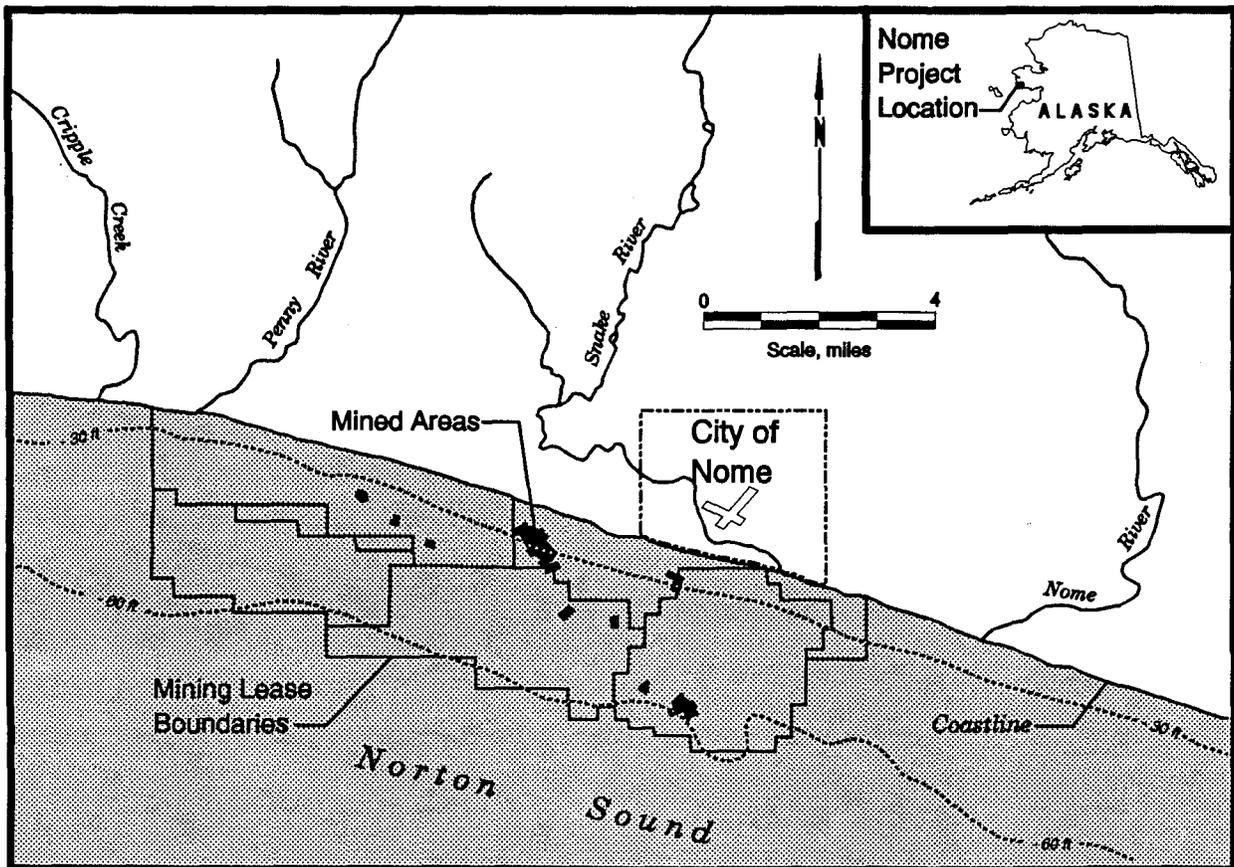


REGULATORY PROCESSES ASSOCIATED WITH METAL-MINE DEVELOPMENT IN ALASKA:

