

Wrangell-St. Elias

National Park & Preserve  
National Park Service  
US Department of the Interior



## ENVIRONMENTAL ASSESSMENT

Gold Run Mining Plan of Operations

Chisana Mining District, Alaska

April, 2017

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# Gold Run Claim Group Mining Plan of Operations

## *Environmental Assessment*

*February 2017*

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### **Note to Reviewers**

If you wish to comment on this document, you may mail comments to:

Bruce Rogers  
Wrangell St. Elias National Park and Preserve  
P.O. Box 439  
Copper Center, Alaska 99573

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## CHAPTER 1: PURPOSE AND NEED

### 1.1 Purpose and Need

The National Park Service (NPS) is considering approval of a mining plan of operations (MPO) which was submitted by Vern Fiehler for the purpose of conducting suction dredge mining operations, highbanker/sluice mining operations, and use of a metal detector for exploration and nugget detection on the Gold Run unpatented mining claims located in the Gold Hill area within the preserve of Wrangell-St. Elias National Park and Preserve (WRST). Mr. Fiehler submitted a MPO in February of 2016, after consultation with NPS specialists, as required by Title 36 of the Code of Federal Regulations (CFR), Part 9A, Section 9.9, detailing his proposed means and methods. Copies of the MPO are available in NPS offices in Copper Center and Anchorage per Federal Register Notice 22309, dated April 15, 2016. The MPO is included as Appendix A of this Environmental Assessment (EA). Access to the claim group in the summer is via fixed wing aircraft to the Chicken Creek Airstrip, then via Off Road Vehicle (ORV) to the claim group. Consistent with the Alaska National Interest Lands Conservation Act (ANILCA), section 1110(b) and with NPS implementing regulations at 43 CFR Part 36.10(c), the NPS proposes to authorize summer access to the Gold Run mining claims through a Right-of-Way-Certificate-of-Access (RWCA). The environmental effects associated with that access are disclosed in this EA.

An approved plan of operations and stipulations serve as the blueprint for the operation and mitigation and reclamation measures. Approval to conduct mining is contingent upon ongoing compliance with the plan of operation as well as all applicable State of Alaska and other federal statutes and regulations.

The mineral rights to the Gold Run (tract #WRST-33-106) claims are owned by Vern Fiehler. See Table 1-1 for general claim information. This EA examines and analyzes the proposed mining operations and reasonable alternatives. A validity exam of the three claims affected by the proposed operation was conducted by NPS and BLM personnel in the summer of 2012; the report is still pending. Alaska units are exempt from the national NPS regulations requiring completion of a validity examination prior to considering a proposed plan of operations. Therefore, NPS will proceed with the evaluation of the MPO through this EA.

This EA has been prepared in accordance with National Environmental Policy Act (NEPA) of 1969, regulations of the Council of Environmental Quality (40 CFR 1508.9), the Mining in the Parks Act of 1976 and its implementing regulations (36 CFR Part 9, Subpart A), as well as ANILCA 1110(b). The surface of the claims was disturbed for the purposes of mineral extraction prior to 1977.

Table 1-1. Mining claims covered in this mining plan of operations/EA.

| Claim           | Location Date      | Case Serial # | Legal description  |
|-----------------|--------------------|---------------|--|
| Gold Runs Below | September 30, 1973 | AKAA-026817   | 20 ac in the SE 1/4 of Section 15, Township 4N, Range 19E, Copper River Meridian                             |
| Jay #2          | July 28, 1973      | AKAA-027060   | 20 ac in the NW 1/4 of Section 15, Township 4N, Range 19E, Copper River Meridian                             |
| Jay #3          | July 28, 1973      | AKAA-027061   | 2 ac in the NE 1/4, and 18 acres in the SE 1/4, of Section 15, Township 4N, Range 19E, Copper River Meridian |

**Background:** Prospectors first discovered gold in Bonanza Creek in 1913. This led to the Chisana Gold Rush with mineral exploration and placer mining along Big Eldorado, Little Eldorado, Gold Run, and Bonanza Creek drainages during the 1913 – 1919 period. Subsequently, in the 1930's hydraulic mining occurred in Gold Run and Glacier Creeks and along upland benches.

The three Gold Run claims are unpatented and have been previously mined. Historic mining directly impacted 131 acres of lands in the Gold Hill area, which includes the Gold Run claims (NPS 1990). Physiographic environments that were most affected by past mining include the stream channel, floodplain, stream terraces and some upland benches located in and along drainage bottoms. A Special Use Permit to access the camp area and claims has been authorized to Mr. James Moody for most years between 1996 and 2012 (NPS 1996). Placer mining on the Gold Run Creek claims has been authorized by NPS since 1988 (NPS 1989).

Much of the Gold Run Creek stream bed from its confluence with Glacier Creek to its upper reaches has been disturbed or mined. Virtually all stream bottoms have been affected and many adjacent upland benches have also been mined or otherwise developed. Chisana miners employed hydraulic methods and major water diversion projects were common. Miners also used mechanized equipment in the district. The amount of mining activity at Gold Hill has fluctuated with the price of gold; this district has been an intermittent producer. Gold production between 1913 and 1942 at Gold Hill is estimated at 45,000 ounces (NPS 1990). There is no accurate estimate of recent gold production, but based on the history of continued mining activity since 1942 it is likely that another several thousand ounces have been produced since then.

History of ownership and mining on the Gold Run claims is long and complex. A complete summary of this history is available in A History of the Chisana Mining District, Alaska 1980-1990 (NPS 1996). The NPS minerals management program is guided by the 1990 WRST Mining EIS record of decision (ROD). That ROD preferred approach for mineral management is to acquire all mining claims located within WRST from willing sellers. The Gold Run claimant of record has not expressed an interest in selling the claims to the NPS. Hence, the NPS course of action, as explained in the ROD, is to process proposed MPOs and authorize those MPOs which would not result in significant impact to park resources and values.

The Gold Run unpatented placer mining claims were originally located under the terms of the General Mining Act of 1872 (30 USC 21 et.seq.). The Mining in the Parks Act of 1976 requires 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 and authorizes the Secretary of the Interior to regulate mining and associated activities on federal mining claims located within park units. These regulations, found at 36 CFR Part 9, Subpart 9A, apply to both patented and unpatented mining claims. In 1980, ANILCA closed the park to the establishment of new unpatented mining claims (16 U.S.C. 410 h-5).

## **1.2 Impact Topics**

To focus this environmental assessment, the NPS selected specific impact topics for analysis and eliminated others from further evaluation. Impact topics are defined as resources in WRST that may be affected by the proposed action. A brief rationale for the selection of each topic is given below, as well as the rationale for dismissing specific topics from further consideration.

### **1.2.1 Impact Topics Selected for Detailed Analysis**

#### **Aquatic and Water Resources**

Glacier Creek is one of three drainages with unpatented placer claims and historic mining in the Gold Hill area. Proposed mining operations would occur within the Glacier Creek drainage fluvial system. Potential resources at risk near the claims include invertebrates and water quality.

Placer mining discharge and disturbance directly impacts fluvial systems. Placer mining wastewater discharge would generate elevated levels of suspended sediments which could degrade water quality. Surface disturbance removes soils and vegetation, exposing areas to erosion which could also adversely affect water quality. Improper transportation, use, or storage of fuels could endanger water quality and dependent resources.

#### **Cultural Resources**

The Chisana Historic Mining Landscape is listed on the National Register of Historic Places (Feldman 1997). Gold Run and Glacier Creeks are associated with the 1913-1914 Chisana Gold Rush. The drainage contains significant elements of the historic mining landscape. Loss or degradation of significant resources would adversely affect the historic district. Cultural resource staff have conducted an archeological inventory of this action's area of potential effect in an effort to identify historic properties pursuant to NHPA, Section 106.

#### **Floodplains**

Historic mining operations in Gold Run and Glacier Creeks have altered the river corridor area and function of its floodplain. Numerous historic mining structures and artifacts are located in the floodplain. The proposed mining operations and associated activity would occur in the existing or historic floodplain.

Consideration of impacts on floodplains is required by Executive Order 11988 (Floodplain Management).

