at 36 CFR Subpart 9A, apply to both patented and valid unpatented mining claims

Legal Context

The 1916 Organic Act directed the Secretary of the Interior and the NPS to manage national park units to:

> "…conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as would leave them unimpaired for the enjoyment of future generations." (16 U.S.C. 1.)

The Organic Act also granted the Secretary the authority to implement "rules and regulations as he may deem necessary or proper for the use and management of the parks, monuments and reservations under the jurisdiction of the National Park Service." (16 U.S.C. 3.)

In 1917, Congress established Mount McKinley National Park:

> "…as a public park for the benefit and enjoyment of the people . . . said park shall be, and is hereby established as a game refuge." (39 Statute 938)

Additions to the park were made in 1922 and 1932 to provide increased protection for park values and, in particular, wildlife. The 1932 addition moved the eastern park boundary from a north-south line near park headquarters to the western bank of the Nenana River, and widened the park in the west to include Wonder Lake.

1978 amendments to the 1916 NPS Organic Act and 1970 NPS General Authorities Act expressly articulated the role of the national park system in ecosystem protection. The amendments further reinforce the primary mandate of preservation by stating:

> "The authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided for by Congress." (16 U.S.C. 1-a1.)

The Alaska National Interest Lands and Conservation Act of 1980 (ANILCA) added approximately 2,426,000 acres of public land to Mt. McKinley National Park and approximately 1,330,000 acres of public land as Denali National Preserve and re-designated the entirety Denali National Park and Preserve. The Kantishna Hills, including the project area, was added as national park by ANILCA. ANILCA directs the NPS to preserve the natural and cultural resources in the park and preserve for the benefit, use, education, and inspiration of present and future generations. The Act further directs the NPS to manage for the continuation of customary and traditional subsistence uses in the park and preserve additions in accordance with provisions in Title VIII.

The NPS Organic Act and the General Authorities Act prohibit impairment of park resources and values. The 2001 NPS Management Policies uses the terms "resources and values" to mean the full spectrum of tangible and intangible attributes for which the park is established and managed, including the Organic Act's fundamental purpose and any additional purposes as stated in the park's establishing legislation. The impairment of park resources and values may not be allowed unless directly and specifically provided by statute. The primary responsibility of the NPS is to ensure that park resources and values would continue to exist in a condition that would allow the American people to have present and future opportunities for enjoyment of them.

Issues

Issues and impact topics are identified and form the basis for environmental analysis in this EA. A brief rationale is provided for each issue or topic that is analyzed in the environmental consequences section of this EA. Issues and topics considered but not addressed in this document also are identified.

Vegetation

Some existing vegetation within the project area would be destroyed, disturbed or lost due to access road reconstruction and trampling until successional vegetation is reestablished...

Soils

The proposed mining area encompasses approximately 2 acres, all of which is streambed gravels, cobbles, boulders and sediment. Mining would directly and adversely affect streambed soil horizons. Rehabilitating the access road could disturb some unconsolidated soils. No new impacts to pristine soils on park lands are anticipated.

Wildlife Values and Habitat

The proposed mining and access road activities would potentially impact wildlife habitat. This action's direct effects would remain largely confined to the claim block, but operations could also indirectly affect wildlife using nearby park lands. Mining operations can pose potential impacts to wildlife by causing temporary avoidance zones.

Aquatic Resources

Potential resources at risk include invertebrates and water quality. Placer mining wastewater discharge would generate elevated levels of suspended sediments which could degrade water quality for a short distance downstream. Suction dredging would remove invertebrate habitat. Surface disturbance removes soils and tramples vegetation, exposing areas to erosion which could also adversely affect water quality. Improper transportation, use, or storage of fuels used could endanger water quality and dependent resources.

Floodplains

Consideration of impacts on floodplains is required by Executive Order 11988 ("Floodplain Management"). The proposed mining operations and associated activity would occur in the existing floodplain and could impact floodplain functioning, such as runoff attenuation.

Cultural Resources

The Comstock Cabin, a contributing feature to the Neversweat Mine Complex, has been determined eligible for the National Register of Historic Places. Rehabilitation work on the cabin to make it livable for the claimants would need to be approved by the NPS and State Historic Preservation Officer. NPS staff would provide recommendations to the operator regarding protection and preservation of the Neversweat Mine Complex Cultural Landscape, which includes five collapsed mine adits, a trail up a large tailing pile, and small-scale features associated with mining activities. The access road historic integrity would need to be maintained.

Visitor Experience and Visual Effects

The type, degree, and quality of recreation and visitor use could be affected by the proposed mining. The proposed mining would directly impact some components of the natural landscape associated with natural beauty, like floodplain and aquatic resources. This action's direct effects

would remain largely confined to previously disturbed areas within the Liberty claims and along the access road.

Issues Eliminated from Further Consideration

Wetlands

All disturbance to wetlands and wetland vegetation under this proposal would be in a long-disturbed road bed or unvegetated streambed. The miner plans on mining less than 4350 sqFt/yr (0.1acres/yr) within the riverine wetlands in the stream bed. Stipulations for the miners to use reclamation as an ongoing process during all phases of the mining operation will help minimize impacts to wetlands. The suction dredge would return processed gravel directly to the stream as it exits the sluice, and combined with the natural dynamics of the seasonal high water of this system will result in a temporary, yearly disruption of wetland functions and features of 0.1 acre a year. Based on past monitoring of similar mining activities, this area will be fully recovered within the next year. All of these wetlands have been previously disturbed by prospecting, some mining, and by vehicle travel. Wetland disturbance of 0.1 acres per year in a previously disturbed riverine wetland would not degrade the natural and beneficial ecological, social/cultural, or other functions and values of wetlands. Material used to rehabilitate the road would come from flood debris and not from established areas of wetland soils or vegetation.

Air Quality

While construction and mining activities would generate some short term and highly localized machinery emissions and airborne dust, these impacts would be localized and negligible.

Natural Soundscape

The mining activities would degrade natural sounds by only a minor amount due to the ambient sounds of the creek covering the suction dredge equipment noise until one is close to the equipment.

Wilderness Character

Wilderness character would not be affected since the Eldorado Creek area is not in designated or eligible wilderness.

Effects on Threatened and Endangered Species

The Endangered Species Act requires an analysis of impacts on all federally listed threatened and endangered species, as well as species of special concern. In compliance with Section 7 of the Act, the U.S. Fish and Wildlife Service (USFWS) was consulted. No federally designated threatened or endangered species are known to occur within Denali National Park (pers. comm. Ted Swem, USFWS, Fairbanks, Alaska, September 9, 2013).

Local Communities/Socioeconomic Resources

A small-scale mining operation would likely provide a negligible benefit to the local economy.

Subsistence Use

ANILCA Section 810 requires federal agencies to analyze the impacts of federal actions on subsistence resources and lifestyles. Some local rural residents conduct subsistence activities including hunting, trapping and gathering within the general vicinity of this proposed action. This

action possesses no potential to result in any additional subsistence restrictions. The ANILCA 810 analysis for this project is attached as Appendix C.

Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations,* requires all federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. This project wouldresult in negligible changes to the socioeconomic environment of the area, and therefore is not expected to have a disproportionate adverse impact to minority or low-income populations or communities.

Climate Change

Secretarial Order 3226 directs federal agencies to ensure that climate change impacts are considered in connection with departmental planning and decision making. The 2006 NPS Management Policies direct the operation and management of facilities, vehicles, and equipment in a manner to minimize the consumption of energy, water, and nonrenewable fuels. It is not anticipated that the proposed mining operations would have a measureable effect on greenhouse gas emissions and climate change.

Permits and Approvals Needed to Complete the Project

A concurrence from the State Historic Preservation Officer is required and Assessment of Impacts to Cultural Resources obtained for the evaluation of the effects of this project on cultural resources.

Consultation with the Corps of Engineers reveals that a Section 404 permit is not required for suction dredging when using less than a 12" nozzle.

A National Park Service Statement of Findings to evaluate impacts to floodplains is required because the project will affect floodplain resources.

A National Park Service Statement of Findings to evaluate impacts to wetlands is not required because the action affects no more than 0.1 acre of wetlands per year and is water dependent.

The claimants would need to post a performance bond before commencing mining operations. Conditions of a performance bond are presented in Appendix G.

II. DESCRIPTION OF THE ALTERNATIVES

ALTERNATIVE 1 (NO ACTION) – NO MINING OPERATIONS AUTHORIZED ON LIBERTY CLAIMS.

Under this alternative the NPS Alaska Regional Director would not approve the operator's proposed mining plan of operations. As a result, authorized mining would not occur on the Liberty claims on Eldorado Creek. This alternative provides a baseline for evaluating the changes and impacts of the proposed alternative.

ALTERNATIVE 2 (PROPOSED ACTION WITH STIPULATIONS) – AUTHORIZE PROPOSED MINING OPERATIONS ON THE LIBERTY CLAIMS WITH NATIONAL PARK SERVICE STIPULATIONS

Under this alternative, the NPS Alaska Regional Director would approve the operator's mining plan of operations (MPO) for ten years on the Liberty unpatented placer claims. A re-authorization would require a new MPO at that time. This authorization would include NPS stipulations for resource protection. These stipulations would constitute a mitigation plan designed to minimize and/or prevent potential environmental impacts to park resources and values and would be conditions to the authorization to mine. The proposed mining stipulations are presented in Appendix B.

According to the 1999 Mineral Report, a total of 125,651 BCY (bank cubic yards) exist on the valid Liberty claims, 45,508 of which are considered mineralized. At an average pay of .032 ounces per BCY there are an estimated 1,456 ounces in reserve.

DeVault estimates there are about 20,000 to 30,000 BCY of instream material within Eldorado Creek itself. Eldorado Creek has a gentle grade of 3 percent which is good for instream gold preservation (NPS 1999, pp. 17, 21).

With an estimated 20,000-30,000 BCY of instream gravels and 100 day mining season it could take 65 to 200 years with a 6" suction hose and 33 to 100 years with an 8" suction hose to dredge the total instream gravels running only one dredge at a time with a 2 to 4 man crew (Figures 4 and 5). Running two dredges at a time would reduce the time to mine the whole of the claims. One year's progress upstream could run from as little as 100 linear feet of streambed to as much as 800 feet of streambed. This does not take into account the potential self-renewing of the claims during times of floods and high water. Some stretches of the creek may be barren enough of gold that the operator would sample but bypass them.

Access

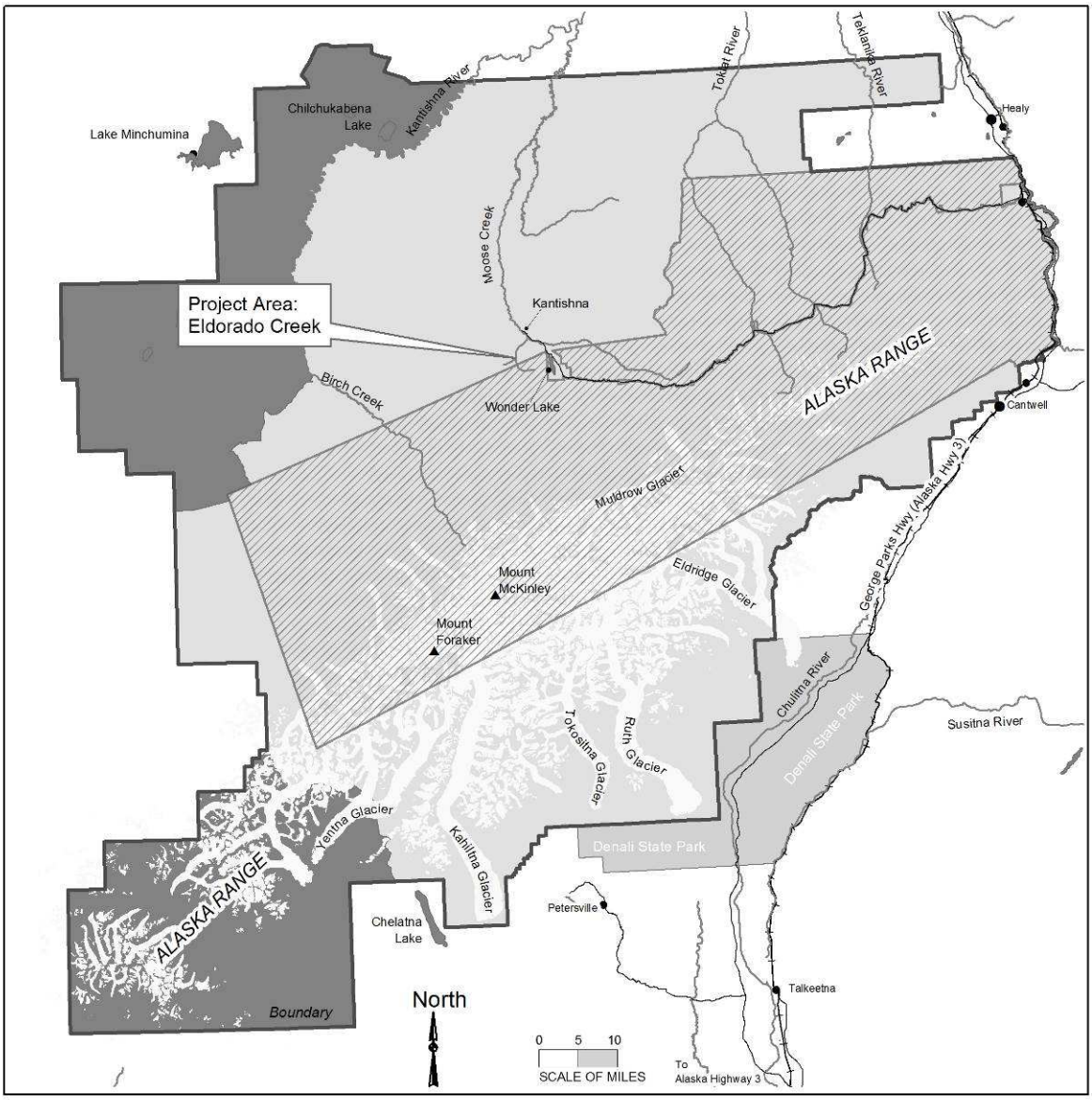
Access to the claims during the mining season would consist of driving along the Denali Park Road to Kantishna, fording Moose Creek on a ROW easement on property owned by Doyon LTD, and then driving upstream on the Eldorado Creek access road for 1.5 miles to the mining claims. The access road would be used for about two miles while on the claims.

An average of 15 road (Denali Park Road) travel permits would be requested to support the mining operations per season. While on the claims, trucks and ATVs used to conduct mining operation would travel along the access road as necessary. Standards for maintenance of the access road would be included in the plan stipulations. Annual access road maintenance and brush clearing during mining operations would be needed to keep the access road in usable condition and would be the responsibility of the mining operator.

The Kantishna area and Eldorado Creek access road experienced severe flooding in June 2014 (http://www.newsminer.com/news/local_news/flooding-maroons-lodge-guests-at-kantishna-denali-park-road-closed/article_e63cd3f6-fd8e-11e3-88ab-001a4bcf6878.html) that put the stream into the access road in many places, littered the route with boulders in places, eroded surface fines from stretches of the access road, and was accompanied by small landslides that reached the access road in other places.

The access road would need to be repaired for use by trucks and ATVs. See Appendix F for a list of proposed repairs and see Appendix H for related photographs. An excavator would be needed for the improvements: to remove and reposition boulders, create ramps for travel into and out of the stream at cut banks, remove landslide material, and level out the access road in places by repositioning gravel and fines onto the route surface. In some areas material from the streambed will be removed to help level the access road or help lower the channel so that the stream stays in the channel and not in the access road. Chainsaws would be used for brushing the access road to a 9-10 foot width clear of branches.

These repairs include about 2,045 feet of light grading and 300 feet of moderate grading on the 6,864 feet of access road to reach the claim block, and another 1,993 feet of light grading and 995 feet of moderate grading and improvements on the 8,448 feet of access road on the claim block. At the three Option Areas presented in Appendix F, the two option areas downstream of the claims (Options 9 and 13) would likely drive in the old creek bed. At Option 22, on Liberty #15 (see Figures 6 and 7), the plan would be to reclaim the roadbed and divert the creek back into its pre-flood channel. The excavator would be approximately a 160 to 220 size/model, 30,000lbs to 55,000lbs and burn 6 to 10 gallons of diesel an hour. It would have a bucket/thumb combination with a blade for grading.



Location in Alaska

Figure 1
Park/Region
Denali National Park and Preserve
U.S. Department of the Interior • National Park Service

