Introduction

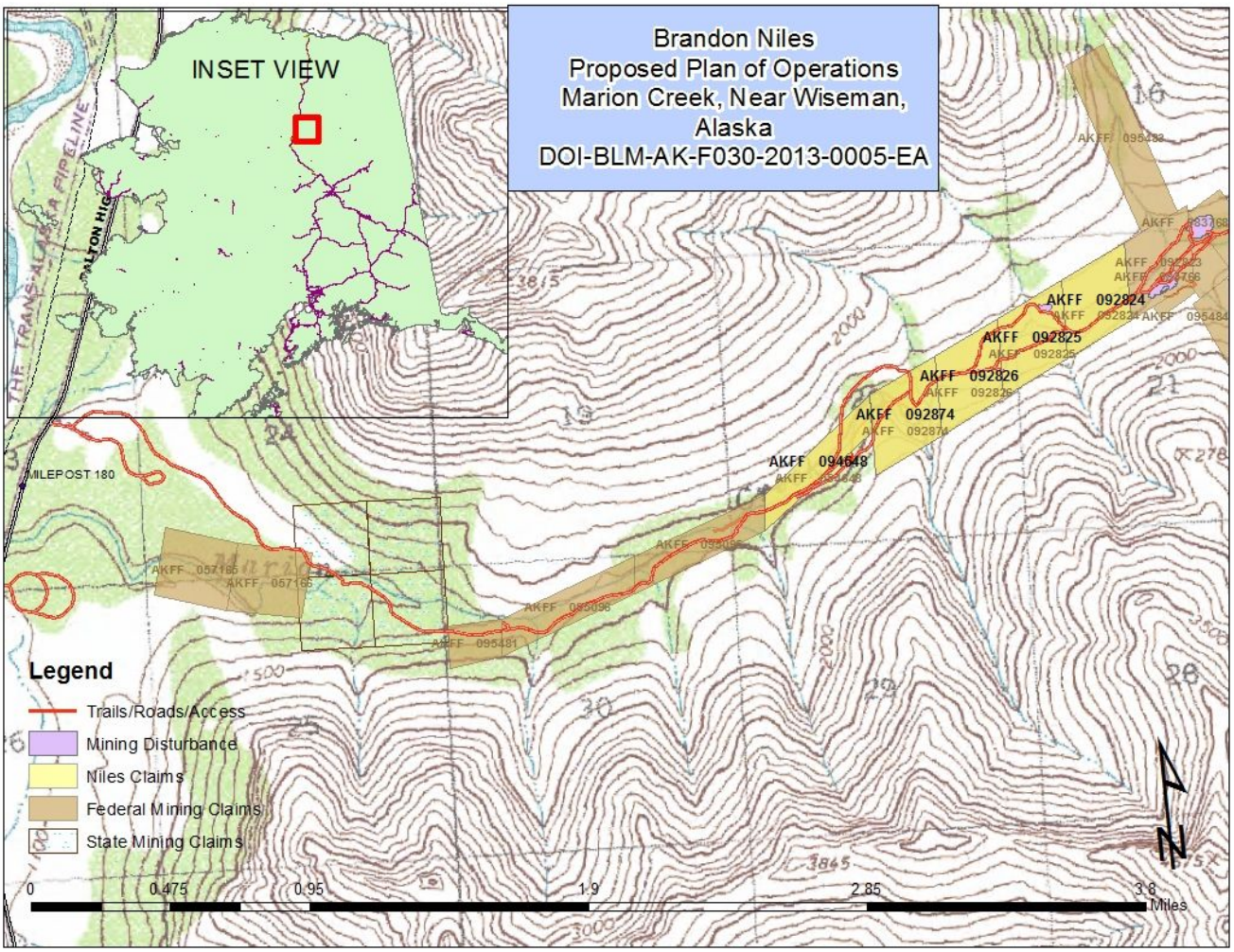
Identifying Information:

Niles Plan of Operations DOI-BLM-AK-F030-2013-0005-EA

Surface Management Mining (3809) Plan of Operations

Location of Proposed Action:

The proposed action is located on federal mining claims along Marion Creek, near Wiseman, Alaska. T.29N., R.11W., secs 20 and 21, Fairbanks Meridian. The specific claims are: Federal Claims AKFF 094648 (Sunset A-8), AKFF 092874 (Sunset Associated #6), AKFF 092826 (Sunset A-5), AKFF 092825 (Sunset A-4), and AKFF 092824 (Sunset A-3).



Name and Location of Preparing Office:

Lead Office - Central Yukon Field Office, LLAKF030

1150 University Avenue, Fairbanks, Alaska 99709

Subject function code, lease, serial, or case file number:

Case file number AKFF 0965355

Applicant Name:

Brandon Niles

Purpose and Need for Action:

BLM Purpose

The purpose of the action is to provide Brandon Niles the opportunity to develop mineral resources along Marion Creek in such a way that prevents unnecessary and undue degradation.

BLM Need

The need for the action is established by:

- the 1872 Mining Law, which allows mining claims to be staked on federal lands;
- Federal Land Policy Management Act (FLPMA), which allows for multiple use of public lands;

  and
- the Utility Corridor Resource Management Plan (RMP), which allows for the opportunity to develop mineral resources in this area.

BLM Decision

The BLM will decide whether or not to authorize mining operations and occupancy on Marion Creek as proposed by Brandon Niles and if so, under what terms and conditions.

Scoping, Public Involvement and Issues:

The initial (BLM internal) scoping for Brandon Niles proposed mining plan of operations and occupancy was first introduced during the Central Yukon Field Office staff meeting on Tuesday, January 15, 2013. Central Yukon NEPA Team participants were briefed on the project and were given information on how to start the review process for the development of issues.

Each specialist was provided the opportunity to review the mine plan and submit a list of issues that they determined critical to evaluate further They also, provided feedback and ideas for items identified in the proposed plan of operations.

The following issues were identified in the internal scoping to need further analysis:

- Fish and Aquatic Habitat: How will the BLM reduce impacts to Fisheries and aquatic habitat.
- Water Quality: How will the BLM prevent water quality degradation (Turbidity) during suction dredging and heavy equipment operations in Marion Creek.
- Water Quality: How will the BLM prevent water quality degradation (Pollution) from petroleum products being introduced through heavy equipment operation and fuel spills.
- Noxious and Invasive Plants: How will the BLM prevent the spread of Noxious and invasive plant species into the Marion Creek Drainage.

The following issues were identified but were determined not to be critical for the analysis and are justified here:

Fisheries/Essential Fish Habitat: The fisheries biologist for the Central Yukon Field Office, Carl Kretsinger determined that no adverse impacts to essential fish habitat and/or fish in Marion Creek would be expected, assuming the mitigation measures would be implemented as part of the authorization for the proposed action.

External scoping was not conducted for this Environmental Assessment based on the fact that there is low potential for controversy due to the location of the proposed action. The historic Koyukuk Mining District has a long history of mining, the claims to be mined are used for mining only; recreation on mining claims is limited due to the nature of mining operations. No history of controversy has been identified in any of the other operations that are currently operating in the area.

The proposed action was posted on BLM's National NEPA register in early January 2013.

Proposed Action and Alternatives

Description of the Proposed Action:

Brandon Niles has filed a State of Alaska Multi-Agency Permit Application (APMA) for suction dredge operations on federal mining claims along Marion Creek, near Wiseman, Alaska. The claims associated with the proposed plan of operations are located approximately three miles upstream from the Dalton Highway on Marion Creek. A total of five claims are included in this proposed plan of operations (see Table 1 for a complete list). The proposed action includes access, mining and reclamation, water management plan, quality assurance plan, spill contingency plan, reclamation cost estimate, and interim management plan. Along with the mining plan of operations, a Use and Occupancy application has been submitted that includes lodging facilities, an outhouse, fuel storage, and solid waste collection point along the mining access road. Brandon Niles mine plan, APMA #F132468, and additional supplemental information are available for further review at the Fairbanks District Office.

Table 1. Brandon Niles Mining Claim List

Claim Name	Claim Number	Type of Mining Disturbance Planned
Sunset Association #6	AKFF 092874	Mining with 8” Suction Dredge
Sunset A-8	AKFF 094648	Bulk Sampling with 8” Suction Dredge
Sunset A-5	AKFF 092826	Bulk Sampling with 8” Suction Dredge
Sunset A-4	AKFF 092825	Bulk Sampling with 8” Suction Dredge
Sunset A-3	AKFF 092824	Bulk Sampling with 8” Suction Dredge

Access and Equipment

Access will be on the existing mining road along Marion Creek to the occupancy and mining location at approximately mile 3.5 within mining claim AKFF 092874. Mining equipment on site for suction dredging operations will include a Keene Engineering Model 824V6 Suction Dredge and a small gasoline over hydraulic portable winch. A John Deere 550 dozer and/or a Hitachi 220 excavator will be used if reclamation standards can not be met concurrently with suction dredging operations and will be used to stabilize large boulders (in excess of 300 lbs) and trees if they represent a safety hazard. Fuel storage will be kept below 500 gallons (refer to Section 20 APMA# F132468 and figure 2.2) and will be stored at the proposed camp location on mining claim AKFF 092874 in a bermed and lined area located more than 100 feet from the stream channel.