#### **Vegetation**

The proposed mining would directly impact some vegetation within the claim block. Some existing vegetation within the project area would be destroyed, disturbed or lost due to overburden removal and/or mining until successional vegetation is reestablished.

Mining activities create vegetation disturbances that can result in increased potential for invasive vegetation species.

## **Visual Resources**

The proposed mining would directly impact some components of the natural landscape associated with natural beauty, like vegetation, wildlife, and aquatic resources. Although the action's direct effects would remain largely confined to previously disturbed areas within the Gold Run claim group, such impacts could also directly affect visual resources viewed from adjacent preserve lands.

### **1.2.2 Impact Topics Dismissed from Further Analysis**

## **Air Resources**

WRST is considered a Class II airshed under the Clean Air Act, which requires consideration of impacts on air resources. Construction and mining activities would generate low levels of short term and highly localized machinery emissions and airborne dust.

## **Soils**

Suction dredging of barren gravel bars would result in minimal soil loss and negligible additional impacts to floodplain soils because there are no soils in the channel. Highbanker operations would be confined to barren or disturbed lands with limited or no soil development. Digging small holes at metal detector locations would cause direct short-term impacts on established soil outside the floodplains, but concurrent reclamation would minimize these impacts. Overall, there would be less than 0.01 acres of soil disturbance associated with the proposed action.

## **Climate Change**

Proposed mining operations would not have a measureable effect on greenhouse gas emissions and climate change.

## **Wetlands**

Wetlands were identified and mapped for the entire Gold Hill area using the standardized National Wetlands Inventory (Cowardin et al. 1979) methodology in 2013 and 2014 through a contract with St. Mary's University of Minnesota's GeoSpatial Services (Robertson et al. 2015). Per the findings of Robertson et al. (2015), only riverine wetlands occur within the claim blocks, along Glacier and Gold Run Creeks. Effects to these drainages from proposed mining activities are considered under the Floodplains discussion.

Executive Order 11990 and NPS Directors Order 77 (DO-77) have been considered in this EA. DO-77 states "The basic test for determining if a proposed action will have adverse impacts on wetlands is if the activity has the potential to degrade any of the natural and beneficial ecological, social/cultural, or other functions and values of wetlands." Disturbance of 0.03 acres of previously disturbed riverine wetland will not degrade the wetland or wetland function from its existing condition. Consequently, a Wetlands Statement of Findings will not be prepared for this proposed action.

## **Socioeconomic Environment**

Mining is a commercial operation with the potential to benefit mine operators, employees and investors directly. Placer mining on the Gold Hill claims in the last 20 years has been small scale and has not resulted in high levels of gold production. Mining operations in the Gold Hill area provide a direct benefit to air taxis, primarily out of Tok, Alaska. Mining in the Gold Hill area results in low levels of local and regional socioeconomic benefits. Effects of the actions considered in this document would not result in significant impacts to the socioeconomic environment.

## **Environmental Justice**

This action would not result in changes to human health or the environment with disproportionately high and adverse effects on minority or low-income populations or communities.

## **Indian Trust Resources**

Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, requires early consultation if a proposal is to have substantial direct effect on Indian Trust Resources. The proposed project area (and most of the State of Alaska) does not contain Indian Trust Resources, therefore the proposed action would not affect these resources.

## **Subsistence**

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 would not result in additional subsistence restrictions. The ANILCA 810 analysis for this project is attached as Appendix C.

## **Visitor Use and Experience**

Recreation and visitor use of the Gold Hill area is low due to its remote location and access difficulties. Access is via fixed wing aircraft to the Chicken Creek Airstrip. NPS commercial use records for the years 2007 – 2015 show that approximately 40 visitors were dropped at the Chicken Creek Airstrip, mostly sport hunters. Despite the small scale mining operations in the area, there is still opportunity for scenic hiking and backpacking in the area. Some visitors seek out the area specifically because of an interest in the historic mining that occurred there. Overall, given the small scale of operations proposed and the small number of visitors to the area, the proposed mining activities would have little relationship to visitor use and experience.

## **Wildlife**

Moose, bear, caribou and Dall's sheep use or travel through the Gold Hill area (NPS 1990). The proposed mining and access activities would potentially impact small amounts (approximately 0.04 acres per year) of wildlife habitat within previously disturbed areas. Proposed mining operations could also indirectly affect wildlife using nearby lands during the summer months because of noise and human activity. Past and sporadic small-scale mining activities on this and other claims in the Gold Hill area



have not resulted in long-term displacement of wildlife, as evidenced by frequent sightings of caribou in the area and the use of the Chicken Creek Airstrip as a drop-off point for Dall sheep hunters.

### **Wilderness**

The WRST 1986 General Management Plan classified the area around Chisana and Gold Hill as ineligible for inclusion in the national wilderness preservation system. The designated wilderness boundary is located approximately 5 miles southeast of the project area; the proposed project would not occur in designated wilderness.

## **CHAPTER 2: ALTERNATIVES**

### **2.1 ALTERNATIVE A (NO ACTION): NO MINING OPERATIONS AUTHORIZED ON GOLD RUN GROUP CLAIM.**

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 Gold Run placer claims at Gold Hill. This alternative provides a baseline for evaluating the changes and impacts of the proposed alternative.

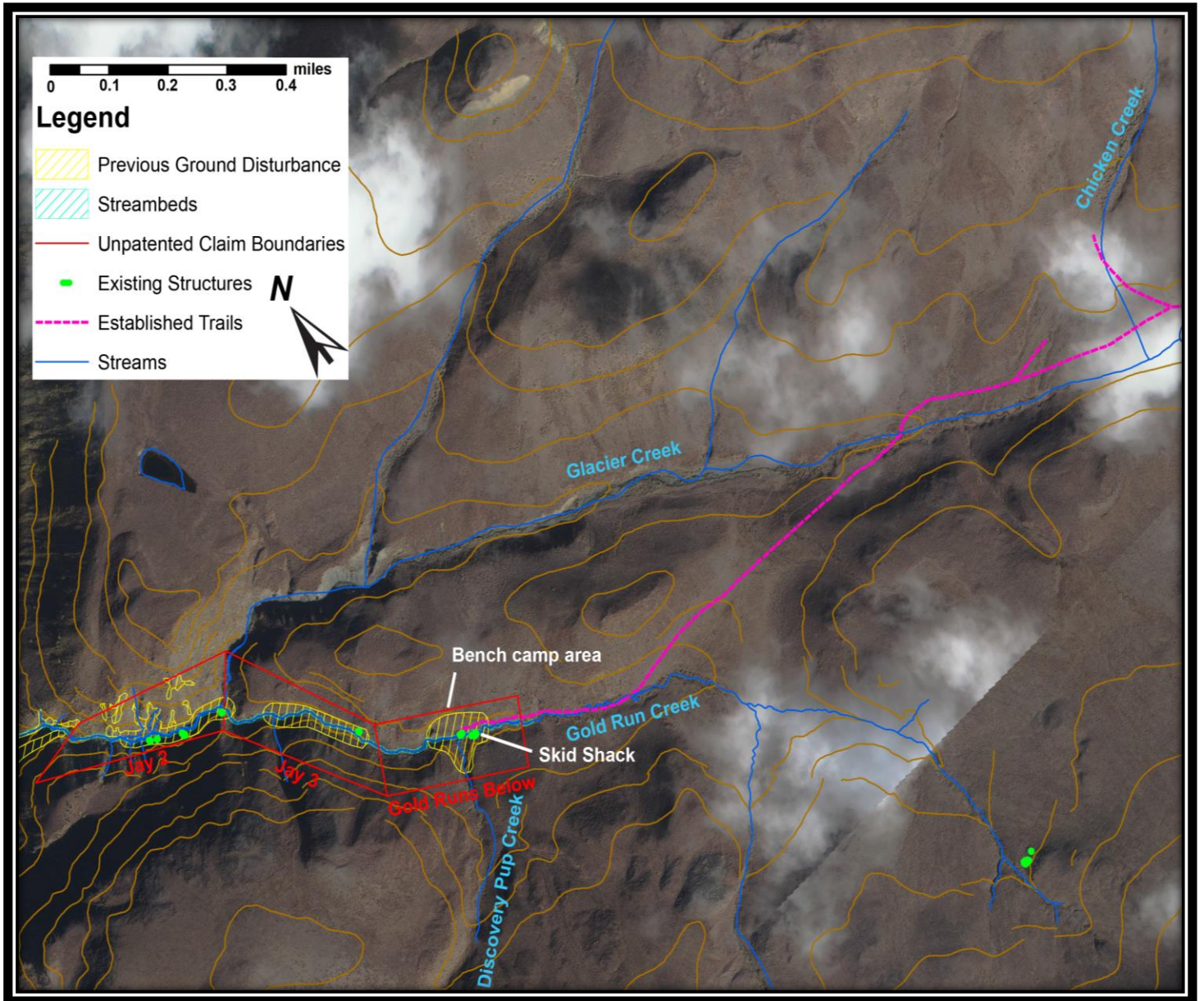
### **2.2 ALTERNATIVE B: PROPOSED ACTION WITH STIPULATIONS (NPS PREFERRED ALTERNATIVE)**

