

Chapter 1 Introduction

1.1 Summary of Proposed Action

The proposed action is a plan by Teck-Pogo Inc., the Applicant, to develop the underground Pogo Mine on State of Alaska land in the Goodpaster River Valley approximately 38 miles northeast of Delta Junction, Alaska. The mine would process approximately 2,500 tons of ore per day (tpd), and would produce approximately 375,000 ounces (oz) of gold annually at start-up, with a possibility of increasing production and expanding the mill to approximately 3,500 tpd and 500,000 oz annually.

The Applicant would like to begin project construction as soon as possible in 2003. The project would require 25 to 33 months to construct and would have an operating life of approximately 11 years, based on current ore reserves. Its life could be extended if additional reserves were found. The capital cost of the project is estimated at \$200 million to \$250 million. The mine would operate 365 days a year with an initial workforce of approximately 288.

As proposed, the proposed action would include a 49.5-mile access road, a mill and camp complex, a dry-stack tailings pile and recycle water tailings pond, an airstrip, gravel pits, laydown and fuel storage areas, and a local network of roads. Gold would be recovered by gravity separation, flotation concentration, and cyanide vat leaching. Approximately half of the tailings would be returned underground as a paste backfill. Power would be supplied from the regional grid via a 50-mile power line.

1.2 Purpose and Need for Action

Need for Action

The need for the proposed action is to allow the Applicant to develop an underground mine in its nonfederally owned Pogo claim block in order to produce gold and to make a reasonable profit.

Purpose for Action

The purpose of the proposed action is to provide the federal authorizations needed by the Applicant to construct and operate an underground gold mine and associated facilities in and near its Pogo claim block, which is located in a currently roadless area 38 miles northeast of Delta Junction, Alaska, near the Goodpaster River. The mine would process between 2,500 and 3,500 tpd of ore for at least 11 years to supply an on-site mill, which would produce up to approximately 500,000 oz of gold per year through gravity recovery, froth flotation, and cyanide leaching of concentrate. The proposed action would meet the objectives for construction and operation of the mine by providing:

- An efficient, on-site mill and gold extraction process
- Safe, stable, long-term disposition of 11 million tons of tailings with sufficient capacity to contain potential additional ore reserves
- An adequate water supply to meet mill process and camp complex requirements
- A safe water discharge system

- 10 to 14 megawatts (MW) of electrical energy needed to construct and operate the mine and mill
- A comfortable on-site camp complex capable of supporting 250 to 700 personnel needed to construct and operate the mine and mill
- Reliable and safe access to the mine for (1) delivery of materials, including approximately 2 to 3 million gallons of fuel and 27,000 to 42,000 tons of non-fuel supplies per year and (2) the 250 to 700 personnel needed to construct and operate the mine and mill on a cost-efficient basis
- Timely project development
- Development of the project in a technically and economically feasible manner

1.3 Proposed Project Location, Land Status, and History

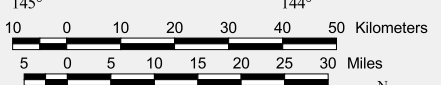
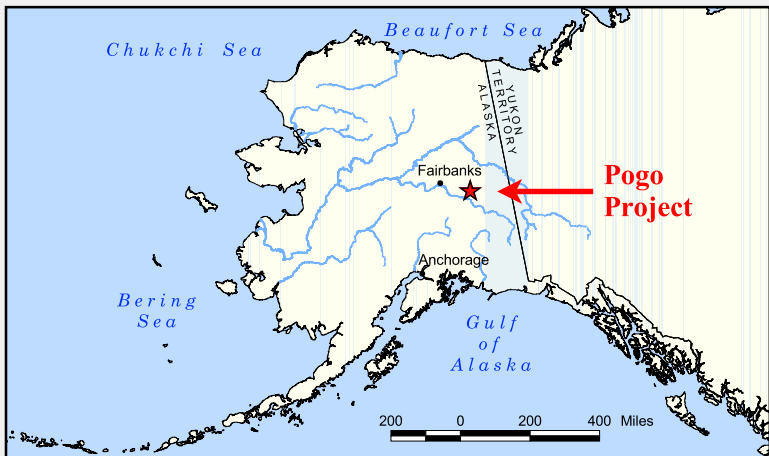
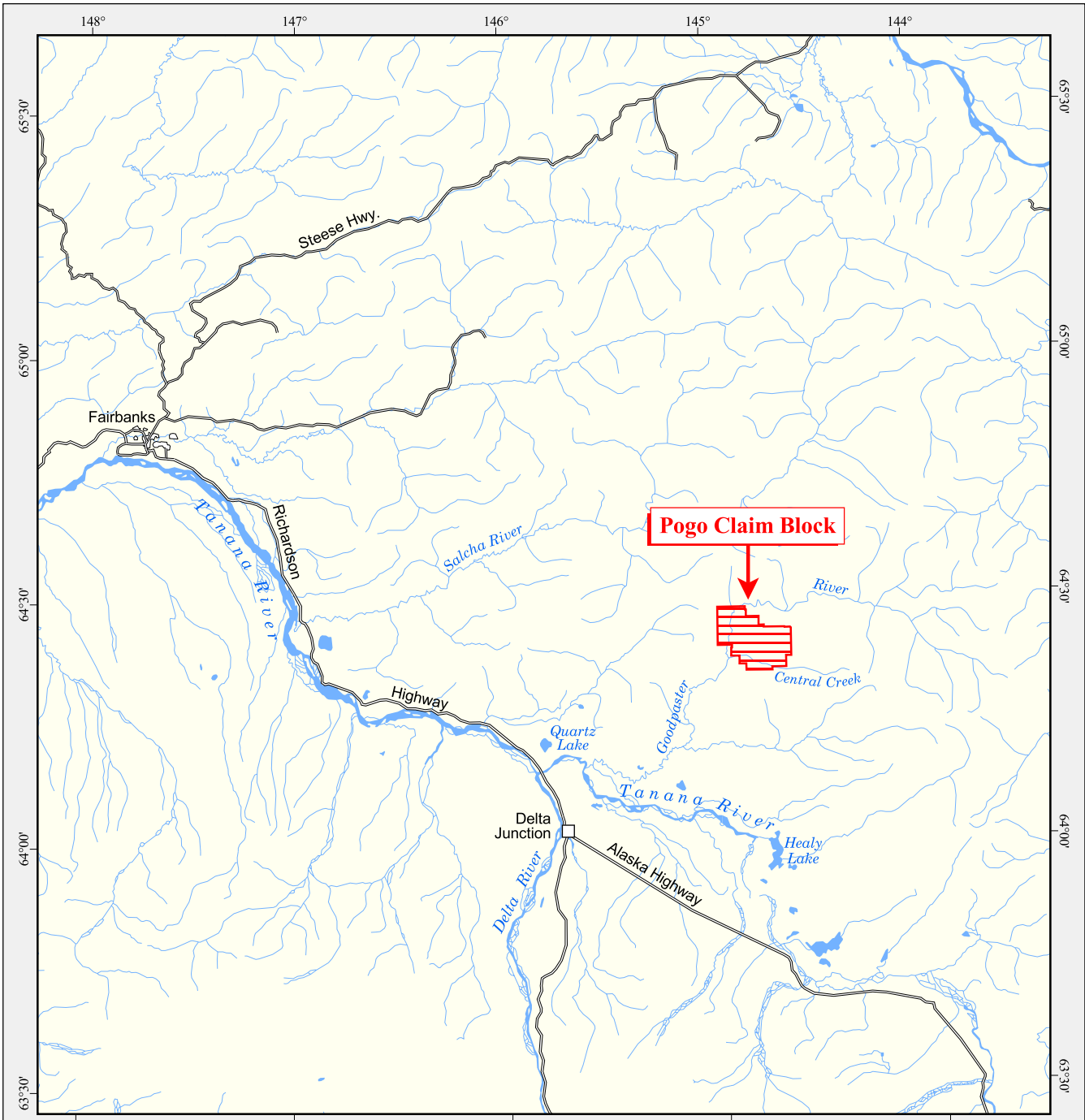
The proposed Pogo Gold Mine ore body is located approximately 38 miles northeast of Delta Junction, Alaska, immediately adjacent to the Goodpaster River (Figure 1.3-1). Virtually all of the project's components, including surface access, would be located within a large block of roadless, multiple-use State of Alaska land (Figures 1.3-2 and 1.3-3). Exploration has proceeded to date with access only by air and winter ice road.