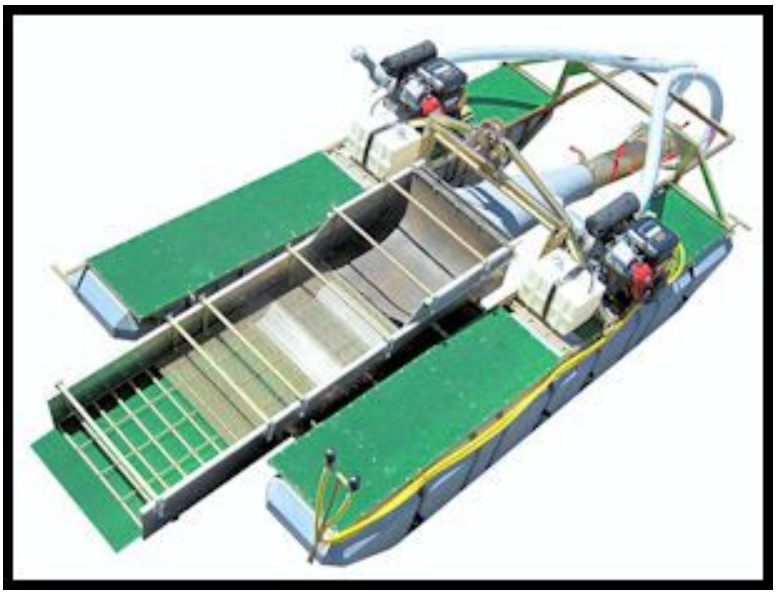


Figure 1. Keene Model 824V6 Suction Dredge

Gas powered Hydraulic winch for suction dredging operations

Figure 2. Gas Engine over Hydraulic Winch

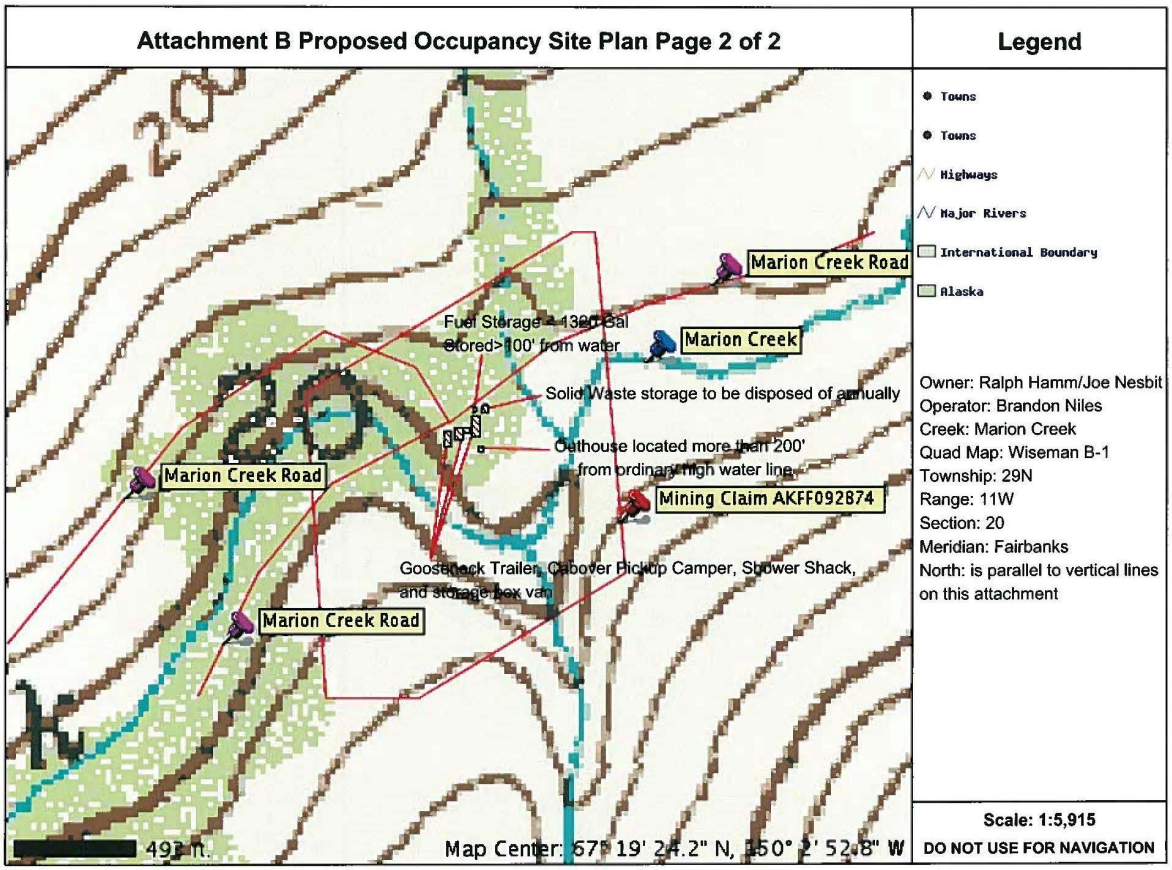


Figure 3. Site Map of Proposed Mining Occupancy and Fuel Storage

Mining and Reclamation

In May of 2013 mining equipment will be mobilized to mine site utilizing existing access roads up Marion Creek valley. Following mobilization, the dredge will be launched into Marion Creek when spring thaw water levels have come down to an acceptable level (late May – early June).

Production mining activities will be conducted at mining claim Sunset Association #6 (AKFF 092874). There are two mining areas defined on this claim (Figure 2.1). Mining area 1 is located on the South eastern portion of the claim and is approximately 250 feet in length (Figure 2.2). Ropes and cables will be attached to fixed objects (boulders/bedrock) in the gorge and will be used to anchor floating equipment into the desired cut location.

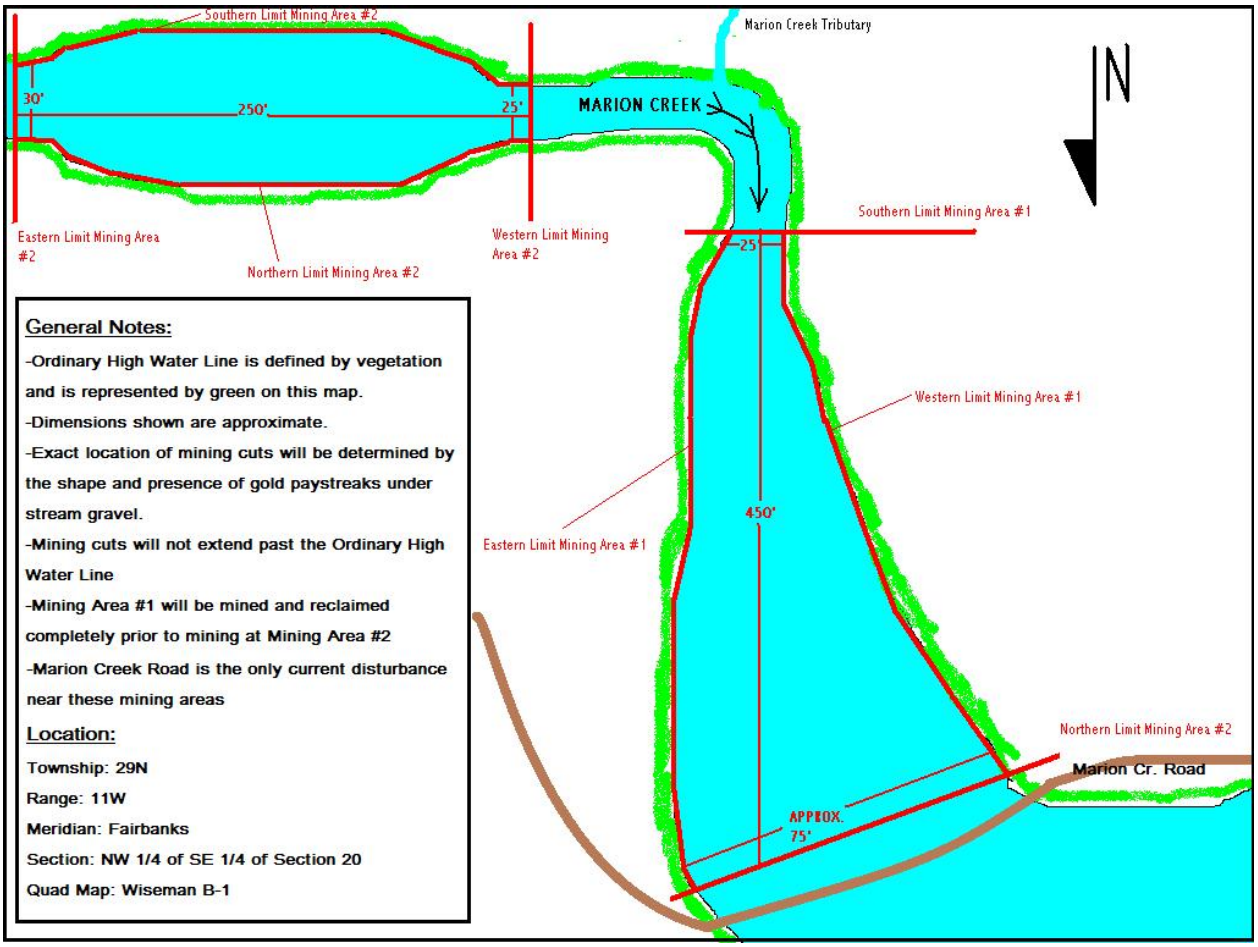


Figure 4. Plan View of the Two Production Mining Areas on Claim AKFF 092874

Figure 5. Picture of Mining Area #1 at Claim AKFF 092874

Figure 6. Picture of Mining Area #2 at Claim AKFF 092874

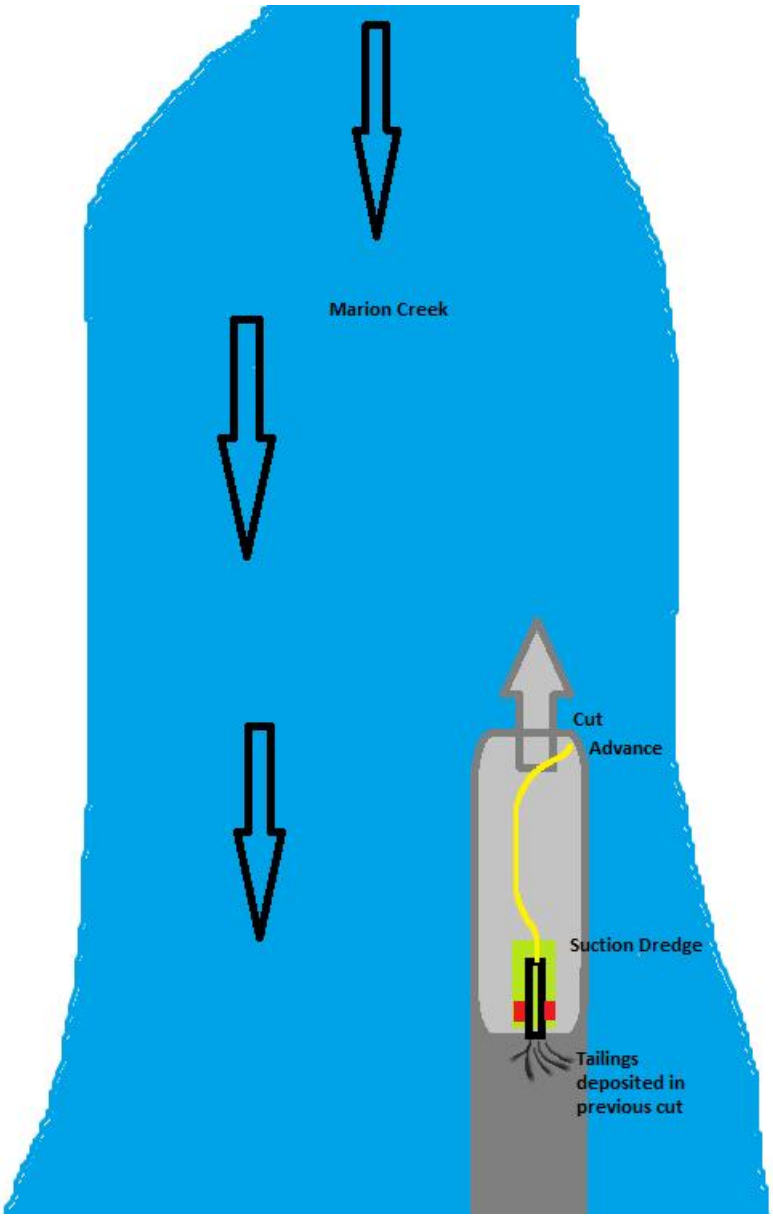


Figure 7. Plan View of Proposed Suction Dredge Operation

Underwater divers will use the suction dredge to open a 12 foot wide by 20 foot long mining cut in the bed of the creek. The depth to bedrock varies but no cut should ever exceed 12 feet in depth from the water surface. Tailings from initial cut will be deposited back on the water body floor.