Figure 1. Project Location

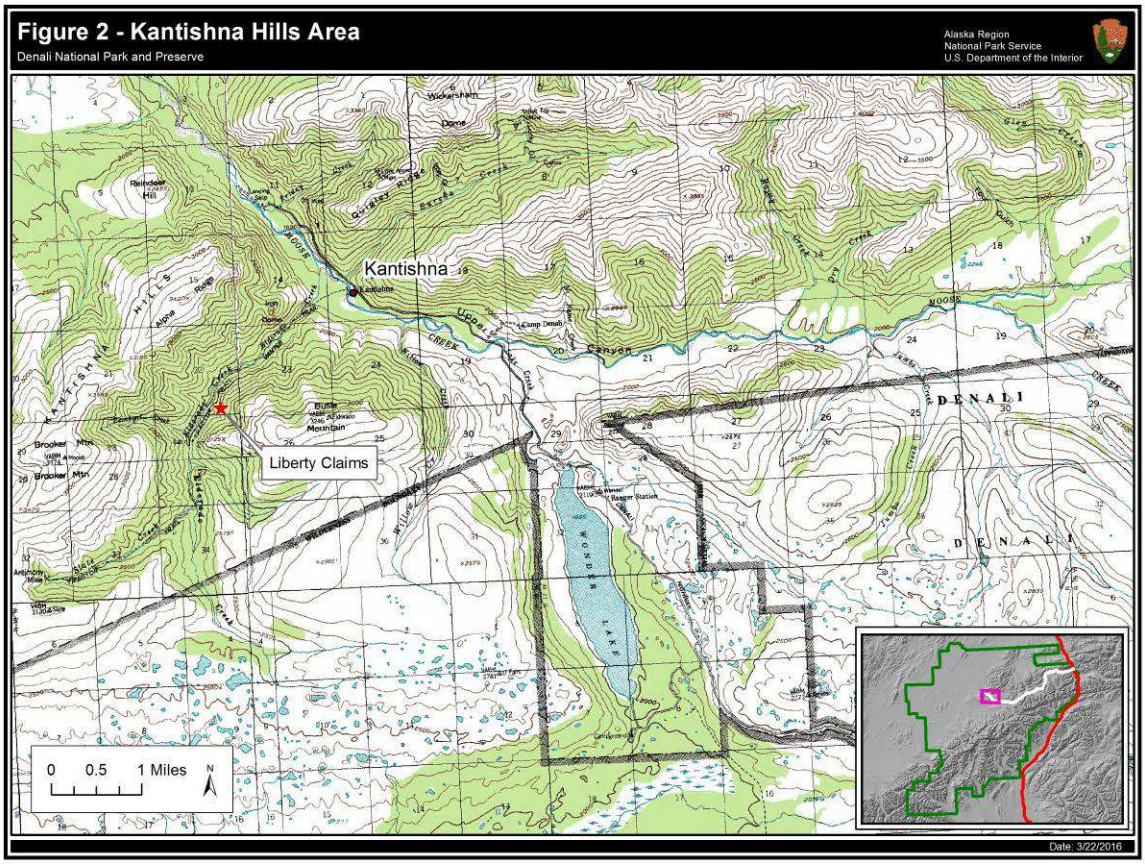


Figure 2. Kantishna Hills Area

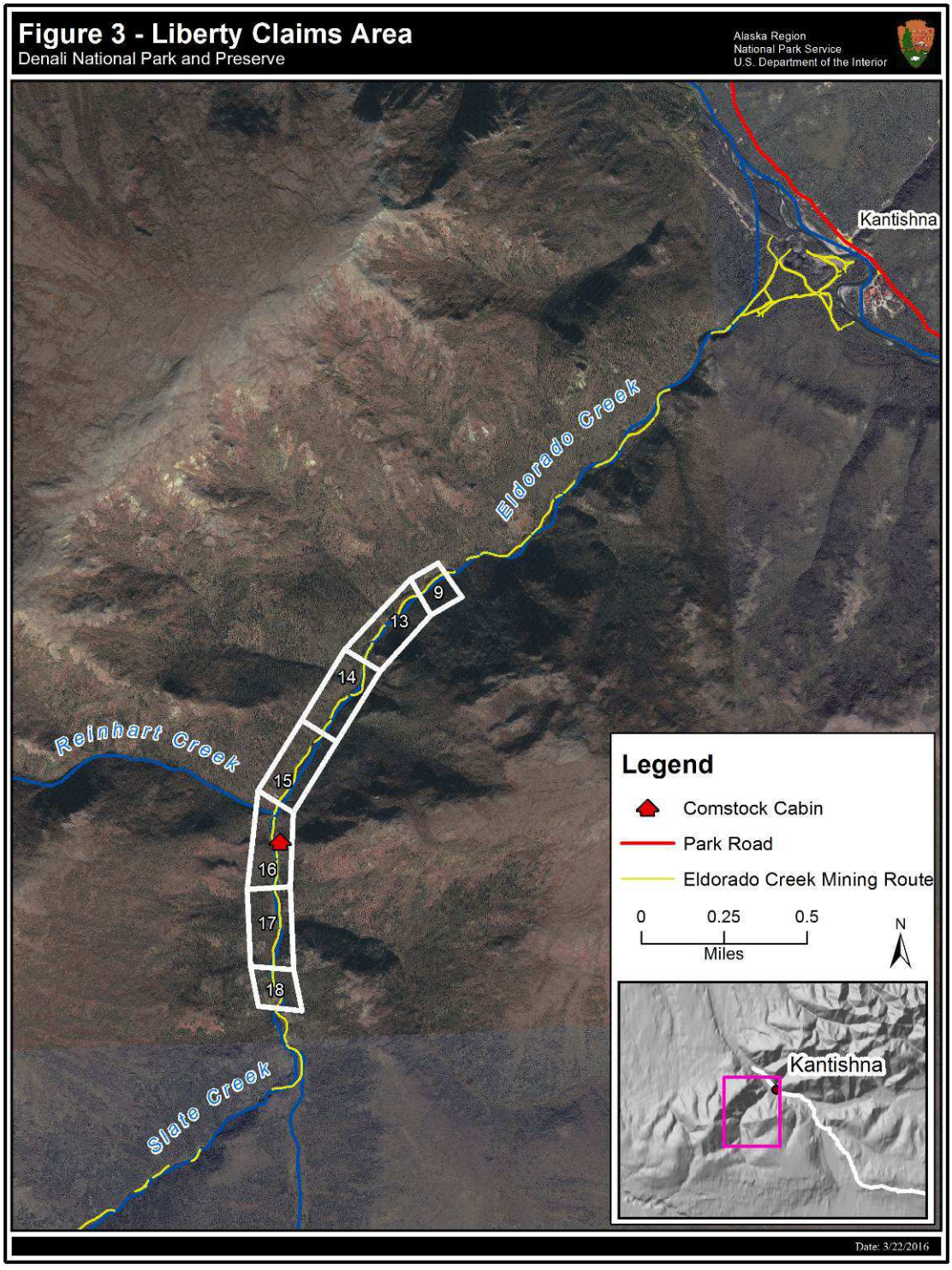


Figure 3. Liberty Claims Area

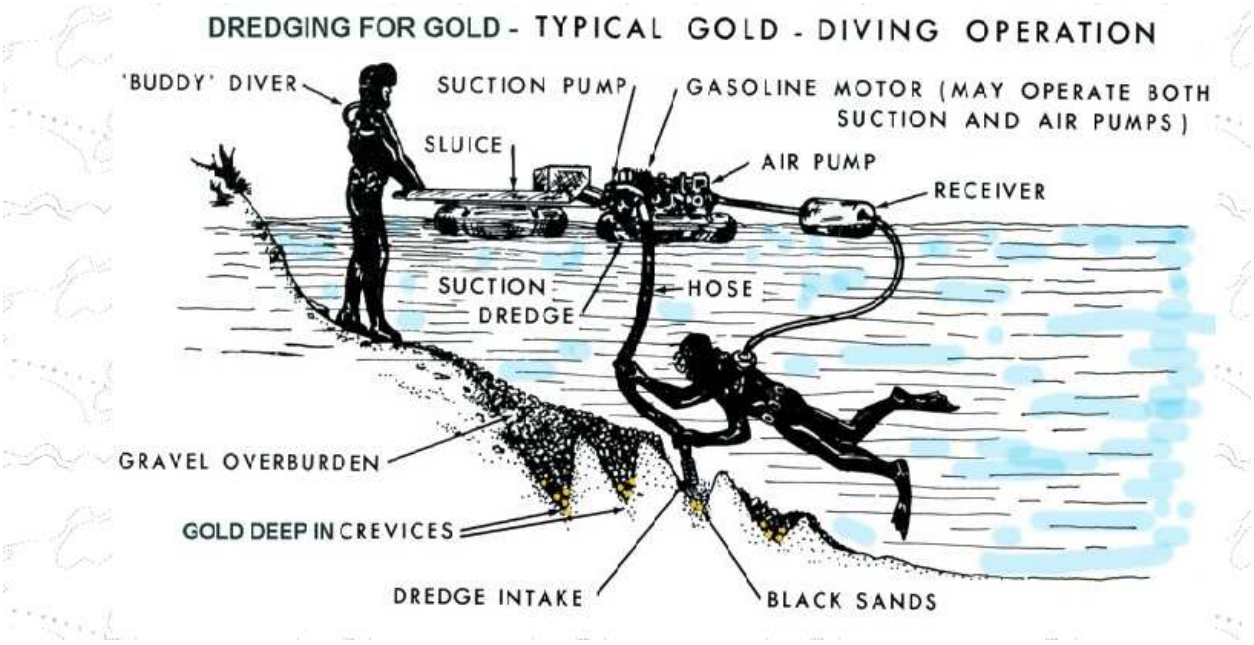


Figure 4. A Typical Gold-Diving Operation

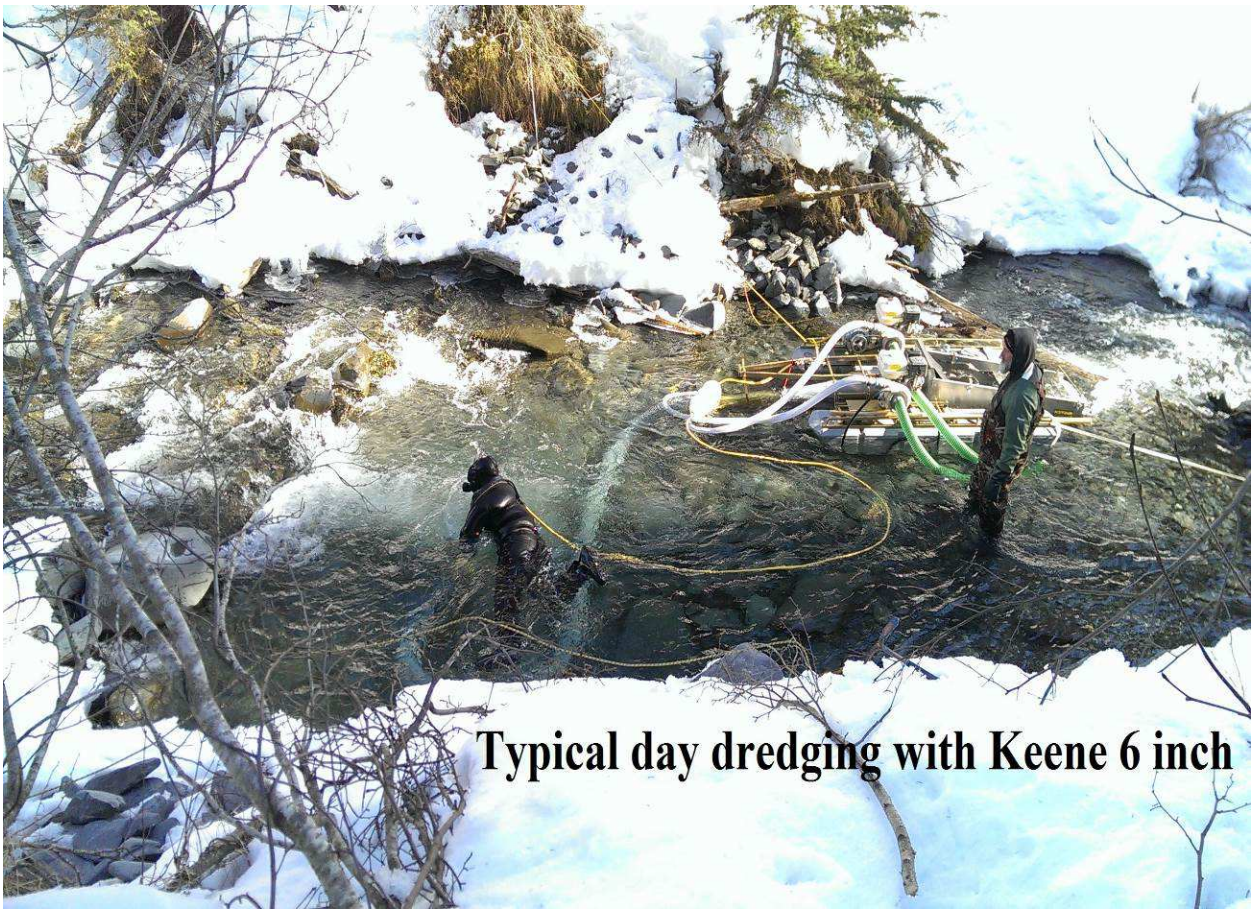


Figure 5. Dredging with 6" Dredge Running

The 6” hose is seen under water near the miner. The dredge is roped to trees on the bank. Gravels are returned to the streambed at the dredge. An 8” dredge would be operated in a similar manner, though the dredge is larger. The nozzle is necked down 1” from the hose size so that rocks do not lodge in the hose.

Figure 6. A Section of Road on Liberty Claim #15

The section of access road in Figure 6 was taken over by Eldorado Creek during the June 2014 flood. The plan would be to plug the break in the creek bank (upstream just out of the picture) by scooping out enough gravels from the stream bed to fill the break and return the flow into the former stream channel. The access road surface would then be brushed and leveled for vehicle traffic.

Figure 7. A Section of Access Road Taken Over by Eldorado Creek on Liberty Claim #15

Figure 7 is looking downstream toward Figure 6, approximately 260 feet away. Once the water is diverted back into its pre-flood channel, this section of access road would be brushed and leveled for travel. The width of the access road would require minimal brushing such as cutting a few alder branches.

Figure 8. A Section of Road on Claim #15

The photo shows how the flood removed much of the fines from the access road, leaving a rough surface to navigate. Leveling the access road surface in this section would require using the available small material and flood debris to fill in between the larger boulders.

Figure 9. A Section of Road on Claim #17

The photo shows a section of access road that needs leveling. There is abundant material in the nearby flood debris and roadbed that can be used to smooth out the holes and boulders.

Figure 10. This Section of Road is on Claim Liberty #18

This photo shows a section of access road where the impacts to the road from the June 2014 flood would not affect vehicle travel.

Figure 11. Former Rockfall Area One Mile Below Claims

This photo shows remnants of the rockfall that used to narrow the creek valley about ¼ miles from Kantishna. Many of the larger rocks were moved over 100 feet during the flood. Due to the narrowness of the valley, the access road and the creek are the same at this location.

Figure 12. Landslide on Lower Eldorado Creek

This photo shows a small landslide that came down to the creek during the June 2014 flood and covered the access road just upstream of the canyon in Figure 11.

Suction Dredge Equipment

Three dredges of different sizes could be used, though no more than two at a time.

4" Keene Dredge with a 5.5hp Honda motor and a T80 hookah air compressor: The maximum gravel run would be approximately 1.5 cubic yards an hour. Every clean out of the sluice box would produce approximately 2 gallons of concentrates. The dredge is approximately 6' long and 4' wide, weighing around 200 pounds.

6" Keene Mini Dredge with twin 5.5hp Honda motors and a 263 hookah air compressor: The hose would have a 6" diameter and the nozzle would be about 5". The maximum gravel run would be approximately 3 cubic yards an hour, though the plan is to run a maximum of 3-4 cubic yards per day. Every clean out of the sluice box would produce approximately 4 gallons of concentrates. The dredge is approximately 8.5' long and 5' wide, weighing around 450 pounds.

8" Keene Dredge with twin 23hp Vanguard motors and a 263 hookah air compressor: The hose would have an 8" diameter and the nozzle would be about 7." It is estimated to use 5 gallons of fuel per 4 hours. This dredge is known to run no more than 6-8 cubic yards a day. Every clean out of the sluice box would produce approximately 8 gallons of concentrates. The dredge is approximately 12' long and 8' wide, weighing around 1500lbs.

Other equipment would include a handheld metal detector, two Honda EU2000 generators, and one Lewis Winch with a Stihl chainsaw motor. The winch has a 3000lb pulling capacity with a 5hp motor.

200 gallons of gasoline or less would be stored at any given time for main mining operations. Fuel would be in 55 gallon and smaller containers. Fuel would be stored in an 8'x10' storage building which would be located over 100 feet away from Eldorado Creek. All fuel used for suction dredge equipment would be stored in 5 gallon containers

Temporary fuel storage for the excavator used for the Eldorado road improvements would be needed. Up to 500 gallons of diesel fuel in 55 gallon containers would be placed in a secondary containment container or berm, initially near the beginning of the Eldorado Creek mining route and at least 100 feet from the creek.

Figure 13. A Gold Cube Used for Processing Suction Dredge Concentrates

Two Gold Cubes would be used to process concentrates from dredging. They would be used in a recirculating system in a 50-100 gallon tub. They run at approximately 10 GPM and would be used 1-4 times a week. Each unit can process 4 gallons of dredge concentrates per hour. They run off a deep cycle battery

Proposed Suction Dredge Operations

At the beginning of every mining season a period of about one week would be required to bring in gear and supplies and also to do maintenance and repairs on equipment, structures and road maintenance. At the close of the season about one week would be needed to stow away all mining gear, winterize camp and haul out some equipment/gear not being stored over the winter. An extra trip into the claims for the beginning and ending of the season is anticipated.
During the approximate 100 day mining season roughly 80 days would be spent at the operation. Trips into the claims for operations would last approximately 1-2 weeks followed with 3-5 days off to resupply and take care of personal responsibilities. During the mining season one or two

of the miners may elect to stay at the mining camp while a resupply trip is taken. Potentially a miner or two could be on the location of operations the whole mining season.

For most mining operations, two miners would be at the claims working together. Occasionally, there could be up to four miners (including DeVault) at the claims at the same time. Based on experience at other creeks, the miners would work approximately 8-14 hours a day with an average day being 12 hours. Actual dredge run time would vary from 5-10 hours a day with 6-8 hours being the average.

All suction dredging would be done within the normal high water level of Eldorado Creek and instream. No undercutting of stream banks would occur at any time during operations. Reclamation of dredging operations would coincide with the dredging activity.
During sampling and production phases, a power winch would be used several times a day for the purpose of moving rocks, cobbles and boulders from the dredge area. This material would remain in the creek and be placed within 50 feet of the dredging area in such a manner that it would appear as though they were placed there by high water or floods.

Phase 1 - Sampling: This phase includes exploration, prospecting, and sampling. The work would first take place with a 4" or 6" dredge to look for a valuable deposit. Once a valuable deposit is found phase 2 would commence. All samples taken would be processed through phase 3.

Phase 2 - Production: Production would be accomplished with either the 6" or 8" dredge. The operator would construct a small rock wall 1 to 2 feet high across the active stream channel. This would create a temporary impoundment to allow the dredge to float. The miner would submerge the intake nozzle into the gravel streambed. Water and gravel would be drawn into the intake hose by the suction pump. The material would be pumped into the sluice box to separate the gold from the gravel. The processed gravel and used water would then be discharged into the impoundment/stream from the sluice box. Depending on the size of the dredge, all gravels 5 (or 7) inches and smaller would be processed through the floating sluice box. Material larger than 5 (or 7) inches would be moved out of the way by hand and then moved back into the dredge hole. After overburden (barren gravel/alluvium) is dredged, the operator would use hand tools to break open fractured bedrock and use the dredge to extract concentrates from the bedrock. As operations move upstream the dredge would redeposit smaller gravels over the mined bedrock surface. In this fashion reclamation would be concurrent with the rest of the operation. Once the area of a valuable deposit is mined, phase 1 would commence again. All production concentrates would be processed in phase 3.

Phase 3 - Clean-up and Processing of Gold Concentrates: This would be the final step in all gold recovery. The samples from phase 1 and the production concentrates from phase 2 would be run through the Gold Cubes in a recirculating system to greatly reduce gravels and gold concentrates. Panning and drying are the final steps in this phase. Clean-up would be at or around the 20'x10' EZ-up type canopy near the cabin and storage building.

Processing capacities and flow rates vary on the material being run. The maximum processing capacities are for running loose overburden and material that does not have good paying gold.

Gold rich gravels are run at a rate approximately 50 percent less than non-gold rich overburden gravels. Once bedrock is reached capacities slow down even more depending on how much the miner works the bedrock cracks and the richness of the gold deposit.

During operations there could be times during the season where 2 dredges would run at the same time, either in the same location or at different locations on the claims. When this occurs, phase 2 would typically be ending at one area and other miners have switched to phase 1, looking for a new deposit.

Further reclamation consists of breaking down or leveling any dams that were constructed to a natural/pre-mining contour and grade when the dredge is moved or at the end of the season. Any oversized rocks removed from the dredging area by hand would also be returned to the dredged area. Suction dredge mining operations would occur in areas normally covered by water within the submerged portion of the active stream area. During flood events, high discharge and increased turbidity levels cause suction dredge operations to shut down due to safety and visibility concerns.

A metal detector and hand tools may be used in previously disturbed areas. The operator proposes to use a metal detector for the purpose of prospecting and sniping nuggets in exposed bedrock areas. Metal detector activities could occur anywhere within the 118 acres encompassed by the claims. A hand-excavated exploratory hole would typically be less than 1 cubic foot. If the metal object causing the signal is not gold or other precious metals, it would be reburied into the small excavation. No vegetation would be removed or disturbed. Dug with a shovel or hand spade, a prospect hole is generally less than a 1 foot in diameter and less than 1 foot deep. Digging a one foot hole with hand tools/shovel would impact soils and vegetation in a 1 to 3 square foot area or less. All sites would be reclaimed (filled back in) at cessation of operations at that site. DeVault anticipates that the annual total surface disturbance from this mining component would be between100 and 200 square feet.

The mining season would be approximately June 10th to September 15th. Phase 1 (sampling) and 2 (production) would occur consecutively and continuously throughout the operations. Phase 3 (cleanup of gold concentrates) would commence on a daily basis during phase 1 (sampling). If in phase 2 (production), then phase 3 (cleanup of gold concentrates) would occur approximately once a week.

Site Structures

The Comstock Cabin would be rehabilitated as living quarters for the miners. All rehabilitation work would need to meet the Secretary of Interior's Standards for Historic Preservation. No new penetrations of the walls or roof would be allowed. The cabin would be lifted off the ground and a new treated wood foundation would be installed. The door and windows would be repaired or replaced with historically appropriate replacements. A wood stove would be installed with approved piping and spark arrestor. All firewood to be used would be brought into the park from an outside source. None of the features at the site (rock walls, adits, etc.) should be disturbed.

A 12'x24' temporary equipment storage building would be constructed using standard building materials for storing dredges, ATVs, equipment, tools, water, food and supplies. It would be built

near the cabin. An 8'x10' temporary fuel storage building would be located approximately 650 feet south of the cabin to provide a safe 100 foot distance from any waterway.

A 4'x4'x8' Outhouse on skids would be built and placed near the fuel storage building. It would be at least 100 feet from Eldorado Creek. A 3'x3'x3' pit would need to be dug at location for human waste.

A 6'x8'x8' temporary sauna/bath/shower house on skids would be built. A wood stove would be installed with approved piping and spark arrestor. All wood to be used would be brought into the park from an outside source.

A temporary 10'x10' E-ZUP type canopy with mosquito netting would be put up and taken down upon entry and exit to the operation on an as needed basis. Mainly, its use is for on work site location to provide shelter and protection from mosquitoes. It would be placed on disturbed locations, such as the access road.

A temporary 20'x10' EZ-up type canopy would be used next to the storage building or the Cabin. It would be put up and taken down at the start and end of each mining season. Its purpose is for shelter for running phase 3 (Clean up and processing of gold concentrates) and also for ATV parking out of the weather during operations.

At times a 12'x12' wall tent or similar shelter would be erected for temporary living quarters next to the cabin. It would be used during times of the rebuilding of the cabin or as needed.

A small rain water catch system would be used for potable water. Storage would be in one or two 55 gallon containers and would consist of a simple rain gutter and piping attached to the 12'x24' storage building.

All trash would be removed from the claims/park every 7-14 days and would coincide with re-supply trips.

Environmentally Preferable Alternative

As stated in Section 2.7 (D) of the NPS Director's Order 12 Handbook (NPS implementation guidelines for NEPA), "the environmentally preferred alternative is the alternative which would best promote the national environmental policy expressed in NEPA (101((b)). The environmentally preferable alternative is the alternative that not only results in the least damage to the biological and physical environmental, but that also best preserves, and enhances historic, cultural, and natural resources." The No Action alternative is the environmentally preferable alternative because no environmental impacts would occur.

Mitigation and Monitoring

Mitigation measures are specific actions that when implemented reduce impacts, protect park resources, and protect visitors. The following mitigations would be implemented under each action alternative and are assumed in the analysis of effects.

General
Vehicular access to the Eldorado Creek valley would not be available until June 10th of the year, in order to protect the migration of Arctic Grayling to the productive fish habitat of Upper Eldorado Creek. Annual suction dredge reclamation would be completed by September 15th of each year in order to provide adequate timing for downstream migration to the wintering habitat in Moose Creek. The dates could be reviewed annually to incorporate information from additional fish surveys.

A detailed list of conditions that would be attached to the plan are included in Appendix B.

Fuel Management
All fuel stored would be placed in a secondary fuel containment container or berm inside the storage building. Two 55 gallon and two 5 gallon spill kits would be on hand at all times. A 5 gallon spill kit would be on location where any 5 gallon container of fuel is being used. All miners would be trained on responsible use of refueling and spill kit usage. Fuel absorbing pads would be in place when refueling any dredge that is instream. Any used absorbing pads or spill kits would be removed from the park at the time of resupplying and immediately replaced.

Mining Equipment
Reclamation of mining sites would be concomitant with operations; it would include concurrent back-filling with tailings, and removing any dams, and leveling tailings piles to an approximate pre-mining topography and natural condition. The original grade and contour would be reestablished. Tailings would be redeposited immediately into the excavation, when feasible or shortly thereafter. Bedrock and large boulders which are removed during the operations would be replaced in the hole as the dredge advances.

Upon cessation of mining, the unfilled portion of all pits would be back-filled by hand with gravel and material removed from the excavation. Reclamation of the dredged site would include spreading gravel and rocks used in dam construction or accumulated piles of processed gravel/tailings on the stream bed at the end of each season to eliminate any obstruction to the stream. Excavations/holes would be backfilled filled. Equipment would be stored at the Support Camp at the end of the season. Debris would be burned or transported out of the park.

Periodic high water flow regimes on Eldorado Creek result in sediment transport that would fill in depressions and reestablish natural grades and conditions. The operator's reclamation in conjunction with and ongoing natural processes would provide for restoration of the stream contour and gradient.

Final reclamation at the end of approved mining operations would consist of removing all equipment and supplies transported to the site to support authorized mining activity and removing and disposing of all garbage, refuse and waste transported to the claims in support of authorized mining activity.

Vegetation
Vegetation cleared for road rehabilitation would not be disposed of in the creek.

Wildlife and Habitat

The mining operators would follow established guidelines in the park's bear-human conflict management plan. The plan requires use of bear-proof containers for food and refuse, and sets up guidelines for temporary closures.

To avoid destroying and/or disturbing occupied bird nests and cavity trees within the project area in accordance with the Migratory Bird Treaty Act (MBTA), park staff would implement appropriate protective measures to protect any occupied bird nest discovered within the project area during the road rehabilitation phase.

Cultural Resources

If cultural resources or items protected by the Native American Graves Protection and Repatriation Act are discovered while working under an approved MPO, all project related activities in the vicinity of the discovery would be stopped and the park archaeologist would be notified immediately. Denali National Park and Preserve, in consultation with the State Historic Preservation Officer and other consulting parties, would determine a course of action per 36 CFR Part 800.13.

Due to the potential for adverse effect, the park archaeologist would determine if periodic monitoring of ground disturbance during road rehabilitation and siting of temporary structures would be needed.

Visitor Experience and Opportunity

Visitors would be advised of any approved MPO activities.

Table 1. Summary of the Alternatives

ACTIVITY	**Alt. 1 – No Action**	**Alt. 2 – MPO with Conditions**
Access Road Work	None. Access road would remain impassable for all vehicles.	Access road would be rehabilitated for three miles for truck and ATV use to the upper end of the mining claims.
Suction Dredging	None	Suction dredging with 6 and 8 inch hoses would affect 100 to 800 linear feet of streambed per mining season. Mining the full length of the claims could require up to 80 years; though floods could re-sort the gravels and make it useful to re-mine areas. The plan would be approved for ten years.
Staging and Housing	No change	The miner would rehab the Comstock Cabin for his use, provide a new outhouse and other outbuildings and temporary structures as necessary to protect supplies and equipment from the elements and wildlife. Housing and structures would be on disturbed areas of the mining claims.