The Pogo deposit is a recent discovery, found through "grassroots" exploration of an area with promising geology but very little prior mining history. In 1981, while conducting a regional mineral potential evaluation, WGM, Inc., discovered gold, arsenic, and tungsten anomalies in stream samples taken from Pogo and Liese creeks. Claims were staked over these areas in 1991 as part of the Stone Boy Joint Venture. Exploration work was carried out by WGM and financed by Sumitomo Metal Mining, Inc. (Sumitomo), and several other companies, which eventually withdrew from the venture. The Applicant signed a letter of intent in June 1997 to acquire a 40 percent interest in the Pogo claims from Sumitomo, and assumed operatorship in the spring of 1998.

Exploration work on the Pogo claims from 1991 to 1999 consisted of grid-based soil sampling, prospecting, and geophysics. Three diamond drill holes were undertaken in 1994, targeting a large gold-in-soil anomaly (irregularity) and a magnetic anomaly in Liese Creek. Encouraging results led to 13 additional drill holes in the Liese Creek area in 1995, and the discovery of the "Liese Zone" – one or more low-sulfide quartz veins with gold.

In late 1997, the Applicant and Sumitomo purchased the Faith Claims on Pogo Creek from Jack Stewart, a placer miner who had sporadically worked the state claims since staking them in the mid-1980s. In the winter and early spring of 1998, the Applicant constructed a 49-mile winter ice road and hauled in underground exploration equipment and supplies. A 48-person Alberta Trailer Company (ATCO) trailer camp with laydown and fuel storage areas was constructed on a portion of Jack Stewart's previous disturbance. In March 1999, underground exploration began with the driving of a 5,000-foot adit toward the ore deposit. The ore zone was reached a year later, in April 2000. Additional geological, geotechnical, and mining engineering data were gathered from the underground activity during 2000 and 2001.



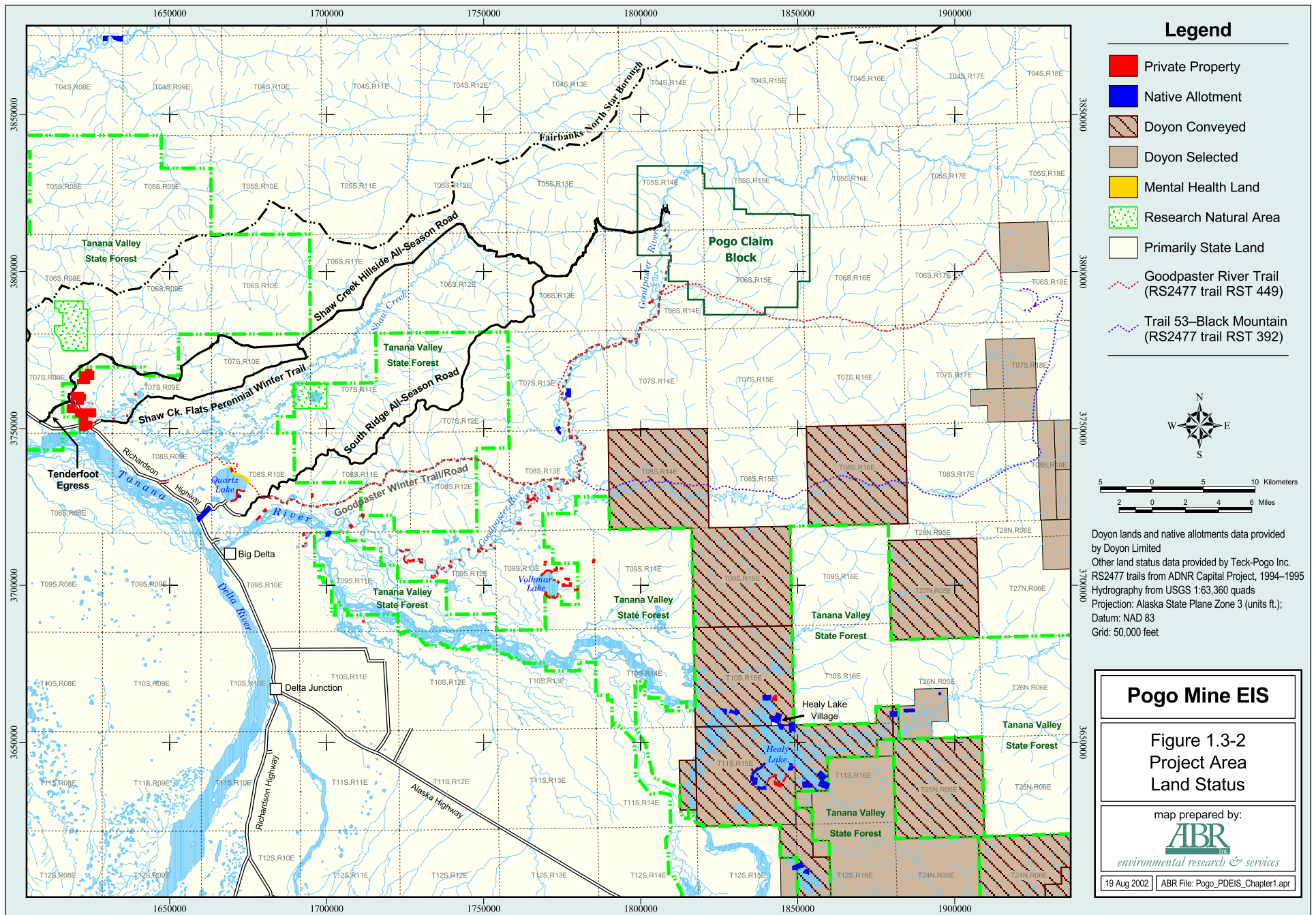


Map base: US DMA DCW
Projection: UTM Zone 6;
Datum: NAD 27



Pogo Mine EIS	
Figure 1.3-1 Pogo Project General Location Map	
map prepared by: ABR environmental research & services	
13 Jan 2003	ABR File: Pogo_DEIS_Chapter1.apr