After the initial cut is complete, the dredge will be relocated over the tail end of the cut. At this point the cut will be advanced upstream. As mining progresses upstream, the downstream end of the cut will be backfilled with tailings, making reclamation of the mining concurrent with the movement of the dredge upstream. Gravel, cobbles, and boulders handled during dredging operation will be processed in the following manner:

1. Gravels < 8” in size will be sucked up with the dredge and re-deposited in the tail end of the cut for reclamation (Figure 2.5).

2. Cobbles > 8” but small enough to be moved by divers will be transported by hand to the tail end of the cut for reclamation (Figure 2.6).

3. Boulders too large to be moved by hand and that represent a safety hazard, will be moved to the back of the cut using mechanical advantage. These boulders will be placed on bedrock and reclaimed as the cut advances forward (Figure 2.7).

4. Boulders that represent a safety hazard to the divers during suction dredging will be moved by mechanical winches, excavator, or D-6 bulldozer. This activity is permitted for safety purposes only and the material that is stabilized or moved will be returned to a proximate position within the stream bed once dredging operations have been safely concluded around the large object.

Depending on the width of the pay streak the cut may advance cross stream at which point the dredge will be relocated to fill in the opposite side of the completed cut.

Reclamation of the mining cut will be concurrent with further expansion of the cut. Elevations at mining cut locations will be reclaimed to within 6 inches of the pre-mining elevation as recorded in a pre-mining survey.

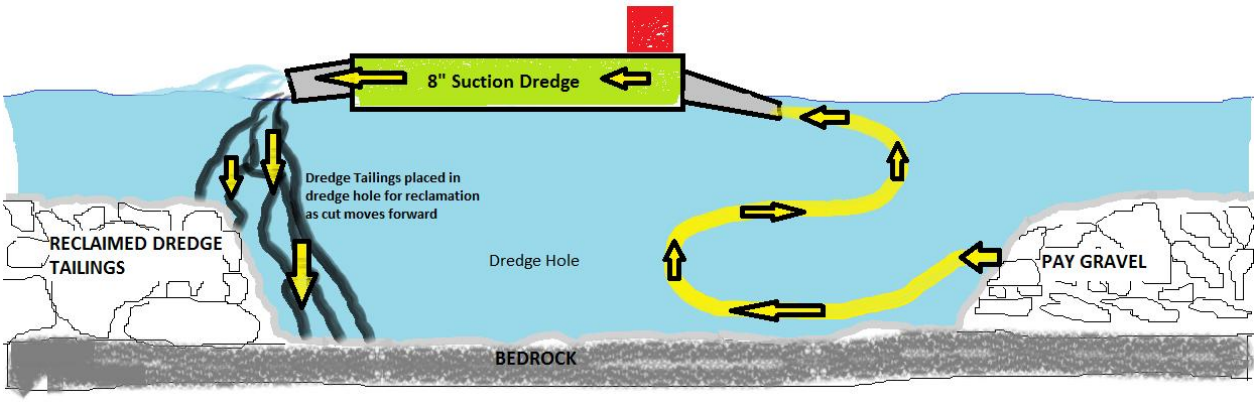


Figure 8. Cross Section of Suction Dredge Operation

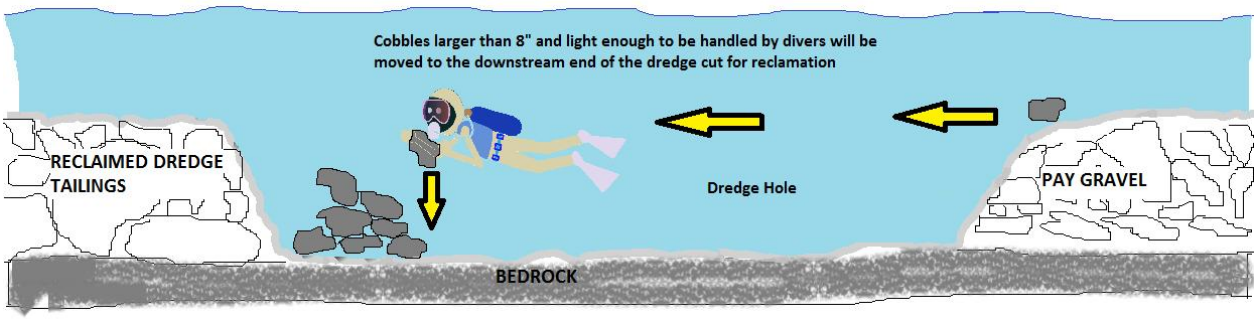


Figure 9. Reclamation of Cobbles and Light Boulders by Hand

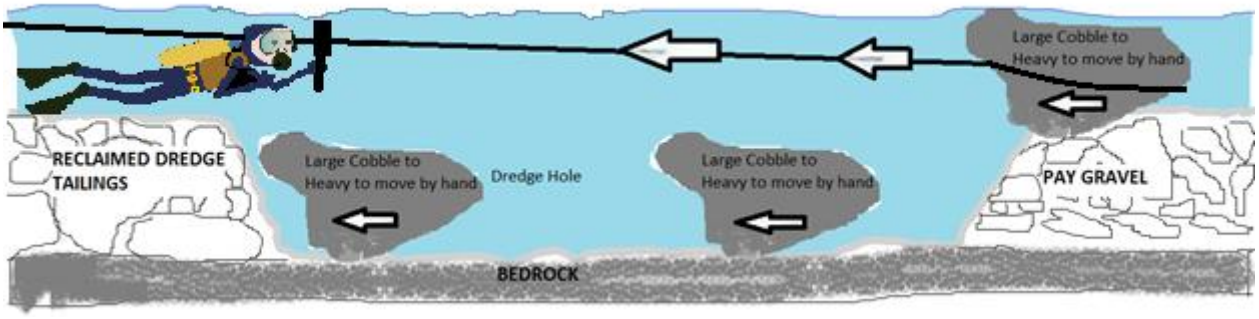


Figure 10. Reclamation of Cobbles too Heavy to be Moved by Hand

Exploration and Bulk Sampling

Bulk sampling and exploration outside Mining Areas #1 and #2 will be conducted on mining claims AKFF 092824 – AKFF 092826 and AKFF 0094648 (Table 1). A 10 foot by 10 foot exploration hole will be opened at each predetermined sample location using the 8 inch suction dredge. The tailings from the exploration hole will be deposited outside the cut area on the water body floor (Figure 2.1). The dredging will progress downward until bedrock is reached. The cubic volume of material processed will be analyzed for gold values. The cut will then be backfilled using the 8 inch suction dredge. The rear of the dredge will be positioned over the exploration cut and the tailings that were deposited on the stream bed will be sucked through the dredge to be redeposited in the cut (Figure 2.2). The elevation at each exploration cut location will be reclaimed to within 6 inches of the pre-mining elevation as recorded in the initial survey.

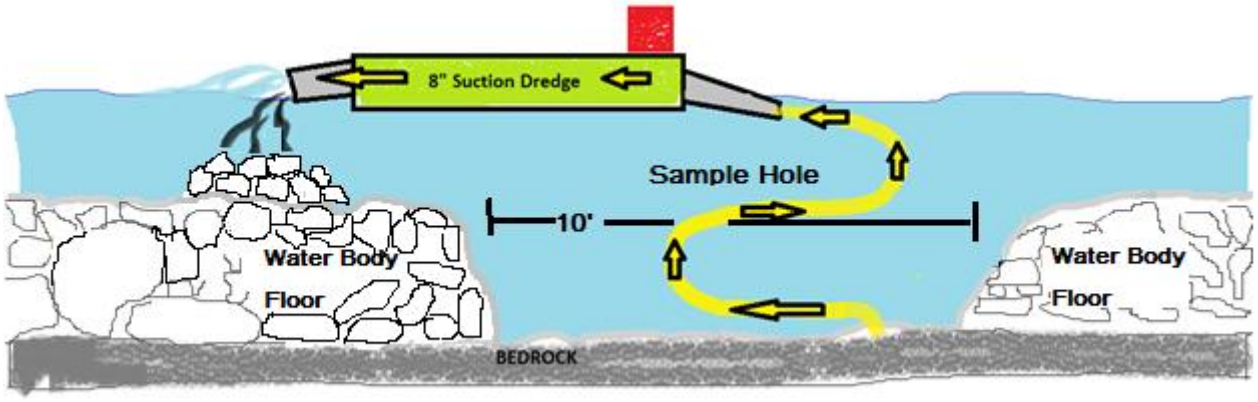


Figure 11. Exploration Cut with Suction Dredge

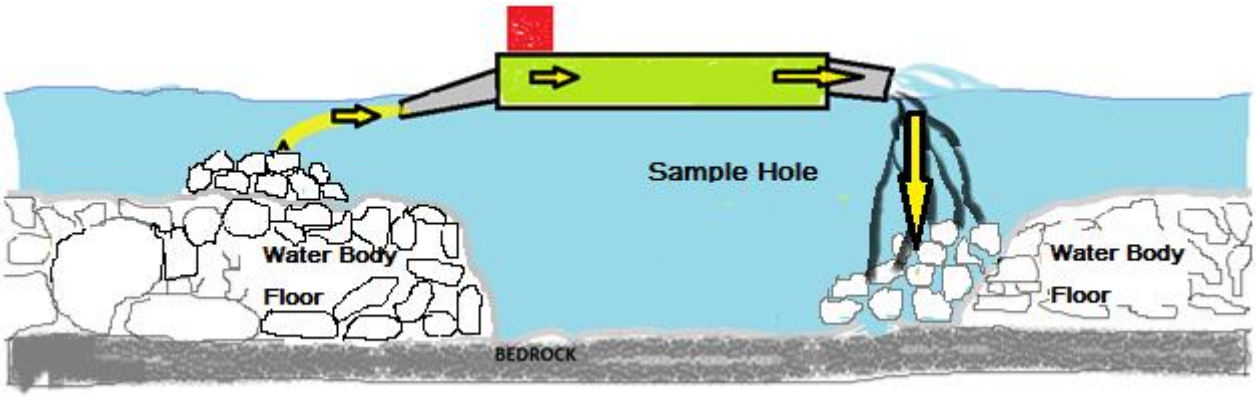


Figure 12. Reclamation of Exploration Cut with Suction Dredge

No Action Alternative- Deny Mining Activity

A no action alternative would deny any mineral development on the proposed claims and the land would remain undisturbed.

A no action alternative does not conform to the Utility Corridor RMP and Record of Decision (1991). Mining is a nondiscretionary action subject to the federal regulations outlined in 43 CFR 3809. If the operator can meet the various State and Federal requirements, the stipulations, and required operating procedures to this Environmental Assessment, the mining plan must be approved.

There are no known alternatives to the proposed action that would meet the purpose and need of the proposed action and lessen impacts, therefore no other alternatives are being analyzed in this EA.