Under this alternative, the NPS Alaska Regional Director would approve the operator's mining plan of operations on the Gold Run unpatented mining claims. 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 D.

#### **2.2.1 Access to the Gold Run group claim using the Chicken Creek Airstrip and established trails.**

Access to the Gold Run group claim would occur via an existing ORV trail from the Chicken Creek Airstrip (see Figure 1). The trail is approximately 1.5 miles in length and ORV travel has been and would be confined to the existing trail between the Chicken Creek Airstrip and the Gold Run claim. No maintenance of the existing trail is expected, though light brushing may occur as needed. Access to the claim group in the winter would be via snowmachine on historic established routes, trails, and accessible river and creek bottoms.

A Right-of-Way-Certificate-of-Access (RWCA) for this access would be issued pursuant to this EA. Impacts associated with access to the claim are described in Chapter 3.



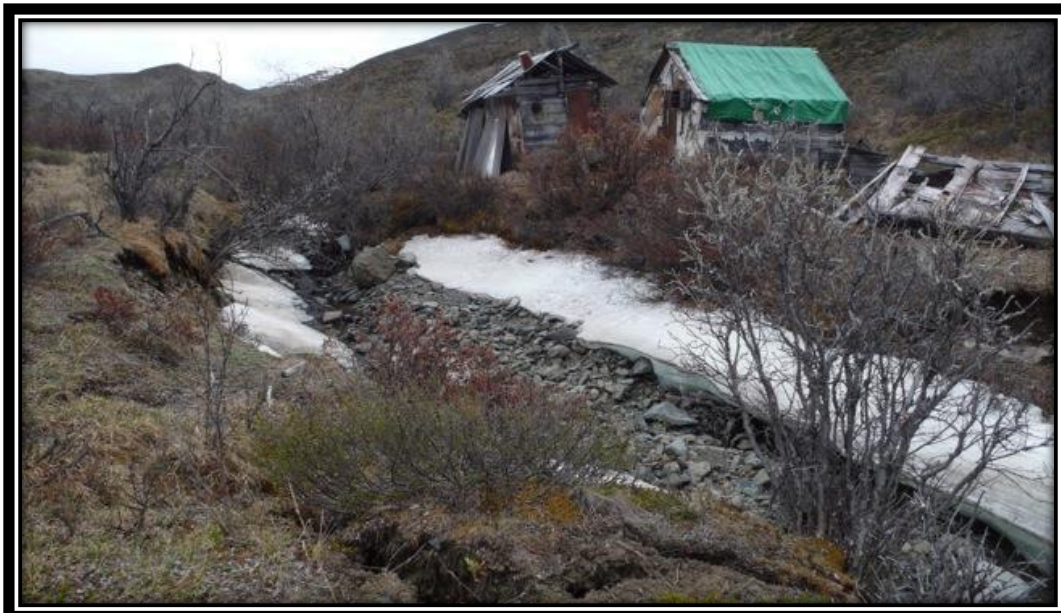
**Figure 1:** Mining claim location, access route, and support camp location.

## 2.2.2 Proposed Mining Plan of Operations for Gold Run group claim

### Mine Support Structures and Related Operations

**Mine Support Camp:** The primary support camp is located within the Gold Runs Below claim at the upstream end of the claim area (see Figure 1).

A few existing historical structures would be used: the “skid shack” and an adjacent shed (see Figure 2). These structures would be used for storage of equipment and supplies, and for staging mining operations. The miner’s main camp would consist of one or two 12’ x 16’ structures built on temporary tent platforms located 100 yards downstream from the skid shack and across the creek. In the late season, a small tent camp would be set up on the north side of Glacier Creek, 100’ downstream from its confluence with Gold Run Creek. No ORV access would be constructed to the lower claims.



**Figure 2:** The “skid shack” (with green tarp) and adjacent shed on Gold Run Creek, circa June 2014.

**Petroleum Products, Transport Storage and Use:** Fuel would be transported to the support camp from the Chicken Creek Airstrip via ORV and ORV trailers in the summer. Storage barrels (no larger than 55 gallons) will be hauled to the site in winter via snowmachine. All gasoline, heating oil, propane, and motor oil would be stored in the support camp. Fuel would be transported from the support camp to the work sites on an as needed basis. Fuel types would include gasoline for the suction dredge, high banker pumps, and ATV; propane for cooking; and potentially diesel for a heater.

Fuel would be stored in metal or other bear-proof material containers no larger than 55 gallons. Estimated fuel use per season is less than 100 gallons. Fuels would be stored near the sheds.

Spill containment for fuel would be near sheds at the support camp and at the work site. Containment would consist of an impermeable boundary such as a metal container or commercially available synthetic



containment material. All such containers will be covered to prevent capture of rainwater. Absorbent pads would be located near the fuel storage area so that drips from fueling activities would be immediately cleaned up. When fueling the equipment a drip pan would be used to prevent spillage onto the ground.

**Human Waste:** An outhouse is located within the support camp. If there is a need to dig a new hole and relocate the outhouse, the claimant would request permission from the park. The bottom of the pit will be no less than 4 feet from the water table and the pit will be covered with soil and vegetation at the end of the season.

**Solid Waste:** All burnable trash would be burned in a burn barrel at the support camp. Garbage and waste oil will be flown out to Tok for disposal at least once per season. All trash and other scent attractants will be kept safe from bears through the use of Interagency Grizzly Bear Committee-certified bear-proof containers or electric fences.

**Food Storage:** All food would be secured and/or stored in bear resistant containers or fully enclosed, bear-proof buildings. All food items would be removed at the end of the season.

### **Mining Equipment**

*Suction dredge:* Operations anticipate use of a 5 or 6-inch suction dredge with a maximum intake diameter of 5 inches. Current equipment at the site includes a 5-inch Gold Grabber Dredge with a 7HP Subaru pump; two backup dredges are 5-inch Keene dredges with 10HP Honda pumps (see Figure 3). A maximum of 30 square feet can be dredged per day. No larger than a 6-inch suction dredge would be used in mining operations.

Suction dredge mining operations would be restricted to areas normally covered by water within the submerged portion of the active stream area.



**Figure 3.** Five inch suction dredge comparable to the one proposed for use at Gold Run.

*High Banker Power Sluice Box:* Operations would use a Honcoop HP17 fed by a 2' Honda pump fed from the nearest creek source (see Figure 4). The high banker would be used for prospecting purposes and would not be used outside of the immediate streambank environment. Hand tools (including shovels, picks, and buckets) would be used to transfer unconsolidated alluvial materials into the high banker.



**Figure 4.** Example of high banker that may be used.

*Metal Detector:* A metal detector, comparable to a Gold Bug 2, would be used to prospect for gold nuggets and guide high banker operations. Use may occur anywhere on previously disturbed ground within the claims. The detector runs on batteries and uses no fuel.

