

US EPA ARCHIVE DOCUMENT

**SITE VISIT REPORTS:
ALASKA PLACER MINES**

2.0 SITE VISIT REPORTS: ALASKA PLACER MINES

2.1 INTRODUCTION

This section of the Gold Placer Technical Resource Document presents summaries of three placer mining operations: Polar Mining Inc.; Alf Hopen; and Cook's Mining. EPA visited these Alaska placer sites during the summer of 1992 to gain a better understanding of typical placer operations. The site visit reports are abbreviated due to the relatively limited size of each mining operation. EPA spent approximately one-half day at each site, viewing the mining and sluicing operations.

2.2 POLAR MINING, INC.

EPA visited Polar Mining's Lower Goldstream Creek operation on July 15, 1992. The following individuals participated in the site visit: Dan May of Polar Mining, Inc., Kathleen M. Charlie of the Alaska Department of Natural Resources, Steve Hoffman from EPA's Mining Waste Section, and Ingrid Rosencrantz of SAIC (EPA's contractor).

2.2.1 General Facility Description

The Polar Mining, Inc.'s Lower Goldstream operation is located on private land in Goldstream Valley,

US EPA ARCHIVE DOCUMENT

approximately 12 miles northwest of downtown Fairbanks (see Figure 2-1). Originally patented in 1938

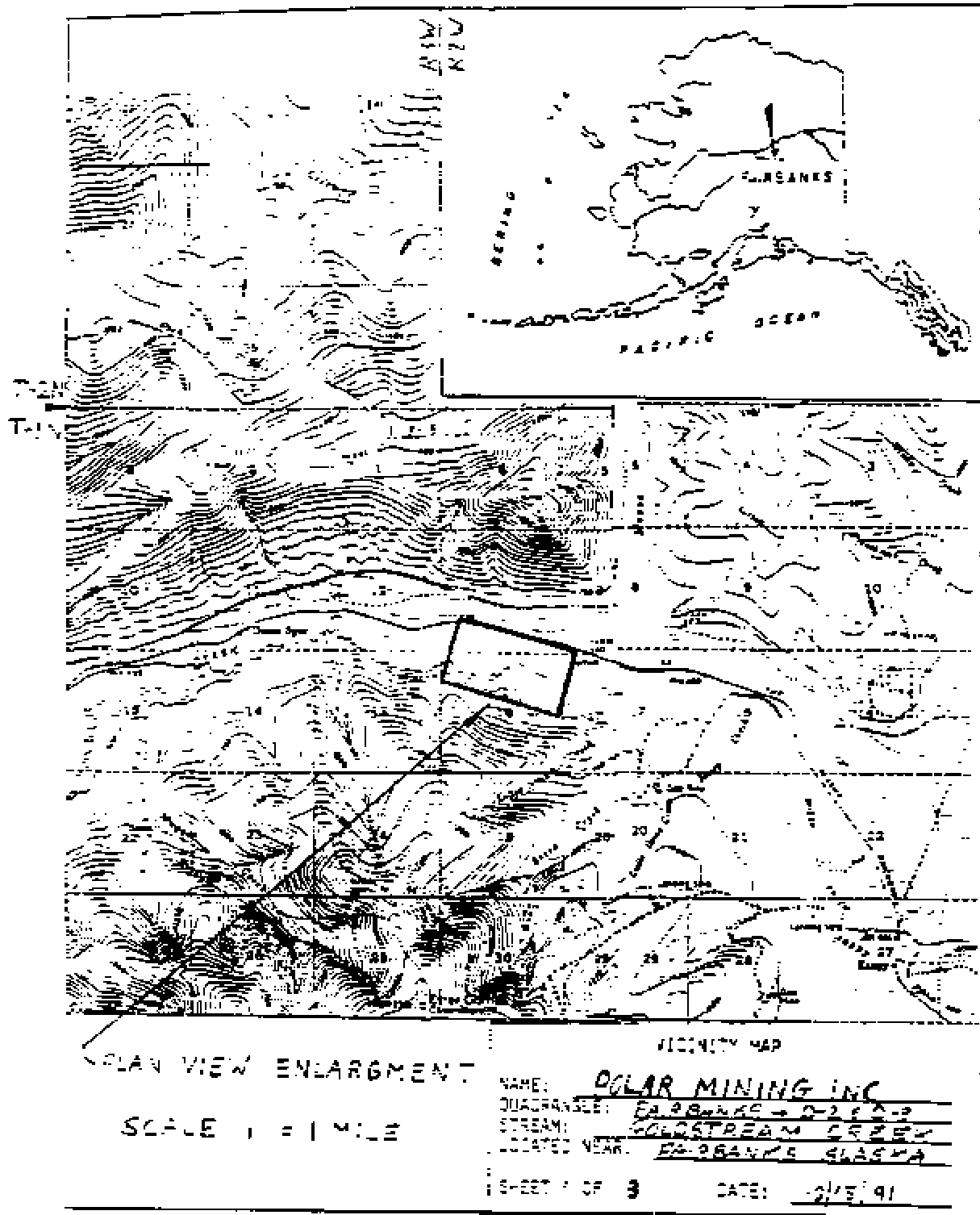


Figure 2-1. Polar Mining, Inc., Vicinity Map

(Source: Polar Mining Inc., 1992 APMA)

by the Fairbanks Exploration Company, the land on which Polar Mining operates is now owned by the Alaska Gold Company (Memorandum, August 9, 1988). Donald May, founder and president of Polar Mining, owns and manages the mine, while his son Dan May acts as vice-president and maintenance supervisor for the company. Polar Mining commenced work on Goldstream Creek in 1987. The company "Overview" states that the mine employs 30 local residents 12 months a year on a monthly payroll of over \$100,000. The company also operates a gold placer mine on nearby Fish Creek. ("Overview," August 1, 1988; "Miners rig up converted Cat," April 14, 1991; Polar Mining, Inc., October 14, 1991)