Conformance

The management of these lands, subject to valid existing rights, is in accordance with the 1872 General Mining Law, applicable provisions of the Alaska National Interest Lands Conservation Act (ANILCA), the Federal Land Policy and Management Act of 1976 (FLPMA), BLM Surface Management Regulations contained in 43 CFR 3809 and 3715, and the Utility Corridor Resource Management Plan (RMP) and Record of Decision (1991). The Utility Corridor RMP and FLPMA are the decision documents and legal basis for the integrated long term resource planning within the Central Yukon Field Offices portion of the Koyukuk Mining District. The proposed action and alternatives are consistent with the Utility Corridor RMP and FLPMA. Placer mining is specifically addressed in Proposed Action 2 which states that all public lands not formally withdrawn or segregated from mineral entry are open for exploration and development of locatable minerals.

In addition to the Utility Corridor RMP and FLMPA requirements, NEPA analysis has been conducted for other mining operations in the Koyukuk Mining District. The following EA's applies to the area of concern:

- DOI-BLM-AK-03000–2010–014–EA Mining Plan of Operations for Q4M Production Company LLC.

- DOI-BLM-AK-03000–2010–017–EA Mining Plan of Operations and Use and Occupancy for Ralph Hamm (Slisco Inc.)
- DOI-BLM-AK-03000–2011–035–EA Mining Plan of Operations and Use and Occupancy for Ralph Hamm (Slisco Inc.)

The analysis of the proposed action by BLM is conducted with the assumption that the development of this mine and exploration activity will be in accordance with all applicable laws, regulations and permits.

The applicant may also require a site-specific ("404" Permit) or a General Permit (GP 88-02N) from the US Army Corp of Engineers, and a Temporary Water Use Authorization or a Water Right from the State of Alaska, Department of Natural Resources (DNR).

ADEC and EPA have statutory authority to establish water quality standards and certify that the proposed operation uses water treatment methods determined to meet standards. By regulation [43 CFR 3809.420(a)(6) and 3809.420(b)(5)], the operator is required to conduct operations in compliance with ADEC and EPA water quality and effluent standards. It is BLM's policy that during compliance inspections of the operation, should it be suspected that water quality standards are not being met, EPA, ADEC, and BLM enforcement will be notified.

Upon issuance of a Notice of Violation by any State or Federal Agency, BLM will issue a Notice of Noncompliance to the operator, in accordance with Chapter 9–9 of the BLM's Surface Management Handbook H-3809-1.

Affected Environment:

Geology and Minerals

The Koyukuk district extends from the Brooks Range on the north to the Ray Mountains on the south. From the highest peaks of the Brooks Range, which reach elevations of over 6,000 feet, to the Kanuti Flats at an elevation of 600 feet, the majority of the area is composed of rolling hills whose crests average about 2,000 feet in elevation.

Unconsolidated Quaternary sediments cover the floors of the river valleys. In the valleys of the gold-producing creeks the bedrock is largely schist. These creeks head on ridges that were originally part of a gently sloping plain built from gravel eroded from the ancestral mountains to the north. This original surface is preserved in many places. The sediments generally range from very course sand to large pebble size, with some sandy and clayey beds, but portions of the deposit contains boulders up to 6 feet or more in diameter. Surficial deposits of the area include largely wind-deposited loess, and thick glaciofluvial colluvium that conceals the bedrock in much of the upland area. Permafrost underlies most of the area, but it is discontinuous beneath parts of the Middle Fork Koyukuk River valley and some of the higher foothills (Cobb, 1972).

The gold is found in the gravel layer lying from only a few inches to many feet above the schist bedrock surface. The gold mineralization appears to have originated in the ridges of schist located to the west, which have been intruded by granodiorite dikes and stringers or from the localized shearing or faulting of the schist bedrock.

There are no economic concentrations of any of the minerals defined as critical or strategic minerals.

Fish and Aquatic Habitat

The proposed action lies within the general range of: Arctic grayling (*Thymallus arcticus* and whitefish (Coregonid spp.) (State of Alaska 1978). Rockwell and Johnson (1978) also note Dolly Varden (*Salvelinus malma*) and sculpin (*Cottus cognatus*) as present. Marion Creek is listed with the State of Alaska as important for the spawning, rearing, or migration of anadromous fish. Chum salmon (*Oncorhynchus keta*) are documented as spawning and Chinook salmon (*Oncorhynchus tshawytscha*) have been documented as rearing within the lower ¼ mile and ½ mile (approximate) respectively of Marion Creek (ADF&G 2009). Observations made during stream habitat surveys conducted by BLM personnel in 1989 (USDI BLM 1989) indicated that Marion Creek has adequate habitat to support fish populations. There is a falls located approximately 2.5 miles upstream from the mouth of Marion Creek that is of adequate size to be a fish barrier. Grayling were sighted downstream of the falls to the Middle Fork Koyukuk River during the 1989 survey. No fish were observed above the falls at that time. A subsequent visit by BLM fisheries biologists to Marion Creek in 2001 failed to locate fish in the vicinity of the proposed action. The proposed action is located upstream of the falls.

Marion Creek within the area of the proposed action (T29N, R11W, S20) is a riffle dominated reach (70%), having a 3% stream gradient, an average channel width of 60 ft., an average wetted width of 40 ft., a mean and maximum depth of 2.3 and 3.6 ft., a predominate substrate composed of larger particles ranging from small rubble (3–6 inch) to small boulder (12 inch), and a narrow riparian width ranging from 3 to 15 ft. wide. Landform gradient adjacent to the stream is steep, averaging 74% indicating a high erosion potential (USDI BLM 1989).

Water Quality and /Hydrology

The region surrounding the proposed action is part of the front-range hills and uplands of the Brooks Range. Marion Creek has a watershed area of 52 mi2 and runs 18 miles from its headwaters to its confluence with the Middle Fork Koyukuk River. There is a falls located approximately 2.5 miles upstream from the mouth of Marion Creek. Based on BLM surveys (USDI BLM 1989), Marion Creek within the area of the proposed action (T29N, R11W, S20) is a riffle dominated reach (70%), having a 3% stream gradient, an average channel width of 60 ft., an average wetted width of 40 ft., a mean and maximum depth of 2.3 and 3.6 ft., a predominate substrate composed of large particles ranging from small rubble (3–6 inch) to small boulder (12 inch), and a narrow riparian width ranging from 3 to 15 ft. wide. Landform gradient adjacent to the stream is steep, averaging 74% indicating a high erosion potential. Peak annual discharge (Bankfull Q) is estimated at 292 cfs (Jones and Fahl 1993). The annual peak flows are a generally in response to snow melt which occurs between late May and early June.

Water quality within the drainage is considered good to excellent over most flows and a shallow well in lower Marion Creek is the source of drinking water for the BLM campground.

Elevated turbidity may occur during high flows and are related to rain events or spring snow melt. Anthropogenic disturbance within the drainage is contributing to the number of occurrences in which turbidity in excess of background levels has been documented within the drainage. Background conditions documented on 2 June to 15 September 2011 in lower Marion Creek found that over this period temperature, conductivity, pH, and turbidity averaged 7.3° C, 20 µS/cm; 6.5; and 6 NTU respectively.

Riparian-Wetlands

The 52 mi^2 Marion Creek watershed consists predominantly of an open black spruce forest type. As the name implies, this forest type is dominated by black spruce, a species estimated as having a 67 – 99% probability of occurring in wetlands (Reed 1988). Other tree species such as paper birch, white spruce, and tamarack may be present. This forest type is common over vast areas of poorly drained, cold terrain in interior Alaska (Viereck et al. 1992). An open to nearly continuous cover of low shrubs is characteristic of these communities intermixed with tall shrubs of willow and alder which may dominate stream corridors. The ground layer is commonly dominated by mosses and lichens. As with black spruce, many of the understory species associated with this forest type are also indicative of wetlands (Reed 1988). Viereck et al. (1993) provides a diagram of plant succession which shows the transition from the invasion of willow to communities dominated by alder, balsam poplar, white spruce, and sometimes black spruce. The transition from a shrub type vegetation to vegetation dominated by trees occurs gradually over 20 to 40 years, with the development of a mature spruce forest after about 150 years. Time frames and types of species present and their growth will differ for well drained south facing slopes or poorly drained permafrost uplands. In the case of areas that are mechanically cleared, the retention of soil plays a critical role in reestablishing vegetation.

Most of the watershed area, and hence, riparian-wetlands within the Marion Creek drainage are in pristine condition and would be classified as having proper functioning condition (Pritchard et al. 1998). Riparian vegetation has been removed along sections of the mine access road that runs from the Dalton Highway up Marion Creek for approximately 7.5 miles. The road crosses Marion Creek with several low water crossings bisecting streamside riparian vegetation. Two mining operations and one mine exploration project all located upstream from the falls at river mile 2.5, have resulted in the loss of riparian-wetlands. Mine related impacts of riparian-wetlands

constitute the largest proportion of loss or degradation of riparian-wetlands within the watershed. Additionally, the Dalton Highway, the Trans Alaska pipeline, a BLM administrative site and campground, and a staging area used by miners all contribute to the cumulative loss or degradation of riparian-wetlands. Though a PFC assessment has not been completed by BLM within the Marion Creek drainage, it is presumed that the disturbed areas are less than fully functional. BLM uses the Proper Functioning Condition (PFC) assessment described by Pritchard et al. (1998) to qualitatively describe the status and trend of riparian-wetland function and as a means of effectiveness monitoring to determine if vegetative cover, diversity, condition, and function is being maintained (management objectives listed in the Utility Corridor RMP {USDOI 1991} and the Alaska Land Health Standards {USDOI BLM 2004}) and to the extent permitted by law, avoiding the destruction, loss or degradation of wetlands (including riparian vegetation; EO 11990).

Total disturbance for riparian-wetlands within the Marion Creek watershed is estimated to be 150 acres.

Vegetation

Streamside vegetation, predominated by willow (*Salix spp*.) and white spruce (*Pica glauca*), occurs along creeks in the vicinity and along Marion Creek near the mine site. The major vegetation communities in the claim area include needleleaf spruce forests, low shrub tundra and tall shrub.

Wildlife

A variety of mammals and migratory birds are likely to be associated with the plant communities at the project site. BLM conducted aerial surveys for raptors in the portion of the Marion Creek Drainage where this and other active mines are located in 2002, 2006, and 2009. As a result several vacant golden eagle nests were identified in this area; located across the Middle Fork Koyukuk River Valley over 6 miles from the proposed mining area. The more recent 2010 survey lead to the identification of two other raptor stick nests within 2 miles of the mining claim.

BLM/AK Sensitive Species and Birds of Conservation Concern: The published ranges of several wildlife species that appear on the BLM/AK Sensitive Species and the Birds of Conservation Concern (U.S. Fish and Wildlife Service. 2008) lists overlap the project area. No inventories have been conducted specifically in the Marion Creek Drainage for these species. However, based on reported habitat preferences, and Breeding Bird Surveys that BLM conducts along the nearby Dalton Highway, blackpoll warblers and olive-sided flycatchers are the listed species that are most likely to inhabit the mining claims and be subject to disturbance by vegetation clearing.