*Miscellaneous tools:* Miscellaneous tools and equipment may be used during mining including gold pans, shovels, hand tools such as hammers and wrenches, picks, ax, generators, power tools (such as drills and saws), pry bars, and protective equipment such as safety glasses and ear protection. All equipment would be removed from the work sites at the end of each season and stored at the support camp. When mining is complete or the tools are obsolete they would be removed from the area entirely.

*Surface Transportation:* A Honda Rancher or similar ORV would be used for surface transportation on the claims and for travel from the Chicken Creek Airstrip to the claims in summer. In winter, the snowmachine used will be a Polaris RMK or Yamaha Bravo or similar.

### **Mining Operations**

The claimants propose to mine the length of the creek bed within the claims (approximately 2,400 linear feet) and would confine all mining to areas that are already disturbed by mining (see Figure 5 in the Mining Plan of Operations, Appendix A). At the rate estimated below, completion of mining this area would not occur within the 20-year life of this plan.

The proposal is to primarily use the suction dredges to conduct mining operations. The dredges have a box sluice and they rest on pontoons in the stream. Water and gravel would be drawn into the intake hose by the suction pump. The material would then be pumped into the sluice box to separate gold from the gravel. The processed gravel and used water would then be discharged into the stream from the sluice box. Each dredge, though capable of a maximum throughput of approximately 16 cubic yards per hour, would typically process from 3 – 5 cubic yards of gold-bearing gravel per day. Small temporary impoundments would be constructed in the stream using large rocks from the existing creek bed. A tarp or similar plastic may be draped over the rocks to impede drainage over the impoundment to create a pond for the dredge to float; however if an impermeable boundary is placed, it would be removed at the cessation of use of that particular impoundment.

Effluent would drain into the impoundment to allow solids to settle prior to being discharged over the temporary impoundment. Most likely, a new impoundment would be constructed every day, and removed every evening unless for some reason dredge activities for the current impoundment are not completed in a single day. In no event would an impoundment remain in place for longer than 7 days. There is no intent to redirect creek flow except as needed during high water events. Water impoundments would not use any material taken from cultural features.

All gravels five inches and smaller will be processed through the floating sluice box, and all materials larger than six inches would be hand moved out of the way and then moved back into the hole after the hole has been dredged. After the overburden is dredged the operators would use prying tools to break open the bedrock, and use the dredge to extract the concentrates from the bedrock. After processing the fractured bedrock, the operators would return the broken bedrock. As the operators move up the channel the dredge would redeposit smaller gravels over the bedrock. In this fashion reclamation would be concurrent with the operation. Final reclamation is done at the end of the season, when the final dredge site is leveled out. Any dams that were constructed would be broken down and leveled back to the natural contour. The dredging operation is confined to the active stream channel, and would not exceed the annual high water mark.

The operation would start in early June each year and continue until mid-September, depending on the weather conditions. The operator anticipates that there would be 30 productive suction dredging days per season. It is estimated that up to 30 square feet can be dredged per day, depending on the size of the material and the dredge being used. If the average stream width is 10 feet, it would take over 25 years to dredge the entire 24,000 square feet of the claim.

Average estimated disturbance from suction dredge activities would be approximately 900 square feet per year (0.02 acres/year).

Metal detectors would be used for the purpose of prospecting and sniping exposed bedrock areas. Exploration activities may occur on all claims and would typically take place intermittently between dredging days; metal detector operations would not be the primary activity during the mining operation. Prospecting would be limited to previously disturbed ground within the claims. Test holes would be less than 1 cubic foot in diameter, and hand dug with a shovel and pick. Some pits would be out of the active floodplain. Upon completion of testing all holes would be backfilled into their previous state.

Average estimated disturbance from prospecting activities would be 200 square feet per year (0.005 acres/year).

A highbanker may be used for areas where suction dredging is not feasible, such as in the steep sections of the creeks. Use would primarily occur as a prospecting tool and would not be used outside of the immediate streambank environment. Mineral bearing deposits in these locations would be processed using the sluice box attached to the highbanker. Gravels to be processed in the highbanker would be moved by hand. Highbanker activities would be confined to previously mined areas or other locations directly impacted by past mining activities, including floodplains.

Average estimated disturbance from highbanker activities is less than 500 square feet per year (0.011 acres/year).

### **Water Management**

**Water Use for Operations:** The operator proposes to use one 5-6" suction dredge, operating 8-hours per day, and a highbanker to feed it. Maximum manufacturer's rating for the suction dredge pump is approximately 300 gallons of water per minute (gpm). Due to the intake of gravel during dredging, the operator estimates actual water usage at approximately 60 gpm. Using the figure of 60 gpm for an 8-hour day for one suction dredge and one highbanker, non-consumptive water use would not exceed 30,000 gallons per day (gpd). If two suction dredges are operated simultaneously, they would be separated by no less than 1000 feet, and the total operated hours for each dredge would not exceed 8 hours/day.

The operator will obtain a Permit to Appropriate Water from the State of Alaska pursuant to state law AS 46.15. No construction of diversion ditches is proposed.

The proposed operation also includes the use of highbankers and a pump to feed the highbanker. Like the suction dredge operations, highbankers are considered by the Alaska Department of Natural Resources as non-consumptive use. For this operation, use of a pump to support highbanker operations would be limited according to the size of the pump to be used.

Domestic water supply would be from the Gold Run or Glacier Creek at approximately 20 gallons per day. No use of storage tanks or piping systems is proposed.

**Waste Water:** Suction dredge discharge water would be returned directly to the stream channel untreated. Water from the highbanker would be discharged onto barren ground and/or floodplain and allowed to flow back into the stream channel or seep into the ground.

### **Access Trails and Routes within the Claims**

An ORV would be operated on the existing bladed trail between the support camp and suction dredge or upland bench workings, along bladed trails on the sparsely vegetated floodplain terraces and over previously disturbed, barren and/or sparsely vegetated ground.

### **Reclamation**



Reclamation is proposed as an ongoing process during all phases of the mining operation. The suction dredge would return processed gravel directly to the stream as it exits the sluice. At the end of the summer field season, the operator would level out any tailings piles. There is no plan to replace top soil in previously disturbed, barren and/or sparsely vegetated areas.

Any dams used to enhance water depth for dredge operations would be removed and the dam sites recontoured to approximate the original grade/topography. Any temporary holes or overburden stockpiles resulting from highbanker mining or excavation associated with use of the metal detector would be back-filled and/or leveled to approximate the original grade/topography.

Final reclamation at the end of the 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. Removed items would include tent platforms, tents, and all other modern and temporary mining activity support structures.

## 2.3 MITIGATING MEASURES

A complete description of stipulations is provided in Appendix D.

## 2.4 COMPARISON OF ENVIRONMENTAL EFFECTS

Table 2-1. Summary of environmental effects resulting from each alternative.

| <b>Impact Topic</b>         | <b>Effects from Alternative A - No Action</b>  | <b>Effects from Alternative B – Proposed MPO with stipulations</b>   |
|-----------------------------|--|--|
| Aquatic and Water Resources | No new direct or indirect impacts to aquatic and water resources.  | Proposed mining activities would not change the existing disturbed condition of the water resources.   |
| Cultural Resources          | Historic structures would likely not be maintained; facilities would likely continue to deteriorate over time.             | The authorization of small scale mining along with the stipulations would result in retention of the historic structures and the cultural landscape.                           |
| Floodplains/wetlands        | No new direct or indirect impacts to floodplains/wetlands would occur.   | Impacts to floodplains/wetlands from the proposed mining activities would be approximately 0.03 acre per year.   |
| Vegetation                  | No new direct or indirect effects to vegetation would take place.  | Impacts to vegetation from the proposed mining activities would be approximately 0.04 acre per year.   |
| Visual Resources            | No new direct or indirect effects to visual resources. Past evidence of mining activities would still be visually evident. | Evidence of past and present mining is apparent; impacts from the proposed action would be consistent with and not noticeably different from past actions in the project area. |

## CHAPTER 3: ENVIRONMENTAL CONSEQUENCES

**Introduction:** This Chapter gives a brief description of the existing conditions for each of the impact topics listed in Chapter 1. It also discloses the anticipated direct, indirect, and cumulative impacts expected from the implementation of each alternative.