Polar Mining's Lower Goldstream operation is the largest open pit placer gold mine in the Fairbanks area in 1992. The total volume of material mined in 1992, including strippings (soils presumably used for reclamation) and overburden removed, was 2,200,000 cubic yards. The estimated volume of material beneficiated during the 1992 mining season was 500,000 cubic yards. Based on this information, the stripping ratio for the Lower Goldstream operation approached 4:1 (waste:ore). The total area of the mining operation in 1992, including stripped areas, mining cuts, overburden and tailing stockpiles and disposal areas, temporary stream diversions, stream bypasses, and settling ponds, is approximately 29 acres. The estimate does not include the camp and access roads. (Polar Mining, Inc., 1992 Annual Placer Mining Application F927278)

In 1992, Polar Mining reclaimed 35 acres, both concurrently with mining and at the end of the mining season. Polar Mining reshaped the reclaimed area to blend with the surrounding physiography using tailings, strippings, and overburden. The company also stabilized the area so that it will retain sufficient moisture to allow for natural revegetation. Polar Mining spread stockpiled topsoil, overburden muck, and, if necessary, settling pond silts, over the contoured mine workings to promote natural plant growth that can reasonably be expected to revegetate the area within five years. (Polar Mining, Inc., 1992 APMA)

Unlike most placer mines, the Lower Goldstream operation was active year-round, with the possible exception of four weeks in late December and early January (Polar Mining's 1992 APMA indicates that the intended dates of operation are January 20, 1992, through December 20, 1992). Although the projected dates of operation suggest a year-round mining operation at Lower Goldstream Creek, the estimated number of sluice days for the 1992 season was 150.

The description that follows applies to the original Lower Goldstream operation as presented in an "Overview" of Polar Mining's placer mining activities in the Fairbanks area. A 1988 NPDES Compliance

Inspection Report corroborates this account. During the site visit in July 1992, mining operations resembled those represented in Figure 2-2, only farther upstream.

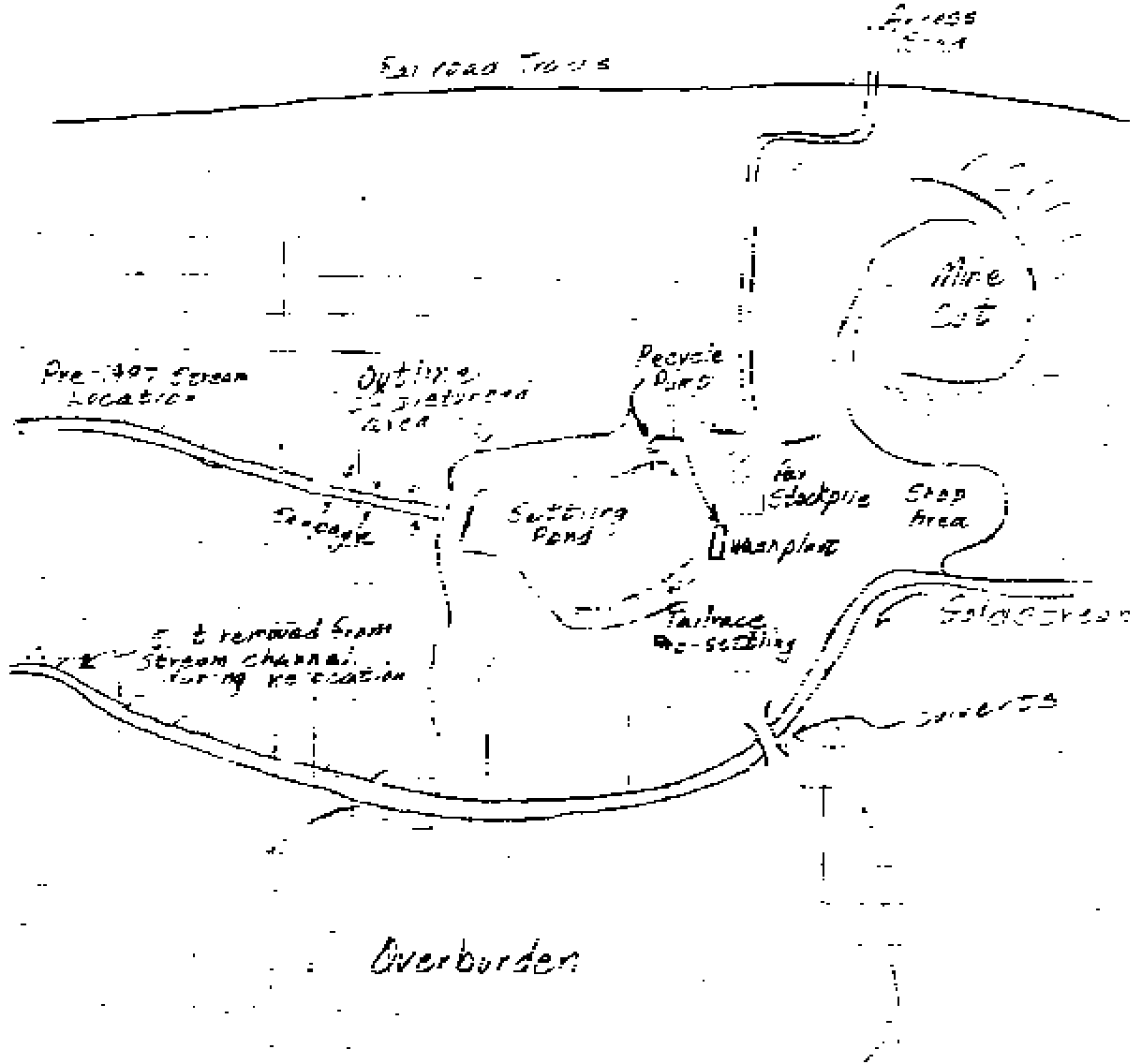


Figure 2-2. Sketch of Lower Goldstream Creek Mining Operation

(Source: ADEC, Placer Mine Inspection Form)