Legend

- Private Property
- Native Allotment
- Doyon Conveyed
- Doyon Selected
- Mental Health Land
- Research Natural Area
- Primarily State Land
- Goodpaster River Trail (RS2477 trail RST 449)
- Trail 53-Black Mountain (RS2477 trail RST 392)



Doyon lands and native allotments data provided by Doyon Limited
 Other land status data provided by Teck-Pogo Inc.
 RS2477 trails from ADNR Capital Project, 1994-1995
 Hydrography from USGS 1:63,360 quads
 Projection: Alaska State Plane Zone 3 (units ft.);
 Datum: NAD 83
 Grid: 50,000 feet

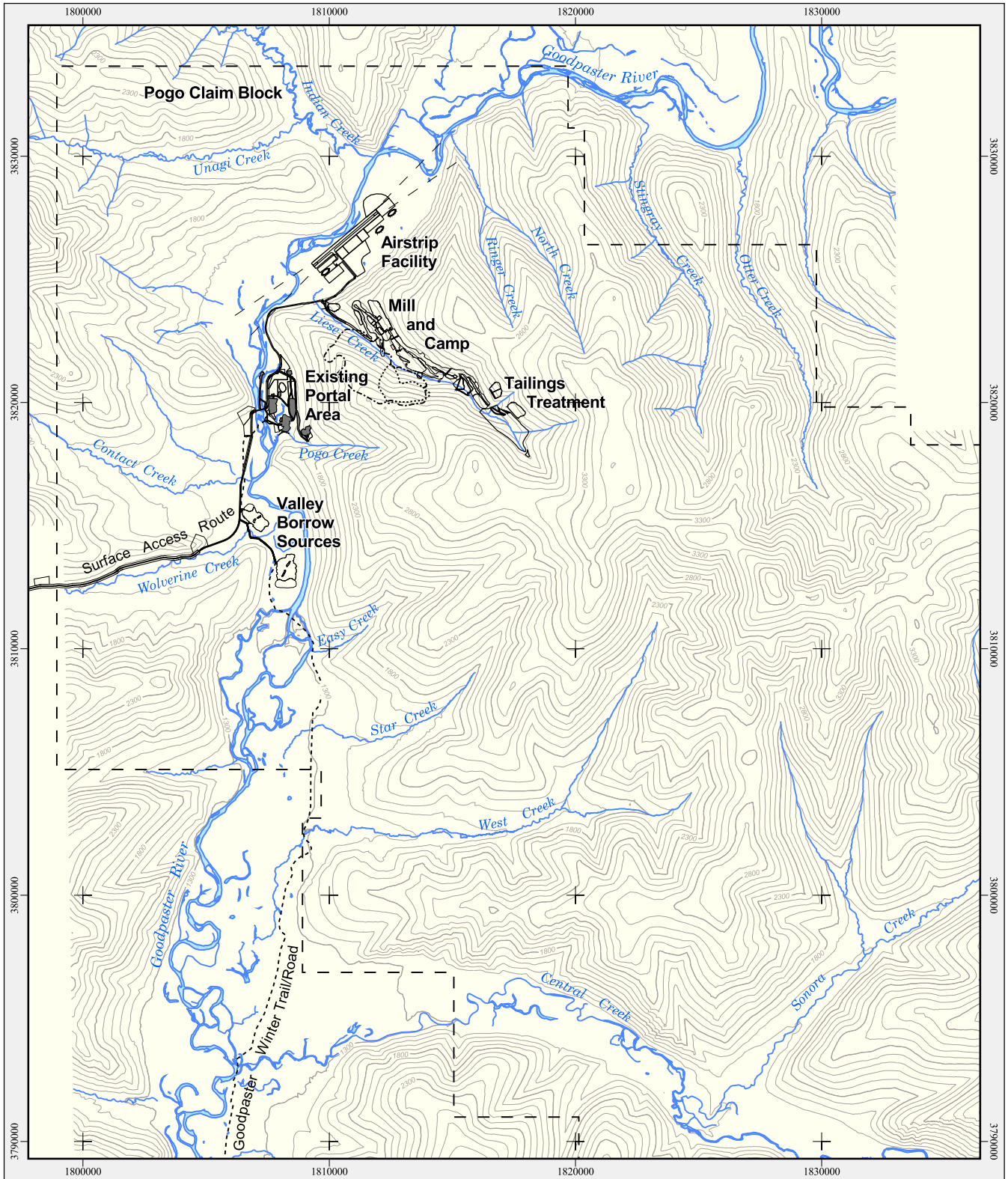
Pogo Mine EIS

Figure 1.3-2
 Project Area
 Land Status

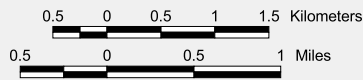
map prepared by:

 environmental research & services





Contours and hydrography by AeroMap U.S., Inc., 1997
 Contour interval: 100 feet
 Mine site facilities from AMEC
 Projection: Alaska State Plane Zone 3 (units ft.)
 Datum: NAD 83
 Grid: 10,000 feet



Pogo Mine EIS

Figure 1.3-3
 Pogo Mine Site Area

ABR map prepared by:
environmental research & services

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1.4 EIS Development Process

The Applicant has applied to the U.S. Environmental Protection Agency (EPA) for a National Pollutant Discharge Elimination System (NPDES) permit to discharge waste waters from the Pogo mine project from an off-river treatment works to a channel connected to the Goodpaster River. This project is considered a “new source” discharge and, in accordance with Section 511(c)(1) of the Clean Water Act (CWA), is subject to the provisions of the National Environmental Policy Act (NEPA). Because the proposed project has the potential to significantly affect the quality of the human environment, the decision on issuance of the NPDES permit is considered a “major federal action.” NEPA requires preparation of an environmental impact statement (EIS) for all major federal actions.