### 3.1 Project Area

The Gold Hill Project Area, which was analyzed in a 1990 Environmental Impact Statement on cumulative impacts of mining, is shown in Figure 5 and includes the Gold Hill area and all active mining claims in the Gold Hill area (Gold Run, Big Eldorado, Little Eldorado, Bonanza, and Shamrock). The project area is approximately 9,550 acres.

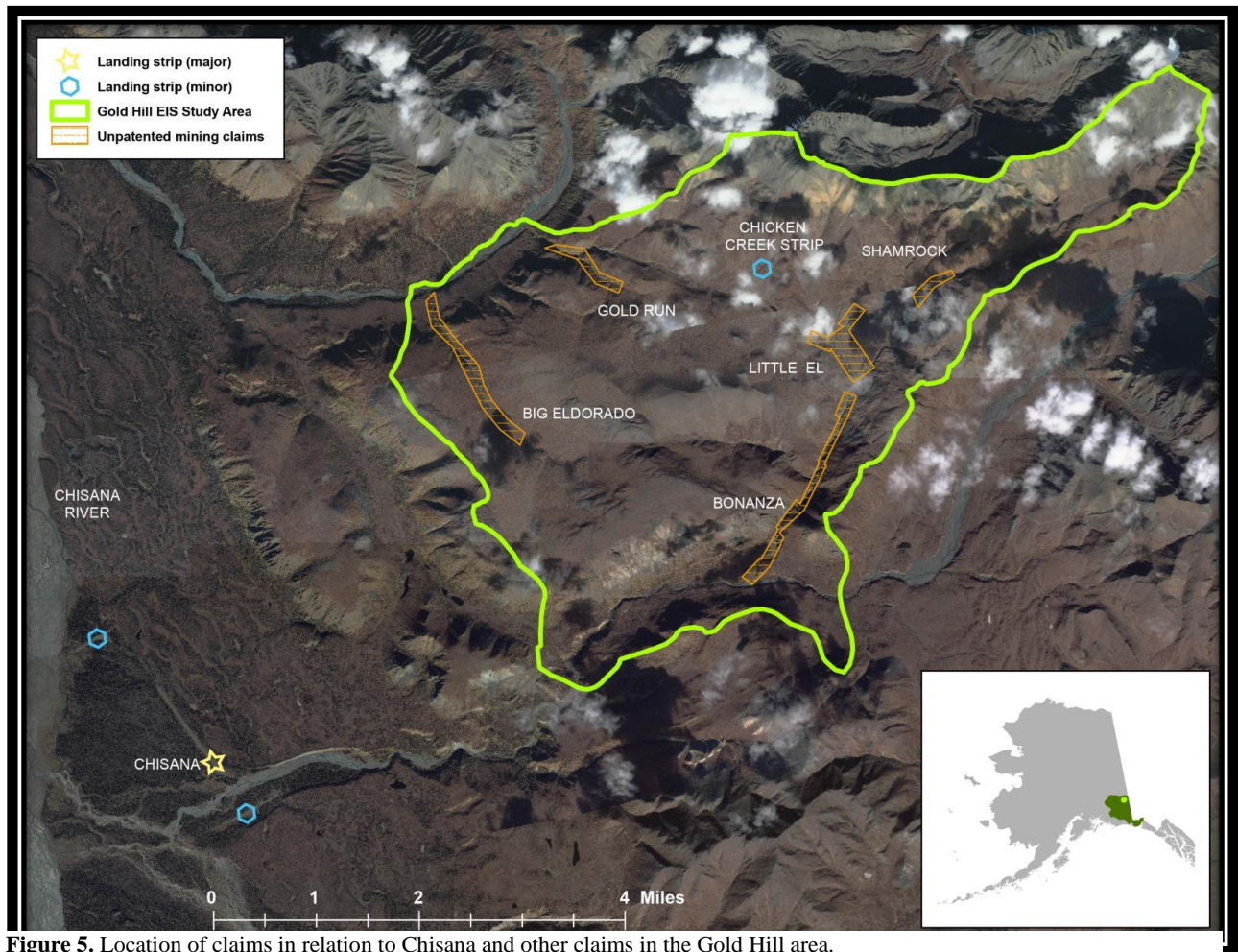


Figure 5. Location of claims in relation to Chisana and other claims in the Gold Hill area.

### 3.2 Aquatic and Water Resources

#### 3.2.1 Existing Conditions of Aquatic and Water Resources

Gold Run Creek watershed is an unforested alpine drainage encompassing slightly less than 3 square miles. It originates in the Nuzotin Mountains on Gold Hill and flows approximately 1.5 miles before joining Glacier Creek. Water flow in the stream varies widely with rainfall and seasonal runoff. During times of high water, stream flow reaches flood stage. Measured or estimated discharge above the Gold Run claim block is approximately 1.0 cubic feet per second (cfs) in the fall. Discharge below the claim block ranges is approximately 51.3 cfs in the summer. The average stream flow in the area of proposed mining is 9 cfs (NPS 1990). Surface flow within the claim block can drop below 1 cfs. During the winter months, all surface water typically freezes and aufeis develops.

Stream resources have been impacted in the area of these mining claims by past mining operations that altered channel and floodplain morphometry on Gold Run and Glacier Creeks. Repeated placer mining in the creek beds and hydraulic mining of upland benches increased fine sediment loads and degraded water quality. Surface water diversions have caused reduced natural flow regimes. Mining operations directly and adversely affected water quality through the loss of wetlands, riparian habitat, vegetation cover and soils. Although most of the soils and fine sediments have been flushed from the floodplain river systems, these disturbed lands continue to be subject to higher levels of erosion. Gold Run and Glacier Creeks are not likely to return to pre-mining conditions because of the scope of the past mining and the authorization of continued mining, even if it is small scale.

The existing stream substrate on the claims is composed of boulder, large rock, and gravel with finer materials deposited between them. Gravel overlays and is mixed with fractured and decomposing bedrock to a depth of three to five feet.

The water quality of Gold Run Creek is within the acceptable range required to support aquatic life, according to Environmental Protection Agency and Alaska Department of Environmental Conservation standards (U.S. Geological Survey 1999). However, aquatic life and biomass of the creek is not abundant. Alterations to physical characteristics of the stream and the removal of riparian vegetation by past mining have impacted the aquatic habitat. Gold Run Creek contains only sparse riparian vegetation and the floodplain of the creek contains little soil to support vegetation, until after its confluence with Glacier Creek. As a result, there is little riparian vegetation and little biomass entering the stream from the claims.

Neither the NPS nor the Alaska Department of Fish & Game (ADF&G) has any documentation of fish presence in Gold Run Creek or its tributaries.

### **3.2.2 Effects on Aquatic and Water Resources from Alternative A (No Action)**

Direct and Indirect Impacts: Under the No Action alternative no new impacts to aquatic and water resources would occur on park lands resulting from authorization to mine. Without new disturbance, some natural revegetation would occur. Erosion from natural disturbances (high water) would affect water quality and natural processes would slowly (over many years) improve conditions.

Cumulative Impacts: Because there are no direct and indirect effects associated with this alternative, there would be no contribution to cumulative impacts.

### **3.2.3 Effects on Aquatic and Water Resources from Alternative B, Proposed Action with Stipulations**

Direct and Indirect Impacts: Monitoring of past suction dredge operations on Bonanza Creek, similar in character and located 2 miles from Gold Run Creek, indicates that material being mined from the bed of Gold Run Creek would predominantly be gravel and coarse sand with minor amounts of fine sand and silt. Water quality data collected on Bonanza Creek while a suction dredge processed material indicates that, upon reentering the stream from the sluice, coarse material would settle out relatively quickly from Gold Run Creek, due to the similarity of the creeks (NPS 1995). A small volume of fine material would be carried downstream but would settle out within several hundred feet. Shutting dredge operations off would stop the input of sediment and the water would clear up within several minutes.