During the cold winter months when the ground is frozen, Polar Mining used drilling and blasting techniques to remove frozen silt overburden, and then uses large scrapers to haul the overburden to a dump site either adjacent to the mine pit or in the immediate vicinity of the pit. According to the company "Overview," since the frozen silt overburden contains very little moisture, there is no water or mud discharge into the surrounding lowlands or Goldstream Creek when the overburden thaws in the spring. During the summer, the scrapers haul the gold placer pay gravels from the bottom of the pit to a trommel wash plant and sluice box, which is 30 feet wide by 10 feet long. Overburden from the Lower Goldstream operation consists of gravel to an average depth of 10-30 feet and organic material to an average depth of 20 feet. Total depth to pay gravel, therefore, is approximately 30-50 feet. ("Overview," August 1, 1988; Polar Mining, Inc., 1992 APMA)

Ground water entering the cut provides the source of make-up water, which is generated by seepage infiltration at an estimated volume of 10 gallons per minute. Goldstream Creek does not supply any water to the mining operation, nor does it receive any discharges. One hundred percent of the stream is bypassed by the operation, although the 1992 APMA indicates that channels are planned to connect obsolete recycle ponds to Goldstream Creek. According to the company "Overview," wash water is 100% recycled and is temporarily contained in these large recycle/settling ponds before it is transported to the recovery plant. Polar Mining did not use any chemical treatment to extract gold from the gravels. ("Overview," August 1, 1988; Polar Mining, Inc., 1992 APMA)

Before Polar Mining initiated activity at the Lower Goldstream operation in 1986, the company relocated the Goldstream Creek channel, diverting the Creek south of the original wash plant location and settling pond as they are depicted in the 1988 Placer Mine Inspection Form (see Figure 2-2). Mine cuts now follow the original streambed. At the time of the 1988 sampling inspection, Polar Mining moved overburden from the mine cut south across Goldstream Creek and stockpiled ore near the wash plant with scrapers. The wash plant facility consisted of a large trommel and a sluice box. Discharge from the sluice box is routed to a large recycle pond. According to the 1992 APMA, the recycle pond was approximately 750 feet long by 500 feet wide by 35 feet deep. A 300-horsepower pump directed the water to the wash plant through a 12-inch return line at an estimated rate of 3,500 gallons per minute. According to an internal Environmental Quality Memorandum from Paul Bateman to Pete McGee dated August 9, 1988, Polar Mining used total recycle in its operations and runs a zero discharge operation. During the 1988 site visit, however, water was being pumped from the bottom of the pit and was apparently being discharged to the tundra. During the 1992 EPA site visit, no discharges to tundra were observed. (Overview, August 1, 1988; Polar Mining, Inc., 1992 APMA)

The 1992 Reclamation Plan provided for two distinct mine cuts labeled 1992-1 and 1992-2 (see Figures 2-

3 and 2-4). Mine cut 1992-1 was scheduled to begin stripping operations in the late fall of 1991, whereas