Noxious and Invasive Plants

Surveys along the Dalton Highway for invasive plants have occurred annually since 2004 and 28 species have been documented. In Alaska invasive plants are ranked on a scale of 0-100, with 100 being the most invasive and therefore potentially threatening to native habitats. The most pervasive and invasive species recorded in the Wiseman area are: *Meliltous alba* and *Vicia cracca. Meliltous alba* (white sweetclover; ranking: 80), has been rapidly expanding its range northward along the Dalton Highway and has been found as far north as the Hammond River (MP 190). *Vicia cracca* (Bird Vetch; ranking: 73), has been recorded in several places and as far north as Rosie Creek (~MP 170) on the Dalton Highway. To date, invasive species have not been recorded along the Marion Creek Road. However, increased traffic on the road in

association with increased mining activity is likely to increase the potential for invasive plant spread via vehicle and foot traffic.

Wastes (Solid and Human)

The immediate area surrounding the proposed action along Marion Creek is not affected by any known solid or human waste burial sites or contaminated sites. Placer mining operations are underway above and below the proposed action site.

Environmental Effects:

Geology and Minerals

Direct/Indirect Impacts: Development of mineral resources (gold) entails physical removal from the earth and "commitment" to other uses, presumably of both physical and economic benefit to society. The minerals themselves are thus consigned, irreversibly and irretrievably, to human use, including repeated recycling in many instances.

Fish and Essential Fish Habitat

The proposed action would take place approximately 1.4 miles upstream of known fish habitat and because this, any adverse impacts would occur as an indirect result of altered water quality, increased sediment production and transport, or reductions in food or prey availability. Eleven mitigation measures (Mitigation Measures # 1–11 this document) were identified during the effects analysis for Water Quality / Hydrology and Riparian-Wetlands. If implemented, these mitigation measures should largely prevent adverse impacts to water quality 500 feet or more, downstream from the dredging operation. The prohibition of mining activities that could result in streambank and floodplain erosion should prevent a majority of new sediment production. Measures requiring the restoration of pre-existing stream bed topography and the replacement of in-channel roughness elements (i.e. large boulder) in a distribution similar to the pre-mined condition are expected to maintain the current channel form and sediment transport capacity and competence. It is expected that some fine sediment mobilized during the operating season would deposit in slow water velocity areas such as stream margins, pools, and interstitial spaces between larger substrate particles. However, most of the fine sediment displaced by dredging operations is expected to remain transient in nature and be routed through the stream system during subsequent high flow events.

Suction dredging up to 32,000 ft^2 of streambed is expected to have a substantial and localized adverse impact on benthic invertebrate abundance and community composition. Several studies looking at the effects of suction dredging on streams in Montana, Idaho, and California have found that abundance and taxonomic composition of benthic invertebrates returned to pre-disturbance levels within four to six weeks after dredging (Griffith and Andrews 1981, Thomas 1985, and Harvey 1986). However, in a study looking at the effects of suction dredging on aquatic invertebrates in several Alaska streams it was found that invertebrate recovery could take up to one year following dredging (Prussian et al. 1999). This suggests that mining into late fall (i.e. dredging until freeze-up), the short growing season, and the extreme environmental conditions common to interior Alaska may prolong recovery times. The prolonged recovery time can, in turn, influence the energy reserves, growth, behavior, metabolic processes and ultimately, the survival of fish that are dependent on these prey items. Since most of Marion Creek remains in a near natural condition, the loss of 32,000 ft^2 of invertebrate production (a small fraction of the available habitat for invertebrates) for up to one year is not expected to decrease the suitability of habitat for fish in lower Marion Creek.

The proposed use of heavy equipment in flowing waters to move and stabilize large rock during mining and the need to refuel the suction dredge while it is anchored in the river both present potential sources of contamination by petroleum hydrocarbons. Petroleum products are associated with polycyclic aromatic hydrocarbons (PAHs). PAHs are common pollutants that depending on their molecular structure can be moderately toxic to fish in their parent state and/or become highly toxic in the presence of solar ultraviolet radiation (Oris and Giesy 1987) or upon biotransformation to metabolites (Tuvikene 1995). Aquatic organisms can be adversely impacted

by PAHs at concentrations as low as 0.2 – 10 ppb, with ramifications ranging from decreased immune system and reproductive function to cellular damage at the genetic level (Tuvikene 1995).

Assuming that the mitigation measures addressing the control and containment of petroleum based products, the restoration of the hydraulic and geomorphological functions of the stream, and measures addressing fuel handling and storage are implemented, adverse impacts due to the proposed action are expected to be limited to the immediate area to be dredged and up to 500 feet downstream. Recovery of the aquatic invertebrate community would not be expected to return to pre-mine conditions for at least one year following final reclamation. In the near future, if additional suction dredging is authorized upstream and in close proximity to the proposed action then recovery would be expected to take correspondingly longer.

Essential Fish Habitat Finding: Eleven mitigation measures (measures 1–11 this document) were identified during the effects analysis for Water Quality / Hydrology and Riparian-Wetlands. Assuming these mitigation measures are implemented as part of the authorization for the proposed action then no adverse impacts to essential fish habitat and/or fish in Marion Creek would be expected.

Cumulative Impacts: At the time of this assessment, it is estimated that approximately 280 acres of land has been disturbed or is authorized for development within the Marion Creek drainage. This estimate includes placer mine development (including access and infrastructure), staging areas, the Trans Alaska Pipeline, the Alaska DOT&PF gravel pit, Federal administrative and recreational facilities, and the Dalton Highway. The main threats to fish and aquatic habitat from the cumulative disturbance are related to upland erosion, instream sedimentation, degraded water quality, altered stream channel geometry, destabilized streambanks, degraded or destroyed riparian vegetation, lost floodplain connectivity and function, and the construction and use of access roads. The current Marion Creek mine access road (~7.5 miles) is located either in or very close to the floodplain and in its current condition and configuration contributes a substantial amount of sediment to the system. Past mine authorizations along Marion Creek (e.g. Ralph Hamm and Q4M Productions LLC) have required the applicants to relocate a large portion of the road out of the floodplain and rehabilitate the decomissioned road segments. Relocation of the road will help reduce overall sediment input into Marion Creek when completed but many years (est. 15 – 20) will be required before vegetation along the rehabilitated segments of the road bed is capable of stabilizing soils.

Plans for the previously authorized mining operations in the drainage prescribe stipulations that are designed to reduce impacts to fish and aquatic habitat. Future monitoring of the prescribed stipulations will determine their effectiveness. With implementation of the mitigation measures proposed for the current action, further degradation of aquatic resources > 500 feet downstream from the dredging operation is not expected.

Water Quality and Hydrology

The proposed action would result in the alteration of up to 32,000 ft^2 of the active channel of Marion Creek up to the ordinary high water line. Some of the changes that can be expected as a result of dredging are an altered channel topography, a decrease in channel width to depth ratio as the channel is excavated and until reclamation is complete, and localized changes in bed slope. The channel width / depth ratio and bed slope are two of the more important factors affecting channel form and the balance between variables that shape and maintain a stream channel at equilibrium (Rosgen 1996). Removal of depositional features such as riffles and gravel bars would diminish the protection provided by the armored substrate surface, allowing for secondary

erosion of the non-armored finer sediments below the previously armored surface layer. Dredge tailings left following the operation would be unconsolidated and would be expected to mobilize under increases in stream volume and velocity. Sediment deposited downstream of the dredge would be vulnerable to resuspension and transport during subsequent stormflow events (Hassler et al. 1986). As the finer particles are transported downstream they could be expected to deposit within slow water velocity areas such as the interstitial spaces between substrate particles and within pools (Thomas 1985).

Suction dredging up to the ordinary high water line, as proposed, may result in the removal of riparian vegetation, large rock, and instream wood which stabilizes streambanks. Excavation along stream margins may also lead to destabilization of the banks due to undercutting and/or channelizing stream flows directed along or into banks.

During the operation, the applicant proposes to use a gasoline powered portable winch, a John Deere 550 bulldozer, and a mid-sized tracked excavator to push or pull instream objects that present safety hazards (e.g. large cobble heavier than can be safely moved by hand) from the leading edge of mine cuts to the tail end of the mine cut for concurrent reclamation. The number of passes the bulldozer and/or excavator would make through mine cut #1 during the 2013 mining season is estimated at 90. The material that would be moved by the proposed equipment would be objects considered to be a safety hazard.

The instream operation of heavy equipment has the potential to result in large stockpiles of substrate up to 20 feet downstream from its original location. Stockpiles of stream substrate would result in altered streamflow patterns and an increased potential for localized streambank erosion and sediment production. The relocation and altered distribution of large substrate from the area to be mined would alter flow resistance and stream energy. Stream energy, as dictated by flow resistance, has a strong relationship with channel pattern (Gordon et al. 2007) and changes in flow resistance would be expected to result in corresponding adjustments to stream channel form, changes in sediment routing and storage patterns, and loss of channel equilibrium.

Localized degradation of water quality would be expected as a result of the instream operation of heavy equipment and the use of the suction dredge. Suction dredging has been documented to result in turbidities of between 15 and 50 NTU immediately downstream of the dredge, with background levels returning between 150 and 500 feet downstream (Harvey 1986, Somer and Hassler 1992, Thomas 1985, Griffith and Andrews 1981, Stern 1988, Prussian et al. 1999). The size of turbidity plumes can be quite variable and are influenced by the composition of the streambed, stream flow, the amount of material being processed by the dredge or moved by the equipment, and the area in the stream in which the dredge or equipment is operated. Mining along stream margins, streambanks, and areas of deposition would have a greater composition of fine particles and would be expected to result in higher turbidity. Although most turbidity plumes associated with the use of suction dredges have been shown to return to background levels within 500 feet (the mixing zone allowed for under the Alaska Pollutant Discharge Elimination System, there are circumstances and site conditions which can cause plumes to extend beyond the authorized mixing zone (Prussian et al. 1999). Assuming that the equipment proposed for instream use is free of mud and soil prior to entering the stream, turbidity levels should be similar to that generated by the dredge. The extent of the turbidity plume generated by the equipment would be highly variable and dependent on the volume of stream flow, the bed materials in which the equipment was being operated and whether the equipment was operated at the same time that the dredge was actively working.

In addition to turbidity, suction dredging has been shown to elevate suspended sediment concentrations up to 300 – 340 mg/L immediately downstream of the dredge, decreasing to background within 500 feet (Stern 1988 and Thomas 1985). The instream operation of equipment would be expected to result in similar values for suspended sediment.