The NEPA compliance program requires analysis of information on potential impacts, including environmental, cultural, social, economic, and public health impacts; development and analysis of options to avoid and minimize impacts; and development and analysis of measures to mitigate adverse impacts. EPA's NEPA compliance responsibilities include several statutes and executive orders that must be addressed during the NEPA process. Examples include the Endangered Species Act, the Executive Order on Environmental Justice, and executive orders on wetlands, floodplains, farmland, biodiversity, and tribal government coordination and consultation. The Council of Environmental Quality (CEQ) regulations for implementing NEPA may be found in the U.S. Code of Federal Regulations (CFR), Title 40, Parts 1500-1508. The EPA's regulations on compliance with NEPA are located in 40 CFR 6. After completing the final EIS, EPA will prepare a record of decision (ROD) that sets forth EPA's basis for issuing or denying the NPDES permit.

In the fall of 1997, the Applicant began discussions with various state and federal agencies about underground exploration permits, and later initiated pre-development discussions. In June 2000, Teck-Pogo Inc., as prospective Applicant for the project's NPDES permit, entered into a Memorandum of Understanding (MOU) with EPA that established the conditions and procedures to be followed in preparation of the EIS. On August 1, 2000, the Applicant filed an application for an NPDES permit to discharge waste waters to a soil absorption system and to underground injection wells on the Goodpaster River Valley floor. This application formally commenced the EIS process. On January 2, 2003, the Applicant filed an amended NPDES application to discharge waste waters from an off-river treatment works on the Goodpaster River Valley floor to a channel connected to the Goodpaster River.

EPA has assumed lead federal agency responsibility for preparation of the EIS and, in accordance with its implementation of NEPA regulations, has determined that it will prepare the EIS with the use of a third-party contractor. The EPA and Applicant MOU provided for engaging a third-party contractor to develop the EIS under the direction of EPA. A third-party contractor supplies technical expertise and other assistance directly to a federal agency. The contractor works under that agency's direct supervision and not for the Applicant. The costs for the contractor's services are reimbursed by the Applicant under the terms of the MOU. Michael Baker, Jr., Inc., a large international engineering and environmental firm with a strong presence in Alaska, was selected as the third-party contractor in June of 2000, and immediately commenced work. The contractor has no financial interest in the outcome of the project and has filed a formal Statement of Financial Interest (SOFI) to that effect.

Additional information about the Pogo Mine EIS process, including baseline reports and technical documents, can be found on the Web at <http://www.pogomineeis.com>.



Cooperating Agencies

In order to construct and operate the mine, many federal and state permits are needed. Therefore, the EIS has been prepared with EPA as the lead agency and the U.S. Army Corps of Engineers (COE) and State of Alaska Department of Natural Resources (ADNR) as cooperating agencies. This EIS may be used by agencies as a basis for a permit decision-making process and their own ROD or other appropriate procedure. The authorities under which this action is being proposed are listed in Section 1.7 (Agency Roles and Responsibilities).

1.5 Scoping

As required by the CEQ regulations (40 CFR 1501.7) and EPA regulations (40 CFR 6.400), EPA provided for an early and open process to determine the scope of issues to be addressed and to identify the significant issues related to the Pogo Mine project. EPA accomplished these objectives through early public, tribal, and agency involvement in regular meetings, and by conducting a thorough public and agency scoping process.

On August 11, 2000, EPA published a Notice of Intent (NOI) to prepare an EIS for the Pogo Mine Project in the *Federal Register* (FR). On the same date, EPA distributed the *Scoping Document for the Pogo Mine Project Environmental Impact Statement* (EPA, 2000) that described the proposed project, the EIS process, and a document preparation schedule. Distribution of the scoping document began a 60-day public and agency review and comment period that ended on October 10, 2000. EPA hosted two scoping open houses during that period. The first was held on September 26, 2000, in Delta Junction at the Delta Junction Community Center, and the second was held on September 27, 2000, in Fairbanks at the Noel Wien Library. Attendance totals were 46 and 50, respectively.

The scoping open houses served two purposes. One was to listen to and record the public's comments about the proposed project as described in the scoping document. The second was to respond to the public's requests for the background information and hands-on technical assistance that might be needed to fully understand the project description and proposed scope of the EIS analysis before commenting. EPA project staff, other agency representatives, and members of the third-party contractor, Michael Baker, Jr., were available to answer questions and explain methodologies.

A "town meeting" format provided an opportunity for individuals to comment and promoted group interaction. All comments made during the open houses, whether oral or written on comment sheets or flip charts, were documented as part of the official record. While people were welcome to make comments and suggestions during the open houses, the record was specifically left open for an additional 13 days to accommodate anyone needing additional time to formulate comments.

Sixty-two sets of comments were received, excluding those received during government-to-government consultations. In five of these cases, individuals gave very similar comments on two or more occasions, usually orally and in writing. Thus, 57 individual sets of non-tribal comments were received. Because some written comments were signed by more than one individual or organization, 64 entities actually commented. EPA will accept public comments throughout preparation of this EIS.

On January 30, 2001, EPA distributed a 55-page *Pogo Mine EIS Scoping Responsiveness Summary* (EPA, 2001a). This document described the scoping process, and:



- Included 17 pages of representative public and agency comments as well as 4 pages of tribal comments
- Described how the comments were evaluated
- Listed the 17 issues identified by the scoping comments
- Identified the project’s component options to address those issues
- Described how evaluation criteria were developed for the issues and how those criteria would be used to evaluate the component options and identify project alternatives to be analyzed in the EIS
- Discussed activities that would follow the scoping process and identified sources of information
- Presented an EIS/NPDES permitting process and time line diagram
- Presented a draft EIS table of contents

Government-to-Government Consultations

In addition to the EIS scoping effort, pursuant to Executive Order 13084 (Consultation and Coordination with Indian Tribal Governments), EPA undertook a concerted government-to-government consultation effort with the 13 Tribes listed below. These Tribes were considered to be potentially affected by the proposed Pogo Gold Mine by virtue of their location (1) within a 125-mile radius of the proposed Pogo Mine site, or (2) within the potentially affected Tanana River watershed. A detailed description of this consultation process is contained in Section 7.13 of this EIS.