Table 2. Summary Impacts of the Alternatives

IMPACT TOPIC	Alt. 1 – No Action	Alt. 2 – MPO with Conditions
Vegetation and Soils	Continued vegetation infill in previously disturbed areas.	Removal of flood debris on access road would set back natural revegetation of disturbed areas by many years.
Wildlife and Habitat	Habitat would improve through vegetation growth on access road.	Removal of flood debris on access road and vehicle use during ten years of mining would reduce herbivore habitat for decades.
Aquatic Resources	No change	There would be temporary disruptions of local macroinvertebrate and grayling populations where mining occurs. Macroinvertebrate and fish stocks should rebound each year in the mined reaches.
Floodplains	Continuation of no vehicle use would help restore floodplain habitat. Turbidity and erosion would lower as the stream re-armors after the 2014 flood.	Rehabilitating the access road for vehicle use would disturb the stream banks at the crossings and re-mobilize some stream sediments. Suction dredging would temporarily loosen streambed structure, with some turbidity increases for a short distance downstream of the mining.
Cultural Resources	No change. Comstock Cabin foundation would continue to slowly decay while resting directly on mine tailings.	Use of Comstock Cabin by miner for housing would improve cabin foundation and extend its life.
Visitor Experience and Opportunity	Hiking access in the valley would be slower as the access road gets overgrown.	Access for hiking and likely local biking and ATV access would be improved or made possible by rehabilitating the access road. Some visitors may enjoy viewing the mining; others may not.

III. AFFECTED ENVIRONMENT

Detailed descriptions of the environment in the Kantishna Hills may be found in the 1990 Cumulative Impacts of Mining Environmental Impact Statement for DENA (NPS 1990) and in the Kantishna Hills Drainage Histories (Buzzell, 1988). This section summarizes the natural and human environment that may be affected by the proposal.

The project is located in the Kantishna Hills, an area with five park visitor lodges operating during the summer season. The project area is confined to the Eldorado Creek valley near Kantishna. The claims start about 1.5 miles above the junction with Moose Creek and extend about 1.6 miles along the creek valley.

Eldorado Creek Valley

Eldorado Creek flows north and northeast on the south flank of the Kantishna Hills and drains 12.5 square miles before its confluence with Moose Creek near the mouth of Eureka Creek. Eldorado Creek flows through a relatively narrow bedrock-walled valley at a stream gradient of 2.8 percent to 4.8 percent with an average of 3 percent. During the summer the instream average discharge of Eldorado Creek is 17.6 cubic feet per second. The Eldorado Creek floodplain varies from 50 to 300 feet wide, but is usually is usually no more than 150 feet wide, with moderately steep slopes rising above on both sides. The two principal tributaries of Eldorado Creek are Slate Creek and Reinhart Creek, with locally-named Iron Creek flowing into Eldorado Creek in Liberty #17. Reinhart Creek is an unmined stream of 2-3 cfs that enters Eldorado Creek just downstream of the Comstock Cabin in Liberty #16. Slate Creek averages about 8 cfs and has been heavily mined in its upper reaches.

Mining

Lode mining for stibnite/antimony on upper Slate Creek has helped to expose heavy metals to erosion. Water quality sampling on Slate Creek has documented that Slate Creek waters have the highest concentrations in the Kantishna Hills of aluminum, antimony, arsenic, beryllium, iron, rubidium, and uranium, and they are among the highest in chromium and lead, though surprisingly low in mercury (Brabets and Ourso 2013). The recent sample site for Eldorado Creek was about 1 mile below the Liberty claims, and the mainstem of Eldorado Creek concentrations were high for antimony, arsenic, beryllium, cadmium, iron, nickel and highest in the Kantishna Hills for cobalt, copper, manganese, yttrium and zinc (Brabets and Ourso 2013, p.49)

One of the main antimony deposits in the Kantishna Hills is in the Slate Creek watershed and occurs as a quartzite unit of the Birch Creek Schist. The mine produced about 679 tons of hand-picked antimony ore; production from about 1916 to 1945 (end of World War II) totaled about 325 tons of ore averaging 49 percent antimony. From World War II to 1983, the mine produced about 354 tons of ore that averaged about 60 percent antimony. About 22 tons of antimony ore was produced in 1983.

Analyses of trace elements in samples of the water column indicated that concentrations of antimony at Slate Creek exceeded U.S. Environmental Protection Agency (USEPA) guidelines for drinking water. Arsenic concentrations at Slate Creek exceeded USEPA guidelines for

drinking water in about one-half of the samples. Iron concentrations at Slate Creek exceed the threshold concentrations for chronic toxicity for aquatic life. Antimony and arsenic concentrations in streambed sediments were 5,800 and 3,900 micrograms per gram at Slate Creek, and 490 and 690 micrograms per gram at Eldorado Creek, respectively. Concentrations of arsenic, cadmium, chromium, copper, lead, nickel, and zinc in streambed sediments exceeded sediment quality guideline thresholds that could be toxic to aquatic life.

In addition to the Slate Creek Mine, other mining occurred in the Eldorado Creek watershed. The Neversweat Mine (also known as the Comstock of Bonnell Mine) is located approximately 3 miles upstream of its confluence with Moose Creek. In approximately 1930, Johnnie Busia staked a silver-lead lode claim on the east side of Eldorado Creek. Busia called his prospect the "Neversweat" Mine and sometime during the 1930s, he drove a forty foot adit into a steep rocky outcrop a few feet above the creek level. The adit failed to encounter a vein and Busia started an open cut at 100 feet and then another at 150 feet uphill from the adit. The cuts also failed to locate a mineral vein and there are no reports that Busia shipped any ore from the mine in the 1930s. Frank Bonnell acquired the claim in the 1950s and dug at least three new adits above the 1930s adit. In the 1970s, Jim Fuksa of Fairbanks acquired the Neversweat Mine and did some development work as part of maintaining a series of eight lode claims known as Comstock #1 through #8. Identical to Busia's efforts in the 1930s, there is no record that any ore from the mine was shipped to market through the mid-1970s and the mine has been inactive since then.

Placer mining is reported from Eldorado Creek during the first decade of mining in the district. In 1916 the USGS reported that there was evidence of past mining activity at several places on Eldorado Creek, especially "at a point 2 miles upstream from the mouth," but that the gold was reported to be too unevenly distributed for successful mining and there was no one working the stream that year (Capps 1919). One operator was reported working in 1925, but no production of gold is recorded for the stream and a 1987 survey found no physical evidence of early placer mining activity. There is evidence of mobilization of pipe and equipment to mine, without actual placer mining activity from the early 1980s on Liberty 17, where a small tributary comes in.

Mining also occurred along Eldorado Creek near its mouth at Moose Creek. Mining began around 1916 and was abandoned for many years until 1975. In 1982, two placer mining operations using backhoes worked a large area of the Eldorado-Moose Creek floodplain. Water was drawn from the Eldorado and Moose Creeks for wash plant operations, but all the effluent was discharged into a series of large settling ponds constructed parallel to Moose Creek. Lower Eldorado Creek stream channels were cut and moved several times in the process of mining different areas.

Vegetation and Soils

The slopes of the Eldorado Creek valley are generally forested with small to medium-sized white spruce, with patches of willows in rivulet drainages and alders on thinner soils. The floodplain has scattered white spruce including some denser patches of spruce where the floodplain is wider. Most of the riverbanks, road edges, and other wet areas, however, are covered by willows, and alder is also common. Occasional cottonwoods are also found. No evidence of fires was found, but it is likely that a primary growth of spruce was cut during the early twentieth century for mining-related use or for firewood.

Two generic soil types occur in the project area. One soils type underlies upland forested areas and is gravelly or boulder filled, often with a thick surface layer of silty soil, with humus layers supporting mosses and lichens. Discontinuous permafrost would be expected on the north-facing slopes and under the thickest areas of silty soil on the other slopes. The other soil is in the riparian areas, with a gravelly or cobble-filled, silty soil without a thin organic layer. Boulders deposited by past glacial movement are common in the floodplain and streambed.

Wildlife Values and Habitat

The landscape surrounding Eldorado Creek is typical interior Alaska habitat for moose, black bears, grizzly bears, wolves, red fox, snowshoe hares, red squirrels, small mammals, and various birds such as chickadees, ravens, magpies, and numerous migratory species. No Dall sheep are found in the Kantishna Hills. Caribou are more likely on the windswept ridges at higher elevations than in the valley bottom. Local caribou populations are low, and Alaska Department of Fish and Game closed caribou hunting in Unit 20C, including the Kantishna Hills, in 1976. Very limited moose hunting by local rural residents from Cantwell has occurred in the Eldorado Creek drainage.

Aquatic Resources

As discussed above, the water of Eldorado Creek is high in various heavy metals. Much of the concentrations come from the waters of Slate Creek that drain a metal-rich area where fresh surfaces have been exposed by lode mining and vehicle use. The input of heavy metals from the disturbed floodplain and other mined areas of Slate Creek is mixed with the pristine waters of upper Eldorado Creek in the mainstem of Eldorado. Eldorado Creek below Slate, unlike Eldorado above Slate, also has some bedrock exposures that evidence low pH and high metallic inputs, such as iron. "Stinky springs" were noted by Moffit in 1930 (Moffit 1932) and are still noticeable on middle Eldorado Creek (Liberty #15) where hydrogen sulfide release is evident, and iron deposition on the stream rocks is common due to low pH in the water. Below Slate the bottom substrates are clean and smooth and are not covered with periphyton or algae.

Upper Eldorado Creek above Slate Creek is a tundra stream, with a narrow channel, lower gradient than downstream and overhanging banks and cooler waters. The bottom substrate is covered with a heavy growth of dark brown periphyton, algae, and mosses. No mining or other disturbance to the floodplain surface occurred there. In one study, upper Eldorado Creek was found to have 40,035 macroinvertebrates per square meter, among the highest concentrations of macroinvertebrates of any stream in interior Alaska (Wedemeyer 1987). That number included five times as many insects per square meter as nearby Jumbo Creek, also an unmined stream that flows at a low gradient through tussock tundra. Invertebrate densities in upper Eldorado Creek are high, even when compared with studies on temperate streams (Cowan and Oswood 1984, Figure 4). Early estimates of a 2014 sample taken after the June 2014 flood (Henderson in prep) indicate equally high densities, perhaps even exceeding the 1984 samples.

A study of fish resources in the Kantishna Hills in 1982 found that for upper Eldorado Creek:

> "…this portion of the stream supports the largest grayling population in the Eldorado Creek drainage, contains the highest quality feeding (and possibly spawning) habitat,

> and…exhibits the highest catch rates of Arctic grayling so far documented in the Kantishna Hills." (Meyer and Kavanagh 1983, p.74)

Arctic grayling "probably migrate upstream from overwintering areas between mid-April and late May," and most "grayling spawning in the Kantishna Hills probably takes place from early May through early June" (Meyer and Kavanagh 1983, p.119). Because of lingering ice in the streambed of Eldorado Creek, migration would usually be toward the end of May. During the brief summer, Arctic grayling are voracious feeders. They will eat almost anything that moves, but drifting aquatic insects, especially black flies, mayflies, stone flies, and caddis flies are their primary food items. The macroinvertebrate populations and fish populations indicate that Upper Eldorado Creek is a highly productive. Because Upper Eldorado will generally freeze solid in winter, Arctic grayling begin migrating out of Eldorado Creek by the second or third week of September, and the grayling will over-winter in Moose Creek, a much larger stream.

Cultural Resources

The only known historic sites within the Eldorado Creek drainage are related to lode mining. Cultural resources in the Eldorado Creek valley include the Comstock Cabin - and related features - which has been determined eligible for the National Register of Historic Places. Five other historic sites in the Eldorado Creek drainage are the Eldorado Tractor Road, Slate Creek Mine on upper Slate Creek, Brooker Mountain Cairn, Slate Creek Airstrip, and Alpha Ridge Lode Mine near the top of the ridge to the north of the Liberty claims. Four of these historic sites are not easily reached from the Liberty claims and they would not be affected by an MPO on Eldorado Creek. The Eldorado Tractor Road would be made usable for vehicle traffic, though it would not be lengthened, widened, moved, or covered with other than native materials.

Visitor Experience and Opportunity

During the summer months there is some backpacking in the Eldorado Creek valley, usually heading for the ridges surrounding the upper Eldorado area where there are excellent views of the Alaska Range, potable water, wind, and fewer mosquitos. Some day-hiking starting out of the Kantishna lodges would also head up the Eldorado Creek mining route, though as the road has deteriorated through time that option has become less attractive. Horseback day trips up the Eldorado Creek valley used to be offered at one of the lodges for about ten years prior to 1996, but that business left the area. Limited hunting for moose by authorized subsistence users from Cantwell has occurred, averaging less than one hunter per year. Caribou hunting in Alaska Game Management Unit 20C was closed by Alaska Department of Fish and Game and would not be available to subsistence hunters.

IV. ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

Assumptions for Impact Analysis

This section contains an evaluation of the direct and indirect environmental impacts of one action alternative and the no action alternative. The analysis assumes that the mitigation identified in the *Mitigation and Monitoring* section of this environmental assessment would be implemented under the action alternative.

Cumulative impacts were analyzed to add up the incremental impacts to the environment resulting from adding the alternatives to other past, present, and reasonably foreseeable future actions. The cumulative impacts relate primarily to reclamation of the disturbance from placer mining in streams in the Kantishna Hills, including at the mouth of Eldorado Creek, and from facility use at lodges on private property in Kantishna as well as management facilities in Kantishna such as the Friday Creek Camp and the Kantishna Airstrip.

Alternative 1 – No Action

Vegetation and Soils

No vegetation, soils or wetlands would be removed or disturbed under this alternative. Reclamation of the mining route up the Eldorado Creek valley would continue as a result of future high water events and vegetation infill, because the mining route is presently impassable for trucks and other vehicle use would be prohibited.

Wildlife Values and Habitat

Wildlife habitat in the Eldorado Creek valley would not be removed under this alternative, except when hiking parties would walk through or camp overnight. Reclamation of the access road up the Eldorado Creek valley would continue to provide increased wildlife habitat as a result of future high water events and vegetation infill, because the access road is presently impassable for trucks and other vehicle use would be prohibited

Aquatic Resources

Aquatic resources in the Eldorado Creek valley would not be affected under this alternative. High concentrations of some heavy metals, limited pools in the creek, and periods of low flow would continue to limit macroinvertebrate populations and fish habitat in the areas of the mining claims. Flying insect populations would remain high, and macroinvertebrate populations upstream in Eldorado Creek above Slate Creek would continue to provide restorative populations on lower Eldorado Creek. The higher than average heavy metals concentrations in Eldorado Creek would continue to depress the food resources in the creek for Arctic grayling. Grayling would annually migrate through middle Eldorado to reach the abundant macroinvertebrate populations on upper Eldorado Creek.

Floodplains

The floodplain of Eldorado Creek would be beneficially affected by this alternative since the ongoing reclamation of past mining impacts - including the access road - sped up by the June 2014 flood, would likely continue. Based on the speed of the revegetation after mining ceased on lower Eldorado Creek, the existing and continuing redistribution of fines and plant seeds would cause the access road to be covered with willows and alders within ten years. The stream is likely

to change channels at spring breakup or during other high water events which would also tend to return the floodplain to a natural condition.

Cultural Resources
The Comstock Cabin has been determined eligible for the National Register of Historic Places and would be not be used for housing under this alternative. No cabin rehabilitation is planned at this time. No other historic properties in the Neversweat Mine Complex cultural landscape or in the Eldorado Creek Valley would be affected.

Visitor Experience and Opportunity
This alternative would not improve or diminish recreational opportunities. Visitors hiking upstream in the Eldorado Creek valley would need to be prepared for a wet walk, as the main trail (the access road) crosses the creek over 20 times and recent flooding has caused the stream to braid with the road in numerous places. Access up stream would continue to get worse for hiking as the road infills with vegetation.

Cumulative Effects: The impacts of this alternative to resource values, including vegetation and soils, wildlife habitat, aquatic resources, cultural resources, and visitor experience and opportunity, would be beneficial. Natural reclamation would continue; the Eldorado Creek access road would not be available for vehicle use. New growth of vegetation on the access road would provide additional wildlife habitat.

Alternative 2 – DeVault Mining Plan of Operations with Mitigations (NPS Preferred)

Vegetation and Soils
Under this alternative less than 0.5 acre of white spruce forest and willow shrub community would be removed for the rehabilitation of the Eldorado Creek mining route. The removal would consist of grading partially vegetated road sections to smooth out the travel surface and brushing branches and spruce and willow boles that extend into the vehicle path on the road. The limited vegetation removal from this alternative would be visible because the route to be cleared is the standard route upstream for any traveler in the valley, but the amount of vegetation removed would not reach 0.1 percent of the cover, either in the floodplain or in the Eldorado Creek valley as a whole. The gradual changes and increase in the vegetation that would come from natural revegetation of the access road without approval of this plan would be suspended during the life of the mining operations.

Surface disturbances in the active stream channel range from very minor to a complete reorganization of the unconsolidated gravel bed. Swell factor for the stream gravel ranges from 10 to 20 percent. The end result is that the stream is temporarily terraced and the material is size sorted. Although dams help trap sediment and retard sediment transport, terracing is more pronounced and can remain for a longer time interval, if the dams are not completely reclaimed.

Short-term effects caused by suction dredge mining within a stream channel include excavating a hole at the upstream end of the operation, processing overburden and fractured bedrock by the suction dredge, hand stacking tailings of oversized material adjacent to and within the dredged area, overturning cobbles and boulders which would remove the pre-existing protective surface

"lag" deposits. Once disturbed, the creek bed armoring would be weakened, compactness decreased and porosity increased making the stream bed gravel more susceptible to scouring and flood related impacts. As operations continue upstream a sufficient distance, the oversized material would be covered by dredge tailings. Fine sediments would mix with the processed gravel and/or would be transported below the site, generally being deposited within 100 feet of operations. Clay and some silt disperse farther downstream, though small suction dredge operations commonly do not exceed turbidity standards within 500 feet or less. The preexisting stream gradient and stream bed class size mixture would be temporarily changed until the stream reclaims itself. Sometimes the channel width would increase or the flow patterns change around the tailings piles. The channel location can change due to suction dredging; channel migration potentially can cause undercutting of stream banks. When the water channel is directed toward a gravel bank, gravel is eroded.

Impacts to channel substrate and morphology are temporary; often natural processes remove all physical evidence of suction dredging after the first flood event. A year after mining has ceased algae commonly reestablishes on the substrate by natural processes.

The operator proposes to use gravels and boulders to construct small temporary dams sufficient to float the dredge. The operator proposes to remove all dams once mining at that site has ceased. With small dam construction, minor amounts of additional creek bed would be submerged by increases in water level. The amount of dam-induced submerged lands depends upon bank slope and stream gradient. In areas of steep gradient it would be negligible but could submerge areas adjacent to the channel for a distance of 1 to 2 feet. Areas submerged by water due to small dams, lie within the zone normally subject to active channel influences. Dams that are in place during a high water event could alter stream flow and cause a minor change in the channel location. Construction of dams would not reduce stream discharge; water would flow through and over the dam. The operator would probably use 2.5 cubic yards or less of material to construct most dams

Around 1.2 acres (5,333 lineal feet by 10 feet wide) of access road surface would receive either light or moderate grading. This grading would consist of moving flood debris from areas where the flood piled it up, either on other parts of the access road surface or from the creek channel. The flood debris, including sand, gravel, cobbles and flat rocks, would be carried by the bucket or pushed by the blade on the excavator to areas of the road where fines had been stripped by the flood. No developed soil horizons exist in the access road, and the road work would replace lost gravels and rocks with other gravels and rocks piled up nearby by the flood. Some boulders would be moved to fill in low spots.

Cumulative Effects: The Kantishna Hills have been mined, both by placer operations and by lode mining, for over 100 years, though no mining has occurred since 1985. An estimated 1,555 acres and 33 miles of stream reach have been disturbed by mining (NPS 1990). Some minor disturbance from validity sampling at the creek edge has taken place up through 2002. Early mining efforts stripped all of the larger white spruce in the area to be used for mine timbers, cabin logs, and firewood. In the Eldorado Creek area, about 60 acres around the mouth of the creek was smoothed out by bulldozer in 1986 as required to get the mining reclamation bond released. Another half-acre was partially reclaimed in 1982 about 1/2 mile upstream. Alders and

willows have almost completed covered the 60 acres in the last 30 years, growing from a thin soil. White spruce will compete with cottonwoods over the next 50 years to overtop the alders.

Five summer lodges housing about 175 guests per night have developed on private land near downtown Kantishna since 1952, with expansion of lodge facilities continuing today at a low level. All of the lodges provide electricity for operations by running 25 to 100 kW generators, producing a low level of ambient noise within or near lodge property. The Kantishna Airstrip records up to 20 takeoffs and landing daily during the summer months for flightseeing, inholder access, and NPS research. The lodges have many day-hiking options for lodge guests. The incremental impact to vegetation and soils from implementation of this mining plan would be less than 0.1 percent of the total disturbance in the Kantishna area.

Conclusion: The 2014 flood provided an opportunity for vegetative recovery along the access road. This mining plan would reverse vegetative reclamation of the access road in the Eldorado Creek valley by rehabilitating the presently unusable access road for vehicle use. The suction dredge work would have annual temporary impacts to short reaches of the streambed. The streambed material in the short reaches should re-armor itself within a year during the next high water events. The bed of the access road would be re-disturbed in areas to improve the drivability. The re-distribution of fine material in the road could help vegetative growth once vehicle use stops.

Wildlife Values and Habitat

The acreage of habitat available for large mammals, small mammals, and birds would essentially not be reduced because the surface area of access road disturbance would remain about the same as it has been. However, the gradual changes to the vegetation and habitat that would come from natural revegetation of the road would be suspended. During the rehabilitation of the access road noise and human activity would disturb wildlife and cause animals to be temporarily displaced from the vicinity of the project area. During the suction dredging noise and human activity would be very localized at a short reach of the stream channel, and at the base camp area, and would cause wildlife to be temporarily displaced from nearby areas. There would be no impact during the fall, winter, and spring when there would be no mining activity.

Cumulative Effects: Approximately 1,555 acres of wildlife habitat has been disturbed in the Kantishna Hills from past mining, and all but a couple of acres of more recent lodge and other developments have taken place on former mined lands. The vast majority of the mined lands have been naturally reclaiming over the past 30 years and some areas on Slate Creek, Glen Creek, Eureka Creek and Caribou Creek have seen NPS projects to assist natural reclamation. To the extent that large mammals incorporate an avoidance area around human activity areas, the human activity out of the lodges near the mouth of Eldorado Creek would have a much larger impact than the average of two to four people mining with small equipment upstream on Eldorado Creek. The amount of wildlife habitat directly affected by mining or access road rehab would be minimal, though temporary avoidance areas could reach a couple of acres. The creek valley is surrounded by tens of thousands of acres with similar habitat.