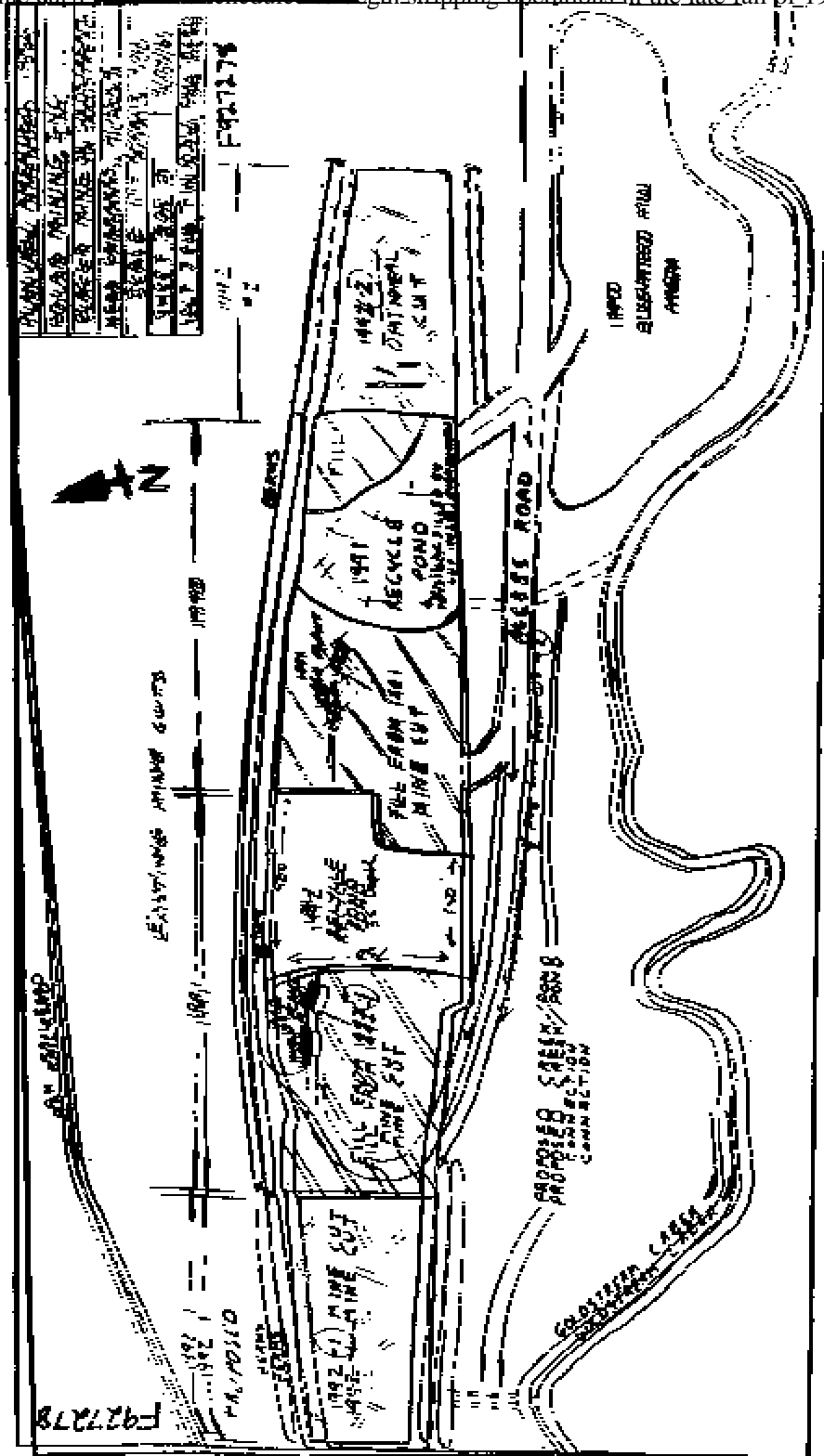


Figure 4. Second Mine with Low Level Goldstone Creek Connection, amended 09/1992

(Source: Polar Mining, Inc., 1992 APMA)

the second proposed cut was optional. (Polar Mining, Inc., October 14, 1991)

The proposed 1992-1 mine cut lies adjacent to and west of the 1991 mine cut. It is estimated to be 1,200 feet long by 450 wide by 35 feet deep, disturbing approximately 12.4 acres. Polar Mining planned to stockpile material along the north and south sides of the cut to create two topsoil/vegetation berms, disturbing an additional 2.8 acres. Each berm will each measure 1,200 feet long by 50 feet wide (at the base) by 12 feet high. Polar Mining plans to deposit the overburden removed from this cut in the 1991 mine cut, starting from the west side. A portion of the approximately 500,000 bank cubic yards¹ will also be used in the construction of a wide dike across the 1991 cut, dividing the cut to form a recycle pond out of the remainder of the cut. The pay gravels will be concentrated on a pad constructed on top of the dike, and the tailings that are not stockpiled for future sale will fill in the mined out cuts. (Polar Mining, Inc., October 14, 1991)

Upon completion of the 1992-1 cut, Polar Mining planned to level the berms along the north and south sides of the cut and forge a connection between the cut and Goldstream Creek, allowing the cut to fill with water and become a large pond as deep as 25 feet with at least one shallow sloping side. Polar Mining will also leave the 1992 recycle pond open after contouring the surrounding areas.

¹A bank cubic yard is the volume of material, usually pay dirt, equivalent to one cubic yard in situ (i.e., in its original, undisturbed place in the ground). This volume does not include a swell factor or reduction in volume resulting from screening.

Several shallow areas in the pond will be available for waterfowl loafing and feeding. (Polar Mining, Inc., October 14, 1991)

Adjacent to the east side of the 1990 mine cut is the optional mine cut (1992-2). If mined, this cut would be approximately 1,100 feet long by 425 feet wide by 57 feet deep, covering about 10.7 acres. An additional 2.5 acres along the north and south perimeters of the cut will be stockpiled, creating topsoil/vegetation berms that measure 1,100 feet long by 50 feet wide (at the base) by 12 feet high. Polar Mining plans to deposit the overburden removed from the optional cut in the de-watered 1991 recycle pond area, completely filling it in. The remainder of the approximately 800,000 bank cubic yards of overburden would be put in the east end of the 1991 mine cut. Polar Mining would transport the pay gravels to the 1992 wash plant location and would put the tailings that are not stockpiled for future use back in the mined out cuts. Polar Mining plans to treat the 1992-2 cut like the 1992-1 cut upon completion of mining by leveling the berms and connecting the cut to Goldstream Creek. (Polar Mining, Inc., October 14, 1991)

If the optional cut (1992-2) is not mined, then Polar Mining will smooth the area around the recycle pond and connect the pond to Goldstream Creek. This pond would also have several shallow sloping areas that may render it acceptable for waterfowl habitat. (Polar Mining, Inc., October 14, 1991)

More than 10,000 gallons of fuel are stored on-site in above-ground tanks with capacities greater than 660 gallons. Fuel containment berms surround the storage containers, but the berm area was not lined. A fuel company tanker truck makes an average of 55 trips per year, transporting as much as 8,000 gallons of fuel per trip. The mine site is reached via an existing access road off Murphy Dome Road. Other equipment used on-site to facilitate overburden removal, beneficiation, and reclamation activities include two D10 dozers, one Demag H121 excavator, three 773 rock trucks, one 988B leader, one 235 excavator, one 16G grader, and a blast hole drill rig. On an annual basis, Polar Mining used 1,200,000 pounds (approximately 600 tons) of explosives to excavate, specifically ammonium nitrate fuel oil (ANFO). (Polar Mining, Inc., 1992 APMA)

In its proposed 1992 Reclamation Plan (a section of the 1992 APMA), Polar Mining projected that, given the economic conditions at the time and the mining methods being used, the company was approaching the end of the current minable ore reserve at the Lower Goldstream Creek operation. Polar Mining's plans for continued mining operations at the Lower Goldstream mine site beyond the 1992 season were unclear at the time of issuance of the 1992 Reclamation Plan. There was some discussion of a small underground operation or of continued surface mining on a much smaller scale. (Polar Mining, Inc., October 14, 1992)

2.2.2 Regulatory Requirements and Compliance

Polar Mining operates its Lower Goldstream mine site with several permits. Polar Mining has been issued an NPDES Wastewater Discharge Permit (Number AK-004635-3) by EPA.