- | | |
|-------------------------------|------------------------------|
| Circle Native Community | Native Village of Tanana |
| Dot Lake Village Council | Nenana Native Village |
| Healy Lake Tribal Council | Northway Traditional Council |
| Manley Village Tribal Council | Tanacross Village Council |
| Mentasta Traditional Council | Tetlin Village Council |
| Native Village of Eagle | Tok Traditional Council |
| Native Village of Minto | |

1.6 Issues and Concerns

The scoping comments identified 17 major issues related to construction, operation, and closure of the proposed project. These issues served as the basis for development of criteria that were used to evaluate the various project options and alternatives, as described in Chapter 2. The 17 issues identified from public, agency, and tribal scoping comments were:

- | | |
|-----------------------------------|--|
| ▪ Surface and groundwater quality | ▪ Recreational resources and uses |
| ▪ Wetlands | ▪ Existing privately-owned lands and existing recreational and commercial uses |
| ▪ Fish and aquatic habitat | |
| ▪ Wildlife | ▪ Subsistence and traditional uses |



- Air quality
- Noise
- Safety
- Reclamation
- New industrial and commercial uses
- Cultural resources
- Socioeconomics
- Cumulative impacts
- Technical feasibility
- Economic feasibility

1.7 Draft EIS Public Comments and Responses

The draft EIS comment period formally began with a notice of availability published in the *Federal Register* on March 14, 2003, and closed 60 days later on May 13, 2003, although comments received after the closing date have been considered and responded to. In addition, public meetings during which comments and testimony were taken were conducted in Delta Junction on April 29, 2003, and in Fairbanks on April 30, 2003.

The 184 commenters made a total of approximately 641 comments. These figures do not include comments received during government-to-government consultations discussed above. All public and agency comments, and responses to them, are contained in Appendix E of this final EIS.

1.8 Agency Roles and Responsibilities

1.8.1 Responsible Official and Decision to Be Made

The Pogo Mine project requires a NPDES permit for project-related water discharges. The project is defined as a new source by the NPDES regulations (40 CFR 122.2 and 122.29). Under the CWA Section 511(c)(1), a new source is subject to compliance with NEPA prior to taking a final action on the NPDES permit (40 CFR Part 6, Subpart F). Thus, EPA is following a specific procedure that began with scoping and data collection and continues with analysis of data to identify and evaluate alternatives. The results of these analyses are documented in this EIS and form the basis for EPA's decision on the NPDES application. EPA's Region 10 Administrator is the responsible official for this decision.

The responsible official may decide to adopt:

- The No Action Alternative
- One of the action alternatives
- An alternative that combines features of more than one alternative
- One of the action alternatives with additional mitigation measures

EPA's ROD documenting the EIS conclusions will result in a decision on the Applicant's NPDES permit application. EPA will approve or deny the application, or require that the Applicant revise its proposed project prior to approval.

The Pogo Mine project requires a Clean Water Act Section 404 permit for discharge of dredged and/or fill material into waters of the U.S., including wetlands, prior to conducting the work (33 U.S.C. 1344). The impact on waters of the U.S. has been documented in this EIS and will be the basis for the COE decision on the Applicant's Section 404 permit application. The alternatives



analysis contained in this EIS will be the basis for determining compliance with the EPA's Section 404 (b)(1) guidelines.

The State of Alaska will use this EIS to assist in its separate permit adjudication process, and will make its determinations on a schedule coordinated with the EIS process. If EPA were to decide against issuance of a NPDES permit, the state could still issue its authorizations if the project was redesigned so that an NPDES permit would not be required.

1.8.2 Agency Roles and Responsibilities (Permits and Approvals)

Preparation of this EIS and the permitting process are related but also distinct activities. The EIS is designed to explore project alternatives and discuss relative environmental impacts. Permitting gives government decision-makers a process to enforce certain conditions that are mandated by statute or regulation, and to require individual stipulations to eliminate or mitigate project-specific adverse environmental impacts identified in the EIS.

Many federal and state permits and approvals would be required for the Pogo Mine Project. Following is a list of the agencies involved in permitting, consultations, or otherwise providing authorizations for the project, with a description of their major permits, authorizations, or authorities. A succinct list of the major permits and authorizations required for project development is contained in Chapter 9.

Federal Government

Environmental Protection Agency (EPA)

- Section 402 NPDES Water Discharge Permit
- Section 404 Permit Review
- Spill Prevention, Control, and Countermeasure (SPCC) Plan
- Stormwater Construction and Operation Permit
- Underground Injection Control (UIC) Permit
- Section 106 Historical and Cultural Resources Protection
 - ✦ **Section 402 NPDES Water Discharge Permit.** Sections 301 and 306 of the CWA require that EPA develop wastewater effluent standards for specific industries, including gold mines. These standards are established both for existing sources and new sources. Because the project is a new source, New Source Performance Standards (NSPS) for gold mines and mills are applicable to the project (40 CFR 440.104). Section 402 of the CWA requires that the Pogo Mine project obtain an NPDES permit for its proposed discharge. The NPDES permit would be required to meet the NSPS or the water quality standards, whichever provides the more stringent limitation.

In accordance with Section 511(c)(1) of the CWA, NPDES permit actions for new sources are subject to NEPA (40 CFR Part 6, Subpart F). Therefore, EPA would issue a ROD before the final permit action.

EPA is the NPDES permitting authority in Alaska. The Alaska Department of Environmental Conservation (ADEC), pursuant to Section 401 of the CWA, must provide certification to EPA that the discharge would comply with any applicable

- state water quality standards. The ADEC certification determines whether wastewater mixing zones are, or are not, permitted.
- ✦ **Section 404 Permit Review.** Section 404 of the CWA authorizes the COE to issue permits for the discharge of dredged or fill materials into waters of the United States (described below). EPA, under Section 404(c), has a review authority and may prohibit or withdraw the specification (permitting) of a site upon a determination that the use of the site would have an unacceptable adverse effect on municipal water supplies, shellfish beds and fisheries areas, or recreational areas.
 - ✦ **Spill Prevention, Control, and Countermeasure (SPCC) Plan.** Section 311 of the CWA establishes requirements relating to discharges or spills of oil or hazardous substances. Discharges or spills of oil in “harmful quantities” are prohibited. EPA has established a requirement for the preparation of an SPCC Plan by facilities that handle substantial quantities of oil (40 CFR 112). A registered engineer must certify the plan.
 - ✦ **Stormwater Construction and Operation Permit.** Under Section 402(p) of the CWA, EPA has promulgated regulations for control of stormwater runoff. For the Pogo Mine project, these sources would include runoff from roads, laydown areas, the mill and camp sites, and other surface disturbances. The EPA approach to this type of discharge is generally to require implementation of best management practices (BMPs). If an NPDES permit is needed for the project, the stormwater control requirements from the NPDES program may be incorporated into the NPDES permit.
 - ✦ **Underground Injection Control (UIC) Permit.** The UIC program is authorized by Part C of the Safe Drinking Water Act (SDWA), Public Law 93-523, and Amendments. Injection wells are defined broadly to include boreholes, sumps, dry wells, drain fields, and other subsurface disposal devices used to put fluids into the ground. The Class V category consists of injection wells that are not included in the other classes of wells (e.g., Class I, II, or III). EPA will determine whether any discharge in the proposed project will be covered by a Class V UIC permit.
 - ✦ **Section 106 Historical and Cultural Resources Protection.** Under Section 106 of the National Historic Preservation Act, as lead federal agency EPA is responsible for ensuring overall protection of historical, cultural, and archaeological sites and resources for the Pogo Mine project. This role would include consultation with the State Historic Preservation Office (SHPO) within the ADNR.
 - ✦ **Hazardous Waste Generator Identification Number.** Under the Resource Conservation and Recovery Act (RCRA), an entity that generates hazardous wastes must register and receive an identification number before commencing operations.