Conclusion: Little wildlife habitat would be directly affected by this mining plan, though there would be temporary avoidance areas of a couple of acres at any one time for larger mammals.

Aquatic Resources

Monitoring of suction dredge operations shows temporary short-term changes in water quality parameters. When suction dredge operations process the gravel, there is local degradation of the water. Madison (1981) reports the following physical effects from suction dredging in a BLM report: increased turbidity, alteration of channels, including flow patterns and velocities, alteration of depth and width, altered scouring characteristics, changes to pool-riffle ratio, changes to particle size composition, deposition of fine material and gravel on riffle areas, and changes in water temperature.

Water quality effects of placer mining reported from investigations conducted within Chugach National Forest include: increased turbidity and suspended solids and temperature increases proximal to the mining operation. Trends reported for heavy and trace metals include a slight increase downstream from mining sites. Suction dredging and hand tool operations in the active stream channel has occurred while dredging on Bonanza Creek in Wrangell-St Elias National Park, but it was not identified as a concern during the geochemical investigation conducted by the USGS.

All areas within the flood plain are periodically affected by sediment transport and scour during flood events. Recently mined sections of the streambed would be less compacted and less armored against scour. Turbidity would likely increase during flood events below recently mined areas, at least until the flooding helps to re-armor the streambed and winter freezing and spring breakup helps to settle the fines available and cements the gravels together.

Fish are not common in the section of Eldorado Creek within the Liberty claims. The high populations of Arctic grayling found in Eldorado Creek above Slate Creek migrate upstream through the claims in middle to late spring and then again downstream in mid-September. The grayling migrations and populations should be little affected due to limiting the mining season to the period when the grayling are residing in upper Eldorado.

Macroinvertebrate populations in middle Eldorado Creek were recently investigated and found to be at low levels. This could be due to the high levels of heavy metals coming from Slate Creek waters as well as input from the bedrock exposures along middle Eldorado Creek. Future mitigation projects in the mined area of Slate Creek could reduce the heavy metal input to the stream, but any impact would likely be very gradual. High populations of macroinvertebrates on Upper Eldorado Creek insure that populations on the section of middle Eldorado Creek being mined would reestablish within a year after mining on that section was completed. It could be that high water at any time of summer would both flush macroinvertebrates out of a stream section and flush invertebrates from upstream down into that section.

Cumulative Effects: Arctic grayling predominantly use lower and middle Eldorado Creek as a migration route to reach the very productive habitat of upper Eldorado Creek. A prohibition on mining activities during spring and fall migration would protect this important resource. Low populations of macroinvertebrates are resident in the streambed of the claims, and short stretches of their habitat would be removed annually by suction dredging. This impact would be temporary for each area mined, as macroinvertebrate populations would start returning after mining is completed. The low numbers of resident grayling would have 100-800 feet of stream habitat unavailable each year.

Conclusion: The mining plan with mitigations would have temporary and very local impacts on aquatic resources.

Floodplains

The floodplain of Eldorado Creek would have ongoing adverse impacts for the next ten years. The reclamation and revegetation of the access road would be reversed and set back at least ten years after the end of mining. Moose, for example, are not lacking for trails in the Eldorado valley, and don't need the access road for travel from one part of the valley to another. The access road would not provide browse while being used for mining vehicle access.

The suction dredging would temporarily impact the habitat function of the stream by re-sorting the rocks and gravels in a small area. As mining moves and the mined area is abandoned, subsequent high water events would tend to re-armor the stream bottom, and the habitat for macroinvertebrates and Arctic grayling would return to normal. High water events in the valley are likely to cause more erosion the more disturbed area is exposed, and turbidity levels downstream during floods would be higher if the mining plan is approved. Heavy rains are usually forecast ahead of time in the Denali summer, so it is unlikely that there would be substantial risk to property, natural, or cultural resources or humans from flooding.

Cumulative Effects: Eldorado Creek has experienced mining impacts in the lower ¼ mile, in the upper Slate Creek area, and from vehicle use on the 7 mile long access road connecting the two areas. A small amount of lode mining in the Comstock area hardened one floodplain terrace above the streambed but generally did not affect the floodplain. The impacts to the floodplain from the mining plan would be to reverse some revegetation that has occurred on the access road and delay regrowth for the life of the plan. The June 2014 flood incorporated some segments of the access road into the stream system (braids) and rehab of the access road for renewed vehicle use would reverse this trajectory and tend to fortify the access road from encroachment by the stream.

Conclusion: The mining plan would reduce some floodplain functioning by rehabilitating the access road so that it is more separated from the potential to be incorporated as a stream braid. The suction dredging would temporarily remove short reaches of macroinvertebrate and grayling habitat. The affected reaches should return to normal functioning once the mining has moved upstream.

Cultural Resources

Use of the Comstock Cabin for living quarters during the mining operation would require various efforts at permanent and temporary rehabilitation and repairs to the cabin. Some permanent repairs include lifting up the cabin to place the whole structure on treated timbers to help prevent additional rotting or warping of the floor. The floor boards would be replaced that have warped around the door. Modern furnishings and trash would be removed. Temporary repairs would include installing temporary windows and a wood stove and stove pipe. These could be removed at the end of mining and the windows would be returned to their present condition. All rehabilitation and repairs would be required to meet the Secretary of Interior's Standards for the Treatment of Historic Properties and would require consultation with the State Historic Preservation Officer. The permanent rehabilitation of the cabin would ensure a longer life for the structure and would have a beneficial effect on expanding the understanding of the advantages of preserving cultural resources.

Cumulative Effects: The only known archeological or historic sites in the area of potential effect would be the Comstock Cabin and surrounding features of the Neversweat Mine Complex, and the Eldorado Tractor Road. Rehabilitation of the cabin would have a beneficial effect on that resource. Stipulations would be in place to prevent adverse impacts to the other features of the Mine Complex

such as the rock walls and collapsed adits. The access road would be rehabilitated to a usable condition, without adversely impacting its integrity of location, footprint, materials, or workmanship.

Conclusion: The permanent rehabilitation of the cabin would ensure a longer life for the structure and would have a beneficial effect on expanding the understanding of the advantages of preserving cultural resources.

Visitor Experience and Opportunity

There would be a long-term impact to recreational opportunities for Kantishna area visitors from the access road rehabilitation and mining activities. Access road rehabilitation would make it easier to hike up the Eldorado Creek valley as there would be less need to use the streambed as the trail given a smoother walking surface on the road. During the life of the plan, the mining operations could be interesting to some visitors and could be viewed unfavorably by other visitors who either do not expect or do not approve of mining operations in national park areas.

Cumulative Effects: Most of the visitor activities in Kantishna are guided and unguided hiking trips out of the lodges. Three to four park bus trips per day also drop off hikers who may be backpacking in the Kantishna Hills overnight or only staying for a short day hike. Eldorado Creek presently gets only a modest amount of visitor hiking because most visitors would have to wade across Moose Creek and then follow a flood-damaged access road for five miles or so before getting to open or alpine areas. The valley has a heavy population of mosquitos. The mining plan would change the visitor opportunity greatly by making the access road obvious and smoother, so that there would be faster travel and less route-finding to get to upstream parts of the valley with more interest. The suction dredging could be interesting to park visitors.

Conclusion: Visitor opportunities to hike in the Eldorado Creek valley and to travel quickly up the Eldorado Creek valley to reach alpine areas would be improved by rehabilitation of the access road. The suction dredging operation, to the extent that it is viewed by visitors as traditional or harmless, could be an attraction for individuals or even groups.

CONSULTATION AND COORDINATION

List of Persons and Agencies Consulted:

Ted Swem, U.S. Fish and Wildlife Service, Endangered Species Coordinator, Ecological Services Office, Fairbanks, AK

Phoebe Gilbert, Archeologist, Denali National Park and Preserve

Grant Crosby, Senior Historical Architect, Alaska Regional Office, National Park Service

Bruce Rogers, Environmental Protection Specialist, Wrangell-St. Elias National Park and Preserve

List of Preparers:

Steve Carwile, Compliance Officer, Denali National Park and Preserve

Britta Schroeder, GIS Specialist, Denali National Park and Preserve

Linda Stromquist, Geologist, Alaska Regional Office, National Park Service

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APPENDIX A
SUBSISTENCE - SECTION 810(a) OF ANILCA

SUMMARY EVALUATION AND FINDINGS

I. INTRODUCTION

This section was prepared to comply with Title VIII, Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA). It summarizes the evaluation of potential restrictions to subsistence uses in Denali National Park and Preserve that could result from the approval of a suction dredge mining plan of operations on Eldorado Creek in the Kantishna Hills.

II. THE EVALUATION PROCESS

Section 810(a) of ANILCA states:

"In determining whether to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands . . . the head of the federal agency . . . over such lands . . . shall evaluate the effect of such use, occupancy, or disposition on subsistence uses and needs, the availability of other lands for the purposes sought to be achieved, and other alternatives which would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes. No such withdrawal, reservation, lease, permit, or other use, occupancy or disposition of such lands which would significantly restrict subsistence uses shall be affected until the head of such Federal agency -

(1) gives notice to the appropriate State agency and the appropriate local committees and regional councils established pursuant to section 805;

(2) gives notice of, and holds, a hearing in the vicinity of the area involved; and

(3) determines that (A) such a significant restriction of subsistence uses is necessary, consistent with sound management principles for the utilization of the public lands, (B) the proposed activity will involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other disposition, and (C) reasonable steps will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions."

ANILCA created new units and additions to existing units of the National Park System in Alaska. Denali National Park and Preserve was created by ANILCA Section 202(3) (a):

"The park additions and preserve shall be managed for the following purposes, among others: To protect and interpret the entire mountain massif, and additional scenic mountain peaks and formations; and to protect habitat for, and populations of, fish and wildlife, including, but not limited to, brown/grizzly bears, moose, caribou, Dall sheep, wolves, swans and other waterfowl; and to provide continued opportunities, including reasonable access, for mountain climbing, mountaineering, and other wilderness recreational activities."

Title I of ANILCA established national parks for the following purposes:

". . . to preserve unrivaled scenic and geological values associated with natural landscapes; to provide for the maintenance of sound populations of, and habitat for, wildlife species of inestimable value to the citizens of Alaska and the Nation, including those species dependent on vast relatively undeveloped areas; to preserve in their natural state extensive unaltered arctic tundra, boreal forest, and coastal rainforest ecosystems to protect the resources related to subsistence needs; to protect and preserve historic and archeological sites, rivers, and lands, and to preserve wilderness resource values and related recreational opportunities including but not limited to hiking, canoeing, fishing, and sport hunting, within large arctic and subarctic wildlands and on free-flowing rivers; and to maintain opportunities for scientific research and undisturbed ecosystems.

". . . consistent with management of fish and wildlife in accordance with recognized scientific principles and the purposes for which each conservation system unit is established, designated, or expanded by or pursuant to this Act, to provide the opportunity for rural residents engaged in a subsistence way of life to continue to do so."

The potential for significant restriction must be evaluated for the proposed action's effect upon ". . . subsistence uses and needs, the availability of other lands for the purposes sought to be achieved and other alternatives which would reduce or eliminate the use. . . ." (Section 810(a))

III. PROPOSED ACTION ON FEDERAL LANDS

Alternatives 1 and 2 are described in detail in the environmental assessment. Customary and traditional subsistence use on NPS lands will continue as authorized by federal law under all alternatives. Federal regulations implement a subsistence priority for rural residents of Alaska under Title VIII of ANILCA.

The NPS proposes to authorize a suction dredge mining plan for ten years on the 118 acres along middle Eldorado Creek that comprise the Liberty #9 and Liberty #13-18 unpatented placer mining claims. The claims were found valid in 1999 and the valuable minerals within the claims belong to Eldorado Ventures LLC. The lessee, Kris DeVault, would be permitted to use up to an 8” diameter suction dredge to search for gold, generally in the bedrock below the stream bed. A short pool would be created in the stream bed to float the dredge/sluice box by stacking rocks and boulders from the stream bed to the top of the water while excavating all material above bedrock by hand. As the operator slowly moves upstream, the material removed will fill in the lower part of the pool behind him. The operator and helper will live at and around the Comstock cabin on the claims during the summer season, from about June 10-September 15.

IV. AFFECTED ENVIRONMENT

Subsistence uses within Denali National Park and Preserve are permitted in accordance with Titles II and VIII of ANILCA. Section 202(3) (a) of ANILCA authorizes subsistence uses, where traditional, in the northwestern and southwestern preserves of Denali National Preserve. Lands within former Mount McKinley National Park are closed to subsistence uses.

A regional population of approximately 300 eligible local rural residents qualifies for subsistence use of park resources. Resident zone communities for Denali National Park and Preserve are Cantwell, Minchumina, Nikolai, and Telida. By virtue of their residence, local rural residents of these communities are eligible to pursue subsistence activities in the new park additions. Local rural residents who do not live in the designated resident zone communities, but who have customarily and traditionally engaged in subsistence activities within the park additions, may continue to do so pursuant to a subsistence permit issued by the Park Superintendent in accordance with state law and regulations.

The NPS realizes that Denali National Park and Preserve may be especially important to certain communities and households in the area for subsistence purposes. The resident zone communities of Minchumina (population 22) and Telida (population 3) use park and preserve lands for trapping and occasional moose hunting along area rivers. Nikolai (population 122) is a growing community and has used park resources in the past. Cantwell (population 147) is the largest resident zone community for Denali National Park and Preserve, and local residents hunt moose and caribou, trap, and harvest firewood and other subsistence resources in the new park area.

The main subsistence species, by edible weight, are moose, caribou, furbearers, and fish. Varieties of subsistence fish include coho, king, pink and sockeye salmon. Burbot, dolly varden, grayling, lake trout, northern pike, rainbow trout and whitefish are also among the variety of fish used by local people. Beaver, coyote, land otter, weasel, lynx, marten, mink, muskrat, red fox, wolf and wolverine are important furbearer resources. Rock and willow ptarmigan, grouse, ducks and geese complete the park/preserve subsistence small game list.

The NPS recognizes that patterns of subsistence use vary from time to time and from place to place depending on the availability of wildlife and other renewable natural resources. A subsistence harvest in any given year many vary considerably from previous years because of such factors as weather, migration patterns and natural population cycles. However, the pattern is assumed to be generally applicable to harvests in recent years with variations of reasonable magnitude.

V. SUBSISTENCE USES AND NEEDS EVALUATION

To determine the potential impact on existing subsistence activities, three evaluation criteria were analyzed relative to existing subsistence resources that could be impacted.

The evaluation criteria are:

- the potential to reduce important subsistence fish and wildlife populations by (a) reductions in numbers; (b) redistribution of subsistence resources; or (c) habitat losses;
- the affect the action might have on subsistence fishing or hunting access; and
- the potential to increase fishing or hunting competition for subsistence resources.

The potential to reduce populations:

The mining-related activities could set up temporary avoidance areas next to the suction dredge, though no long-term impacts on wildlife habitat are expected.

The alternatives would not adversely affect the distribution or migration patterns of subsistence resources. Therefore, no change in the availability of subsistence resources is anticipated as a result of the implementation of the proposed action.

Restriction of Access:

The proposed actions are not anticipated to result in a significant restriction to subsistence access. Rehabilitation of a mining access route in the Eldorado Creek valley would make it easier for subsistence users to access the area. Access for Federal subsistence uses in Denali National Park and Preserve is granted pursuant to Federal and non-conflicting State regulations. Denali National Park and Preserve is managed according to legislative mandates, NPS management policies and the park's General Management Plan.

Increase in Competition:

The proposed actions are not expected to significantly increase competition for ANILCA Title VIII subsistence resources or uses on Federal public lands within the affected area. The miners would not qualify for subsistence uses themselves as they are not local rural residents.

VI. AVAILABILITY OF OTHER LANDS

Other lands are not available since the land interests involved are private mineral interests that cannot be transferred to other properties. The preferred alternative is consistent with the mandates of ANILCA, including Title VIII, and the NPS Organic Act.

VII. ALTERNATIVES CONSIDERED

The alternatives considered for this project were limited to the **1)** denial of the proposed mining plan of operations, as mitigated (no action); **2)** approved the proposed mining plan of operations as mitigated to protect fisheries and other park resources.

VIII. FINDINGS

This analysis concludes that the preferred alternative would not result in a significant restriction of subsistence uses.

APPENDIX B:
PROPOSED CONDITIONS TO ATTACH TO AUTHORIZATION TO MINE

ON THE LIBERTY CLAIMS

All future plans of operation supplements, revisions, modifications and/or amendments shall be submitted, in writing, to the Superintendent for analysis and determination of appropriate action. The operator shall notify the Superintendent, or the Superintendent's designee, prior to operations start up and end of season shut down to enable park staff to meet with the operator and conduct the required monitoring and compliance investigations.

The operator shall work with park staff in (1) documenting specific sites mined within the claims, (2) conducting field measurements to determine and verify (a) water usage, (b) volume of material processed, and (c) extent of surface area disturbed by operations, and (3) conducting trail reclamation and mitigation activities.

An annual report shall be submitted to the Superintendent by the permittee. The report shall be submitted by November 30 of the year in which operations were conducted. Authorization to continue mining operations the following year is subject to the operator's submitting an annual report. The annual report shall include, at a minimum, the following information:

a. Beginning of season arrival date on claims.

b. End of season departure date from claims.

c. Mining operations startup date.

d. Number of days dredging was conducted.

e. Number of days metal detector exploration was conducted.

f. Locations where dredging operations were conducted

h. Location on claims where exploration was conducted and methods employed.

i. Volume (cubic yardage) of material mined.

j. Volume processed by dredge.

k. Total linear footage of streambed worked.

l. Total surface area (square yardage) of streambed disturbed.

m. Total surface area (square yardage) of floodplain and uplands disturbed.

n. Average number of hours processing material daily.

o. Map showing locations of areas mined and prospected (explored).

p. Number of dams constructed.

q. Reclamation completed in previously disturbed, unvegetated areas.

r. Number of access trips taken by ATV

s. Condition of and/or problems with the access route.

t. Mitigation performed on access route.

u. Support facilities maintenance/construction conducted.

v. Volume of fuel used during the season.

w. Volume and location of fuel stored on claims over the winter.

x. Cultural resources found (description and map location) which are not on the maps provided in the environmental assessment, including items discovered during mining operations reported to the Superintendent as required under operating stipulations.

y. Operational changes to the approved plan of operations which occurred and may need to be considered as alterations to the plan of operations.

z. Future mining and exploration plans.

Vehicle (ATV) use shall be restricted to the single most used (disturbed) track on the existing trails. Access from the claims to the park road shall not exceed 50 ATV round-trips in support of mining activities per season. Trail mitigation techniques identified by the NPS shall be conducted. A "trip" consists of one round trip (travel in both directions with one truck or four-wheeler). Additional trips require prior approval, in writing, from the Superintendent.

On the Liberty claims vehicle (ATV) access is restricted to existing trails and to barren disturbed areas on the floodplain. Use of ATVs is restricted to support of mining operations. Recreational or other uses of ATVs is not permitted.

Modification or changes in transport vehicle or suction dredge mining equipment requires prior approval, in writing, from the Superintendent. The suction dredge may not be used, or setup for use, as a water jet to move gravel or other material.

Refueling of the suction dredge shall be done with the use of a large funnel and a catch pan under the fuel can. Fuel storage sites shall be bermed and lined with an impermeable layer such as visqueen. Storage of fuels shall be confined to the support camp and not in areas subject to flooding. Sorbent pads shall be kept on site. Fuel storage is not permitted on Eldorado Creek during the non-mining season. The maximum fuel storage amount authorized in the Kantishna Hills area in support mining operations is 500 gallons.

Any leakage or spillage of oil based fuels, onto the ground or into the stream, shall be reported, according to Alaska State regulations to the State of Alaska Department of Environmental Conservation and the superintendent. Immediate actions shall be taken to confine the spill to the smallest area.

Waste oil will be secured in bear resistant containers and stored on-site under the same requirements as fuel until the waste oil is transferred out of the park and properly disposed of.

Suction dredge mining operations are restricted to areas normally covered by water within the submerged portions of the active stream channel.

Mining and exploration activities shall not cause deterioration of Eldorado Creek waters exceeding EPA or State of Alaska DEC water quality standards.

Mining operations shall be conducted to insure that vegetated areas outside the approved area of operations, areas of cultural significance, and/or stream banks are not subject to increased erosion.

If more than one suction dredge is operating simultaneously those mine sites shall be a separated by a minimum of 600 feet.

Construction of small dams to provide sufficient water depth to keep the suction dredge intake nozzle beneath the water is permitted if the dam construction does not significantly reduce water flow downstream or cause increased stream bank erosion. Maximum dam height is restricted to 2.0 feet.

Construction of water diversions are not permitted. Water pumping in support of suction dredge is permitted as these practices essentially return water immediately to the stream and/or floodplain.

Water impoundments shall not utilize any material from historic features nor shall their construction or use impact any cultural features.

Utilization of the historic structures is permissible only in support of the approved mining plan of operations. Repairs and alterations to the structures shall be in keeping with the Secretary of the Interiors Standards for the Treatment of Historic Properties with oversight and technical assistance provided by NPS. Care shall be exercised to avoid impacts to the historic cultural features in the vicinity of the cabin area. Artifacts located at historic structures shall be left as found.

Care shall be taken during mining operations, including the moving or storage of equipment, while near or adjacent to cultural features or isolated cultural objects to insure no damage to those items would occur. Areas of cultural significance depicted, shall be avoided and no mining operations shall be conducted in those areas.

Metal detection and excavation is not permitted within the boundary of the Neversweat Mine Cultural Landscape. A new outhouse hole would not be permitted within the Neversweat Mine Cultural Landscape.

During all phases of the mining operation, all federal laws and regulations protecting cultural resources shall apply. Known cultural resources occurring within the vicinity of the claims under review shall not be altered, destroyed or collected. In the event that concealed cultural and/or scientific resources are encountered during mining operations, the Superintendent or the Superintendent's designee, shall be notified immediately. The discovery shall be left intact and steps shall be taken to protect it.

Reclamation at the end of the season shall include spreading the gravel used in dam construction, and any accumulated piles of processed gravel, on the stream bottom to eliminate

any obstruction to the stream. Excavated pits shall be filled with tailings. Original stream gradients shall be reestablished. Reclamation of all dams, mined areas and prospect pits upon cessation of operations at that site and by the end of the season, is required. Mine and prospect excavation shall be reclaimed when operations cease at that site.

All debris from the mining operation shall be removed from along the streambed each season.

Annual reclamation shall consist of:

A.) Leveling the tailings piles to conditions that approximate the contours and slopes of the adjoining land, floodplain and stream channel. Reestablishing the original gradient of the stream in the mined areas.