Polar Mining was first issued the Department of the Army, Corps of Engineers (COE) "404" permit (Number 4-870729) on September 30, 1988, for the placement of 4,187,100 cubic yards of dredged and fill material in 98 acres of wetlands to construct a dike, topsoil berms and overburden stockpile areas, and the placement of fill material for reclamation activities. In December 1989 Polar Mining requested that a permit modification granting authorization to move the proposed 1990 mining cut approximately one mile downstream of the area permitted for 1990 and to construct topsoil berms for the 1991 mining season. The land previously permitted for 1990 was to be left undisturbed. To facilitate ore access and

subsequent reclamation activities, Polar Mining also requested authorization to create a pad from the majority of the fill material and expressed its intention to stabilize the pad when it finished mining from that cut. Polar Mining intended to use previous mine cuts as process water recycle ponds or as receiving pits for material from the next mine cut. Polar Mining stated that the pad was necessary because not all overburden could be returned to each completed excavation; overburden material has a swell factor of 30-40%. (Department of the Army, December 17, 1991)

The COE permit (Number M-870729) was modified on January 11, 1990, to allow Polar Mining to place approximately 961,100 cubic yards of dredged and fill material into approximately 19.4 acres of wetlands to stockpile topsoil and waste barren overburden for the 1990 and 1991 mining cuts. All other conditions of the original permit remained the same. (Department of the Army, August 22, 1991)

The COE permit was again modified (Number N-870729) on August 22, 1991 to extend the time limit for completing the authorized work, and the modified permit now expires September 30, 1994. (Department of the Army, August 22, 1991)

The Alaska Department of Fish and Game (ADF&G) issued Polar Mining a permit (Number FG92-III-0002), informing the company that Goldstream Creek supports resident fish species (grayling) in the area of the proposed channel excavations from the recycle pond to Goldstream Creek. The ADF&G advised Polar Mining that the excavations could obstruct the efficient passage and movement of fish. The ADF&G permit included the following stipulations to reduce potential erosion and barriers to fish passage (Alaska Department of Fish and Game, January 6, 1992):

1. The outlet channel(s) shall not be connected to Goldstream Creek prior to completion of mining-related activities in the ponds;
2. The outlet channels shall be excavated to the same depth as the bottom of Goldstream Creek where the channels enter Goldstream Creek;
3. The outlet channels shall be 12-15 feet wide at the water surface with banks graded to a stable slope; and
4. The permittee shall plug the outlet channels (with a 100-foot plug) to the original ground surface level if ADF&G identifies fish entrapment related fish kills within the ponds or potential fish entrapment related fish fills within the ponds prior to 1995.

Polar Mining does not need a permit from a state or federal land management agency to conduct its operations because the Goldstream Creek is on private land, although a permit is required from the COE for the disturbance of wetlands.

EPA is not aware of any state, federal, or local government regulations for mine noise control to the surrounding community. The Mine Health Safety Administration (MHSA), however, does regulate noise at mines to protect workers. The MHSA and the Alaska State Mine Inspector inspected the Lower Goldstream operation on June 25, 1988, and found the mine to be in compliance with all MHSA safety requirements. Winter blasting was monitored by the State Mine Inspector, who coordinated with the Pacific Powder Company to take seismic and decibel readings of each blast. The State Mine Inspector found all blasts to be within the recommended standards of noise and seismic ground shock for a residential area.

The 1988 "Overview" mentions noise-related problems at the Lower Goldstream operation. A small group of local Goldstream residents initially opposed the Lower Goldstream operation, their primary complaint being noise, but their first complaints were about visual impacts. To mitigate these impacts, Polar Mining constructed a large berm between the pit and the residential area to deflect noise away from the area homes. Polar Mining also reduced operational hours and the size of the blasts to minimize their effects. This group of Goldstream residents requested that the Alaska Department of Environmental Conservation (ADEC) hold a public hearing on the ADEC certification of the COE permit. The public hearing was held on August 8, 1988 in Fairbanks. The issue of noise levels was raised, but most concerns involved water quality and wetlands. The State did not take any action based on this hearing ("Overview," August 1, 1988; Memorandum, August 9, 1988)

In Alaska, bonding is required for all mining operations having a mined area of five acres or greater. The area must be bonded for \$750.00 per acre, unless the miner can demonstrate that a third party contractor can do the required reclamation for less than that amount. Polar Mining submitted \$4,350.00 to the Alaska Department of Natural Resources (DNR) for payment into the State Wide Bonding Pool to meet the bonding requirements. (Polar Mining, 1992 APMA; Alaska DNR, State Wide Bond Pool Form)

According to the site manager, at the time of the 1992 EPA visit, the site was in compliance with all of its permits. (Polar Mining, 1992 APMA; Alaska DNR, State Wide Bond Pool Form)

2.3 ALF HOPEN

EPA visited Alf Hopen's Little Eldorado Creek operation on July 15, 1992. The following individuals participated in the site visit: the operator Alf Hopen, Kathleen M. Charlie of the Alaska Department of Natural Resources, Steve Hoffman from EPA's Mining Waste Section, and Ingrid Rosencrantz of SAIC (EPA's contractor).

2.3.1 General Facility Description

Alf Hopen operated a gold placer mine on Little Eldorado Creek in the Fairbanks mining district near Cleary, Alaska. The Little Eldorado Creek mining operation is an historic site, as evidenced by Mr. Hopen's discovery of fire pits at the site that had been used previously to thaw the layer of permafrost overlying the pay dirt. Mr. Hopen leased the land from the Alaska Gold Company and operated on both federal and private (patented) claims. The 1992 Reclamation Plan for the Little Eldorado Creek operation states that the total area to be mined in 1992 is 8 acres, excluding the camp and roads. The operator conducted reclamation on an equal amount of acreage in 1992, both concurrently with mining and at the end of the mining season. The topographical map attached to the 1992 Annual Placer Mining Application (APMA Number F925866) suggests that work is being performed at an elevation of slightly less than 1,050 feet. The site is fairly steep. Access to the mine site is by means of existing roads.

Mr. Hopen runs a seasonal operation at the Little Eldorado Creek mine site. He first started mining at this site on August 15, 1991. The planned dates of operation for the 1992 season are May 1 through October 15, with an estimated 120 sluice days during the season. Three employees work at the site. The mining operation is projected to be completed in 1992, but if work remains to be done when the season ends, then mining and reclamation activities will be finished in 1993.