U.S. Army Corps of Engineers (COE)

The COE is a cooperating agency with EPA for the Pogo Mine project EIS.

- Section 404 Dredge and Fill Permit
- Section 106 Historical and Cultural Resources Protection
- ✦ **Section 404 Dredge and Fill Permit.** Section 404 of the CWA authorizes the COE to issue permits for discharge of dredged or fill material into waters of the United States, including wetlands. The CWA prohibits such a discharge, except pursuant to a Section 404 Permit. To the degree that they affect “waters of the United States,”



various activities undertaken in connection with mining operations might require a Section 404 Permit (including road or bridge construction, construction of dams for tailings storage, water storage dams, and stream diversion structures).

The COE is responsible for determining that the proposed project is in compliance with Section 404(b)(1) guidelines (40 CFR 203). Under Section 404(c), EPA has review authority over the COE 404 Permit decisions.

- ✦ **Section 106 Historical and Cultural Resources Protection.** Under Section 106 of the National Historic Preservation Act, the COE is responsible for ensuring protection of historical, cultural, and archaeological sites and resources for the Pogo Mine project within the COE's permit area. This role would include consultation with the SHPO.

National Marine Fisheries Service (NMFS)

- Threatened and Endangered Species Act (ESA) Consultation (Section 7)
- Essential Fish Habitat
- Fish and Wildlife Coordination
- ✦ **Threatened and Endangered Species Consultation (Section 7).** EPA must conduct an ESA Section 7 consultation with the National Marine Fisheries Service (NMFS) regarding any threatened or endangered species under its jurisdiction that may be affected by the proposed project. The level of required informal or formal consultation would depend on whether listed species occur in the project area, and, if so, whether they likely would be affected by the proposed project. If listed species occur in the area and they likely would be affected, EPA and NMFS would undergo the formal consultation process. This is typically an involved process that results in measures designed to minimize the impact of the project on listed species.
- ✦ **Essential Fish Habitat.** In a similar manner, EPA must consult with NMFS concerning any action that might adversely affect essential fish habitat (EFH). EFH includes habitats necessary to a species for spawning, breeding, feeding, or growth to maturity. EPA will provide NMFS with an EFH assessment.
- ✦ **Fish and Wildlife Coordination.** The NMFS also provides technical expertise and makes comments and recommendations to federal agencies via the Fish and Wildlife Coordination Act (United States Code [USC], Title 16, Section 661 *et seq.*).

U.S. Fish and Wildlife Service (USFWS)

- Threatened and Endangered Species Consultation (Section 7)
- Bald Eagle Protection Act Clearance
- Migratory Bird Protection
- Fish and Wildlife Coordination
- ✦ **Threatened and Endangered Species Consultation (Section 7).** EPA must conduct an ESA Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) regarding any threatened or endangered species under its jurisdiction that may be affected by the proposed project. The level of required informal or formal consultation would depend on whether listed species occur in the project area, and, if so, whether they likely would be affected by the proposed project. If listed species occur in the area and they likely would be affected, EPA and USFWS would undergo the formal consultation process. This can be, but is not always, an involved process.



- ✦ **Bald Eagle Protection.** The USFWS implements provisions of the Bald Eagle Protection Act by ensuring that development does not affect nest trees.
- ✦ **Migratory Bird Protection.** The USFWS implements provisions of the Migratory Bird Protection Act.
- ✦ **Fish and Wildlife Coordination.** The USFWS also provides technical expertise and makes comments and recommendations to federal agencies via the Fish and Wildlife Coordination Act (16 USC 661 *et seq.*).

Mine Safety and Health Administration (MSHA)

- Mine Identification Number
- Miner Training and Retraining Plan Approval
 - ✦ **Mine Identification Number.** Because worker health and safety aspects of the Pogo Mine Project would be regulated by federal health and safety standards, the Applicant must obtain a Mine Identification Number from the Mine Safety and Health Administration (MSHA). Agency representatives would make routine inspections of the operation and also would be involved in educational and safety training programs. The Pogo Mine project would be responsible to provide MSHA with reports of accidents, injuries, occupational diseases, and related data.
 - ✦ **Miner Training and Retraining Plan Approval.** MSHA must approve specific programs for the education, training, and retraining of all employees.

Bureau of Alcohol, Tobacco, and Firearms (BATF)

- License to Transport Explosives
- Permit and License for Use of Explosives
 - ✦ **License to Transport Explosives.** Interstate transportation of explosives is regulated by the Bureau of Alcohol, Tobacco, and Firearms (BATF). The Pogo Mine project or its explosive supplier would need to obtain a license for transport of such explosives to the site.
 - ✦ **Permit and License for Use of Explosives.** BATF also would have to issue an Explosives User Permit to the Pogo Mine project.

Federal Communications Commission (FCC)

- Radio License
 - ✦ **Radio License.** Radio and microwave station authorizations would need to be obtained from the Federal Communications Commission (FCC). A license must be obtained for any two-way radio installations made at the project site.

Federal Aviation Administration (FAA)

- Notice of Landing Area Proposal
- Notice of Controlled Firing Area for Blasting
 - ✦ **Notice of Landing Area Proposal.** An entity proposing to construct a landing area must notify the Federal Aviation Administration (FAA) of the location, length, bearing, and other details of the proposed landing area.
 - ✦ **Notice of Controlled Firing Area for Blasting.** Entities engaged in the use of explosives also must notify the FAA of the location of such areas.

U.S. Coast Guard (USCG)

- Bridge Construction Permit Across Navigable Waters
 - ✦ **Construction Permit for a Bridge Across Navigable Waters.** To ensure safe navigability of waterways, construction of a bridge across navigable waters must be approved by the U.S. Coast Guard (USCG).

State of Alaska

The State of Alaska is a cooperating agency with EPA for the Pogo Mine project EIS.