B.) Filling in pits and mine cuts/dredged areas to conditions that approximate the contours and slopes of the adjoining land, flood plain and stream channel.

C.) Reclaiming and spreading out the gravel used in dams constructed for the purpose of operating the dredge.

D.) Eliminating any barriers that were constructed to allow for the natural flow of water and free passage of macro and microfauna and stream biomass.

E.) Stabilization of the tailings to prevent their erosion due to subsequent normal occurrences, such as heavy rains or floods.

F.) Placing tailings and fine material in a manner which facilitates natural revegetation of the disturbed area.

G.) Replacing the substrate with a mix of material (gravel, rubble, and/or boulders) to form a streambed that approximates original conditions.

H.) Insuring that reclamation of disturbed areas prevents erosion of the stream bank and stabilizes the area to minimize downstream turbidity.

I.) Upon completion of dredging activities, reclamation shall insure that the channel width and depth are similar to natural conditions and allow for normal stream discharge.

Final reclamation at conclusion of approved mining operations shall consist of:

A.) Removing all equipment (four wheelers, access vehicles, mine equipment, fuel, and camp support materials) transported to the claims for the mining operation.

B.) Removing and disposing at an approved location all garbage, refuse or waste, broken or unused equipment transported to the claims in support of approved operations.

C.) Operator shall notify the NPS as to when reclamation has been or will be completed. A field inspection with the operator present shall be conducted to evaluate the completed reclamation. Failure to accomplish reclamation in accordance with the approved plan shall result in forfeiture of the performance bond.

Any large animal causing a nuisance, and/or the death of a large mammal or bird of prey occurring in the vicinity of the mine site shall be reported to the Superintendent as soon as possible. All state and federal game regulations shall be adhered to.

Refuse generated by the operator and/or his employees and coworkers shall be removed from the claims and disposed of in accordance with State and Federal law. Handling and disposal of all solid waste material shall be conducted according to Alaska State Regulations.

All food, perishables, and organic trash shall be secured from bears in bear proof containers and other wildlife. Burnable trash shall be burned. Non-burnable trash shall be backhauled outside the park at the end of the season.

The operator shall obtain all necessary State of Alaska and Federal **permits** prior to commencing operations, and keep them current during the life of the operation.

Compliance with all State and Federal laws and regulations is required.

Authorization to continue mining operations is contingent upon the Liberty claims being maintained as **valid existing unpatented mining claims with the BLM.**

A performance bond shall be posted and maintained with the National Park Service bonding officer at the Alaska Regional Office in the amount of $5,000 prior to the implementation of the approved mining plan of operations. The performance bond shall be increased to reflect any changes in operations or adjustments for inflation.

APPENDIX C
STATEMENT OF FINDING FOR FLOODPLAIN MANAGEMENT
(EXECUTIVE ORDER 11988: FLOODPLAIN MANAGEMENT)

Introduction

A mining plan of operations for the Liberty placer mining claims along Eldorado Creek in Denali National Park and Preserve (NPP) proposes to use a small suction dredge within the creek to recover placer gold deposits located on bedrock, and in the alluvium near bedrock within the streambed.

Eldorado Creek flows north and northeast on the south flank of the Kantishna Hills. Slate Creek is tributary to Eldorado Creek, and the location of one of the larger antimony deposits in the area where mining operations produced over 1,380 tons of ore throughout the working history of this site. Mining on the Liberty Claims has been limited to small-scale hand mining, and lode mining activities located on the Comstock lode claims, which are over-staked on Liberty #16 and #17. A small collection of historic structures and features associated with the Comstock lode mining, including a historic cabin, are located on these claims. The Comstock lode claims are also referred to as the Bonnell or Neversweat Mines.

The Eldorado Creek drainage basin covers 12.5 square miles (USGS Scientific Investigations Report 2013–5048, Brabets and Ourso, 2013). Floods are fairly common occurrences in the Kantishna Hills due to steep terrain and frequent summer rains. The active stream hydraulics result in scoured stream channels and redistribution of gravels and alluvium within the floodplains of these drainages.

The Liberty claims under consideration for a mining plan of operations (Liberty#9, Liberty#13-#18) are part of the Kantishna Historic Mining District (KHMD). Within the KHMD, most historic mining operations were situated within the floodplains and adjacent riparian zone of the creeks due to the nature of the mineral deposits.

Justification for Use of Floodplain

The proposed action would occur within a 100-year regulatory floodplain. Placer mining operations are by necessity conducted within the active floodplain of the creek and specifically in this case the streambed. The placer gold values located on these claims are concentrated in bedrock, on bedrock, and in the alluvium near bedrock in the stream channel (Validity Examination of Liberty #9 and Liberty #13-20 Placer Mining Claims, Giffen, 1999). All of the direct temporal disturbance would occur within the gravel and cobble zone of the active streambed and floodplain below ordinary high water. As described in the plan of operations, the support facilities for these activities would be situated outside the active floodplain.

The activities described in the plan do not give cause to anticipate any measurable long-term changes in natural floodplain values such as ecosystem quality, soils, vegetation, and wildlife habitat or ground water recharge. There would be no risk to property, natural, or cultural resources or humans from flooding. The proposed mining action was chosen over the no action alternative because it is unlikely to cause any significant short or long-term impacts to the

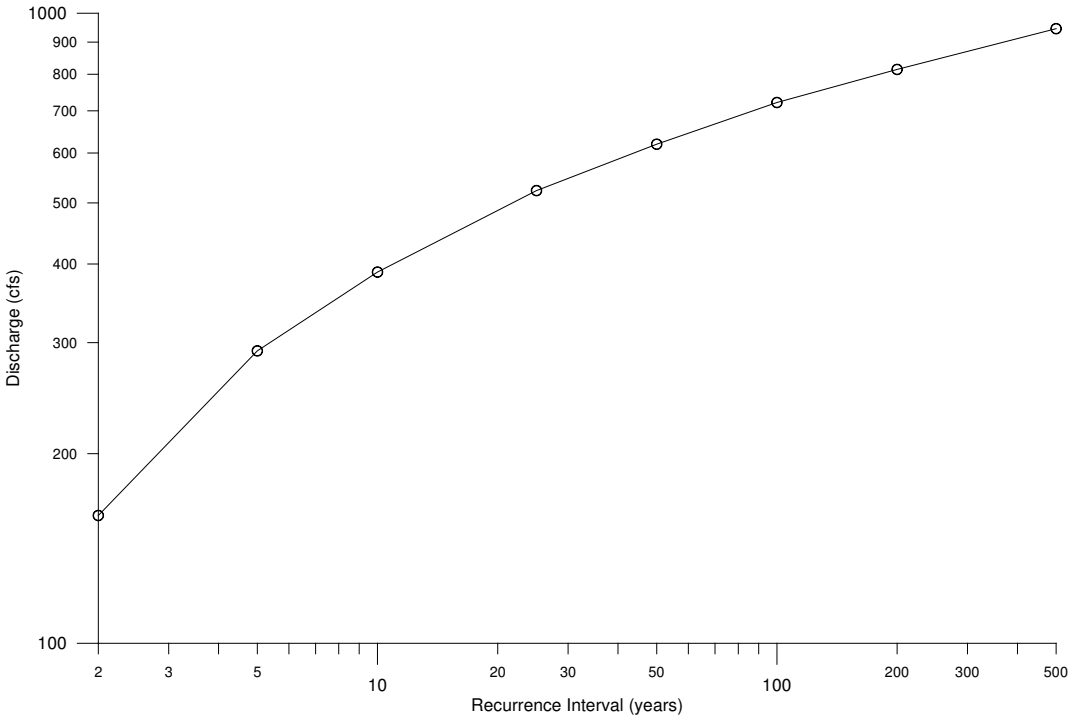
floodplain or natural resources, and allows the claimants to exercise their mineral rights. NPS would actively monitor mining operations.

Description of Site-Specific Flood Risk

The Liberty Claims contain approximately 118 acres in total. The area that may be subject to flooding from Eldorado Creek ranges from 20 to 200 feet wide along the length of the claims. The floodplain is widest on the lower reaches of the creek, where the estimated hydraulic gradient is 2.9 % immediately above the confluence with Moose Creek. The farthest upstream location has a steeper estimated gradient of 4.89%. Stream gravels located on the claims are composed of silt, sand, gravel, cobbles, and boulders up to 10 inches across, mixed with glacially deposited boulders up to 6 feet in diameter. Bedrock occurs at depths ranging from 3 to 8 feet. A thin, gravelly soil, 2 to 8 inches deep, has formed beneath vegetation adjacent to the creek. (Data from Giffen, 1999)

No continuous stream flow records exist for Eldorado Creek, nor is flood frequency and discharge documented. Discharges were measured periodically as part of the Brabets study (2013), those measurements were recorded as increasing from low early summer flows of 7.2 cubic feet per second (cfs) to flows of 19.2 cfs in late summer. Seasonal flooding frequently occurs in late spring to early summer due to combined effects of spring snowmelt and rains, but may occur late summer as well.

Based on the published USGS (1993) equations for ungauged basins and the basin characteristics for Eldorado Creek a graph was created to show the recurrence intervals for the 2-, 5-, 10-, 25-, 50-, 100-, 200-, and 500-year floods.



Flash flooding is rare and generally limited to very early heavy rains that occur when the ground is still frozen or rain on snow events. Most rainfall comes with sufficient warning to mitigate flood risks and rain on snow events are only likely to occur before the mining season.

Mitigation of Harm and Risk
Two alternatives are considered in the Environmental Assessment. These include a no action alternative, and the approval of the mining plan of operations with mitigation measures protective of resources. The environmental consequences of both alternatives were analyzed in detail for floodplains and related resources, including water resources, wildlife, vegetation, soils, and wetlands.

The proposed mining operations may affect approximately 9,200 linear feet of creek bed within the floodplain on the claims, and another 6,864 linear feet which constitutes the access road to the claims. Floodplain function would be temporarily and minimally impacted during operations due to access and minor daily modifications associated with suction dredging, such as small in-stream rock dams and temporary pool construction. With daily reclamation of the area of operations, impacts to the floodplain would be negligible. The NPS would monitor operations to assure compliance with mitigation measures identified to minimize harm to life, property and natural values, and preserve floodplain values.

NPS does not anticipate any short-term impacts from the proposed action that will result in any long-term threat to property or resources. This proposed action is consistent with NPS guidance for compliance with Executive Order 11988 (Floodplain Management found at Director's Order #77-2.

Summary:
There is no practical or feasible alternative to approving the proposed placer mining activities on the Liberty claims on Eldorado Creek as described and evaluated. The proposed action would have temporary direct affects within the streambed of Eldorado Creek, and to a much lesser extent, the floodplain of Eldorado Creek. These effects have been evaluated in an EA. The proposed action would not pose any significant threats to NPS resources, facilities, or human life. Although temporary effects to the streambed and floodplain may occur, no significant impacts to floodplain values are anticipated. Other alternatives were evaluated. This included a discussion of the no-action alternative. The proposed action was chosen because it offers a high level of protection to park resources including the floodplain, while enabling the claimant to exercise his rights under applicable law and regulation. The action reduces the potential for flood-related hazards to private property, and adheres to NPS management policies for floodplain management found at Directors Order #77-2.

APPENDIX D:

REGIONAL DIRECTORS ANALYSIS:

DeVault LIBERTY CLAIMS MINING PLAN OF OPERATIONS

TITLE 36 CFR 9.10 (d) Summary Evaluation

This analysis is for approval of a proposed mining plan of operations submitted to the National Park Service by Kris DeVault, authorized lessee from claimants Eldorado Ventures, LLC. The mining plan describes placer mining and exploration operations utilizing a suction dredge and metal detector on land partially impacted by previous gold mining in the Kantishna Hills within Denali National Park and Preserve. The NPS prepared an Environmental Assessment "Liberty Claims Mining Plan of Operations". The NPS would approve DeVault's mining plan of operation on the Liberty #9 and Liberty #13-18 placer mining claims and attach stipulations to control and minimize impacts to park resources and values.

Title 36, Chapter I, Part 9 of the Code of Federal Regulations provides the regulations for Minerals Management in National Park units. The Regional Director's analysis may include the following criteria listed in Title 36 CFR 9.10 (d). The criteria below serve as a guideline checklist for evaluation of the proposed plan. Analytical comments concerning the plan follow each criterion.

1. **An examination of the environmental report filed by the operator.**
Comment: The environmental report submitted by the operator with the plan of operations references existing NPS data and analysis and/or briefly addresses fish and wildlife, past mining activities, cultural resources, water resources, geology, vegetation, and the impacts resulting from proposed operations, fuel use and storage, and waste disposal. That report references the Denali NP/P Mining EIS, a recent USGS report on stream water quality on mined lands in the Kantishna Hills, suction dredge evaluations written by US Forest Service staff, and a website of the California Water Quality Board on the subject of water quality impacts from suction dredging. NPS review of the submitted information indicates that it recognizes most of the issues relevant to the proposed operation. The information in the operator's report was essentially derived from existing data and past environmental studies.

   NPS information and reports are consistent with the operator's statements concerning the environmental conditions on the claims. Information collected by the NPS is on file at the DENA Headquarters. Review of this information was incorporated into the EA covering the plan proposed by the operator.

   Although the operator's report was brief and contained no new supporting data, the NPS review of the environmental conditions on the claims and surrounding area, it did not contain incorrect or misleading information. Considering the scope of the proposed mining operation, the NPS has determined that the operator's environmental report is adequate.

2. **An evaluation of measures and timing required to comply with reclamation requirements.**

Comment: The proposed plan of operations addresses reclamation as an on-going process during the mining. Gravel processed through the suction dredge would be discharged from the dredge directly into the stream. Reclamation of suction dredge operations was previously analyzed and discussed in the Bonanza Nos. 1-6 MPO EA and the Shamrock Group MPO EA, both from Wrangell-St Elias NP/P, covering proposed plans of operation which are similar in scope. Reclamation requirements as outlined in 36 CFR 9.11 (a) (2) and (b) would be complied with under the proposed plan. Guided by DO 77, the NPS would attach stipulations that assure removal of mining equipment, supplies and debris resulting from the operation. Stipulations would effectively manage short-term blockage of the stream from dams and address reclamation of excavated sites to a condition that approximate pre-mining topography.

Time restrictions for reclamation compliance would require the operator to assure that reclamation is on-going while mining is proceeding and completed each season prior to the operator leaving the area at the end of the mining season.

3. An evaluation of necessary conditions and amount of the bond or security deposit to cover the estimated reclamation costs.

Comment: The conditions of a performance bond, as required under 36 CFR 9.13 (a), are presented in the EA. Stipulations are integrated into the operator's proposal. These stipulated conditions are primarily a clarification of the regulatory requirements to assure that reclamation is adequate and provide little change to the proposed reclamation of the operation. The reclamation bond for the proposed operations was developed to address any potential need for the NPS to remove mining equipment, supplies and debris, and/or to remove dams and fill holes in the streambed. The amount of the performance bond was calculated to "...be in an amount equal to the estimated cost of completion of reclamation requirements..." as required under 36 CFR 9.13 (c). An explanation of the bonding and cost estimate calculations were included in the Engineering and Geological Analysis appended to this EA (Appendix B).

4. An evaluation of the need for any additional requirements for the access permit.

Comment: ANILCA Section 1110(b) provides for non-federal landowners to be given “such rights as may be necessary to assure adequate and feasible access for economic and other purposes to the concerned land by such . . . private owner or occupier and their successor in interest,” while such rights would be subject “to reasonable regulations issued by the Secretary to protect the natural and other values of such lands.” Access to mining claims situated within Alaska parks is governed by the Department of Interior transportation and utility system regulations at 43 CFR Part 36. Section 36.10 of these access regulations specifies procedures for access across park lands to valid inholdings, including patented and valid unpatented claims. Section 36.10(c), allows mining claimants who acquired their rights under the General Mining Act of 1872 to file their request for access as part of their mining plan of operations.

Under the guidelines of these regulations, the NPS has determined that DeVault has provided complete information with regard to property ownership and use of the inholding and that the impacts from granting access would be evaluated within the EA. Conditions and limitations for rehabilitation, use and maintenance of the access will be stipulated in the permit to mine.

Vehicle use on the restricted section of the Denali Park Road is granted as needed to inholders separate to their access permits for travel off of the Park Road. DeVault has requested and the Superintendent has granted 15 Park road travel permits per summer upon approval of the MPO. The Rules of the Road for Park Road use apply to all vehicle use.

5. **A determination regarding the impact of this operation and the cumulative impact of all operations on the management of the** unit.

Comment: Anticipated impacts of the mining operation are discussed in this EA and in other environmental documents pertaining to placer mining in Kantishna. A review of the proposed plan and a review of the available environmental information on the area of operations by the NPS, determined that the impacts of the operation would not be significant.

The conclusion of reviews of similar suction dredge proposals was that there would be only a modest increment to the cumulative effects of past, present and future actions in the area of the central Kantishna Hills. Prior placer and lode mining have disturbed hundreds of acres along the Moose, Eureka, Friday and Eldorado Creek drainages, and park road travel, lodge and other visitor developments since 1952 have cleared lands and heightened summer levels of activity. The proposed operations would be temporary, occur on lands previously impacted by mining, and would generally be tucked away from almost all of the concentrated visitor activity near downtown Kantishna.

While there are other patented lode claims in the Kantishna Hills, it is unlikely that mining could occur on any other property in Denali National Park and Preserve since there are no other placer claims left and the lode claims likely encompass too little acreage for any type of regulated and modern approach to hard-rock mining. The NPS would continue monitoring operations to assure compliance with the plan operating stipulations and to assure that no unforeseen impacts occur from the operation, should the proposed plan of operations be approved and implemented.

6. **An evaluation of Alternative 1 - No Action Alternative, No Mining Operations Authorized.**

Comment: Under this alternative the submitted plan of operations would not be approved by the NPS, Regional Director, Alaska under 36 CFR 9.10, and the operator would not be permitted to mine. There would be no additional long-term or short-term, physical biological impacts under this alternative and the Cultural Landscape would not be affected by proposed mining. There would be no additional cumulative impacts to target resources identified in the Final Environmental Impact Statement, Cumulative Effects of Mining, Denali National Park and Preserve (NPS 1990).

This alternative would impact the local economy by resulting in economic loss to the operator/claimants and some local or regional businesses.

Non-approval of the plan would leave the operator with the options of submitting a new plan of operations or appealing to the Regional Director for a reversal of the decision. Continued Non-approval by the NPS would leave the operator with the option of filing an appeal to the United States District Court for approval of the plan. Denial of the plan by both the NPS and the federal court would give the operator the option of pursuing a case against the United States for compensation as provided for in Section 11 of the Mining in the Parks Act (Public Law 94-429).

APPENDIX E

Mining Plan of Operations
Placer Mining Claims
Liberty #9 and Liberty #13 through #20
Denali National Park and Preserve

Table of Contents

ATTACHMENTS

Mineral Report	Mineral Report from the United States Department of the Interior National Park Service is held at the NPS office in Anchorage. Mineral Report is a validity examination of the Liberty claims. **NPS note - Mineral Report is FOIA exempt under exemption 3.**
Attachment #1A	Chain of title from BLM records and Memo to file produced by Melody J Smyth, Mineral Law Specialist for the BLM
Attachment #1B	An Abstract of Title, prepared June 16, 1995 by Land Field Services, Inc. for the Liberty #9 and Liberty #13 through #20
Attachment #2	USGS Water Quality of Streams Draining Abandoned and Reclaimed Mined Lands in the Kantishna Hills Area, Denali National Park and Preserve, Alaska, 2008-11 Scientific Investigations Report 2013-5048
Attachment #3	All applicable permits, including but not limited to: State mining license, State water right permit, NPDES from the EPA and ADF&G Fish Habitat permit.
Attachment #4	Images and sketches: 1. Typical gold suction dredge operation 2. Components of a typical suction dredge 3. Suction dredge sketch showing water flow 4. Keene Engineering 6” mini suction dredge 5. Sauna/bath/shower house

	6. Outhouse
	7. Storage building 8'x10'
	8. Power Winch
	9-12. Pictures of 4", 6", and 8" Keene dredges
	13. Gold Cube
	14. Storage building 12'x24'
Attachment #5, Maps	Aerial Survey maps done by, Walker-Alaska Aerial Survey, INC.
Attachment #5, Preface	Location options for temporary structures shown on attachment #5 A, B and C.
Attachment #5, A, B & C	Maps showing location options for temporary structures described in attachment #5, Preface
Attachment #5D	Temporary fuel storage
Attachment #6	Compilation of Published Findings on the Effects of Suction Dredging
Attachment #7	Aerial photos of the Liberty Claims and Eldorado Creek
Attachment #8	Lease Agreement
Attachment #9	Eldorado road RST 414 Casefile
Attachment #10	Pictures 1a through 32a for Eldorado road access improvements

Outline of Information Requirements for a Proposed Mining Plan of Operations Under 36CFR9 Subpart A

This outline specifies the minimum information required by the National Park Service (NPS) to adequately evaluate any proposed plan of operations for activities within units of the National Park System in connection with all patented and valid unpatented mining claims. The NPS must analyze the effects that the proposed operations will have on the protection, preservation and public use of the resources and values of National Park System units. This analysis is necessary for the NPS to make a reasoned decision regarding plan of operations approval or disapproval. In some cases, additional information may be required. Any further information requirements will be specifically identified by the appropriate park superintendent or field director.

An approved mining plan of operations is required by the National Park Service regulations for Mining and Mining Claims found at Title 36 of the Code of Federal Regulations (CFR), Part Part 9, Subpart A for all mining operations conducted on National Park System lands. These regulations, published January 26, 1977 (42 Federal Register (FR) 4835), govern all activities within National Park System units associated with the exercise of valid existing mineral rights on patented and valid unpatented mining claims. Additional NPS regulations governing mining operations in National Park System units in Alaska are located at 43 CFR Part 36.

The objectives of the regulations are to: ensure that mining operations on claims within National Park System units are conducted in a manner consistent with the purposes of the National Park System and its individual units, avoid or minimize effects on the environment and park resource values, and preserve the resources of the National Park System for the benefit of present and future generations.

In order to facilitate preparation of a plan of operations and expedite the NPS review of your plan, we recommend that you follow this outline closely and contact park personnel for any additional guidance or answers to any questions before submitting a proposed plan. It is solely the claimant's responsibility to provide all the required information. Missing, false, incomplete, or inaccurate information will delay review and may result in NPS rejection of a proposed plan.

In all cases, all the required information, in the form of a proposed plan of operations, must be submitted to the park superintendent in charge of the National Park System unit within which the operations are proposed. Following review and comment by the park superintendent and staff, the proposed plan will be forwarded to the appropriate field director. Final review and approval or rejection is the field director's responsibility.