Along with elevated levels of turbidity and suspended sediment, the proposed instream use of the suction dredge, gasoline powered portable winch, and heavy equipment would result in the contamination of surface waters from the introduction of oil, grease, and petroleum hydrocarbons. Refueling operations, engine, drivetrain, hydraulic system leaks, and residue at lubrication or service points are all potential sources of contamination. The applicant proposes to conduct daily inspections of heavy equipment for leaks prior to instream use. Fueling of heavy equipment would take place at the fuel storage area, located a minimum of 100 feet from Marion Creek. Fueling of the portable winch and suction dredge would be conducted while the equipment is anchored out in the stream. Fueling would be accomplished by equipping the winch and dredge with marine quick connect fuel line fittings and switching out small portable marine fuel tanks (est. 6 – 10 gallon size) as needed. The fuel tanks would be filled at the fuel storage location some distance from the stream. The precautions proposed for refueling would reduce the chance of accidental fuel spills and contamination of Marion Creek. The precaution of daily equipment inspections will help reduce contamination as a result of minor leaks and residue of oil and lube on equipment, however, some contamination would still be expected and would likely exceed the State's water quality standard for hydrocarbons, oil and grease. The State's standard is that of a visible sheen on the water surface. The high pressure hydraulic systems used on heavy equipment are prone to leakage. Industry experts estimate that 70 to 80% of hydraulic fluids leave systems through leaks, spills, line breakage, and fitting failures (Johnson and Miller 2010). The proposed use of heavy equipment to move and stabilize large rock within the stream would necessitate that the equipment be used for prolonged periods in flowing water, which would increase the chances for contamination by petroleum products.

Petroleum products are complex mixtures of hundreds of hydrocarbon compounds, ranging from light, volatile, short-chained organic compounds to heavy, long-chained, branched compounds. The exact composition of petroleum products varies depending upon the source of the crude oil and the refining practices used. The petroleum products associated with the proposed action include: gasoline, engine oil, hydraulic fluid, diesel fuel, and grease. The discharge of these pollutants is controlled through the Clean Water Act and most, if not all, of these products are associated with polycyclic aromatic hydrocarbons (PAHs). PAHs are common anthropogenic pollutants that are lipophilic in nature; can readily penetrate biological membranes; and be amplified to high concentrations in food webs. PAHs are the most toxic of the hydrocarbon families, are highly toxic to aquatic organisms at concentrations of 0.2 – 10 ppb, and are known to bond to cellular proteins including DNA and RNA, resulting in cell damage, mutagenesis, malformations of embryos, and cancer (Tuvikene 1995).

The use of biodegradable lubricants in high pressure hydraulic would help reduce the quantity of hazardous substances introduced into Marion Creek.

Cumulative Impacts: consist of past and current impacts in addition to reasonably foreseeable future impacts. Past impacts affecting water resources within the Marion Creek drainage include the construction of the Trans Alaska Pipeline and Dalton Highway, the construction of a 7.5 mile long mine access road up Marion Creek, and two active placer mines within the drainage. Water quality within the drainage is considered good to excellent over most of the open water season, however, sediment production related to mining activity and improvements to access within the

drainage have contributed to both minor short-term elevations in turbidity and extreme violations. Short-term elevations are typified by turbidities increasing up to 50 NTU above background for up to 24 hour periods (USDOI BLM unpublished data 2011). Extreme events are represented by the violation caused by Q4M Production Company LLC, in which untreated water from an active mine cut was pumped into Marion Creek causing turbidity to run as high as 3,800 NTU over background, with a noticeable turbidity plume extending over 7 river miles to the Dalton Highway (USDOI BLM unpublished data 2010).

Foreseeable future impacts to water resources include increased mining (both placer and gravel) within the drainage. For each individual mining operation some incremental decrease in water quality is expected.

Given the proposed action and based on the analysis and issues identified above, eleven mitigation measures (measures 1–11; this document) were developed to ensure the proposed action would be in conformance with the Clean Water Act, Executive Order 11988, and the Utility Corridor Resource Management Plan (USDOI 1991).

Executive Order 11988 (Floodplain Management) Determination: Given the application of the mitigation measures (measures 1–11; this document), no adverse impact to the natural and beneficial functions of the floodplain are anticipated and the requirements of Executive Order 11988 have been met.

Riparian-Wetlands

The proposed action would make use of the existing mine road for access. The use of the existing road would be expected to lead to some small incremental contribution of roadbed erosion and sediment production, especially if the use occurs during wet weather.

As part of the proposed action a camp would be established within the claim block adjacent to the existing road. The camp would include a travel trailer, a cab-over camper, an outhouse, a shower house, a 26 foot box van, and a maintenance/storage area for the John Deere 550 bulldozer and mid-sized track excavator. No additional road clearing or construction is proposed. The estimated disturbance due to the proposed camp/storage area is 2 acres. The camp facilities would be used up to six months per year for up to five years, with equipment and storage facilities remaining on site throughout the year.

The long term concentrated use of the site would result in a compacted and denuded core camp area. In addition, short trails leading to sanitary facilities, parking sites, and equipment and fuel storage areas would be expected. Some contamination of soils may be expected as a result of equipment maintenance, fuel transfer operations, and general storage of vehicles and equipment which may have minor fluid loss or leaks. Additionally, depending on the depth of soils, a number of human waste pits may have to be dug. The use of the camp site would be expected to result in the loss or degradation to approximately 2 acres of riparian-wetland. The compacted and barren condition within the core camp area would be expected to persist over time and contribute in a minor way to the overall erosion and sediment production within the watershed that eventually enters Marion Creek. To minimize the short and long-term erosion and sediment contribution, the number of trails, size of the clearing, and the removal of live vegetation should be minimized. At closure the site should be mechanically decompacted and planted with vegetation similar to that of surrounding plant cover. Successful achievement of this mitigation measure would be evaluated based on having similar species composition, density, and vigor of the surrounding landscape.

Cumulative Impacts: approximately 2 acres of riparian-wetland would lost or degraded. This would be additive to the 150 acres that has been lost or degraded from past activities within the Marion Creek watershed. Foreseeable development includes reopening and expansion of an existing gravel pit along lower Marion Creek, this disturbance is estimated at up to 130 additional acres of disturbance.

Executive Order 11990 (Protection of Wetlands) Determination: Considering the small amount of riparian-wetland that would be adversely impacted by the proposed action and assuming that the action is implemented with the requirement to mechanically decompact and replant the camp and parking area with vegetation similar to the of the surrounding area, the intent of Executive Order (EO) 11990 and requirements within the Utility Corridor Resource Management Plan (USDOI 1991) regarding the EO would be satisfied.

Noxious and Invasive Plants

Direct effects: Highways and spur roads are corridors for the spread of invasive plant species because seeds and reproductive parts 'hitchhike' on vehicles and equipment. Areas subject to recent or ongoing disturbance, such as staging areas for mining activity, are common places for invasive plant species to become established since the primary species of concern are adapted to disturbed areas.

Indirect effects: Once new colonies of invasive plants become established in current or recently disturbed areas, both ongoing human activity (heavy equipment, vehicles, and foot traffic) and natural processes (wildlife movement, wind and water) can be vectors for further spread. The more extensive the infestation of invasive plants is, the greater the long-term likelihood of invasive plant spread into natural habitats.

Cumulative effects: The proposed action would occur in an area where no invasive plants have been recorded to-date. The elevated human activity level that will result from this action could cause to the spread of invasive plants along the Marion Creek road, at the active mine site, and ultimately into the surrounding natural habitat. Invasive plant encroachment into natural habitat has the potential for altering natural ecosystem processes and affecting wildlife habitat quality and quantity.

Wastes (Solid and Human)

The mining plan of operations identifies an outhouse and solid waste collection point along the mining access road. Solid waste disposal is planned on an annual basis. If mitigation measures are not implemented then serious health concerns may arise.

Mitigation Measures

1. Mining is only allowed within the active channel. Mining within the active stream channel that results in undercutting, littoral channeling, or that otherwise results in erosion of a streambank is prohibited.

2. Motorized winches or other motorized equipment shall not be used to move boulders, logs, or other natural obstructions within the active channel, unless the obstructions present a safety hazard. If an obstruction is determined to be a safety hazard, mechanized equipment can be used to move or stabilize the obstruction, with stabilization of the obstruction preferable to moving the obstruction. If moved, the obstructions are to remain as close to

their original location and elevation as possible and be returned to the original location and elevation prior to making a new mine cut.

3. Tailings and cobbles that are moved by hand must not be stacked in a manner that significantly alters the streamflow or results in accelerated streambank erosion.

4. Mining through concentrated silt and clay should be avoided. The permittee shall use reasonable care to avoid mining through silt and clay materials that would result in a significant increase in turbidity. Reasonable care includes moving the suction dredge to a new location, or reducing the volume of effluent discharged by limiting the operating speed of the suction dredge.

5. Equipment used for mining must not release petroleum products. Equipment surfaces must be free of oil and grease, and must be checked for fuel and oil leaks prior to the start of operation on a daily basis. In addition, a readily biodegradeable hydraulic fluid must be used in the hydraulic systems of all heavy equipment used in the stream.

6. Refueling of the suction dredge and portable winch shall consist of exchanging empty portable marine tanks fitted with quick connect fittings with pre-filled tanks (as pictured in the 2013 Plan of Operations). Absorbent towels designed specifically to be hydrophobic and to absorb hydrocarbons such as oil and gasoline shall be used during tank connect and disconnect operations. Transfer of fuel from bulk storage tanks into the portable marine tanks shall occur on land at the fuel storage facility.

7. Within Mine Area #1 and #2 (depicted in 2013 Plan of Operations), a survey depicting the longitudinal profile of the stream along its thalweg and in cross sectional view at topographic breaks (riffle, pool, run) or a maximum intervals of 60 feet along the thalweg shall be conducted prior to mining and following reclamation. The survey will be conducted by personnel technically qualified and experienced with survey using common techniques as described in Appendix A. Longitudinal stations shall be established at a maximum of 30 foot intervals, as proposed, and cross section stations shall be established so as to describe the general cross sectional bed topography of the stream. In addition, the following minimum complement of cross section stations will be included in the survey: top of stream bank (left and right), base of stream bank (left and right), water surface edge (left and right), and thalweg. All survey notes and plots of the longitudinal and cross-sectional profiles shall be provided to BLM prior to mining and following reclamation.

8. Water quality monitoring will be conducted on a daily basis when operating to ensure turbidity and settleable solids meet State water quality standards at the downstream limit of the authorized mixing zone (500 feet from the operation). Records will be provided on request and show date and time of measurements. Turbidity measurements will be reported in nephelometric turbidity units (NTU) and settleable solids will be reported in ml/L. The methods and equipment to be used to monitor water quality shall be presented to and approved by BLM prior to mining.

9. Repeatable photo points shall be established. Pictures from the photo points shall clearly show the distribution of large in-channel boulders and the streambanks within Mine Areas #1 and #2 (2013 Plan of Operations). Pictures are to be submitted to BLM prior to mining and following reclamation.

10. To minimize the short and long-term erosion and sediment contribution, the number of trails, size of the clearing, and the removal of live vegetation should be minimized. At closure the site should be mechanically de-compacted and planted with vegetation similar to that of surrounding plant cover. Successful achievement of this mitigation measure would be evaluated based on having similar species composition, density, and vigor of the surrounding landscape.