A Case Study of the WestGold BIMA



U. S. DEPARTMENT of the INTERIOR
Manuel Lujan, Jr., Secretary

BUREAU of MINES
T S Ary, Director



OFR 88-92

**REGULATORY PROCESSES ASSOCIATED WITH METAL-MINE DEVELOPMENT
IN ALASKA:
A CASE STUDY OF THE WESTGOLD BIMA**

Final Report

**Prepared for
U.S. Bureau of Mines
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By Lee Ann Gardner ¹

ABSTRACT

This U.S. Bureau of Mines publication presents a case study of the processes used in permitting the Nome Offshore Placer Project, a gold mining project offshore Nome, Alaska which operated from 1985 through 1990. The mining project, developed by Western Gold Exploration and Mining Company, Limited Partnership (WestGold), used the BIMA, which was at the time the largest bucketline mining vessel in the world, to dredge gold from the ocean floor.

This case study reviews the permitting process from the regulators' and industry's perspectives, as well as characterizing the efficiencies and inefficiencies associated with this case. The Federal, State and local laws applicable to the Nome Offshore Placer Project are identified, agency jurisdiction and interagency relationships are explored, and the chronology of the permitting process is examined. The regulatory authorities for both environmental monitoring and post-mining monitoring are delineated. Significant milestones affecting the project and required regulatory submittals are also included.

The case study of the Nome Offshore Placer Project is detailed with respect to agency involvement and coordination, approaches to permitting from both the regulators' and developer's perspective, environmental issues, and permit stipulations which were unique to the project. The advantages and disadvantages of these topics are discussed.

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INTRODUCTION

The United States has well-developed regulatory statutes for evaluating and permitting mine development projects. Mine development permitting can be implemented at the local, State, or national level. The level of government that has jurisdiction on a particular regulatory area is dependent on the ownership of lands affected, what agreements have been made between the government levels, and whether a mining operation will discharge water or air particulates.

According to some industry observers, Federal and State of Alaska regulatory structures concerning mining operations continue to evolve at an accelerating rate. Their perception is that jurisdictions are becoming fuzzy as the domains of regulatory agencies continue to increase. They perceive there to be more overlapping and seemingly inconsistent regulations at Federal, State and local levels, as well as ever-increasing demands by agencies for more information and subsequent delays in regulatory determinations. Some industry observers also feel permitting and environmental monitoring requirements are becoming more stringent in Alaska and that any level of uncertainty that is generated as a result of the existing regulatory framework can adversely affect Alaska's competitive position for exploration and mine development funds.

As a result, the Alaska Field Operations Center of the USBOM contracted with ENSR Consulting and Engineering (ENSR) to conduct a case study of the Nome Offshore Placer Project. This study would provide a chronology of the project's permitting process from both the industry's and the regulators' perspectives, highlighting efficiencies and inefficiencies in the process.

The specific objectives of this study were to:

- Delineate the environmental and permitting regulatory structure and process as they pertained to the Nome Offshore Placer Project.
- Conduct a case study of the environmental and permitting process associated with the Nome Offshore Placer Project, from both the industry's and regulators' perspectives.
- Describe the advantages and disadvantages of the specific approach used by the developer to acquire permits.
- Identify major incentives and disincentives to metal mine development in Alaska as demonstrated by the Nome Offshore Placer Project.

NOME OFFSHORE PLACER PROJECT BACKGROUND

The history of the offshore mining project at Nome dates back to 1962 when Shell Oil Company was issued six leases for submerged State lands within Norton Sound covering approximately 21,750 acres (Figure 1). The lease area extended from approximately 1.6 km (1 mi) east to 16 km (10 mi) west of the City of Nome, and offshore for a distance of approximately 4 km (2.5 mi) (22).

Norton Sound is a typical arctic marine environment. The marine benthic infaunal community inhabiting the sand and cobble substrates consists primarily of polychaetes and mollusks. Physical substrates are constantly changing as a result of natural forces (e.g., ice scouring, storm activity). Red king crab (*Paralithodes camtschatica*), an important commercial and subsistence species, migrates nearshore in winter and spring. Other commonly occurring marine life includes cod, flatfish, sculpin, salmon, seal, walrus, and whale. There are no endangered species occurring there, and the Arctic peregrine falcon (*Falco peregrinus tundrius*) is the only threatened species in the area (22).