Information required in this outline may have to be modified or corrected when work actually begins on the claims, due to unexpected problems encountered in the field. Should this occur, the claimant is required to revise the plan of operations to reflect actual field conditions and operations. Your operations in the field will be monitored closely by the NPS to ensure they are being conducted in conformance with the requirements of your approved plan.

PART I. INTRODUCTORY INFORMATION

A. National Park System Unit

Identify the unit in which the proposed operation(s) would occur:

Denali National Park and Preserve

Unit 43

B. Mining Claim Information
Provide the following information about the claims involved:

1. Name of claim(s);

Liberty #9 and Liberty #13 through #18

2. Name of claim group

Liberty #9 and Liberty #13 through #18

3. Type of claim: **Placer**
4. Bureau of Land Management serial number(s)

F059196, F059200, F059201, F059202, F059203, F059204, F059205

5. Date claims were located;

Liberty #9 – June 18 1969
Liberty #13 through #17 – June 26 1969
Liberty #18 – June 27 1969

6. Date surveyed (if applicable) **Aerial Survey done by, Walker-Alaska Aerial Survey, INC. November 1991. See attachment #5, Maps**
7. Mineral survey number: **N/A**
8. Date patented: **N/A**
9. United States patent number: **N/A**
10. Copy of patent **N/A**
11. Chain of title going back to the date the lands in the claim were withdrawn from mineral entry.

Paragraph from Mineral Report page 9 compiled previous to 6/14/1999:

Chain of title from BLM records: Originally staked and recorded by Dorian Rither and Larry Eddington for Northwest Exploration, INC. Richard Dean is the current owner of record according to the BLM records. However, ownership of the claims is currently in litigation and is uncertain at this time (1999). An Abstract of Title, prepared June 16, 1995 by Land Field Services, Inc. for the Liberty #9 and Liberty #13 through #20. See attachment #1A and #1B

[redacted]

CI. Mining Claim Location

[redacted]

All mining claims, whether lode, placer, millsite, or tunnel site, must comply with the provisions of 43 CFR §§3830 and 3840 for locating and monumenting of the claims. Attach copies of the location notices as they appear on file with the Bureau of Land Management.

Please see Mineral Report pages I-23 thru I-31 for copies of the location notices that are on file with the BLM.

Identify the claims and location of the proposed mining operation on the appropriate 1:62,500 scale U.S. Geological Survey (USGS) quadrangle(s), or other scale map as available. Show existing and proposed roads and trails. (See Part II A).

See maps in part II of the Mineral Report. Liberty #9 and Liberty #13 through #18. Also see page 5 figure 1, page 7 figure 2 and page 8 figure 3. Also see attachment #5, Maps.

Legal Description: Identify section, township, range, and meridian where applicable and distance and direction from a fixed landmark to a staked claim corner or corners. **Fairbanks Meridian**

T[redacted]

Identify the name of the creek, stream, or river drainage as shown on the USGS map:

Eldorado Creek

PART II. ACCESS (36 CFR §9.3 and 43 CFR §36)

A. Access Map
See page 6, 7 and 8 in Mineral Report. Also see attachment #5 Maps, attachment #7 Aerial photos of the Liberty Claims and Eldorado Creek, attachment #9 RST casefile summery.

Describe the proposed route of access, i.e., whether by existing road, new road, water, air, etc. Show existing roads, trails, and airstrips that you use for access to and from the mining claim(s), on a 1:62,500 U.S. Geological Survey quadrangle map, if available; otherwise, use 1:100,000 or 1:250,000 (use location map above, if desired). Use a dashed line (- - - - -) for existing traditional access routes and a dotted line (....) for any new routes that may be proposed.

Please see attachment #9 for RST 414 casefile summery on documentation of history, construction and use of Eldorado road.

Access will be by the Denali National Park road 91 miles back to Kantishna. The Liberty Claims are located approximately 1.5 miles SW of Kantishna. Beginning approximately 1.5 miles upstream from its confluence with Moose Creek and continuing up Eldorado for approximately 3 miles. The existing road crosses the lower part of Moose Creek to reach the Eldorado / Slate Creek access road. The Eldorado / Slate Creek access road crosses Eldorado Creek more than 20 times after its confluence with Moose Creek and runs through all the Liberty Claims. Eldorado / Slate Creek access road (RST 414) has long been in existence prior to the claims being withdrawn from mineral entry. Access will also be from the Kantishna airstrip which is located approximately 1.4 miles NW from Kantishna and the confluence of Moose Creek and Eldorado.

[redacted]

[redacted]

An average of 15 park passes are requested for mining operations per season. At this time a minimum of 10 and maximum of 20 trips are anticipated depending on weather, resupply trips, initial mining operation start up, beginning of year and end of year trips and emergencies.

Additional passes may be required for the improvements needed to get Eldorado road back to usable condition.

Annual road maintenance and brush clearing during mining operations will be needed to keep the road in usable condition and will be the responsibility of the mining operator.

Describe improvements or earthwork proposed for existing roads or landing strips and volumes of material from cut and fill areas. For proposed new roads or landing strips, provide the following information: length; roadbed width; average width of total disturbance; volume from cut and fill areas, and total area of disturbance.

No new roads or landing strips are proposed.

Eldorado road has also been used as recent as 2010 for the completion of the Slate Creek restoration project. Signs of Eldorado road construction, improvements and maintenance are still currently visible today.

On 6/8/2015 – 6/13/2015 I assessed the existing road conditions after the flood of 2014. On 6/10/2015 I also met with Steve Carwile on location of the Eldorado road to discuss the road damage done by the floods.

An Excavator will be needed for the improvements. At this time we have not purchased the Excavator, exact specs are not available. It will be approximately a 160 to 220 size/model, 30,000lbs to 55,000lbs and burn 6 to 10 gallons of diesel an hour. It will have a bucket/thumb combo with a blade for grading. The only maintenance required for road improvements is daily greasing of zirk fittings. If a break down occurs, repairs may be needed on location.

The following listed are improvements to get the existing Eldorado road (RST 414) back to usable condition for mining operations:

- **Brush clearing of overhanging Alders. Not all brushing needed is listed.**
- **Removal of a few small trees that have fallen into the road.**
- **All topsoil removed will be placed back on the road where topsoil is needed.**
- **No gravels or topsoil from outside of the creek will be placed in the creek.**
- **All gravels and topsoil removed from the Eldorado road for grading or ramps will be placed back on the Eldorado road in an area needing the material.**
- **All instream gravels and boulders that need to be moved will stay instream except where specified.**
- **All road work and brushing will be just enough to allow truck and trailer through. Approximately 6-10 foot road width.**

Three areas of road work needed have an included Option A, or Option B. After assessing the existing road conditions in person and using attachment #5 maps, attachment #7 aerial photos and Google Earth, it seems the main channel of the creek has changed in three areas.

The following list of Eldorado road improvements start at approximately .4 of a mile from its confluence of Moose creek. The list is in consecutive order from downstream working upstream to the end of the claim block. Everything listed is approximate.

List of improvements 1 - 15 to the start of the claim block at Liberty #9

- **6864 feet of road**
- **2045 feet of road needs light improvements – 29.7%**
- **300 feet of road needs moderate improvements – 4.3%**

List of improvements 16 - 32 for the entire claim block, Liberty #9, #13 - #18

- **8448 feet of road**
- **1993 feet of road needs light improvements – 23.6%**
- **995 feet of road needs moderate improvements – 11.7%**

GPS coordinates are approximately accurate within 15-20 feet.

Please see Appendix I for pictures 1a through 32a.

1. **N63°31'25.3" W150°58'28" – Light grading for ramp, mostly sand for 30'. Picture 1a.**

Next 120' needs moderate grading of rocks, small boulders and debris. Light brushing. Pictures 1b, 1c and 1d.

2. **N63°34'24" W150°58'30.7" - 10-20'ramp into creek/road. Picture 2a.**

   Next 240' needs light grading and boulders moved downstream. Picture 2b.

   Root pile will be pushed aside. Picture 2c.

3. **N63°31'24.1" W150°58'35.5" – Large boulders will be pushed aside. 450' of light grading through canyon. Picture 3a.**

4. **N63°31'23.4" W150°58'38.7" – 100' of light grading and brush clearing. Picture 4a and 4b.**

5. **N63°31'22.8" W150°58'40.5" – Landslide area: Brush clearing and debris to be pushed to the side. 2-4' of landslide will be moved. Picture 5a, 5b and 5c.**

6. **N63°31'11.5" W150°58'56.5" – 10' of light leveling. Picture 6a.**

7. **N63°31'07" W150°59'09.4" – Large ramp into creek. Approximately 15' long and 3' at the deepest. Topsoil will be pulled back from the bank that was cut from the floods. Bank gravels will then be used to smooth out a ramp to the creek. The topsoil that was removed will then be placed back on top of the ramp area and road. Next 135' will need a few small boulders moved aside. Picture 7a, 7b and 7c.**

8. **N63°31'06" W150°59'10.2" – Small ramp out of creek. Gravels from ramp will be pushed up the road approximately 25' to level road and fill around boulder. Picture 8a and 8b.**

9. **N63°31'03" W150°59'19" – Main flow of the creek has moved over to the road. Picture 9a.**

Option A: Use old channel of creek as the road. 200' of light grading is needed and removal of dead Spruce. Picture 9b

Option B: Take 6-10 cubic feet of gravels from the top of the old main channel, which is now a gravel bar, and move it over 30' to the top of the old road. This would divert the main water flow back to the old channel. 200' of light grading of the old road required. This would reduce erosion of the banks on the road. Picture 9c is looking downstream.

10. **N63°30'57" W150°59'34" – 250' of light grading of 30% of the road. Top soil will be leveled. Picture 10a and 10b.**

11. **N63°30'54" W150°59'41.5" – 140' of light grading from creek crossing. Picture 11a and 11b.**

12. **N63°30'52" W150°59'46" – Smooth out ramp coming out of the creek, push gravels up the road 10' to fill in 3' deep ditch. Picture 12a and 12b. Another ditch in road 90' up. Fill in with 2 cubic feet of gravels from ramp at creek and level with surrounding road topsoil. Picture 12c and 12d.**

13. **N63°30'51" W150°59'59.9" – Smooth out sandy ramp to creek. Pull sand back so entry is not so steep, level out on top of sandy road. Approximately 20' long area. Picture 13a.**

At the bottom of ramp, main flow of creek looks to have moved to the road (left side looking up stream). Picture 13b.

Option A: Use old creek channel as road. Light grading next 250'. Picture 13b and 13c.

Option B: Take a small amount of gravel (6-10 cubic feet) from the top of the old main channel which is now a gravel bar and move it over 30 feet to the top of the old road to divert the main water flow back to the old channel (N63°30'51" W151°00'05"). Light grading in old road needed 250 feet. Would be beneficial to minimize erosion of the banks on road. Picture 13d and 13e - looking downstream.

14. **N63°30’51” W151°00’05” – 5’ deep X 10’ wide X 15’ long deep area in creek/road needs approximately 10- 15 cubic feet of gravels to fill. Old creek channel directly behind is filled with a gravel bar that can be used. Usage of this gravel bar would be limited to the top 2’. Picture 14a and 14b.**

    Light grading next 225’, light brushing of road. Picture 14c.

15. **N63°30’48” W151°00’09” – Ramp out of creek needs moderate grading 90’. Boulders will be moved down to gravel bar. Gravels from ramp will be used to level road to ditch in road. Picture 15a and 15b.**

16. **N63°30’48.4” W151°00’12.6” – Approximate start of claim block – Liberty 9. Brush clearing next 75’. Picture 16a**

17. **N63°30’48.4” W151°00’13.8” – 2’ deep X 6’ wide X 8’ long ditch. Will be leveled with gravels in front of the hole. Brush clearing next 200’. Picture 17a.**

18. **N63°30’47.3” W151°00’17.4” – Light to moderate grading next 225’. Picture 18a.**

19. **N63°30’45.8” W151°00’21” – Smooth ramp out of creek, 20’. Approximately 75% of the next 500’ of road has moderate flood damage. From the ramp up the road for approximately 100 feet is a gravel bar from the eroded road. Those gravels can be used to fill in the eroded flood cut road. All gravels and topsoil cut will be leveled on the road. Damage is approximately 500’ in length from, N63°30’45.8” W151°00’21” to N63°30’42.8” W151°00’29.6”. Picture 19a, 19b, 19c and 19d.**

20. **N63°30’42” W151°00’31” – Brush clearing: Approximately 8-15 small trees (Spruce, Cottonwood, Alder etc.) have eroded out of the side of the road and are leaning or have fallen over. Removal is needed. Also, brush and root piles will be pushed to the side. Light grading on road 75’. Picture 20a, 20b and 20c.**

21. **N63°30’40.9” W151°00’32.4” – Light grading from ramp out of creek to next crossing, 100’. After creek crossing brush clearing next 250’. Picture 21a.**

22. **N63°30’39” W151°00’38” – Moderate grading. Level out 150’ of road. Fill in ditch 2’ deep X 3’ wide X 8’ long. Will use gravels and boulders from road to fill**

and then level topsoil. Picture 22a and 22b.

23. N63°30'25" W151°00'55" – Light grading of ramp into creek and moderate grading out of creek. Next 220' will need to have moderate grading of gravels. All of these gravels look to have come out of #24 where the road now has water. Picture 23a, 23b and 23c.

24. N63°30'25" W151°00'57.7" – Moderate flood damage for the next 260'. Approximately 75% of the creek water is running through what used to be the road. From the aerial photos this section looks like it was a dry road and all the gravels are now relocated in #23 from the floods. Picture 24a, 24b and 24c.

Option A: Use old road that has main flow of water. Pull back gravels for ramp 20' and level on road. Moderate to light grading next 260'. All exposed boulders will be moved aside or pushed down stream. Picture 24b, 24c, 24d and 24e.

Option B: N63°30'23" W151°01'01.5" – Divert the flow of water that is now mostly in the old road back to main channel. Approximately 3 cubic yards of gravels sitting atop the old main channel will be moved over to old road 10-15' to divert main flow of water back to old channel. Gravels from (#23) N63°30'25.7" W151°00'56.7" (Picture 23c) can be used to help fill and level road from (#24) N63°30'25" W151°00'57.7" for the next 260'. Would be beneficial to minimize erosion of the banks on road. Picture 24a through 24f.

25. N63°30'21" W151°01'03.3" – Light grading 110'. Level topsoil on road. Picture 25a.

26. N63°30'17.5" W151°01'08.8" – Light grading 90'. Picture 26a.

27. N63°30'11.5" W151°01'16.6" – Light grading next 360'. Picture 27a and 27b.

28. N63°30'7.6" W151°01'16.7" – Level out small ditch. Picture 28a.

29. N63°30'4.3" W151°01'16.5" – Light grading 45'. Picture 29a.

30. N63°29'55.9" W151°01'16.6" – Small ramp in and out of creek 10' using gravels

at creek. Picture 30a.

31. **N63°29'54" W151°01'16.7" – Light grading and leveling of small deterrent berms the park placed on Eldorado road upon completion of the Slate creek restoration project, next 960'. Picture 31a, 31b and 31c.**

32. **N63°29'41.3" W151°01'19.5" – Approximate end of claim block- Liberty 18. Picture 32a.**

B .Proposed Method of Access:

Discuss the proposed methods of transportation to and from the operations. Be specific as to the types of vehicles. Give the make and model, tracked or wheeled, weight, any modifications that will be necessary, etc. If access is via aircraft, give the type (i.e., fixed-wing, helicopter), name (e.g., Cessna 207, Bell Jet Ranger, etc.), and any changes or modifications (e.g., floats, skids). List all other modes of transport required (e.g., boat, sled, etc.). List equipment to be transported. This is a critical aspect of the proposed plan, as it will help determine the amount, timing and type of access that will be allowed to the claim.

Vehicles that will be used for transportation to and from the Liberty Claims are:

1. **2000 Toyota Tundra 4x4, lifted with camper shell**
2. **2011 Toyota FJ Cruiser 4x4**
3. **1987 Chevy Crew Cab 4x4 lifted**
4. **16 x7 foot single axle flatbed trailer.**
5. **1963 PA-18 Super Cub 4040z**

Vehicles that might be used for transportation to and from the Liberty Claims are:

6. **Military M-35A2 Deuce and a half 2 ½ ton Diesel Truck**

7. **2002 Ford F150 4x4**

8. **1999 Ford F250 4x4 with camper shell**

The Chevy and Military 2 ½ ton trucks are currently located at or near the Rainy Creek cabin owned by Rainy Creek LLC. Eldorado Ventures LLC are also members of the Rainy Creek LLC. Any other vehicles used in transportation to and from the Liberty Claims will be presented at the Park Headquarters prior to entry into the Park.

Vehicles that will be transported to the Liberty Claims to be used for mining operations are:

1. **2012 Polaris Big Boss 800cc 6x6. Weight is approximately 800lbs**

2. **Two 2007 Polaris Sportsman 500cc 4x4. Weight is approximately 500lbs**

Equipment to be transported to the Liberty Claims are listed in Part IV C. under equipment to be used.

C. Proposed Dates of Access

Give the proposed seasonal dates of access: first trip in, last trip out, and number of trips anticipated. Specify these dates for each piece of equipment identified above for proposed methods of access.

Because the Denali Park Road access is dictated by weather and road conditions, no exact date for first trip and last trip can be given. First and last trip by vehicle will occur around the time of the Park road opening and closing. Mining season is approximately 100 days depending on weather. Approximate dates are 6/1 - 9/15. At this time a minimum of 10 and maximum of 20 trips are anticipated depending on weather, resupply trips, initial mining

operation start up, beginning of year and end of year trips and emergencies. 15 trips a year average are proposed. Additional trips and passes may be required for road improvements.

D. Proposed Construction of Access **N/A**

If you propose to construct a means of access on lands in a National Park System unit to the claim within the unit, describe the nature of the access means, for example: road, trail for four-wheel drive vehicles, airstrip, powerline, pipeline, conveyor belt, dock, etc. On a map scale of 1" to 100' or larger, describe the exact location or route of the access means. Describe the exact dimensions of the means of access: length, width, depth, height, etc., as appropriate. Describe the materials and equipment to be used, the method of construction and each stage and expected time frame of construction.

PART III. USE OF WATER (36 CFR §9.8)

A. Water Source(s) and Quantity:

Describe all water sources and diversion devices necessary for operation

Provide the following water resource background data:

- present water quality (total suspended and dissolved solids, turbidity, principal anions and cations, pH and metals):
- average monthly stream flows for months of proposed operations (instream gallons per minute or cubic feet per second):
- average stream width at points of diversion and discharge **N/A**
- type and size of streambed materials:
- stream gradient:

Identify amount of water necessary for operations:

Identify quantity, quality, and sources of water to be used for domestic or campsite purposes. Same source Include descriptions of water storage tanks and piping systems.

Water source is Eldorado Creek. No diversion devices are needed.

Eldorado has a stream gradient of 2.8% to 4.8% with an average of 3.1% (page 18 of Mineral Report)

During the mining season instream average discharge of Eldorado Creek is 17.6 cubic feet per second or an average discharge of 7898.48 gallons a minute during the mining season. (Page 10-D of Mineral Report)

Water used for dredging is discharged in the same place at the same time it is withdrawn and is considered a non-consumptive use.

Water used for campsite purposes will be no more than 150 gallons per week and will be withdrawn from Eldorado creek by hand or using a 15GPM pump. Campsite water will mainly be use for a recirculating concentrating system to go through the dredge concentrates. It will also be used for panning concentrates. Both of those will be done in separate water tubes.

A small rain water catch system will be used for potable water. Storage will be in one or two 55 gallon containers and will consist of a simple rain gutter and piping attached to the 12'x24' storage building.

Please see Mineral Report page 10, D.

Also see Environmental Overview and Analysis of Mining Effects DNP 1981 page 15.

For water quality of Eldorado Please see Attachment #2 - USGS Water Quality of Streams Draining Abandoned and Reclaimed Mined Lands in the Kantishna Hills Area, Denali National Park and Preserve, Alaska, 2008-11 Scientific Investigations Report 2013-5048

http://pubs.usgs.gov/sir/2013/5048/pdf/sir20135048.pdf

Please see page 9, 12, 27, 37, 44, 45 and 48 thru 50 of that report in attachment #2.

B. Permits

1. Attach copy of state water use permit or other equivalent document showing that claimant possesses a perfected water right.

Before mining commences all applicable permits will be attached, including but not limited to: State mining license, State water right permit, NPDES from the EPA and ADF&G fish habitat permit. See attachment #3

PART IV. PLAN OF OPERATIONS (36 CFR §9.9)

A. Names and Addresses (36 CFR §9.9(b)(1))

It is important that the NPS have accurate and up-to-date information on where the claimant(s), operator(s), assignee(s), etc. may be reached throughout the year. It may be necessary to contact them concerning the information they have submitted, and difficulty in reaching them will delay review of the proposed plan.

Provide the following information:

- Claimant Name: Legal name of individual, corporation, or other entity recorded with the Bureau of Land Management as holder of the right to sell, lease, assign, or otherwise transfer all or any part of a patented or unpatented mining claim, millsite, or tunnel site. Specify the recording district or other site of legal recordation.
- Claimant address and telephone number: Seasonal locations and telephone numbers where the above-named claimant may be reached throughout the year.
- Operator, lessee, assignee, designee name: Legal name if other than claimant as given above. If the Operator will be someone other than the claimant, submit a copy of the lease document and/or the designation of operator authorizing mineral operations on the claims.

  See attachment #8 for Lease Agreement

- Seasonal locations and telephone numbers where Operator (if other than claimant) may be reached throughout the year.
- Designated agent for operator: Seasonal locations and telephone numbers where operator's designated agent (person with authority to act for operator), if any, may be reached throughout the year. **N/A**
- Designated field representative: Seasonal locations and telephone numbers where designated field representative (field contact with authority to act for operator), if any, may be reached throughout the year. **N/A**

Claimant Name/ Owner info:

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

Lessee and Operator and information:

Kristopher E. DeVault

Sole owner of – Gold Vault Mining Company

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

B. Proposed Area of Operations Map (36 CFR §9.9(b)(2))

A map of the proposed area of operations is necessary to describe the amount and extent of past and present development on the claims and to describe the development expected in the future. Use a map or maps to show all existing and proposed development at a scale of at least one inch = 100 feet (1" = 100'). At this scale, a standard 20 acre mining claim is 15 x 6 inches. More than

one map or a map with overlays may be necessary. The use of aerial photos of a scale of 1"=200' is encouraged.