11. The applicant will be required to sign on to the Marion Creek road maintenance agreement as a full participating member prior to mining. This agreement was previously established between Ralph Hamm and Q4M Productions LLC as a mechanism to ensure that road repair and maintenance issues identified along the Marion Creek mine access road are addressed in a timely manner.

12. The permittee will report to the BLM any invasive plant species observed within the permitted development area, along access roads and in areas reclaimed within the past 5 years. Current species of concern include white sweetclover, bird vetch, perennial sowthistle, yellow toadflax, foxtail barley, and ox-eye daisy. Tips for identifying these species are provided in informational booklets that are provided to permittees by the BLM. If it the permittee can either positively identify or even suspects that one of these species is present in a given area they are required to report this to the BLM by the end of the calendar year. Their report should include a detailed description of the infested area and a photograph of the plant.

13. Destruction of active bird nests, eggs, or nestlings can result from spring and summer vegetation clearing, grubbing, as well as other site preparation and construction activities. Under the Migratory Bird Treaty Act (MBTA) it is illegal for anyone to “take” migratory birds, their nests, or their eggs. In interior Alaska the recommended time frame for avoiding vegetation clearing, thus minimizing the chances of “take”, is May 1-July15.

14. Human waste shall be handled in accordance with Alaska Department of Environmental Conservation, Wastewater regulations, pit privy guidelines outlined in 18 AAC 72 at least 100 feet from surface water.

15. Solid waste (garbage, trash) shall be removed off site to an Alaska Department of Environmental Conservation approved disposal facility. Burial of solid waste is not authorized.

16. The Federal government shall not be held responsible for protection of the applicant's structures or their personal property from wildfire.

17. Permitee will be held financially responsible for any actions or activity that results in a wildfire. Costs associated with wildfires include but are not limited to; Damage to natural resources and costs associated with any suppression action taken on the fire.

Tribes, Individuals, Organizations, or Agencies Consulted:

A

Table 2. List of Persons, Agencies and Organizations Consulted

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
Jeff Rogers	Alaska Department of Natural Resources (Mining Division)	Bonding Authorized
Leslie Tose	U.S. Army Corps of Engineers (Regulatory)	USACOE Permit Filing needed for instream mechanical work.
Tim Pilon	Alaska Department of Environmental Conservation	Use of mechanical equipment in-stream is now authorized by ADEC for the safety purposes during suction dredge operations

List of Preparers

[Enter the Preparers List here.]

Table 3. List of Preparers

Name	Title	Responsible for the Following Section(s) of this Document
Tyler Cole	Natural Resource Specialist	Lead Author
Carl Kretsinger	Fisheries Biologist	Riparian, Wetlands, Water quality, Hydrology, Fisheries and Essential Fish Habitat
Jennnifer McMillan	Ecologist	Wildlife, Noxious and Invasive plant
Rebbecca Hile	Physical Scientist	Wastes (Solid and Human)
William Hedman	Archaeologist	Cultural Resources
Lisa Jodwalis	Park Ranger (Interpretation)	Wilderness

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Cultural Resource Assessment

Serial Number	AKFF 0965355
NEPA Number	DOI-BLM-AK-F030-2013-0005-EA
Applicant	Brandon Niles
USGS Quadrangle	Wiseman B-1
Date	3/19/2013

Location:

The proposed action is located on federal mining claims along Marion Creek, near Wiseman, Alaska. T.29N., R.11W., secs 20 and 21, Fairbanks Meridian. The specific claims are: Federal Claims AKFF 094648 (Sunset A-8), AKFF 092874 (Sunset Associated #6), AKFF 092826 (Sunset A-5), AKFF 092825 (Sunset A-4), and AKFF 092824 (Sunset A-3).

Description of Proposed Action:

Brandon Niles has filed a State of Alaska Multi-Agency Permit Application (APMA) for suction dredge operations on federal mining claims along Marion Creek, near Wiseman, Alaska. The claims associated with the proposed plan of operations are located approximately three miles upstream of Marion Creek from the Dalton Highway Crossing along the Marion Creek access road. A total of five claims are included in this proposed plan of operations (see Table 1 for a complete list). The proposed action includes access, mining and reclamation, water management plan, quality assurance plan, spill contingency plan, reclamation cost estimate, interim management, and occupancy application. Brandon Niles mine plan, APMA #F132468, and additional supplemental information are available for further review at the Fairbanks District Office.

Table 4. Brandon Niles Mining Claim List

Claim Name	Claim Number	Type of Mining Disturbance Planned
Sunset Association #6	AKFF 092874	Mining with 8” Suction Dredge
Sunset A-8	AKFF 094648	Bulk Sampling with 8” Suction Dredge
Sunset A-5	AKFF 092826	Bulk Sampling with 8” Suction Dredge
Sunset A-4	AKFF 092825	Bulk Sampling with 8” Suction Dredge
Sunset A-3	AKFF 092824	Bulk Sampling with 8” Suction Dredge

Access will be on the existing mining road along Marion Creek to the occupancy and mining location at approximately mile 3.5 within mining claim AKFF 092874. Mining equipment on site for suction dredging operations will include a Keene Engineering Model 824V6 Suction Dredge and a small gasoline over hydraulic portable winch. A John Deere 550 dozer and/or a Hitachi 220 excavator will be used if reclamation standards can not be met concurrently with suction dredging operations. Fuel storage will be kept below 500 gallons (refer to Section 20 APMA# F132468 and figure 2.2) and will be stored at the proposed camp location on mining claim AKFF 092874 in a bermed and lined area located more than 100 feet from the stream channel.

In May of 2013 mining equipment will be mobilized to mine site utilizing existing access roads up Marion Creek valley. Following mobilization, the dredge will be launched into Marion Creek when spring thaw water levels have come down to an acceptable level (late May – early June).

Production mining activities will be conducted at mining claim Sunset Association #6 (AKFF 092874). There are two mining areas defined on this claim (Figure 2.1). Mining area 1 is located on the South eastern portion of the claim and is approximately 250 feet in length (Figure 2.2).

Ropes and cables will be attached to fixed objects (boulders/bedrock) in the gorge and will be used to anchor floating equipment into the desired cut location.

Underwater divers will use the suction dredge to open a 12 foot wide by 20 foot long mining cut in the bed of the creek. The depth to bedrock varies but no cut should ever exceed 12 feet in depth from the water surface. Tailings from initial cut will be deposited back on the water body floor.

After the initial cut is complete, the dredge will be relocated over the tail end of the cut. At this point the cut will be advanced upstream. As mining progresses upstream, the downstream end of the cut will be backfilled with tailings, making reclamation of the mining concurrent with the movement of the dredge upstream. Gravel, cobbles, and boulders handled during dredging operation will be processed in the following manner:

1. Gravels < 8" in size will be sucked up with the dredge and re-deposited in the tail end of the cut for reclamation (Figure 2.5).

2. Cobbles > 8" but small enough to be moved by divers will be transported by hand to the tail end of the cut for reclamation (Figure 2.6).

3. Cobbles too large to be moved by hand will be moved to the back of the cut using mechanical advantage, non-motorized devices (such as come-along, block and tackle, or pry bars). These cobbles will be placed on bedrock and reclaimed as the cut advances forward (Figure 2.7).

4. Boulders too large to move will be left in place and dredging will continue around them.

   Depending on the width of the pay streak the cut may advance cross stream at which point the dredge will be relocated to fill in the opposite side of the completed cut.

   Reclamation of the mining cut will be concurrent with further expansion of the cut. Elevations at mining cut locations will be reclaimed to within 6 inches of the pre-mining elevation as recorded in the pre-mining survey (refer to monitoring section).

Bulk sampling and exploration outside Mining Areas #1 and #2 will be conducted on mining claims AKFF 092824 – AKFF 092826 and AKFF 0094648 (Table 1). A 10 foot by 10 foot exploration hole will be opened at each predetermined sample location using the 8 inch suction dredge. The tailings from the exploration hole will be deposited outside the cut area on the water body floor (Figure 2.1). The dredging will progress downward until bedrock is reached. The cubic volume of material processed will be analyzed for gold values. The cut will then be backfilled using the 8 inch suction dredge. The rear of the dredge will be positioned over the exploration cut and the tailings that were deposited on the stream bed will be sucked through the dredge to be redeposited in the cut (Figure 2.2). The elevation at each exploration cut location will be reclaimed to within 6 inches of the pre-mining elevation as recorded in the initial survey.

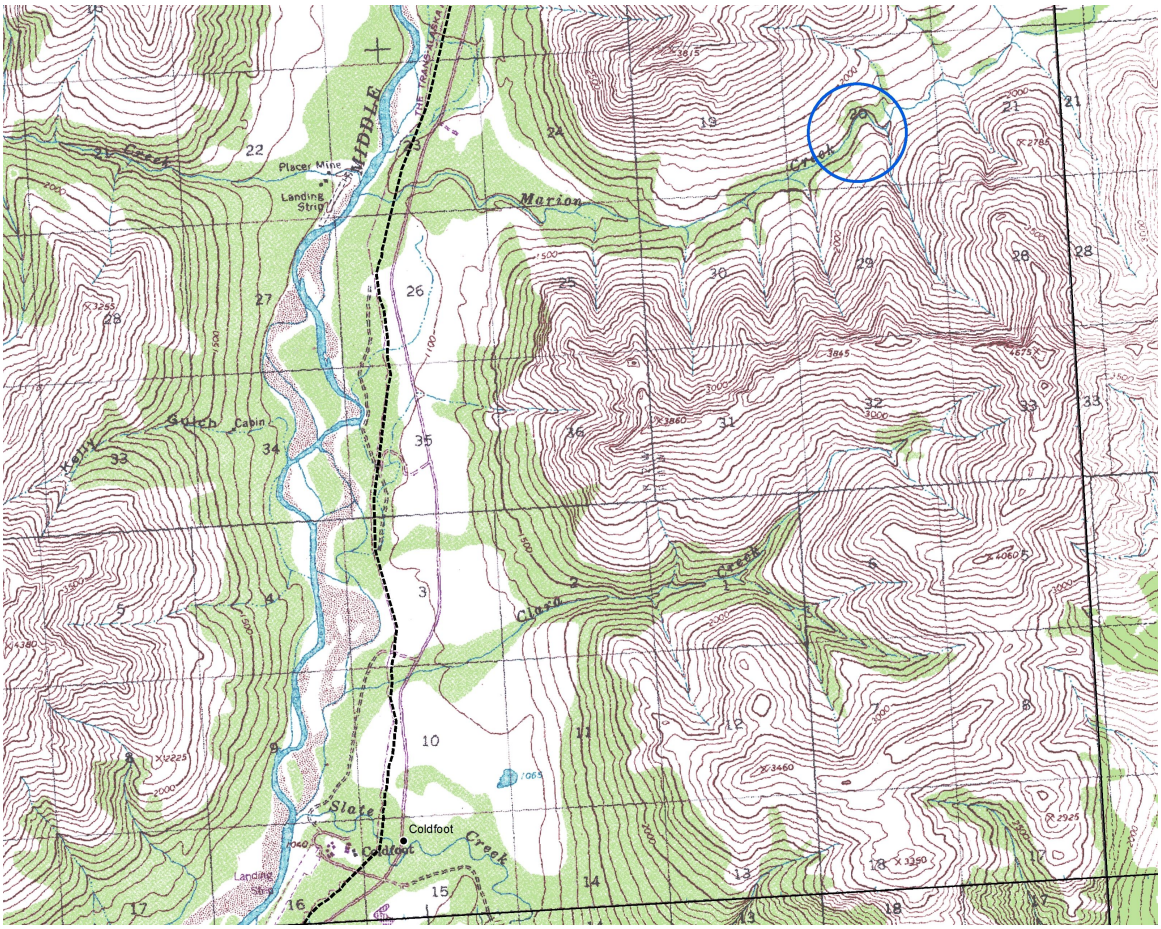

Figure 13. Location of the Proposed Action

OFFICE REVIEW

Existing Data Review and Description of Past Inventory Work in the Area

The Marion Creek valley and location of the proposed action have been subjected to several archeological inventories since 2000. No cultural resources have been located in the vicinity of the proposed action (AHRS 2013; Whitney 2009).