Alaska Department of Natural Resources (ADNR)

- Plan of Operations Approval
- Upland Mining Lease
- Millsite Lease
- Lease of Other State Lands
- Miscellaneous Land Use Permit
- Road Right-of-Way
- Joint Pipeline Office Approval
- Power Line Right-of-Way
- Certificate of Approval to Construct a Dam
- Certificate of Approval to Operate a Dam
- Temporary Water Use Permit
- Permit to Appropriate Water
- Material Sale
- Burn Permit
- Cultural Resources Authorizations
- Mining License
- Fish Passage
- Fish Habitat Permit
 - ✦ **Plan of Operations Approval.** ADNR must approve the plan of operations for a mining project on state lands. The plan of operations includes the project description, Reclamation Plan, Monitoring Plan, Transportation Plan, and any road maintenance agreements. Reclamation Plan approval includes a mandatory bonding provision, prohibits undue and unnecessary degradation, and contains performance standards requiring that lands be returned to a stable condition. The Reclamation Plan would apply to the upland mining and millsite lease areas.
 - ✦ **Upland Mining Lease.** Prior to initiation of production, the holder of a mining claim or group of claims may request a lease for the purposes of producing minerals from the claims.

- ✦ **Millsite Lease.** Use of state lands for other than temporary purposes requires a lease. This lease requirement includes use of lands for mill sites or other mine support purposes.
- ✦ **Lease of Other State Lands.** The Applicant is considering a lease of state lands near the Richardson Highway for purposes of a bus terminal, shop, storage, road maintenance equipment storage, and parking. If issued, this lease would require a separate Reclamation Plan, insurance, and bonding.
- ✦ **Miscellaneous Land Use Permit.** Any winter road use during project development would be authorized under a separate permit and would require a separate bond and Reclamation Plan.
- ✦ **Access Road Right-of-Way.** A grant of right-of-way (ROW) is required across state lands for roads, power lines, and pipelines. If a road ROW were granted, the Applicant and ADNR would enter into a road maintenance agreement.
- ✦ **Joint Pipeline Office Approval.** Any activities that cross the Trans-Alaska Pipeline System (TAPS), such as the all-season road or winter road ground access options, would require authorization from the Federal/State Joint Pipeline Office.
- ✦ **Power Line Right-of-Way.** A grant of ROW is required across state lands for power lines.
- ✦ **Certificates of Approval to Construct a Dam.** A Certificate of Approval to Construct a Dam is required for the construction, enlargement, alteration, repair (other than routine maintenance), or abandonment of a dam pursuant to Alaska Administrative Code (AAC), Title 11, Chapter 93. Dam construction would be subject to design and supervision by an Alaska registered professional engineer.
- ✦ **Certificate of Approval to Operate a Dam.** A Certificate of Approval to Operate a Dam would be issued by the Division of Mining, Land, and Water after completion of construction and approval of the completion report, as-built drawings, Operations and Maintenance Manual, and if required, an Emergency Action Plan.
- ✦ **Temporary Water Use Permit.** Temporary uses of a significant volume of water, for up to 5 years, requires a Temporary Water Use Permit.
- ✦ **Permit to Appropriate Water.** Appropriation of a significant amount of water on other than a temporary basis requires authorization by a Water Rights Permit. A Water Right is a property right for the use of public surface and subsurface waters. The right becomes attached to the land where the water is used. Once use of the appropriated water has been fully developed and demonstrated, a Certificate of Appropriation securing the holder's rights to the water would be issued. This certificate is not automatic; it depends on actual use of the full amount of water and compliance with all permit conditions.
- ✦ **Material Sale.** Material sales (Alaska Statute [AS] 38.05.020) would be used for gravel borrow materials not located within the boundary of the millsite lease or a road ROW. Each site would require a Development Plan that addresses the handling of timber and slash, a bond, and a Reclamation Plan.
- ✦ **Burn Permit.** Anyone wishing to burn outside an incinerator is required to obtain a Burn Permit (AS 41.15.050 and 41.15.060) during the burn season between May 1 and September 30. Whereas the ADEC Permit to Open Burn primarily is concerned with air quality, this ADNR permit primarily is concerned with fire control.

- ✦ **Cultural Resources Authorizations.** A Field Archaeology Permit must be issued from the SHPO for archaeological field work on state lands. The SHPO also would be consulted by the COE as it exercises its National Historic Preservation Act Section 106 responsibilities. The SHPO must concur that cultural resources would not be adversely affected, or that proper procedures would be used to minimize or mitigate impacts that would occur.
- ✦ **Mining License.** A mining license would be required before the mine entered production.
- ✦ **Fish Passage.** AS 16.05.840 (Fishway Act) requires that an individual or governmental agency notify and obtain authorization from ADNR for activities within or across a stream used by fish if the department determines that such uses or activities could represent an impediment to the efficient passage of fish. Culvert installation, stream realignment or diversion, dams, low-water crossings, and construction, placement, deposition, or removal of any material or structure below ordinary high water all require approval from ADNR. Construction activities also must be coordinated with critical spawning periods of anadromous fish.
- ✦ **Fish Habitat Permit (Anadromous Fish Act).** AS 16.05.870 (Anadromous Fish Act) requires that an individual or governmental agency provide prior notification and obtain approval from ADNR “to construct a hydraulic project or use, divert, obstruct, pollute, or change the natural flow or bed” of a specified anadromous water body, or “to use wheeled, tracked, or excavating equipment or log-dragging equipment in the bed” of a specified anadromous water body. All activities within or across a specified anadromous water body and all instream activities affecting a specified anadromous water body require approval from ADNR.

Alaska Department of Environmental Conservation (ADEC)

- Certificate of Reasonable Assurance for Section 402 and 404 Permits
- Waste Disposal Permits
- Air Quality Control Permit to Construct and to Operate
- Air Quality Permit to Open Burn
- Approval to Construct and Operate a Public Water Supply System
- Plan Review for Non-Domestic Wastewater Treatment System
- Non-Domestic Wastewater Disposal Permit
- Plan Review and Construction Approval for Domestic Sewage System
- SPCC Plan Review Approval
- Oil Discharge Prevention and Contingency Plan (winter road option only)
- Storm Water Discharge Pollution Prevention Plan
- Food Sanitation Permit
- ✦ **Certificate of Reasonable Assurance for Section 402 and 404 Permits.** Activities involving discharge of wastewater or fill material into waters of the United States are not only governed by the terms and conditions of a CWA Section 402 NPDES Permit from EPA and a CWA Section 404 Permit from the COE, but also require a Certificate of Reasonable Assurance from the State of Alaska. These certificates can only be issued if ADEC can state that the proposed activity would comply with



Section 401 of the CWA and that any discharge would comply with applicable state water quality standards.