Suction dredge mining operations would have short-term impacts on water quality from increased sediment load and turbidity proximal to the dredge or where highbanker waters would be returned to the channel. Turbidity and total suspended solids would elevate above background immediately below the discharge point. This turbidity increase would likely exceed background by approximately 5 Nephelometric Turbidity Units (NTU), as based on observations in nearby Bonanza Creek (NPS 1995). After the discharge plume has mixed with the stream flow, turbidity and TSS would steadily decrease. Monitoring indicates that at 500 feet below the suction dredge, operations would generally meet water quality standards or return to a condition that approximates water quality parameters upstream of operations. This would be greatly dependent upon the existing stream discharge and background conditions at the time of mining. Other water quality parameters would not be notably greater below the suction dredge; however, manganese levels may be elevated in the 100 feet below the dredge, but these levels would also decrease.

The limited aquatic resources of Gold Run and Glacier Creeks would be affected by the restructuring of stream substrate as a result of suction dredging. Some disturbance of the sparse plant biomass and macro invertebrates would occur. Low levels of impacts would occur over previously disturbed and naturally scoured reaches of the stream as a result of dredging operations.

The average measured stream discharge on the claims is approximately 9 cfs. The average flow translates to approximately 4,039 gallons per minute (gpm) on Gold Run Creek. A 60 gpm estimated rate of water usage per suction dredge would not reduce flow in Gold Run Creek because the water used during dredging would be immediately returned to the stream by the dredge. Overall, the discharge of Gold Run Creek would not change.

Access would occur via the existing trail alignment that has been used to access the claims intermittently over the past 15 years under a special use permit. This route crosses the headwaters of Glacier and Gold Run Creeks and correspondingly may cross up to 15 feet of active submerged channels at certain times of the year. Due to the short duration and transitory nature of these crossings, in addition to the previous use of this route, no new impacts to floodplains would be anticipated. Access in the winter via snowmachine would occur on routes that may include accessible river and creek bottoms. Impacts to aquatic and water resources from winter access would result from spilled mechanical fluids or petroleum products. Prevention and spill abatement stipulations would be in place to address any such occurrences (Appendix D).

Cumulative Impacts: Past mining operations have contributed to the disturbed existing condition of aquatic and water resources that is described above in Section 3.2.1. Mining operations were approved for the Shamrock claim group in 2013 and for the Bonanza and Little El claim groups in 2015. The Shamrock claims are located above the Bonanza and Little El claims on the upper portion of Bonanza Creek. Those operations are very similar to mining operations proposed for the Gold Run claim groups (suction dredge and highbanker operations). The 2015 EA for the Bonanza and Little El Mining Plan of Operations and 2013 EA for the Shamrock Mining Plan of Operations describe a “temporary and low impact” on aquatic and water resources. Suction dredge and highbanker mining operations may also be occurring on the Big Eldorado claim group in the reasonably foreseeable future. These claim groups are in different watersheds than the Gold Run Creek claims, but involve very similar mining methods and impacts to water resources. Cumulatively, the combined operations would have a temporary and low impact on aquatic resources in the analysis area.

Conclusion: The proposed mining activities would have effects on aquatic and water resources, including:

- Intensity: Relatively small scale of disturbance with temporary effects limited to the area in proximity to the suction dredge activities.
- Context: Clearwater streams and water quality are referred to in the park’s purpose statement: “to maintain unimpaired the scenic beauty and **quality** of high mountain peaks, foothills, glacial systems, lakes, **and streams**, valleys, and coastal landscapes in their natural state.” Historic mining activities have resulted in an impacted existing condition for water resources but have also resulted in a cultural landscape that NPS is obligated to maintain. The proposed mining activities on the Gold Run claims, as well as potential concurrent mining activities on the Bonanza, Little El, Big El, and Shamrock claims, would have short term effects on water quality, as mining operations are conducted. These activities and access to them would result in maintenance of the existing disturbed condition of the Gold Run and Glacier Creek drainages.

### 3.3 Cultural Resources

#### 3.3.1 Existing Conditions of Cultural Resources

The Chisana Historic Mining Landscape is listed on the National Register of Historic Places. Gold Run and Glacier Creeks are associated with the 1913-1914 Chisana Gold Rush. The drainages contain significant elements of the historic mining landscape (Feldman 1997). Cultural resource staff have conducted an archeological inventory of this action’s area of potential effect (APE) in an effort to identify any remaining historic properties (36 CFR 800.4(b)) pursuant to the National Historic Preservation Act (NHPA), Section 106 (16 USC 470f). NPS staff provided recommendations to the operator regarding protection and preservation of any historic artifacts or features.

To the extent possible, cultural artifacts would not be disturbed during mining operations. Any isolated artifacts lying on the ground would be temporarily moved to allow mineral extraction; these artifacts would be returned to the location they occupied prior to undertaking mining activities. Direct adverse impacts to cultural resources such as hand-stacked piles and boomer dam remnants would be avoided. The claim owners would continue cooperating with the NPS to remove non-historic debris from the area.

The Jay 2, Jay 3 and Gold Runs Below claim areas are within the “Glacier Creek Valley Historic Mining Area” as defined in the Cultural Landscape Report (Feldman 1997). The claims contain numerous historic buildings, structures, sites and objects; and represent mining throughout the historic period of significance (1913-1945).

The claims were mined extensively after the initial Chisana Gold Rush and continued through the 1940s, primarily through drift mining, shoveling and sluicing. The existing mining landscape is still reflective of early historic mining practices as more recent mining activities (beyond the 1950s) have not re-worked the historic tailings, preserving the associated landform features (Feldman 1997:49-50). The recovery of vegetation, habitat and stream substrate has been minimal, and the whole reflects a landscape in which the cultural remains are an integral component. As a result, the claims and the resources they contain retain a high degree of historic integrity.

Table 3-1 lists the cultural resources within the boundaries of the three claims. Cultural resources are listed with the Alaska Heritage Resources Survey (AHRS) under the site numbers 49NAB-00069, 49NAB-00070 and parent site number 49NAB-00068. Several buildings have been split out and assigned their own individual numbers and have also been entered into the NPS’ List of Classified Structures (LCS). All of these buildings were evaluated to be in Good to Poor condition by NPS Cultural Resources staff in 2012.

In order to preserve the historical character of the mining landscape, the CLR treatment recommendations for these claims include “maintain mining as the primary use...” such that “continued mining on the active claims does not disturb the spatial patterns of the historic landscape” (Feldman 1997:152).

Table 3-1. Archeological Inventories of Bonanza and Little Eldorado Claim Groups.

| <b>NAB-00068 Gold Run Mining Claim (includes sites NAB-00145, 00146, 00147 and 00148)</b> |  |               |
|---|--|---------------|
| <b>Feature # (AHRS# or CLR#, if different)</b>  | <b>Description</b>   | <b>LCS #</b>  |
| 1 (NAB-00148)   | Skid Shack (post-dates 1950’s)                               | 038104        |
| 2 (NAB-00145)   | Cabin  | 038099        |
| 3   | Drift Pit Spoil Pile   |               |
| 4 (NAB-00147)   | Storage Shed/ Doghouse                                       | 038101/038102 |
| 5   | Outhouse   | 038103        |
| 6   | Pit and Spoil Pile   |               |
| 7   | Roadway with Test Pits                                       |               |
| 8   | Ditch Line   |               |
| 9   | Lumber Storage   |               |
| 10  | Portable Boiler  |               |
| 11  | Doghouse   |               |
| 12 (NAB-00146)  | Blacksmith’s Shed  | 038100        |
| 13  | Test Pit   |               |
| 14  | Collapsed Tent Frame   |               |
| 15  | Buried Can Dump  |               |
| 16  | Wooden Bucket and Equipment Storage Area (post-dates 1950’s) |               |
| 17  | Mining Equipment Storage Area (post-dates 1950’s)            |               |