During the EPA site visit on July 15, 1992, Mr. Hopen stated that he moves 1,500 cubic yards of loose material daily. He estimated that this material comprises 20-30 feet of overburden and 6-8 feet of pay dirt. The pay strip is narrow with some side pay. Overburden was pushed to the sides, while a backhoe shovelled the pay dirt to the washing plant, where classification with a shaker screen precedes sluicing. The 1992 Reclamation Plan states that the total volume of material mined, including strippings and overburden, is 70,000 cubic yards. It is unclear from the references available what the ratio is of material moved to material concentrated. The 1992 APMA estimated that during approximately 120 days, Mr. Hopen will beneficiate 600 cubic yards of material daily, which amounts to approximately 60,000 cubic yards annually. The estimates from the 1992 Reclamation Plan and APMA for total material mined and total material concentrated (70,000 cubic yards and 60,000 cubic yards, respectively) suggest a very low ratio of overburden to pay dirt. No explosives are used at this site.

The Little Eldorado Creek operation employed two sluice boxes. The larger sluice box measured 20 feet long by 4 feet wide and has a solitary channel. This sluice had 16 feet of double expanded metal riffles on nomad matting and 4 feet of hydraulic riffles that emit 4 pounds of pressure run over astroturf matting. The smaller sluice, whose dimensions are 12 feet by 34 inches, also has astroturf (door mats).

Mr. Hopen did not employ any chemical treatment in his operation. The equipment used on-site includes a D-8 and D-9 Cat bulldozer, a 980-C Cat loader, a 7/8 cubic yard Insley backhoe, a 1 1/4 cubic yard dragline, a 10x12 pump, and a 6"-pump.

Mr. Hopen had diverted Little Eldorado Creek around the mining operation. According to the 1992 APMA, the diversion ditch provides that 100 percent of the creek bypasses the mine cuts. Mr. Hopen wanted to operate with 100 percent process water recycle, but actually discharged from the fourth pond. The source of the make-up water supply is ground water gain from the cut through seepage infiltration. Make-up water was added 24-hours a day at an estimated rate of 50 gallons per minute (gpm), or 70,000 gallons per day (gpd). The Placer Plan Review Worksheet indicates that the sluice flow, which is the amount of water withdrawn, is 2,000 gallons per minute (gpm). The 1992 APMA indicates that the existing dam is 150 feet long by 15 feet high, with the width of the dam at the base measuring 50 feet and narrowing to 16 feet at the crest, but it is unclear which pond this dam blocks. The 1992 APMA indicated that Mr. Hopen's operation does not have a discharge. A narrative attachment to the 1992 APMA and sketch sheet states that settling ponds had to be built farther downstream than usual in order to create an area sufficiently wide to enable the operator to safely isolate a creek bypass with no possible future pond erosion problem. Additional settling ponds will be built in newly mined cuts as mining progresses upstream. The stream will be returned to the original channel at the end of the mining season as part of the reclamation procedures, at which time it will be permanently channeled around the settling ponds and stabilized.

There is a large percentage of rock in the tailings that will be left behind in old cuts for stream channeling as part of the reclamation plan. All discharge water will be filtered through old dredge tailings after the settling ponds and will not go directly into the creek. The new road will be used as a dike for a temporary stream bypass. The road will be built on dragline tailings from the old open cut.

The description of the recycle/settling pond system in the 1992 APMA differs from the EPA site visit findings. It appears that the operator found it necessary to add a fourth pond to the planned three-pond system to facilitate settling so that the water would be sufficiently clear for re-use in the washing plant. The 1992 APMA (and attached sketch) indicates that the operation uses a pre-settling pond, a small pond (#1), and a larger recycle pond (#2). The site visit revealed that a pre-settling pond was not used. Instead, the main settling pond, which is 60 feet wide and 6-12 feet deep, overflowed into a smaller secondary pond below it on the hillside. The secondary pond discharges to the pump (or recycle) pond, which in turn directs water back to the wash plant for re-use. The recycle pump has 170 horsepower and feeds water through a 12"-line at an estimated rate of 2,000 gpm. In addition to these three ponds is a fourth (and final) settling pond. The Alaska Department of Environmental Conservation (ADEC) reviewed the 1992 APMA and found the water control and wastewater treatment systems adequate.

Fuel was stored onsite in tanks. Fuel containment berms surround the storage area, which were lined. A fuel truck and offsite storage vessels also function as fuel storage mechanisms. Approximately 4,600 gallons of fuel may be stored at one time. A tanker truck transports approximately 4,000 gallons per trip, and the number of trips varies. As part of clean-up, Mr. Hopen burns and buries garbage. No trash is left lying around. Waste oil is contained and removed from the mining site.

2.3.2 Regulatory Requirements and Compliance

Mr. Hopen has not received any Notices of Violation (NOVs) with respect to the Little Eldorado Creek operation, nor has there yet been a Federal inspection.

Mr Hopen operates on Little Eldorado Creek with an NPDES Wastewater Discharge Permit (Number AK-004451-2) from EPA. He received a turbidity modification for the NPDES permit that was

calculated using a discharge rate of 10 gpm and that permits the discharge of wastewater with a turbidity of up to 195 NTU. Discharges (seepage) greater than 10 gpm may require that the discharge be cleaner than 195 NTU during periods of low creek flow.

Mr. Hopen also has a Corps of Engineers "404" Permit Number (D-890661). ADEC declined to review or comment on the Little Eldorado Creek activity as it was proposed in the COE permit application. This non-action constituted a waiver of the state's opportunity to certify the proposed activity. Any modification to the activity could require future certification.