An exploration program (Project Glitter) which used the ice sheet as an operating platform was started by Shell Oil Company in the winter of 1963/64; they successfully drilled 568 test holes along the coast. Although potential commercial concentrations of gold were delineated in several areas, the project failed to gain further support from the company (22)².

Using a drillship in 1967, the USBOM drilled an additional 35 holes in the nearshore area as part of a regional program to evaluate heavy metals in the greater Nome area (26). Other offshore surveys using geophysical techniques and sampling of surface sediments were conducted in 1967 and 1968 (22).

In 1969, American Smelting and Refining Company (ASARCO) acquired the property from Shell Oil Company. ASARCO completed an additional 500-hole exploration program using winter ice as an operating platform. They also completed feasibility studies which included bottom photography; current and wave measurements; offshore bulk sampling; pilot scale test mining from the beach; and a 1973 environmental assessment through the University of Alaska (9). Based on the price of gold and the seasonality of operations, ASARCO concluded that the property was unprofitable at that time (22).

However, with the rise in gold prices in 1984, Power Resources Company negotiated an option to purchase the leases from ASARCO. Power Resources Company subsequently initiated permitting activity in August 1984 to bring the property into production (22).

In May of 1985, Inspiration Mines, Inc. became a principal in the project as well as the project operator. Inspiration Mines, Inc. (later called WestGold) was a wholly owned subsidiary of the New York-based Inspiration Resources Corporation (22).

Initial permitting activities were completed on October 3, 1985 with mining operations beginning on October 7 using the barge Kokohead as a platform. The barge Kokohead supported

² Italicized numbers in parentheses refer to items in the list of references at the end of this report.