|  |   |              |
|--|---|--------------|
| 18                                     | Dump Box (post-dates 1950s')            |              |
| Iso 411                                | Rock Wing Dam                           |              |
| <b>NAB-00069 Jay #3 Claim</b>          |   |              |
| <b>Feature # (CLR #, if different)</b> | <b>Description</b>                      | <b>LCS #</b> |
| 1                                      | Sled Remnants                           |              |
| 2                                      | Foundation                              |              |
| 3                                      | Tent Frame/Plank Floor                  |              |
| 4                                      | Freight Sled                            |              |
| 5                                      | Rock Reinforced Wall/Terrace            |              |
| 6                                      | Can Dump                                |              |
| 7                                      | Mining Cut                              |              |
| 8                                      | Pit                                     |              |
| 9                                      | Foundation                              |              |
| Iso 402                                | Dam Remnant                             |              |
| Iso 403                                | Ditch, Ground Sluicing                  |              |
| Iso 404                                | Sluice Boxes                            |              |
| Iso 405                                | Dam Remnants, Sluice Boxes, Piled Stone |              |
| Iso 406                                | Dam Remnants                            |              |
| Iso 407                                | Sluice Box Remnant                      |              |
| Iso 408                                | Hand Stacked Rock, Dam Remnants         |              |
| Iso 409                                | Freight Sled Remnant                    |              |
| Iso 410                                | Dam Remnants                            |              |
| <b>NAB-00070 Jay #3 Claim 2</b>        |   |              |
| <b>Feature # (CLR #, if different)</b> | <b>Description</b>                      | <b>LCS #</b> |
| 1                                      | Boiler and Tailings Terrace             | 038105       |
| 2                                      | Dam Remnants                            | 038106       |
| 3                                      | Board Scatter                           |              |
| 4                                      | Regulator and Sluice/Flume Section      |              |
| 5                                      | Stone Platform                          |              |
| Iso 501                                | Dam Piece                               |              |
| Iso 502                                | Dam Piece                               |              |
| Iso 506                                | Dam Remnant                             |              |
| Iso 401                                | Hand Stacks and Dam Remnant             |              |

### 3.3.2 Effects on Cultural Resources from Alternative A, No Action

Direct and Indirect Impacts: The NPS would not permit mining activities; there would be no direct impacts to cultural resources from mining activities. Cultural resources would only be impacted by the passage of time and natural forces, which would result in gradual deterioration as vegetation encroaches on structures, roofs deteriorate and allow exposure to the elements, and structural integrity deteriorates. Without human presence on the claims, portable artifacts could be removed by visitors, who could also damage or destroy structures or cultural features (either intentionally or unintentionally).

Cumulative Impacts: Past mining activities have shaped the historic landscape to roughly its current configuration, although activities later than the period of significance for the Historic District may have altered it in unknown ways. Although the cultural resources have been well documented and mapped,

NPS has no plans for any large-scale recovery or collection of artifacts or any significant structural preservation operations. Other reasonably foreseeable mining that would occur on the Shamrock, Big Eldorado, Little El, or Bonanza claims would have a positive impact on maintaining the cultural landscape within the Historic District. Cumulatively, overall impacts to the cultural landscape would be positive.

Conclusion: Impacts to cultural resources would include:

- Intensity: No direct actions would occur, all effects would be related to deterioration of historic structures over time.
- Context: The Gold Run and Glacier Creek drainages contain significant elements of the historic mining landscape. In order to preserve the historical character of the mining landscape, the Cultural Landscape Report treatment recommendations for these claims include “maintain mining as the primary use...” such that “continued mining on the active claims does not disturb the spatial patterns of the historic landscape” (Feldman 1997).

### **3.3.3 Effects on Cultural Resources from Alternative B, Proposed Action with Stipulations**

Direct and Indirect Impacts: Active mining on the scale proposed would not notably alter the integrity of the landscape of the historic district. The Cultural Landscape Report proposed active mining as a suitable treatment for these claims, with the caveat that it not degrade, destroy, or alter the landscape, structures, or artifacts. Although there may be temporary impacts to individual artifacts that need to be moved during mining operations, they would be replaced when finished so the impact would be minimal and of low intensity. Moving of artifacts will need to follow the guidance provided by NPS (Stipulations, Appendix D). The proposed uses and repairs of the structures, if done with in-kind materials, would help retain the structures and the cultural landscape.

Cumulative Impacts: Mining and access to mining has had and will continue to have impacts to the cultural landscape, but these impacts created and are in keeping with the historic character of the landscape. Other reasonably foreseeable mining that would occur on the Shamrock, Big Eldorado, Little El, or Bonanza claims would assist to maintain the historic structures and the cultural landscape within the Historic District. Cumulatively, small scale mining on the Gold Run claims would add to this positive effect on the cultural landscape.

Conclusion: Impacts to cultural resources would include:

- Intensity: Proposed uses and repairs of structures would help retain the historic structures and the cultural landscape.
- Context: The Chisana Historic Mining Landscape is listed on the National Register of Historic Places. Gold Run and Glacier Creeks are associated with the 1913-1914 Chisana Gold Rush. The drainages contain significant elements of the historic mining landscape. In order to preserve the historical character of the mining landscape, the Cultural Landscape Report treatment recommendations for these claims include “maintain mining as the primary use...” such that “continued mining on the active claims does not disturb the spatial patterns of the historic landscape” (Feldman 1997:152).



## **3.4 Floodplains**

### **3.4.1 Existing condition of Floodplains**

Most historic mining operations were situated within the floodplains and adjacent riparian zone within the Gold Run and Glacier Creek drainages. These floodplains and riparian zones have been extensively disturbed and have lost notable components; they no longer resemble un-mined reaches elsewhere in the area. Past mining disturbance has altered most of the streambed and floodplain along the drainage bottoms, barren floodplains, sparsely vegetated floodplain terraces adjacent to the creeks, and the floodplains, terraces, and ephemeral channels of tributary creeks within the claim boundaries. Remnants of historic boomer dams, hand-stacked tailings, and prospect pits are situated in the floodplain and may continue to adversely affect floodplain function.

At present, the floodplain consists of the upper perennial stream channel and intermittently flooded channel and bank gravel bars. The channel width of Gold Run Creek has a narrow floodplain that ranges from 5 to 15 feet within the Gold Run claim block. Periodic flooding increases the volume and size of the bed load and spreads it over the floodplain. This scours the stream bottom and riparian area, slows the establishment of aquatic and terrestrial vegetation, and often alters the physical characteristics of the stream channel.

### **3.4.2 Effects on Floodplains/Wetlands from Alternative A, No Action**

Direct and Indirect Impacts: Under the No Action alternative no new direct and indirect impacts to floodplains would occur.

Cumulative Impacts: Since there are no direct or indirect effects associated with this alternative, there would be no contribution to cumulative impacts.

### **3.4.3 Effect on Floodplains/Wetlands from Alternative B, Proposed Action with Stipulations**

Direct and Indirect Impacts: Suction dredge placer mining operations would be, by necessity, conducted within the active floodplain of Gold Run and Glacier Creeks. Mining operations affect the active floodplain by processing channel and bank gravel bars and temporarily altering local stream channel configuration and flow. Impacts generally consist of pulling up and mixing the stream substrate by dredge and by hand and laying the substrate back during discharge and reclamation. Most proposed suction dredging will occur in previously disturbed areas of the Gold Run Creek floodplain. Additionally, the floodplain substrate is primarily gravel and cobbles with very little riparian vegetation.

Approximately 16,000 square feet of floodplain could be mined under the proposed MPO, including 2,400 linear feet of creek bed along Gold Run and Glacier Creeks. Based on the anticipated progression of mining described in the proposed MPO, suction dredge mining and highbanker disturbance would occur at a rate of approximately 1,400 square feet (or 0.03 acres) of floodplain per year.

Access would occur via the existing trail alignment. This route crosses the headwaters of Glacier and Gold Run Creeks and correspondingly crosses up to 30 feet of floodplains, depending on water levels. Due to the short duration and transitory nature of these crossings, in addition to the previous use of this

route, no new impacts to floodplains would be anticipated. Access in the winter via snowmachine would occur on routes that may include accessible river and creek bottoms. Impacts to floodplains from winter access would include potential impacts resulting from spilled mechanical fluids or petroleum products. Prevention and spill abatement stipulations would be in place to address any such occurrences (Appendix D).