The Alaska Department of Fish and Game (ADF&G) reviewed the 1992 APMA and decided that a permit from ADF&G was not necessary for the proposed placer mining operation on Little Eldorado Creek. The reason given by ADF&G to substantiate this decision was as follows: "The stream is not known to support fish in the area of your proposed mining activity. Your proposed mining plan does not indicate activities will occur in waters specified by the Commissioner as important for the spawning, rearing, or migration of anadromous fish." (Letter from Ron Somerville, Deputy Commissioner, ADF&G, to Alf Hopen, February 18, 1992)

Al Hopen submitted \$1,200 to the Alaska Department of Natural Resources (DNR) for payment into the State Wide Bonding Pool to meet the bonding requirements of Alaska Statute 27.19 for the disturbed area sketched and described in the 1992 APMA and Reclamation Plan. Bonding for Federal claims encompasses the total area of the mining operation, including the camp site, access roads, and areas to be stripped for mining during the next season. For private claims, bonding covers the active mining "footprint," which does not include the camp and access roads. It does, however, include all areas that are part of the mining operation: stripped areas, mining cuts, overburden and tailing stockpiles and disposal areas, temporary stream diversions, stream bypasses, and settling ponds.

2.4 COOK'S MINING

EPA visited Cook's Mining Fairbanks Creek operation on July 15, 1992. The following individuals participated in the site visit: the operator John Cook, Kathleen M. Charlie of the Alaska Department of Natural Resources, Steve Hoffman from EPA's Mining Waste Section, and Ingrid Rosencrantz of SAIC (EPA's contractor).

2.4.1 General Facility Description

Cook's Mining operated a gold placer mine located approximately 20 miles north of Fairbanks, Alaska on federal mining claims (F-52493 through F-52500) at the upper head of Fairbanks Creek, a tributary of Fish Creek, which flows into the Little Chena River. The Steese/White Mountains District of the Bureau of Land Management (BLM) is responsible for the management of this land under the General Mining Law of 1872. Patricia S. Franklin owns the claims, and John Cook operates the mine. The Upper Fairbanks Creek operation is reached by following Steese Highway north toward Cleary Summit, and then taking Fairbanks Creek Road five miles east of Cleary Summit. (Cook's Mining 1992 Annual Placer Mining Application (APMA); Alaska Department of Environmental Conservation (ADEC), December 19, 1989)

The 1992 mining season represented the fifteenth year of production at the Upper Fairbanks Creek site, and Cook's Mining anticipated that two years remain before the site will be closed. (Cook's Mining, March 31, 1992). The 1992 APMA was the source of the following general facility description.

Cook's Mining operated on a seasonal basis from approximately June 1 through October 1, employing three to four workers. The company worked an estimated 100 sluice days during the mining season. The total volume of material to be mined in 1992, including strippings and overburden to be removed, was 200,000 cubic yards. The estimated volume of material beneficiated during the 1992 mining season was 65,000 cubic yards. Based on this information, the stripping ratio for the Cook's Mining Upper Fairbanks Creek operation was approximately 3:1 (waste:ore). The total area of the mining operation in 1992, including stripped areas, mining cuts, overburden and tailing stockpiles and disposal areas, temporary stream diversions, stream bypasses, and settling ponds, was approximately 5-6 acres. The estimate does not include the camp and access roads (Cook's Mining, 1992 APMA).

In 1992, Cook's Mining planned to reclaim 10-15 acres, both concurrently with mining and at the end of the mining season. Cook's Mining will reshape the site to blend with surrounding physiography using mine tailings and overburden. The company will spread stockpiled topsoil/organic debris over the reshaped site. Cook's Mining will ensure that fine sediment captured in the settling ponds is protected from washout and left in a stable condition at the end of the season. Finally, Cook's Mining will restore disturbed stream areas to facilitate natural restoration of fish and wildlife habitat. (ADEC, Decision Record, December 19, 1989)

Cook's Mining removed approximately 31 feet of overburden, consisting of 30 feet of gravel and one foot of organic material. Cook's Mining then fed the pay gravels to a trommel wash plant and sluice box, which measures 24 feet long by four feet wide and has three channels with a 2:1 slope. Cook's Mining concentrates an estimated 700 cubic yards of material daily. No chemical treatment is used at the Upper Fairbanks Creek operation. (Cook's Mining, 1992 APMA)

Ground-water gain from the mine cut and Fairbanks Creek supply the make-up water. Stream flow at this point in the valley is 300 to 400 gallons per minute, while ground-water infiltration can add another 50 gallons per minute. The Fairbanks Creek operation has an intermittent, variable discharge. When Cook's Mining began sluicing for a new cut, it can take up to two weeks for the stream to fill a new recycle pond. Until the pond fills, there is no discharge; after it fills, there is a discharge of 300-400 gallons per minute, 24 hours a day, seven days a week.

The operation is near the head of the valley where the stream runs at a low volume. Cook's Mining needs the stream flow as make-up water for the ponds to keep up with the outgoing pond seepage that would diminish the reservoirs if the company diverted the stream around the mine site. However, Cook's Mining tried to divert the stream to one side of the cut or the other whenever it is feasible so that the equipment does not run in the stream while mining activities are in progress. Since the valley is extremely narrow and has steep sides, Cook's Mining cannot make the stream fully bypass the mining cut or ponds without constructing a large, expensive notch along the length of the south side of the valley, which would destroy the hillside and would not serve any practical purpose. The quality of the water discharge from the mine site has been good enough that Cook's Mining does not find it necessary to construct such a drastic stream bypass. Fairbanks Creek filters through several miles of dredge tailings downstream from the Cook's Mining operation, then emerges again as surface flow. (Cook's Mining, attachment to 1992 APMA; Cook's Mining, "Mining Plans," 1987)

As the mining operations advance, the valley narrows, and the wet groundcover associated with the bottom of the valley diminishes. As of March 31, 1992, approximately 40 feet of valley bottom width was considered wet groundcover. Cook's Mining removed this material and stacked it on the hillside to form an overburden pile 75 feet wide by 1,800 feet long, by 40 feet high. (Cook's Mining, March 31, 1992)