- ✦ **Waste Disposal Permits.** A waste disposal permit is required to establish, modify, or operate a waste disposal facility. Public notice is required for this permit, and permits are issued for periods of as long as 5 years. For the Pogo project, definitions of solid waste include the dry stack tailings pile; the tailings with cyanide residue to be redeposited underground; potentially acid-generating waste rock, which could present an environmental problem associated with management of the waste material; and disposal of construction debris and garbage. A soil absorption system also would be covered, and domestic solid waste may be covered.
- ✦ **Air Quality Control Permit to Construct and to Operate.** The construction, modification, and operation of mining facilities that produce air contaminant emissions require a state Air Quality Control Permit to Construct and a separate Air Quality Control Permit to Operate. The determination to require a permit is based on the source location, total emissions, and changes in emissions for sources specified in 18 AAC 50.300(a). Generally, air quality must be maintained at the lowest practical concentrations of contaminants specified in the Ambient Air Quality Standards of 18 AAC 50.020(a) (suspended particulates, sulfur oxides, carbon monoxide, ozone, nitrogen dioxide, reduced sulfur compounds, and lead). An Applicant must submit an application and supplemental information as required by 18 AAC 50.300(b). Permits are issued for a maximum 5-year period, renewable by the same procedure as the original application.
- ✦ **Air Quality Permit to Open Burn.** If the Applicant were to contemplate open burning of cleared vegetation or non-commercial timber, a separate Air Quality Permit to Open Burn would be required. Whereas the ADNR Burn Permit primarily is concerned with fire control, this ADEC permit primarily is concerned with air quality.
- ✦ **Approval to Construct and Operate a Public Water Supply System.** Prior to start of construction, ADEC must approve, in writing, detailed engineering reports, plans, and specifications for the construction, alteration, or modification of a public water system. Once construction has been completed, ADEC must approve operation of a public water system.
- ✦ **Plan Review for Non-Domestic Wastewater Treatment System.** Plans for disposal of wastewater from milling operations and other non-domestic wastewater sources are required as part of an application for a state Wastewater Disposal Permit and an NPDES Permit. ADEC would review an NPDES application for adequacy under its Section 401 Certificate of Reasonable Assurance authority. ADEC must review and approve treatment facility plans.
- ✦ **Non-Domestic Wastewater Disposal Permit.** ADEC also must authorize the discharge of wastewater into or upon all waters and land surfaces of the state. If injection wells are part of the Wastewater Disposal Plan, the requirements of EPA's Underground Injection Control Class V Wells must be met in the state Non-domestic Wastewater Permit.
- ✦ **Plan Review and Construction Approval for Domestic Sewage System.** The construction and operation of facilities that collect, treat, and dispose of wastewater is governed by a plan review to ensure that minimum standards are applied. Plans for disposal of gray water, sewage, or process water must be reviewed prior to construction of facilities that involve subsurface wastewater disposal. Detailed

engineering reports, plans, and specifications must be certified by a registered professional engineer.

- ✦ **SPCC Plan Review Approval.** ADEC would use its CWA Section 401 certification authority to review the SPCC Plan required by EPA for storage of large quantities of oil.
- ✦ **Oil Discharge Prevention and Contingency Plan.** Approval of an oil discharge contingency plan is required prior to commencement of operation of vessels and oil barges on state waters, or for oil terminal facilities capable of storing 10,000 barrels or more. These contingency plans are reviewed every 3 years. For the Pogo Mine project, this plan would be required only if the winter road access option that would require large fuel storage volumes at the mine site were selected.
- ✦ **Storm Water Discharge Pollution Prevention Plan.** ADEC would use its CWA Section 401 certification authority to review the Storm Water Discharge Pollution Prevention Plans required by EPA for construction activities that would disturb the ground surface and potentially lead to runoff pollution.
- ✦ **Food Sanitation Permit.** Construction and operation of permanent, temporary, and mobile food services, regardless of whether there is a charge for food, are governed by the Alaska Eating and Drinking Establishment Regulations, which include provisions for plan review and issuance of a food service permit.

Department of Transportation and Public Facilities (ADOT/PF)

- Driveway Permit
 - ✦ **Driveway Permit.** ADOT/PF uses state highway standards to review and approve plans for modifying, realigning, or constructing state roads, including driveways or roadways entering them.

1.9 Existing Permits and Approvals

To date, a number of permits have been obtained by the Applicant during the course of surface and subsurface exploration. The major permits, their nature, and where to find additional information about them are described below.

Army Corps of Engineers (COE) – Leroy Phillips, Army Corps of Engineers, P.O. Box 6898, Elmendorf AFB, AK 99506-6898; Phone: (907) 753-2828

- CWA Section 404 (wetlands) permit to fill 14 acres of wetlands to construct access roads and rock storage pads (March 4, 1999)

Environmental Protection Agency (EPA) – Cindi Godsey, 222 West 7th Avenue, Anchorage, AK 99513; Phone: (907) 271-6561

- NPDES Storm Water Construction General Permit coverage notice (November 2, 1999)

Alaska Department of Natural Resources (ADNR) – Steve McGroarty, Division of Mining, Land and Water Management, 3700 Airport Way, Fairbanks, AK 99709-4699; Phone: (907) 451-2795

- Miscellaneous Land Use Permit for use of the Goodpaster Winter Trail (December 22, 1997)

- Approved Plan of Operations and Reclamation Plan for Advanced Exploration (underground) (March 2, 1999)

Alaska Department of Environmental Conservation (ADEC) – Pete McGee, Watershed Management, 610 University Avenue, Fairbanks, AK 99709; Phone: (907) 451-2101

- Wastewater Disposal Permit to discharge treated mine drainage by way of an underground injection well (March 1, 1999)

Alaska Department of Fish and Game (ADFG) – Jack Winters, Habitat Division, 1300 College Road, Fairbanks, AK 99701; Phone: (907) 459-7289

- Several Fish Habitat Permits for activities potentially affecting anadromous fish streams and fish passage (equipment crossing streams, water withdrawal, ice bridges)

1.10 EIS Structure

The format and content of this EIS follows the CEQ regulations at 40 CFR 1502 and EPA's regulations at 40 CFR 6 Subpart F. The purpose of the EIS is to evaluate the overall direct, indirect, and cumulative impacts of the project alternatives on the mine area as well as adjacent areas. The structure of the EIS accomplishes this evaluation in a four-step process.

First, in Chapter 2 (Alternatives), the project options and alternatives that have been considered by EPA are discussed. The chapter describes how scoping issues were identified, explains how evaluation criteria were developed and how options were screened, and discusses how the alternatives were identified and evaluated. It describes the Applicant's Proposed Project as well as the alternatives, including the No Action Alternative.

In the second step, Chapter 3 (Affected Environment) describes the environment of the project area as it exists today, *before* the project is developed. This description provides a basis against which project development impacts may be measured.

In the third step, Chapter 4 (Environmental Consequences) describes the environmental impacts of the Proposed Action and alternatives, determines the degree of those impacts on the human environment, and discusses whether those impacts could be mitigated. Figuratively, the EIS superimposes the project description (Chapter 2) on the existing environment (Chapter 3) to determine whether impacts would occur (Chapter 4).