Claims must be located accurately, and claim locations should be supported by staked corners. As applicable, include, at a minimum, each of the following (use extra maps as necessary)**:**

- Mining claim boundaries within which operations are proposed
- True north
- Scale (horizontal and vertical) and contour interval
- Natural features including but not limited to: streams, lakes, and ponds; vegetation communities (e.g., tundra, forest); and topographic relief;
- Existing surface disturbance, including mine workings, structures, roads, trails, and access routes associated with the mining operations
- Areas previously reclaimed
  It is unknown if any reclamation has been done. These claims have minimal known mining activity.
- Proposed mining operations - identify location of existing and proposed: Exploration activities such as geophysical lines, drill holes, and trench sites
  There are no existing mining operations.
- Pits, cuts, underground portals, and underground workings
  Please refer to the Mineral Report.
- Equipment, structures, surface disturbance, ditches, pads, ponds and workings
  Please refer to the Mineral Report.
- Mine tailings and wastes dumps: **N/A**
- Soil and vegetation stockpile areas: **N/A**
- Ore stockpile areas, both temporary and long-term: **N/A**
- Water diversions, discharge points, settling ponds, and water recycling, equipment **N/A**
- Fuel and supply caches:
- Equipment staging areas and storage sites
- Location of camp for mining operations including all buildings, trailers, and equipment:
- Areas for reclamation:
- Roads, trails, airstrips, and other access routes.
- All openings to the surface for underground mines (identify as main shaft, adit, ventilation or escape shaft or adit, rises, etc.)
- Millsite or other processing facility locations

See Aerial Survey maps of the claims done by Walker-Alaska Aerial Survey, INC.
Attachment #5, Maps
Also see attachment #7, Aerial photos.
Refer to claim locations in the Mineral Report

C. Equipment to be Used (36 CFR §9.9(b)(3))

Identify the following:

1. Surface transportation on claim area:

- Type, weight, and description of vehicle(s) (e.g., 4x4 3/4 ton pick-up, etc.)
- Fuel and maintenance requirements

Main surface transportation:

2012 Polaris Big Boss 6x6. Weight is approximately 800lbs. It will use approximately 4 gallons of fuel a week and will be removed from the operation at the end of each mining season. No maintenance will be done at the operation other than emergency repairs if any.

2000 Toyota Tundra 4x4. Weight is approximately 4500lbs. The truck averages 13mpg with a 25 gallon fuel tank and may need refueling at the operation. This is the main transportation in and out of the operation. No maintenance will be done at the operation other than emergency repairs if any.

1987 Chevy Crew Cab 4x4 lifted. Weight is approximately 5500lbs. The truck averages 10mpg with a 25 gallon fuel tank and may need refueling at the operation. This will be a secondary transportation in and out of the operation. No maintenance will be done at the operation other than emergency repairs if any.

Alternative surface transportation:

Two 2007 Polaris Sportsman 500cc 4x4. Weight is approximately 500lbs. They will use a minimal amount of fuel as they won't be the main source of transportation on the claims. No maintenance will be done at the operation other than emergency repairs if any.

2. Operations equipment:

- Name, type, and short description of each piece of equipment
- Fuel and maintenance requirements
- Fuel storage capabilities and methods
- Processing capacities and flow rates for sluices, suction dredges, etc.

Processing capacities and flow rates vary on the material being run. The max processing capacities are for running loose overburden and material that does not have good paying gold. Gold rich gravels are run at a rate approximately 50% less than non-gold rich overburden gravels. Once bedrock is reached capacities slow down even more depending on how much the bedrock cracks are worked and how rich the gold is.

All fuel used at the time of fueling will be stored in 5 gallon containers.

A handheld metal detector. No maintenance is required.

Two Honda EU2000 generators. Uses 1 gallon of fuel a day per generator.

Two Gold Cubes will be used to process concentrates from dredging. They will be used in a recirculating system in a 50-100 gallon tub. They run at approximately 10 GPM and will be used 1-4 times a week. Each unit will process 4 gallons of dredge concentrates per hour. They require a deep cycle battery and no other maintenance is required. Please see attachment #4 page 13 for Gold Cube image.

One Lewis Winch with a Stihl chainsaw motor. Winch has a 3000lb pulling capacity with a 5hp motor. No maintenance is required.

See http://www.lewiswinch.com/ for more info.

One Helper Winch with a HomeLite chainsaw motor. Winch has a 2000lb pulling capacity with a 2.5hp motor. No maintenance is required.

Total 2 stroke fuel used for both power winches is less than a half a gallon a week.

See attachment #4 page 8 for power winch image

One 4" Keene Dredge with a 5.5hp Honda motor and a T80 hookah air compressor. Uses 1 gallon of fuel per 4 hours of runtime. Dredge is run at approximately 40 GPM. Max gravels run are approximately 1.5 Cubic yards an hour. I personally run a max of 1-2 cubic yards a day with this 4" dredge. Every clean out of the sluice box will produce approximately 2 gallons of concentrates. Maintenance is one oil change per year and is less than one quart of oil. Dredge is approximately 6' long and 4' wide, weighing around 200 pounds.

One 6" Keene Mini Dredge with twin 5.5hp Honda motors and a 263 hookah air compressor. Uses 1 gallon of fuel per 4 hours of runtime per motor for a total of 2 gallons per 4 hours. Dredge is run at approximately 80GPM. Max gravels run are approximately 3 Cubic yards an hour. I personally run a max of 3-4 Cubic yards a day. Every clean out of the sluice box will produce approximately 4 gallons of concentrates. Maintenance is one oil change per year and is less than one quart of oil per motor for a total of less than 2 quarts. Dredge is approximately 8.5' long and 5' wide, weighing around 450 pounds.

The 8 inch dredge is not proposed for the 2015 mining season. The 8 inch dredge will be proposed after the 2015 mining season for future use starting in 2016.

One 8" Keene Dredge with twin 23hp Vanguard motors and a 263 hookah air compressor. Uses 2.5 gallons of fuel per motor per 4 hours of runtime for a total of 5 gallons per 4 hours. Dredge is run at approximately 160GPM. Max gravels run are approximately 6 Cubic

yards an hour. Realistically this dredge is known to run no more then 6-8 Cubic yards a day. Every clean out of the sluice box will produce approximately 8 gallons of concentrates. Maintenance is one oil change per year and is less than 2 quarts of oil per motor for a total of less than 4 quarts. Dredge is approximately 12' long and 8' wide, weighing around 1500lbs.

An Excavator will be needed for the Eldorado road improvements. At this time we have not purchased the Excavator, exact specs are not available. It will be approximately a 160 to 220 size/model, 30,000lbs to 55,000lbs and burn 6 to 10 gallons of diesel an hour. It will have a bucket/thumb combo with a blade for grading. Only maintenance required for road improvements is daily greasing of zirk fittings. If a break down occurs, repairs may be needed on location.

Please see attachment #4 pages 1-4 and 9-12 for more info and images on dredges.

D. Description of Proposed Operations (36 CFR §9.9(b)

Proposed Operations are set into 3 phases of Placer Suction Dredging.

All Suction Dredging will be done within the normal high water level of Eldorado Creek. All necessary reclamation of dredging operations will coincide with any dredging activity.

During phase 1 and 2 a power winch will be used several times a day for the purpose of moving rocks, cobbles and boulders from the dredge area. This material will remain in the creek and be placed within 50 feet of the dredging area in such a manner that it will appear natural, as though they were placed there by high water or floods. Phase 1 and 2 will take place anywhere within the Liberty claims in Eldorado creek. With the nature of suction dredging operations the exact location at an exact time of actual dredging cannot be given.

Phase 1: Exploration, prospecting, and sampling will first take place with a 4" or 6" dredge to look for a valuable deposit. Once a valuable deposit is found phase 2 will commence. All samples taken will be processed through phase 3.

Phase 2: Production will be done with either the 6" or 8" dredge once a valuable deposit is found. Once the area of a valuable deposit is mined phase 1 will commence again. All production concentrates will be processed in phase 3. (The 8 inch dredge is not proposed for the 2015 mining season. The 8 inch dredge will be proposed after the 2015 mining season for future use starting in 2016.)

Phase3: Clean up and processing of gold concentrates. This will be the final step in all gold recovery. Running samples or production concentrates through the Gold Cubes in a recirculating system to greatly reduce gravels and gold concentrates. Panning and drying are the final steps in this phase. Location will be at or around the 20x10 EZ-up type canopy near the cabin and storage building.

If claims prove to have good gold throughout all instream gravels then phase 1 will be minimal and production (phase 2) will be run throughout all stream gravels.

During operations there will be a few instances during the season where 2 dredges will run at the same time. Either in the same location or at different locations on the claims. Most of the time when this occurs it is because phase 2 is ending and phase 1 is in the process of looking for a new deposit.

A metal detector and hand tools may be used in previously disturbed areas such as the Comstock area. This is only something to do when time allows because main operations are not running. Looking for Gold, Silver, Galena or other minerals will consist of on the surface to 1 foot deep sampling. Immediate reclamation of the area dug by hand will be made in place and no vegetation will be removed or disturbed. Any ore and other minerals found will be removed from the claims and further processed outside of the Park.

At the beginning of every mining season a period of about one week will be required to bring in gear and supplies and also to do maintenance and repairs on equipment, structures and road maintenance. At the close of the season about one week is needed to stow away all mining gear, winterize camp and haul out some equipment/gear not being stored over the winter. An extra trip into the claims for the beginning and ending of the season is anticipated.

During the approximate 100 day mining season roughly 80 days will be spent at the operation. Trips into the claims for operations will last approximately 1-2 weeks followed with 3-5 days off to resupply and take care of personal responsibilities. During the mining season one or two of the miners may elect to stay at the mining camp while a resupply trip is taken. Potentially a miner or two could be on the location of operations the whole mining season but is not likely at this time.

For most mining operations, two miners will be at the claims working together. Occasionally, there could be up to four miners (including Operator) at the claims at the same time. Miners will work approximately 8-14 hours a day with an average day being 12 hours. Actual dredge run time will vary from 5-10 hours a day with 6-8 hours being the average.

1. Indicate the type and level of operations being proposed:

    - Placer (ground preparation, production, etc.)

In stream Placer mining by suction dredging.

    - Lode (surface, underground, etc.)

No Lode mining will take place. Only minimal prospecting by hand for minerals on the surface (placer, free or float minerals) in previously disturbed areas such as the Comstock area.

- Exploration (drilling, sampling, etc.) **N/A**

2. State whether this plan is for:

- Continuation of previous mining operations
- And new mining operations

This Plan is for new mining operations.

- Annual assessment work that is legally necessary to bring the claim to patent **N/A**

3. Timing and production

- Give times of beginning and completion of each phase and timing of overall proposal. Give specific dates, if possible.

Mining season is approximately 100 days long, depending on weather. Approximately June 1st to September 15th give or take a couple weeks. Phase 1 (sampling) and 2 (production) will occur consecutively and continuously throughout operations. Phase 3 (cleanup of gold concentrates) will commence on a daily basis if in phase 1 (sampling). If in phase 2 (production) then phase 3 (cleanup of gold concentrates) will occur approximately once a week.

- Estimate anticipated production: daily production rate, seasonal or yearly production rate, total production for life of operation.

Estimated production of material processed and gold produced:

Daily: 6" dredge, 3-4 cubic yards of gravels, 1/4 - 1 ounce of gold.

8" dredge, 6-8 cubic yards of gravels, 1/2 -2 ounces of gold.

Yearly: 6" dredge, 150-300 cubic yards of gravels, 20-75 ounces of gold.

8" dredge, 300-600 cubic yards of gravels, 40-150 ounces of gold

A total of 125,651 BCY (bank cubic yards) exist on the valid Liberty claims, 45,508 of which are considered mineralized. At an average pay of .032 ounces per BCY there are an estimated 1,456 ounces in reserve. Please see page 29-31, 43 and III-1 through III-7 in the Mineral report.

From all the information provided in the Mineral report, I estimate there are about 20,000 to 30,000 BCY of instream material within Eldorado Creek itself. None of the 21 backhoe test sample areas in 1988 were taken "instream" of Eldorado (page 22, II-1 through II-27). The placers on Eldorado are very immature because they are still in a phase of down-cutting and sediment transportation into the creek itself. Eldorado Creek has a gentle grade of 3% which is good for instream gold preservation (page 17, 21). It is likely that the instream gravels of Eldorado hold far more gold then the surrounding benches.

In 1992, 18 test samples were taken by hand methods. Most of which were taken in the already pre dug backhoe pits. Some were taken in shallow bedrock areas which proved to be very hard digging by hand. It is impossible to efficiently recover gold instream by hand methods on bedrock. None of the tests were done instream of Eldorado Creek with a suction dredge which is many times more efficient.

With an estimated 20,000-30,000 BCY of instream gravels and 100 day mining season it would take 65-200 years with a 6" and 33-100 years with an 8" to suction dredge the total instream gravels running only one dredge at a time with a 2-4 man crew. This does not take into account the potential self-renewing of the claims during times of floods and high water. A flood like the so called "500 year flood" of 2014 has added a whole new pay layer and re-concentration of gold. Please refer to the last paragraph on page 17 of the Mineral Report.

4. Mine workings

- Provide drawings (to scale), including cross sections of surface excavations and alterations such as cuts, tailings waste dumps, settling ponds, dams, berms, and roads, including dimensions and slopes. **N/A**
- Describe water control and drainage systems, including tailings ponds, settling ponds, slime ponds, etc. **N/A**
- Describe methods for removing topsoil, overburden, waste rock, and ore, and identify stockpile areas. **N/A**
- Provide estimates of volumes and tonnages for topsoil, overburden, waste rock and ore, stockpiles and waste dumps, road cuts and excavations, and material used in the construction of berms, settling ponds, and dams. Identify and list each rock or soil type separately. **N/A**
- Describe on-site ore processing (including crushing, grinding, etc.). **N/A**
- Describe ore haulage methods and routes (including noise and dust control measures). **N/A**
- Provide engineering plans of: settling ponds, culverts, spillways, berms, drains, excavated slopes, etc., **N/A**
- ditches, canals, flumes, or any other water diversion system, **N/A**
- layout of pipeline system including lift pump stations, slurry pipes, etc**., N/A**
- underground workings. **N/A**

5. Energy requirements:

- Identify the energy source(s): on-site generators, off-site generating facilities, etc.

Two Honda EU2000 watt generators will be on-site.

- Describe the layout of any transmission line system: location of powerlines, substations, transformers, etc., **N/A**
  current and voltage requirements.

Only a small amount is used for lights, coffee maker, toaster oven, fridge, microwave, heater and battery chargers.

Safety systems.

An appropriate fire extinguisher will be in place on or at any vehicle, cabin, each storage building and operating dredge locations.

6. Explosives and blasting equipment: **None, N/A**

- Identify the type and quantity of explosives.
- Describe transportation, storage facilities and disposal of explosives.
- Describe the blasting program Equipment,
- Program Design,
- Safety Measures.

7. Use of chemicals **None, N/A**

- Provide description and explain use of all compounds and additives (e.g., amines, fatty acids, cyanide, flocculants, dispersants, inorganic acids, etc.) proposed for processing or water treatment for drilling, leaching, settling, etc. Identify any soluble material used for any purpose.
- Describe transportation, storage, and disposal of processing chemicals.
- Identify safety precautions in handling.

8. Fuel requirements:

- Identify type(s) and amounts of fuel required.

200 gallons of gasoline or less will be stored at any given time for main mining operations.

500 gallons or less of diesel fuel will be stored for the Eldorado road improvements.

Actual fuel requirements are listed under operations equipment.

- Describe transportation and storage facilities, including maintenance and spill prevention and control precautions:

Transportation to the operation will be by personal truck. Fuel will be in 55 gallon, 15 gallon, 5 gallon, 2.5 gallon and 1 gallon containers. Fuel will be stored in a 8'x10' storage building which will be located 100+ feet away from Eldorado Creek. (See attachment #5, Maps) All fuel stored will be placed in a secondary fuel containment container or berm inside the storage building. Two 55 gallon and two 5 gallon spill kits will be on hand at all times. A 5 gallon spill kit will be on location where any 5 gallon container of fuel is being used. All miners will be trained on responsible use of refueling and spill kit usage. Fuel absorbing pads will be in place when refueling any dredge that is instream. Any used absorbing pads or spill kits will be removed from the park at the time of resupplying and immediately replaced.

Temporary fuel storage for Eldorado road improvements will be needed. Up to 500 gallons of diesel fuel in 55 gallon containers will be placed in a secondary containment container or berm. It will also be temporarily boarded up to keep curious bears out. Spill kits will also be on location during this time. See attachment #5-D for location option A&B. If the park has other options for fuel storage and or location that input is welcomed.

- Identify method(s) and site(s) for disposal of waste fuel and oil:

Removal of any waste fuel, container or oil will coincide with resupply runs every 1-2 weeks and will be completely removed from the park. Until removal all waste fuel and oil will be stored in an appropriate container inside the secondary fuel containment container.

9. Structures: Identify all structures necessary for the operation and their purpose.

See attachment #5

Rehabilitation of existing cabin to be used for living quarters for miners. A wood stove will be installed with approved piping and spark arrestor. All firewood to be used will be brought into the park from an outside source.

A 12'x24' temporary equipment storage building will be necessary for storing dredges, ATVs, equipment, tools, water, food and supplies. It will be built near the cabin. See

attachment #4 page 14 for image – image is of something close or similar to what equipment storage building will look like. See Attachment #5 for locations.

A 8'x10' temporary fuel storage building will be located approximately 650 feet south of the cabin to provide a safe 100 foot distance from any waterway. See attachment #4 page 7 for image. See Attachment #5 for locations.

A 4'x4'x8' temporary Outhouse on skis will be built and placed near the fuel storage building. It will be at least 100 feet from Eldorado Creek. A 3'x3'x3' pit will need to be dug at location for human waste. See attachment #4 page 6 for image. See Attachment #5 for locations.

A 6'x8'x8' temporary sauna/bath/shower house on skis will be built. A wood stove will be installed with approved piping and spark arrestor. All wood to be used will be brought into the park from an outside source. See attachment #4 page 5 for image. See Attachment #5 for locations.

A temporary 10'x10' E-ZUP type canopy with mosquito netting will be put up and taken down upon entry and exit to the operation on a "as needed" basis. Mainly, its use is for on work site location to provide shelter and protection from mosquitoes. It will be placed in a location as not to disturb vegetation such as the existing road as needed.

A temporary 20'x10' EZ-up type canopy will be used next to the storage building or the Cabin. It will be put up and taken down at the start and end of each mining season. This canopy can be set up or taken down in less than 1 hour. Its purpose is for shelter for running Phase 3 (Clean up and processing of gold concentrates) and also for ATV parking out of the weather during operations.

Sketch drawings (to scale) of all structures showing plan layout and location.

See attachment #4, page 5, 6 and 7. Also see attachment #5

- Identify methods of erecting structures.

Cabin is existing and will be rebuilt for rehabilitation. Any part of the cabin that needs restoration will be done in a way as to keep its original look with similar materials used.

12'x24' equipment storage building will be built on location using standard building materials. It will be built in a way as to be easily deconstructed for reclamation.

Fuel storage building, Outhouse and bathhouse will be built on location using standard building materials. They will be built in a way as to be easily deconstructed for reclamation. They will also be built on skis so if need be they can be pulled onto a trailer and removed.

EZ-up type canopies do not need to be built. One temporary 10'x10' canopy and one temporary 10'x20' canopy.

At times a 12'x12' wall tent or similar shelter will be erected for temporary living quarters next to the cabin. It will be used during times of the rebuilding of the cabin or as needed. Please see attachment #4 for images: page 5 for sauna/bath/shower house, page 6 for outhouse, page 7 for fuel storage building and page 14 for equipment storage building.

- Identify materials used, source(s), and transportation needs.

Materials used will be standard building materials found at Spenard Builders Supply or similar. Transportation of materials will be by personal truck and trailer.

10. Additional information required for underground mining: **N/A**

- Identify the mining method (e.g., room-and-pillar, block caving, long wall, etc.).
- Show present and anticipated layout of underground workings, including engineering drawings and cross-sections to depict present and future development.
- Describe haulage routes, hoist system, ventilation systems, etc.
- Describe support structures and methods to prevent subsidence, sloughing, cave-ins, etc.
- If not previously discussed, describe power sources, roof bolting and grouting, safety equipment and anticipated hazards (gas, dust, etc.), and any other system not previously discussed.
- Provide data on water generation and disposal from underground development and mining including volume, quality, underground and surface storage sumps, water treatment facilities and equipment, surface discharge, use for dust control, etc.
- Describe gates, bulkheads or other means of blocking off mine openings (as a safety precaution, to prevent unauthorized entry, and to prevent accidental entry by wildlife).

E. Nature and Extent of Known Deposit (36 CFR §9.9(b)(5)):

See Mineral Report

1. Submit generalized geologic surface sketch map or any published map, if available, showing the nature and extent of the known deposit.

[redacted]

2. Briefly describe the geology and deposit: if placer, describe the depth and thickness of pay and type of bedrock. If lode, describe host rock, vein material, faulting, etc. Identify the following: Use validity report

- Size and shape of deposit
- Ore minerals and grade, ratio of ore to waste
- Secondary and gangue minerals
- Reserve calculations

See page 29-31, 43 and III-1 through III-7 in the Mineral report.

3. Describe previous production and mining history, if known.

See Mineral Report pages 20-22.

4. Provide references for information provided above.

See Mineral Report.

5. For unpatented claims in Alaska, attach completed copy of the Supplemental Claim Information or Mineral Report.

Attached.

F. Reclamation Plan (36 CFR §9.9(b)(6) and 9.11)

To enhance aquatic and terrestrial habitat recovery, reclamation shall be a planned component of the mining operation, and shall be accomplished contemporaneously with mining.

Proposed plans of operations for all claims must include in the reclamation plan provisions for the following:

1. Procedures for removing all surface structures, equipment and man-made debris (36 CFR §9.11(a)(2)(i)), including: (structures placed by you)

- Removal of all above-ground structures including trailers, tents, storage buildings, water tanks, fuel storage tanks, power lines, pipelines, etc. (NOTE: on claims patented without surface use restrictions, only those structures used for "operations" must be removed as part of reclamation work).

Cabin will be left as it was existing.

Outhouse will be easily disassembled and removed. The 3'x3'x3' waste pit will be covered with gravels and topsoil.

Equipment storage building, Fuel storage building, Outhouse and Bathhouse will be easily disassembled and removed by personal truck and trailer.

Canopy's will be taken down and removed as will any tent.

- Removal of all equipment including mining equipment, vehicles, tools, parts, etc.

All items will be removed by personal truck and trailer.

- Removal of all trash and debris, including fuel, chemicals, and blasting materials.

All trash will be removed from the claims/park every 7-14 days and will coincide with re-supply trips.

- Removal of all dams, dikes, berms, etc. except those required for maintaining site integrity; provide cross-sections showing the site configuration after reclamation. **N/A, no dams, dikes or berms are necessary for operations.**
- Removal of temporary roads on or to the mining claims by pulling out culverts and temporary bridges, and by scarifying and breaking down the road prism to match the natural slopes. **N/A, no temporary roads will be constructed. Existing road RST 414 will be left as is.**

2. Replacing overburden and spoil (36 CFR §9.11(a)(2)(iii))

The nature of Suction Dredging instream replaces any and all gravels instream at same time of removal within 30 feet. As dredging is taking place the miner works his way upstream and deposit gravels in the same place he was just dredging. Reclamation coincides with dredging.