Cumulative Impacts: Past mining in the area has resulted in the existing conditions described above under 3.4.1. Within the project area, the Shamrock Mining Plan of Operations could disturb up to 2,650 linear feet of floodplains upstream of the Bonanza claims. Suction dredge and highbanker mining operations may also occur Big Eldorado claim group, located downstream of the Gold Run claims on Chavolda Creek, in the reasonably foreseeable future. The Bonanza and Little El Mining Plan of Operations could disturb up to 2,000 linear feet of floodplains. The Bonanza/Little El and Shamrock claims are in different watersheds than the Gold Run claims. Cumulatively, the mining activities would disturb approximately 2.6 acres of floodplains within the 9,950 acre project area over a 10-year period.

Conclusion: Impacts to wetlands and floodplains would include:

- Intensity: Relatively small scale of disturbance to a previously disturbed floodplain.
- Context: Gold Run and Glacier Creeks are part of the Chisana Historic Mining Landscape. The NPS manages the Gold Hill area for its historic value and therefore preservation of the historic landscape takes precedent over some adverse impacts to natural resources and processes. Multiple historic features and structures have been identified, including wooden remnants of boomer dams and linear hand-stacked tailings. These features adversely impact the floodplain function within the Gold Run claim group but would be preserved to protect the cultural landscape. The disturbed floodplains and creeks do not contain fish populations and do not represent a rare or unusual resource. The proposed action would continue low levels of disturbance in these floodplains for the life of the plan, estimated at 20 years.

Executive Order 11988 Floodplain Management has been considered in this EA and a Floodplains Statement of Findings has been prepared (Appendix E).

Executive Order 11990 and NPS Directors Order 77 (DO-77) have been considered in this EA. DO-77 states “The basic test for determining if a proposed action will have adverse impacts on wetlands is if the activity has the potential to degrade any of the natural and beneficial ecological, social/cultural, or other functions and values of wetlands.” Disturbance of 0.03 acres of previously disturbed riverine wetland will not degrade the wetland or wetland function from its existing condition. Consequently, a Wetlands Statement of Findings will not be prepared for this proposed action.

## **3.5 Vegetation**

### **3.5.1 Existing Condition Vegetation**

The Gold Run mining claims are sparsely vegetated. The tallest vegetation along the creek on the claims consists of several species of willow (*Salix spp.*). Several other shrub species are scattered along the creek where there is enough soil to support them. Grass, sedge and a variety of forbs grow in riparian areas

where soil permits. The hillsides above Gold Run and Glacier Creeks are covered by a varied mosaic of subarctic vegetation cover types, including open and closed tall, low, and dwarf scrub, and mesic and dry graminoid herbaceous (Viereck et al. 1992). Sedge (*Carex spp.*), willow, and dwarf birch (*Betula nana*) predominate in mesic areas. Close ground cover consists mainly of mosses and lichens. Tall shrubs, primarily willows, occur in drainages along the valley wall.

To date, the only non-native invasive plant documented in the Gold Hill project area is Kentucky bluegrass (*Poa pratensis ssp. Pratensis*), located at the end of the Chicken Creek Airstrip (Gantz et al. 2014). Four Alaska Natural Heritage Program (AKNHP) rare plants have been documented within the Gold Hill project area: moonwort (*Botrychium ascendens*); lancepod whitlowgrass (*Draba praealta*); Bostock's miners lettuce (*Montia bostockii*); and bluegrass (*Poa secunda*).

### **3.5.2 Effects on Vegetation from Alternative A, No Action**

Direct and Indirect Effects: No mining would occur and no direct and indirect effects to vegetation would take place.

Cumulative Impacts: Since there are no direct or indirect effects associated with this alternative, there would be no contribution to cumulative impacts.

### **3.5.3 Effects on Vegetation from Alternative B, Proposed Action with Stipulations**

Direct and Indirect Effects: Annual estimated disturbance from all proposed mining activities on the Gold Run claim block would average 0.04 acres per year, and up to 0.74 acres over a 20-year period. Most of these activities would be associated with suction dredge operations in previously disturbed and sparsely vegetated areas. Soil or vegetation disturbance could lead to an increased risk of introducing non-native vegetation to the area. It is not anticipated that any of the four AKNHP rare plants would be affected by the mining due to their distribution and habitats.

Impacts to vegetation from access to the claim could include light brushing on the existing trail alignment as needed, but no new routes or clearing of vegetation would occur. Brushing would impact less than 0.1 acres of vegetation. Access in the winter via snowmachine would not affect vegetation so long as adequate snowcover is present (see Stipulations in Appendix D).

Cumulative Impacts: Past mining in the area has previously impacted vegetation in most of the 19 drainages in the analysis area; while the current condition of vegetation (see Section 3.5.1) has been influenced by historic and ongoing contemporary mining activities, the vegetation is relatively sparse but typical of the area. Mining plans of operations were also approved for Little El/Bonanza (2016) and Shamrock (2013) claim groups in the last five years and activities are ongoing. These activities are expected to result in similar direct and indirect impacts to vegetation, because most proposed mining is via suction dredge in gravel floodplains that have been previously impacted, and only sparse vegetation exists. There are proposed mining operations on one other claim block (Big Eldorado) that are likely to proceed in the near future. Impacts from these operations combined with the proposed Gold Run operations would result in less than one acre of vegetation disturbance per year and less than five acres vegetation disturbance over a ten-year period, within a 9,950 acre project area.

Conclusion: Impacts to vegetation from implementation of Alternative B would include:

- Intensity: The Gold Run operations would contribute a relatively small scale of disturbance (less than 1 acre in a 20-year period) in previously disturbed areas. There would be an increased risk for introduction of non-native species.
- Context: No rare or unusual vegetation species would be disturbed.

## **3.6 Visual Resources**

### **3.6.1 Visual Resources existing condition**

The Gold Hill project area is characterized by rolling hills covered with moist tundra. From the top of rounded Gold Hill, several shallow valleys flow north and east. Gold Run and Glacier Creeks form a rocky canyon in its lower reaches, while Chavolda Creek, a wide, braided stream, forms a large, spruce-lined valley on the north end of the study area.

Views from the project area are often down the broad shallow drainages, across the unseen valleys of Chavolda Creek, and are then limited by small, nearby, rocky mountains. From some of the higher sites in the project area, the very wide and braided channel of the Chisana River and the Nutzotin mountains can be seen.

Past and present mining has created visual impacts in the form of creek bed and riparian disturbance. More obvious visually are the historic roads that have become ORV trails and historic ditches used for water conveyance and diversion. These linear features have created visual scars across the landscape. However, these features are important historic components of the visual resources within a National Register Historic District.

### **3.6.2 Effect on Visual Resources from Alternative A, No Action**

Direct and Indirect Effects: Under this alternative, no mining activities would take place on the Gold Run claims. This alternative would not generate direct or indirect effects to visual resources. Past evidence of mining activities would still be apparent.

Cumulative Impacts: Since there are no direct or indirect effects associated with this alternative, there would be no contribution to cumulative impacts.

### **3.6.3 Effects on Visual Resources from Alternative B, Proposed Action with Stipulations**

Direct and Indirect Effects: This alternative would result in mining activities, including use of a suction dredge and highbanker in areas previously disturbed by mining. Annual area of disturbance from these activities is estimated to be very low (0.04 acres per year).

Access to the claims would use an existing airstrip and trail alignment. No change to the existing condition of visual resources would occur, as light brushing would not noticeably affect visual resources. Other trail or airstrip maintenance activities effecting visual resources are not anticipated. Impacts to visual resources due to access in the winter via snowmachine would include ephemeral snowmachine tracks.

Cumulative Impacts: Reasonably foreseeable future actions include suction dredge and highbanker operations on the Shamrock, Little El, Bonanza, and Big Eldorado claim groups. ORV use to access these operations would continue on the established trails between the Chicken Creek Airstrip and those claims. Because of the small scale of mining operations proposed at these operations, there would be very little noticeable change to the existing condition of visual resources. Cumulative impacts would amount to less than one acre visual disturbance per year.

Conclusion: Impacts to visual resources would include:

- Intensity: Relatively small scale of disturbance within previously disturbed areas.
- Context: The features that impact visual resources, such as linear historic ditches, historic roads, and trails, are features that are important components of the cultural landscape within a National Register Historic District.

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