Anticipated Impacts to Cultural Resources/Effects on Cultural Resources

There are no anticipated impacts resulting from the proposed action. Further, that the action is to take place largely within the active creekbed, the risk for impacts to undiscovered cultural resources is lessened.

Recommendation and/or Mitigative Actions Required

It is recommended that the proposed action proceed with no further Section 106 review.

FIELD EXAMINATION

Description of area surveyed

The terminal 7 miles of the Marion Creek valley.

Survey methodology

Pedestrian inventory, sub-surface site testing, and complete site excavation within the survey area.

Results of survey

Six historic archeological sites have been identified in the Marion Creek valley, none are in conflict with the proposed action.

SUMMARY: CONCLUSIONS AND RECOMMENDATIONS

The following paragraph, outlining basic laws pertaining to cultural resources, needs to be attached to the completed package associated with NEPA no.:

All operations shall be conducted in such a manner as not to cause damage or disturbance to any historical or archaeological sites and artifacts. The Antiquities Act (1906), Archaeological Resources Protection Act (1979), Federal Land Policy and Management Act (1976), and general United State property laws and regulations, all prohibit the appropriation, excavation, injury, or destruction of any historic or prehistoric ruin or monument, or any other object of antiquity situated on lands owned or controlled by the United States (16 U.S.C. 470; 16 U.S.C. 432; 43 U.S. 1733(a); 18 U.S.C. 1361; 18 U.S.C. 641; 43 CFR 8365.1). Such items include both prehistoric stone tools and sites, as well as historic log cabins, remnants of such structures, refuse dumps, and other such features. Should any such site be discovered during the course of field operations, the permittee should avoid impacting such materials, and will immediately notify the Authorized Officer, who will contact a qualified cultural resource specialist to evaluate the discovery, take action to protect or remove the resource, and allow operations to proceed.

_____

Bill Hedman Date
Archeologist, BLM Central Yukon Field Office

Assessment of Wilderness Characteristics

NEPA Document No.: DOI-BLM-AK-F030-2013-0005-EA

Case File/Serial No.: AKFF 0965355

Applicant(s): Brandon Niles

Location:

Federal Mining Claims along Marion Creek, near Wiseman, Alaska. T29N, R11W, SEC 20 & 21, Fairbanks Meridian. Federal Claims AKFF 094648 (Sunset A-8), AKFF 092874 (Sunset Associated #6), AKFF 092826 (Sunset A-5), AKFF 092825 (Sunset A-4), AKFF 092824 (Sunset A-3).

Prepared by: Lisa Shon Jodwalis

Date: 1 March 2013

Proposed Action

Brandon Niles has filed a State of Alaska Multi-Agency Permit Application (APMA) for suction dredge operations on Federal Mining Claims along Marion Creek, near Wiseman, Alaska. The claims associated with the proposed Plan of operations are located approximately 3 miles upstream on Marion Creek along the Marion Creek access road. A total of 5 claims are included in this proposed plan of operations. The proposed action includes access, mining and reclamation, water management plan, quality assurance plan, spill contingency plan, reclamation cost estimate, interim management, and occupancy application.

BLM Purpose and Need

The Need for the action is established by: the 1872 Mining Law, which allows mining claims to be staked on federal land; Federal Land Policy Management Act (FLPMA), which allows for multiple use of public lands; and the Utility Corridor Resource Management Plan (RMP), which allows for the opportunity to develop mineral resources in this area.

BLM Decision

BLM will decide whether or not to authorize mining operations and occupancy on Marion Creek as proposed by Brandon Niles and if so, under what terms and conditions.

Evaluation

The basis for this evaluation is BLM Manual 6310-Conducting Wilderness Characteristics Inventory on BLM Lands, and BLM Manual 6320 - Considering Lands with Wilderness Characteristics in the BLM Land Use Planning Process, which direct offices to conduct and maintain inventories regarding the presence or absence of wilderness characteristics, and to

consider identified lands with wilderness characteristics in land use plans and when analyzing projects under the National Environmental Policy Act (NEPA).

The primary concern is the effects that this activity would have on the naturalness of the land and the opportunities for solitude or recreation of a primitive and unconfined nature. According to BLM Manual 6310, natural condition includes "any work of human beings must be substantially unnoticeable."

The proposed action would take place on lands excluded from Lands with Wilderness Characteristics identified during the inventory process (Area Unique Identifier CYFO-Marion Creek-001) due to the presence of a Wilderness Inventory Road (Marion Creek) and the associated disturbances from active mining operations.

FINDING

The proposed mining operation on Marion Creek would occur in an area identified as not having wilderness characteristics (unique identifier CYFO-Marion Creek-001).

It could potentially impact adjacent areas that have been identified as having LWC during the life of the project. Mitigation measures and the stipulations attached to this permit will minimize the effects of the proposed activities.

Type of Assessment/Sources

1. Chris Barns, BLM Representative, Arthur Carhart National Wilderness Training Center, 9 September 2012. "Wilderness Characteristics Guidance for the BLM. Training Module IIID – LWCs and Proposed Projects."

2. BLM file photos

3. SDMS land status and mining claim maps

4. GIS data

5. USGS topographic maps: Wiseman A-1, A-2, Bettles D-2

Section 810 Analysis

NEPA Document No.: DOI-BLM-AK-030-2013-0005-EA

Applicant(s): Brandon Niles

Case File/Serial No.: FF096535 (380910); FF096552 (3715)

Proposed Action: Please see the environmental assessment, DOI-BLM-AK-030-2013-0005-EA, for a complete description of the proposed action.

Location: T 29 North, R 11 West, Sections 20 and 21, Fairbanks Meridian; Marion Creek

Township/Range: T 29 North, R 11 West

Evaluation by: C. Kretsinger and J. McMillan

Date: 27 March 2013

Type of Assessment/Sources:

Effect of the proposed action on subsistence uses and needs

Fisheries: Species of fish found in Marion Creek that are suitable for potential subsistence harvest include grayling. Small quantities of grayling are taken by subsistence users living in Wiseman, Nolan and the surrounding area (Scott 1993). Chinook and chum salmon are also known to rear in lower Marion Creek. These salmon contribute, in a small but incremental manner, to the overall salmon production occurring within the M.F. Koyukuk River and Yukon drainages. Neither fish habitat nor water quality in Marion creek > 500 feet downstream of the project site are expected to be diminished as a result of the proposed suction dredging operation given the proposed plan of operation and attached mitigation (see DOI-BLM-AK-030-2013-0005-EA) are implemented. The use of the existing mine road, including the portion of the road currently in the floodplain, is not expected to adversely influence the quality or quantity of fish habitat if the road is properly maintained and if portions of the road scheduled for reclamation are rehabilitated in such a manner as to avoid future erosion and additional sediment input into Marion Creek.

Given that the nine proposed mitigation measures that are listed for Riparian, Water, and Hydrological Resources are implemented, the proposed action is not expected to significantly reduce harvestable fisheries resources. Similarly, the proposed action should not alter the distribution, migration or location of harvestable fisheries resources in this or other drainages. The proposed action would not create any legal or physical barriers that would limit access by subsistence users of the fisheries resource.

Wildlife: Scott (1993) identified an area that encompasses lower Marion Creek as a "primary" subsistence use area for the rural residents of Wiseman, Alaska. Similarly, Alyeska Pipeline Service Co. (2002) has identified the lower Marion Creek area, below the proposed mining location, as a subsistence use area for residents of Nolan, Wiseman, Coldfoot, and vicinity. Moose (*Alces alces*), Dall's sheep (*Ovis dalli*), wolves (*Canis lupus),* caribou (*Rangifer tarandus),* black and brown bears (*Ursus americanus* and *U. arctos,* respectively),and furbearers all occur in the general area. Moose, wolves, bears and furbearers like marten (*Martes americana*), lynx (*Lynx Canadensis)* and wolverines *(Gulo gulo*) are the most likely subsistence species to occur at the actual mine site. Moose (<1.0 moose/mi2) and brown bears (33 brown bears /1000 mi2)

are both estimated at low population densities in the general area (Central Yukon Field Office Files; Alaska Department of Fish and Game 2010). No estimates of black bear, wolf or furbearer numbers are available.

The proposed action would alter the distribution, migration and/or location of harvestable wildlife resources by dislocating them from lower Marion Creek Drainage while the mine is in use. However, this and other mines in the drainage would not appreciably reduce harvestable wildlife resources at a landscape scale because comparatively little native habitat would be affected. Improving the road into this mine may increase non-subsistence hunting pressure in the Poss Mountain Area of Critical Environmental Concern, as well as elsewhere in the Marion Creek Drainage. However, if unauthorized motorized use of this trial is excluded, for example by signage and gating, and reporting unauthorized use by the permittee, and removal of the road after mining is complete, there would be little increased competition from non-rural Alaskan residents for subsistence resources.

The proposed action would not create any legal or physical barriers that would limit subsistence harvest and access. The area is open for both sport and subsistence harvest, as regulated by the State of Alaska and the BLM. If any restrictions are placed on harvest of wildlife resources for the management of game populations, subsistence is given preference over sport harvest.

Other resources:

The proposed action would not appreciably change or impact any other harvestable resources such as wood, water, berries or vegetation that are currently used by rural Alaskans.

Expected reduction, if any, in the availability of resources due to alteration in resource distribution, migration, or location:

Expected limitation, if any, in the access of subsistence users resulting from the proposal:

Availability of other lands, if any, for the purpose sought to be achieved:

No other lands were considered for this use because the proposed action involves development of specific mining claims.

Other alternatives, if any, which would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes:

There is no substantial evidence that would indicate a significant impact on subsistence resources would result from the proposed action. No other alternatives were evaluated.

Findings:

The proposed action would not significantly restrict subsistence uses. No reasonably foreseeable and significant decrease in the abundance of harvestable resources or in the distribution of harvestable resources, and no reasonably foreseeable limitations on harvester access have been forecasted to emerge as a function of the action that is analyzed in this document.