Cook's Mining operated two pay channels in this valley, one being the lower channel previously described as having 40 feet of wet groundcover. Cook's Mining was uncovering a bench deposit on the north slope of the valley. This is a very dry hillside area, and the overburden that is removed from this bench is pushed directly into the previous bench cut that was just mined. Dry material is therefore being pushed into a dry hole in the hillside far from the bottom of the valley. (Cook's Mining, March 31, 1992)

Ponds were planned for the lowest point of the valley on the cleaned bedrock, and six berms will line the ponds and measure 100 feet long, by 45 feet wide, by 25 feet tall. Cook's Mining will build these berms using the material previously accounted for in the overburden piles stacked along the side of the cut on the south side of the valley. (Cook's Mining, March 31, 1992)

The recycle/settling pond system had been built in mining cuts behind the most current operation as it progresses up the valley. Each pond differs from the others because the overburden from new cuts is deposited in previous cuts, and then the company builds settling ponds from the area available after it finishes stripping the cuts. Although the ponds vary significantly, an average set of dimensions for one of Cook's Mining's settling ponds is 200 feet long by 100 feet wide by 30 feet deep. The recycle pump is a 60-horsepower instrument that sends an estimated 800 gallons per minute of water through an 8-inch return line.

There is at least one existing dam and at least one more dam to be constructed. The existing dam is described as being 150 feet long and 30-50 feet high. The width of the dam is 40 feet at the crest and 75-100 feet at the base.

Approximately 3,000 gallons of fuel are stored on-site in tanks with capacities larger than 660 gallons and in a tanker on wheels. Fuel containment berms do not surround the fuel storage containers. A truck from town transports approximately 2,500 gallons of fuel on each of its 10 trips to the site.

Cook's Mining uses the following equipment to accomplish the tasks described: two John Deere 850 dozers to strip and push pay dirt; one Cat 225 excavator to divert the stream, prospect, and sluice; one John Deere 444 rubber tire loader to move tailings; one D9L Cat dozer for stripping; and miscellaneous trucks, pumps, and generators to support the stripping and sluicing activities.

2.4.2 Regulatory Requirements and Compliance

Cook's Mining had an NPDES permit (Number AK-004632-9) from EPA. EPA granted Cook's Mining a turbidity modification that allows the company to discharge waste water with a turbidity of up to 16 nephelometric turbidity units (NTU), a modification that was calculated using a discharge rate of 50 gallons per minute. Seepage greater than 50 gallons per minute could require Cook's Mining to maintain a discharge cleaner than 16 NTU during periods of low creek flow. (ADEC, April 7, 1992) Since Fairbanks Creek is not known to support fish in the area of the Cook's Mining operation, the Alaska Department of Fish and Game (ADF&G) did not require a permit.

In Alaska, bonding is required for all mining operations having a mined area of five acres or greater. The area must be bonded for \$750.00 per acre, unless the miner can demonstrate that a third party contractor can do the required reclamation for less than that amount. Cook's Mining submitted \$2,250.00 to the Alaska Department of Natural Resources (DNR) for payment into the State Wide Bonding Pool to meet the bonding requirements. (Cook's Mining, 1992 APMA; Alaska DNR, State Wide Bond Pool Form)

2.5 REFERENCES

- Alaska Annual Placer Mining Application, with attachments, February 3, 1992.
- Alaska Placer Plan Review Worksheet, April 3, 1992.
- Alaska Department of Environmental Conservation. 1992a (March 20). Letter from William D. McGee, Alaska Department of Environmental Conservation, to Alf Hopen.
- Alaska Department of Environmental Conservation. 1992b (April 7). Letter from William D. Morgan, Alaska Department of Environmental Conservation, to Alf Hopen.
- Alaska Department of Environmental Conservation. 1992c (April 7). Letter from William D. Morgan to John Cook, Cook's Mining.
- Alaska Department of Environmental Conservation. December 19, 1989. Decision Record, with attachments.
- Alaska Department of Environmental Conservation. June 3, 1988. Placer Mine Inspection Form, with an EPA NPDES Compliance Inspection Report cover sheet dated August 2, 1988 and signed by Conrad Christianson.
- Alaska Department of Fish and Game. 1992a (January 6). Letter to Dan May, Polar Mining, Inc.
- Alaska Department of Fish and Game. 1992b (February 18). Letter from Ron Somerville, Alaska Department of Fish and Game, to Alf Hopen.
- Alaska Division of Mining Approved Reclamation Plan, approved by John E. Wood, May 6, 1992.
- Alaska Department of Natural Resources Case File Abstract, February 21, 1992.
- Alaska Department of Natural Resources State Wide Bond Pool Form, April 27, 1992.
- Alaska Department of Natural Resources. 1988 (August 1). "Overview: Polar Mining, Inc." An executive summary of the Lower Goldstream operation faxed from the Alaska Department of Natural Resources.
- Cook's Mining. 1987. "Mining Plans." Letter from John Cook; recipient unknown.
- Cook's Mining. 1992a (January 6). 1992 Annual Placer Mining Application (Number F926973), with attachments. Submitted to the Alaska Department of Environmental Conservation by John Cook.
- Cook's Mining. 1992b (March 31). Letter from John Cook to Kevin Morgan, Department of the Army.
- Memorandum. August 9, 1988. From Paul Bateman to Pete McGee regarding Public Hearing Summary.
- Polar Mining, Inc., 1992 Annual Placer Mining Application (Number F927278), with attached maps. December 23, 1991. Signed by Dan May, Operator, Polar Mining, Inc.
- Polar Mining, Inc. October 14, 1991. Letter from Daniel May to the Reclamation Commissioner, Division of Mining, with enclosed sketches.
- United States Department of the Interior, Bureau of Land Management. Environmental Assessment (EA Log Number AK-080-89-041).
- U.S. Department of the Army, U.S. Army Engineer District, Alaska. 1991 (August 22). Permit modification issued by Timothy R. Jennings to Polar Mining, Inc.

U.S. Department of the Army. December 17, 1991. Letter from Timothy R. Jennings to William D. McGee, with enclosed sketches.