- Describe procedures for stripping overburden and spoil. **N/A**
- Identify procedures for saving the fine particulate matter and organic portion of the overburden and storing for use in reclamation, including sediments accumulated in settling ponds. **N/A**
- Identify stockpile locations where they will be maintained in a stable configuration not subject to erosion and where they will not encroach upon stream channels. **N/A**
- Describe methods for marking overburden and spoil for future reference. **N/A**

3. Grading to original contours (36 CFR §9.11(a)(2)(iv))

The nature of Suction Dredging does not greatly affect instream grade and contours. At any time of normal high water or flood all instream grades and contours will naturally be reclaimed to its previous state. Mother Nature will reclaim any suction dredging activity during normal high water or floods to the extent that the Miner will have to redo all his work in that area after high water if he wants to continue working that location.

Note that for claims patented without surface use restrictions, the operator need recontour (and thus describe recontouring) only to the extent necessary to preclude nuisance, adverse effect, injury or damage to federally-owned lands. **N/A**

a. Describe recontouring plan to redistribute tailings piles to conditions that approximate the original contours and slopes of the adjoining land. **N/A**

b. Describe methods of stream rehabilitation including: **N/A**

- Re-establishing the original length, width, and sinuosity of the stream channel that existed prior to mining.
- Replacing the substrate with a mix of material (gravel, rubble, and/or boulders) to form a streambed that approximates original conditions (NOTE: fine particulate matter and the organic portion of the overburden may not be used to construct the stream bed, and the stream may not flow on bedrock).
- Re-establishing the original gradient of the stream between the beginning and end of the mined areas.
- Re-establishing the original stream characteristics so that an appropriate pool/riffle ratio is obtained.
- Eliminating barriers to the free passage of fish throughout the re-established stream channel.
- Provisions for aquatic habitat diversity including undercut banks, pools, riffle areas, runs, slack areas, instream cover, feeding areas, over wintering areas, and spawning areas if they existed prior to stream disturbance.

- Erosion control and bank stabilization measures to minimize downstream turbidity, and facilitate stream side revegetation.
- Measures to establish land/water interface which approximates pre-mining conditions.

4. Replacing topsoil (36 CFR §9.11(a)(2)(v)) **N/A**

a. Describe topsoil handling and stockpiling plan, including procedures for removing and replacing stock piled topsoil over graded mine spoils. **N/A**

b. Describe soil stabilization, erosion and sediment control measures. **N/A**

5. Prevention of surface subsidence (36 CFR §9.11(a)(2)(ii))

All mining is located instream. Care will be taken not to dredge above the normal high water mark. No undercutting of stream banks will occur at any time during operations. Care will be taken to only use vehicles on existing road or in previously disturbed areas such as the Comstock Cabin area.

a. Describe methods to prevent surface subsidence from underground workings. **N/A**

In addition to the above, proposed plans of operations for unpatented claims and claims patented with surface use restrictions must also include in the reclamation plan provisions for the following:

6. Re-establishing native vegetation (36 CFR §9.11(a)(2)(vi)) **N/A**

- Describe seedbed preparation (ripping, discing, etc.).
- Identify native plant species, including seed or transplant sources, collection methods if not available commercially, seed mixtures, seeding rates, seeding and mulching methods.
- Identify fertilizer proposed for use, its composition and application rate.

G. Compliance with Other Laws and Regulations (36 CFR §9.9(b)(7)):

Describe the steps taken to comply with applicable federal, state, and local standards, laws or regulations, including, but not limited to, those listed below. Where applicable, attach copies of each permit, application or equivalent document.

- State water quality standards
- National Pollutant Discharge Elimination System Permits as issued by the U.S. Environmental Protection Agency
- State waste disposal permit stipulations for settleable solids **N/A**
- State anadromous fish protection requirements **N/A**
- Dredge and Fill permit ("404" permit) as issued by U. S. Army Corps of Engineers **N/A**
- Solid and liquid waste disposal permits **N/A**
- All other applicable laws and regulations

From the beginning I have worked with the NPS [redacted] on the Mining Plan of Operations and all permits that may be required to comply with all of the above listed. Also having a contact at the Alaska Miners Association to aid in additional information has been a great resource. During this process I have also contacted the DNR, BLM, ADF&G, EPA, DEC, and the U.S. Army Corps of Engineers to make sure I am in compliance with all applicable laws and permits.

H. Environmental Report (36 CFR §9.9(b)(9)) :

See NPS Final Environmental Impact Statement Denali National Park & Preserve Cumulative Impacts of Mining, Affected Environment: Kantishna Hills Study Area, p55-79

National Park Service regulations at 36 CFR §9.10 require the field director shall make an environmental analysis of a plan of operations prior to approving or rejecting a plan. The analysis is based, in part, on the claimant's environmental report required by 36 CFR §9.9(b)(9)(i-vi). The environmental report must include, at a minimum, a thorough discussion of each of the following:

1. Environment of the area affected by the operation **See EIS Above**

This should include a thorough description and discussion of the aquatic and terrestrial environment, including soils, water resources, water quality, floodplains and wetlands, topography, geology, watershed characteristics, vegetation, threatened or endangered species, fish and wildlife habitat, large mammal populations (e.g., bear, caribou, deer, Bighorn or Dall sheep, wolf, etc.), aesthetics, cultural resources (historical or archeological sites), recreational use, and in Alaska, subsistence use.

All main mining activity will be located instream of Eldorado Creek and will be by suction dredge. No adverse effects to fish and wildlife will take place.

A metal detector and hand tools may be used in previously disturbed areas such as the Comstock area. This is only something to do when time allows because main operations are not running. Looking for Gold, Silver, Galena or other minerals will consist of on the surface to 1 foot deep extration. Immediate reclamation of the area dug by hand will be made in place and no vegetation will be removed or disturbed. Any ore and other minerals found will be removed from the claims and further processed outside of the Park.

2. Impacts of proposed operations on the environmental components above **See EIS Above**

Include an accurate and precise description of how the operations will affect each of the items above. If, for example, the proposed plan of operations will necessitate elimination of the existing stream and subsequent rechannelization, indicate short and long term effects on aquatic resources. Describe impacts on vegetation, fish and wildlife habitat, food sources, and movement or migration.

Please see attachment #6 for the report of "Compilation of Published Findings on the Effects of Suction Dredging". http://www.goldgold.com/655.html

"Movement rate by suction dredge mining would equal about 0.7% of natural rates."

A paragraph from that report reads as follows;

A report from the U.S. Forest Service, Siskiyou National Forest (Cooley, 1995) answered the frequently asked question, "How much material is moved by annual mining suction dredge activities and how much does this figure compare with the natural movement of such materials by surface erosion and mass movement?" The answer was that suction dredges moved a total of 2,413 cubic yards for the season. Cooley (1995) used the most conservative values and estimated that the Siskiyou National Forest would move 331,000 cubic yards of material each year from natural causes. Compared to the 2413 (in-stream) cubic yards re-located by suction mining operations the movement rate by suction dredge mining would equal about *0.7% of natural rates*.

3. Steps to be taken to insure minimal surface disturbance

All mining is located instream. Care will be taken not to dredge above the normal high water mark. No undercutting of stream banks will occur at any time during operations. Care will be taken to only use vehicles on existing road, instream, or in previously disturbed areas such as the Comstock Cabin area.

- Describe all measures taken to minimize surface disturbance and environmental impacts.

The existing road that runs parallel to and the full length of Eldorado Creek will be used. Entry into the creek will have minimal impact if any. Most access points into the creek will be from the existing road that crosses the creek as much as 20 times. From most points, a dredge can be moved up or down creek from those locations either by hand, truck, ATV or power winch. At locations where it isn't feasible to access by above methods, caution will be taken to enter the creek in such a way that would least disturb the surrounding vegetation using hand methods and or power winch.

Areas surrounding the Cabin/Comstock area are mostly previously disturbed. It is in this area that equipment storage building, bathhouse, canopy and tent will be located. Also, this is where vehicle parking will be located. Temporary vehicle parking will also be on the existing road. Bathhouse will be built on skies to have the least impact.

The location for the Outhouse and the fuel storage building will be placed next to the road in an area with the least impact. The Outhouse will disturb a 3'x3'x3' area.

Please see attachment #5

4. Methods for disposal of all rubbish and other solid and liquid wastes

Describe methods of handling, storing, transporting and disposing of all rubbish and waste, including human waste. Identify disposal locations.

All trash, rubbish, solid and liquid wastes will be stored in the cabin and equipment storage building in appropriate containers until removal. Removal of such will coincide with resupply runs every 1-2 weeks and will be completely removed from the park. Human waste will be deposited exclusively in a 3'x3'x3' hole in the ground at least 100' from any water source. At the time of reclamation at least one foot of gravels and topsoil will cover the hole. See attachment #5

5. Alternative methods of extraction and the environmental effects of each **N/A**

Identify and discuss other methods or techniques of mining and provide a discussion of the impacts of each in a manner which allows for ease of comparison to the operations proposed.

6. Effects of actions taken to comply with the reclamation plan **See Above**

The reclamation standards are intended to provide for the safe movement of native wildlife, re-establishment of native vegetation, the normal flow of surface and reasonable flow of subsurface waters, the return of the area to a condition which does not jeopardize visitor safety or public use of the unit, and return of the area to a condition equivalent to its pristine beauty (36 CFR §9.11(2)(b)). The impacts of the proposed reclamation steps taken to comply with these standards must be addressed whether beneficial or adverse.

I. Relationship to NPS Planning (36 CFR §9.9(c))

Discuss the relationship between the proposed plan of operations and the NPS unit's current statement for management and other planning documents for the unit, such as the general management plan. Such documents are available from the park superintendent upon request. Discuss activities to control, minimize, or prevent damage to the unit's recreational, biological, scientific, cultural, and scenic resources (including but not limited to the environmental components listed in the claimant's environmental report required under 36 CFR §9.9(b)(9)).

See Mining Final EIS and ROD: "Since regulations at 36 CFR Subpart 9A are intended to ensure that mineral related activities associated with mining claims do not significantly injure or adversely affect park resources and are not intended to constitute a taking of any compensable property interest of a mining claimant, plans will be reviewed as they are submitted to achieve this balance. Any plans of operations approved will include appropriate mitigation and reclamation measures to minimize the effects on park resources. If, however, the National Park Service determines that the impacts of proposed mining operations would violate the decision standards of 36 CFR 9.10 for plan of operations approval and the effects could not be sufficiently mitigated, the plan would be disapproved pursuant to the existing regulatory standards."

J. Additional Information (36 CFR §9.9(b)(10))

As necessary, additional information may be required by the NPS in a proposed plan of operations. In specific terms, this additional information would be necessary to accurately and adequately analyze the effects that the proposed operation would have on the preservation, management, and use of park resources (including aesthetic qualities) and for decision-making regarding plan approval or disapproval. The field director must reject the proposed plan of operations if all necessary information is not included with the submission.

APPENDIX F

Performance Bond for the DeVault Mining Plan of Operations on the Liberty placer claims, Eldorado Creek, Kantishna Hills, Denali National Park and Preserve

Bond Purpose and Requirements: Upon approval of a plan of operations the operator is required to file a suitable performance bond with a satisfactory surety, payable to the secretary or his designee. The bond is conditioned upon faithful compliance with applicable regulations, the terms and conditions of the authorization permit, and the plan of operations as approved, revised or supplemented. In lieu of a performance bond an operator may elect to deposit with the Secretary, or his designee, cash or negotiable bonds of the US Government.

Bond Calculation: The bond or security deposit shall be in an amount equal to the estimated cost of completion of the reclamation requirements either in their entirety or in a phased schedule for their completion as set forth in the approved, supplemented or revised plan of operations.

Reclamation Standards:

1. Reclamation shall be a planned component of the mining operations and shall be accomplished contemporaneously with mining.

2. Reclamation shall provide for the safe movement of native wildlife, the reestablishment of native vegetative communities, the normal flow of surface and reasonable flow of subsurface waters, the return of the area to a condition which does not jeopardize visitor safety or public use of the unit or archeological resources.

3. Reclamation of mining sites would be concomitant with operations. Reclamation of mined areas will include concurrent back-filling with tailings, and removing any dams and leveling tailings piles to a natural condition at the end of each season. Reclamation of all excavations outside the stream channel would include reestablishing the original grade and contour.

4. Reclamation would include the removal from the Liberty claims all mining equipment, access vehicles and trailers, materials, supplies, petroleum products and debris.

5. Annual mine site reclamation shall consist of:

A.) Reclamation of the sites disturbed by mining with the suction dredges.

B.) Leveling the tailings and back-filling holes to a condition that approximate the contours and slopes of the adjoining land, floodplain and stream channel.

C.) Reclaiming and spreading out the gravel used in dams constructed for the purpose of operating the dredge and eliminating any barriers to allow for the natural flow of water and free passage of macro and microfauna and stream biomass.

D.) Insuring that reclamation of disturbed areas prevents to the extent practical erosion of the stream bank and stabilizes the area to minimize downstream turbidity.

E.) All debris from the mining operation will be removed from along the stream bed and out of the floodplain each season.

6. Final reclamation at conclusion of plan:

A.) Removing all equipment: trucks, four-wheelers and trailers, suction dredges, fuel, fuel containers, tents, and support and building materials and supplies transported to the claims for the mining operation.

B.) Removing and disposing at an approved location all garbage, refuse or waste, abandoned and dysfunctional equipment transported to the claims in support of approved operations.

7. The operator shall notify the NPS as to the when reclamation has been or would be completed. A field inspection with the operator present would be conducted to evaluate the completed reclamation. Failure to accomplish reclamation in accordance with the approved plan shall result in forfeiture of the reclamation bond. The proposed plan of operations with NPS stipulations as described in alternative 2 of the 2016 EA constitute the approved plan of operations.

Bond Recalculation Due to Plan of Operations Modification: In the event that an approved plan of operation is revised or supplemented in accordance with section 9.12, the Superintendent may adjust the amount of the bond or security deposit to conform to the plan of operations as modified.

Duration: The operator's and his surety's responsibility and liability under the bond and/or security deposit shall continue until such time as the Superintendent determines that successful reclamation has occurred.

Bond Release: When all required reclamation requirements of the approved plan of operations are completed, the Superintendent shall notify the operator that performance under the bond or security deposit has been completed and that it is released.

Performance Bond Calculation: High clearance truck and excavator, two operators, up to three days to remove equipment and materials, repair abandoned dams and holes in the stream and repair road work mistakes.

RECOMMENDED PERFORMANCE BOND $5,000.00

APPENDIX G

Eldorado Creek Mining Route Improvements Proposed by Lessee Kris DeVault

List of improvements 1 - 15 to the start of the claim block at Liberty #9

- 6864 feet of road
- 2045 feet of road needs light improvements – 29.7%
- 300 feet of road needs moderate improvements – 4.3%

List of improvements 16 - 32 for the entire claim block, Liberty #9, #13 - #18

- 8448 feet of road
- 1993 feet of road needs light improvements – 23.6%
- 995 feet of road needs moderate improvements – 11.7%

GPS coordinates are approximately accurate within 15-20 feet.

Please see Appendix H for pictures.

1. N63°31’25.3” W150°58’28” – Light grading for ramp, mostly sand for 30’. Picture 1a.

Next 120’ needs moderate grading of rocks, small boulders and debris. Light brushing. Pictures 1b, 1c and 1d.

2. N63°34’24” W150°58’30.7” - 10-20’ramp into creek/road. Picture 2a.

Next 240’ needs light grading and boulders moved downstream. Picture 2b.

Root pile would be pushed aside. Picture 2c.

3. N63°31’24.1” W150°58’35.5” – Large boulders would be pushed aside. 450’ of light grading through canyon. Picture 3a.

4. N63°31’23.4” W150°58’38.7” – 100’ of light grading and brush clearing. Picture 4a and 4b.

5. N63°31’22.8” W150°58’40.5” – Landslide area: Brush clearing and debris to be pushed to the side. 2-4’ of landslide would be moved. Picture 5a, 5b and 5c.

6. N63°31’11.5” W150°58’56.5” – 10’ of light leveling. Picture 6a.

7. N63°31’07” W150°59’09.4” – Large ramp into creek. Approximately 15’ long and 3’ at the deepest. Topsoil would be pulled back from the bank that was cut from the floods. Bank gravels would then be used to smooth out a ramp to the creek. The topsoil that was removed would then be placed back on top of the ramp area and road. Next 135’ would need a few small boulders moved aside. Picture 7a, 7b and 7c.

8. N63°31’06” W150°59’10.2” – Small ramp out of creek. Gravels from ramp would be pushed up the road approximately 25’ to level road and fill around boulder. Picture 8a and 8b.

9. N63°31’03” W150°59’19” – Main flow of the creek has moved over to the road. Picture 9a.

Option A: Use old channel of creek as the road. 200’ of light grading is needed and removal of dead Spruce. Picture 9b

Option B: Take 6-10 cubic feet of gravels from the top of the old main channel, which is now a gravel bar, and move it over 30' to the top of the old road. This would divert the main water flow back to the old channel. 200' of light grading of the old road required. This would reduce erosion of the banks on the road. Picture 9c is looking downstream.

10. N63°30’57” W150°59’34” – 250’ of light grading of 30% of the road. Top soil would be leveled. Picture 10a and 10b.

11. N63°30’54” W150°59’41.5” – 140’ of light grading from creek crossing. Picture 11a and 11b.

12. N63°30’52” W150°59’46” – Smooth out ramp coming out of the creek, push gravels up the road 10’ to fill in 3’ deep ditch. Picture 12a and 12b. Another ditch in road 90’ up. Fill in with 2 cubic feet of gravels from ramp at creek and level with surrounding road topsoil. Picture 12c and 12d.

13. N63°30’51” W150°59’59.9” – Smooth out sandy ramp to creek. Pull sand back so entry is not so steep, level out on top of sandy road. Approximately 20’ long area. Picture 13a.

At the bottom of ramp, main flow of creek looks to have moved to the road (left side looking up stream). Picture 13b.

Option A: Use old creek channel as road. Light grading next 250’. Picture 13b and 13c.

Option B: Take a small amount of gravel (6-10 cubic feet) from the top of the old main channel which is now a gravel bar and move it over 30 feet to the top of the old road to divert the main water flow back to the old channel (N63°30’51” W151°00’05”). Light grading in old road needed 250 feet. Would be beneficial to minimize erosion of the banks on road. Picture 13d and 13e - looking downstream.

14. N63°30’51” W151°00’05” – 5’ deep X 10’ wide X 15’ long deep area in creek/road needs approximately 10- 15 cubic feet of gravels to fill. Old creek channel directly behind is filled with a gravel bar that can be used. Usage of this gravel bar would be limited to the top 2’. Picture 14a and 14b.

Light grading next 225’, light brushing of road. Picture 14c.

15. N63°30’48” W151°00’09” – Ramp out of creek needs moderate grading 90’. Boulders would be moved down to gravel bar. Gravels from ramp would be used to level road to ditch in road. Picture 15a and 15b.

16. N63°30’48.4” W151°00’12.6” – Approximate start of claim block – Liberty 9. Brush clearing next 75’. Picture 16a

17. N63°30’48.4” W151°00’13.8” – 2’ deep X 6’ wide X 8’ long ditch. Would be leveled with gravels in front of the hole. Brush clearing next 200’. Picture 17a.

18. N63°30’47.3” W151°00’17.4” – Light to moderate grading next 225’. Picture 18a.

19. N63°30’45.8” W151°00’21” – Smooth ramp out of creek, 20’. Approximately 75% of the next 500’ of road has moderate flood damage. From the ramp up the road for approximately 100 feet is a gravel bar from the eroded road. Those gravels can be used to fill in the eroded flood cut road. All gravels and topsoil cut would be leveled on the road. Damage is approximately 500’ in length from, N63°30’45.8” W151°00’21” to N63°30’42.8” W151°00’29.6”. Picture 19a, 19b, 19c and 19d.

20. N63°30’42” W151°00’31” – Brush clearing: Approximately 8-15 small trees (Spruce, Cottonwood, Alder etc.) have eroded out of the side of the road and are leaning or have fallen over. Removal is needed. Also, brush and root piles would be pushed to the side. Light grading on road 75’. Picture 20a, 20b and 20c.

21. N63°30’40.9” W151°00’32.4” – Light grading from ramp out of creek to next crossing, 100’. After creek crossing brush clearing next 250’. Picture 21a.

22. N63°30’39” W151°00’38” – Moderate grading. Level out 150’ of road. Fill in ditch 2’ deep X 3’ wide X 8’ long. Would use gravels and boulders from road to fill and then level topsoil. Picture 22a and 22b.

23. N63°30’25” W151°00’55” – Light grading of ramp into creek and moderate grading out of creek. Next 220’ would need to have moderate grading of gravels. All of these gravels look to have come out of #24 where the road now has water. Picture 23a, 23b and 23c.

24. N63°30’25” W151°00’57.7” – Moderate flood damage for the next 260’. Approximately 75% of the creek water is running through what used to be the road. From the aerial photos this section looks like it was a dry road and all the gravels are now relocated in #23 from the floods. Picture 24a, 24b and 24c.

Option A: Use old road that has main flow of water. Pull back gravels for ramp 20’ and level on road. Moderate to light grading next 260’. All exposed boulders would be moved aside or pushed down stream. Picture 24b, 24c, 24d and 24e.

Option B: N63°30’23” W151°01’01.5” – Divert the flow of water that is now mostly in the old road back to main channel. Approximately 3 cubic yards of gravels sitting atop the old main channel would be moved over to old road 10-15’ to divert main flow of water back to old channel. Gravels from (#23) N63°30’25.7” W151°00’56.7” (Picture 23c) can be used to help fill and level road from (#24) N63°30’25” W151°00’57.7” for the next 260’. Would be beneficial to minimize erosion of the banks on road. Picture 24a through 24f.

25. N63°30’21” W151°01’03.3” – Light grading 110’. Level topsoil on road. Picture 25a.

26. N63°30’17.5” W151°01’08.8” – Light grading 90’. Picture 26a.

27. N63°30’11.5” W151°01’16.6” – Light grading next 360’. Picture 27a and 27b.

28. N63°30’7.6” W151°01’16.7” – Level out small ditch. Picture 28a.

29. N63°30’4.3” W151°01’16.5” – Light grading 45’. Picture 29a.

30. N63°29’55.9” W151°01’16.6” – Small ramp in and out of creek 10’ using gravels at creek. Picture 30a.

31. N63°29’54” W151°01’16.7” – Light grading and leveling of small deterrent berms the park placed on Eldorado road upon completion of the Slate creek restoration project, next 960’. Picture 31a, 31b and 31c.

N63°29’41.3” W151°01’19.5” – Approximate end of claim block- Liberty 18. Picture 32a.