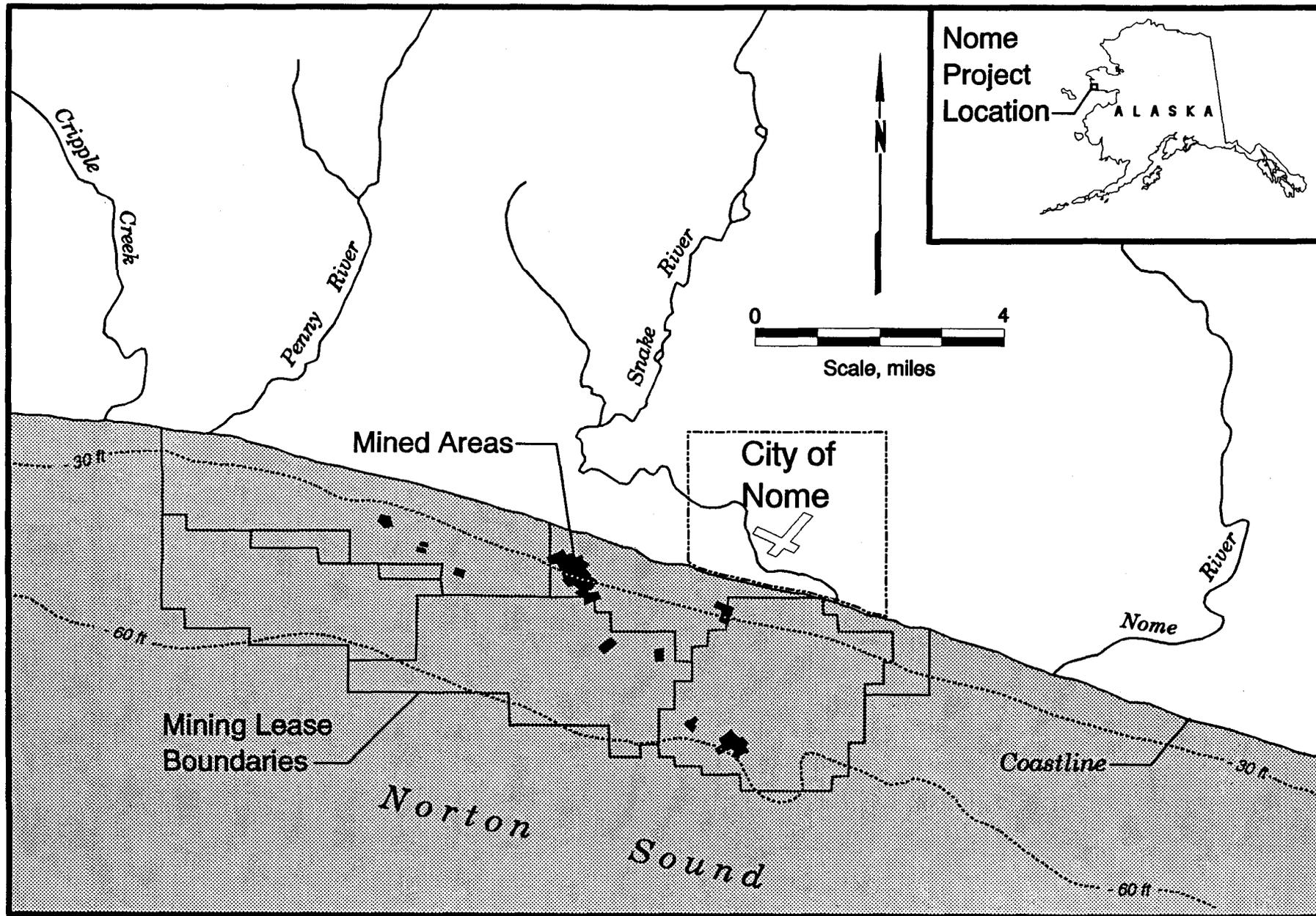


Figure 1. - Location map for the Nome Offshore Placer Project showing leased and mined areas.

temporary housing, a treatment plant, a 7.65-m³ (10-yd³) clamshell bucket operated by a crane, and miscellaneous support equipment. The Kokohead had an estimated associated process water discharge of 1.32 million gallons per day. Because the operation required open water conditions, the first mining season only lasted 29 days before terminating due to sea ice formation. Approximately 62 ounces of fine gold were recovered that season (22).

Several changes occurred within the Nome Offshore Placer Project during 1986. Inspiration Mines, Inc. underwent some internal reorganization and changed its name to Inspiration Gold, Inc. In addition, after an evaluation of the 1985 test mining operation, the company decided to change to a bucket ladder operation and purchased the BIMA, the world's largest active bucket line offshore mining vessel. The BIMA was a mining vessel originally built for Southeast Asia tin mining; it was refurbished in Singapore and transported to Nome for the 1986 mining season. However, in order to put the BIMA into production, the permits obtained for the Kokohead required modification to reflect this change in operation (22).

With the purchase of the BIMA, the scale of the Nome Offshore Placer Project changed immensely. The BIMA was approximately 170 m (558 ft) long, 43 m (140 ft) wide, and 45 m (148 ft) high. The bucket ladder was 88 m (288 ft) long, contained 134 buckets with 0.85 m³ (1.11 yd³) capacity each, had a top speed of 40 buckets per minute, and was capable of digging to a depth of 45 m (148 ft) below sea level. The depth of cut was 3 m (10 ft) below the seafloor. It was capable of recovering a maximum of 45,960 m³ (60,110 yd³) of sediment per day under optimal conditions, and had an associated process water discharge of 58 million gallons per day. In Nome, the BIMA typically processed 7,600 to 15,300 m³ (10,000 to 20,000 yd³) of sediment per day due to existing environmental conditions (e.g., glacial clay sediments with exceedingly high shear strengths; frequent summer storms) (11, 20).

In January 1988, Inspiration Gold, Inc. changed its name to Western Gold Exploration and Mining Company, Limited Partnership or hereinafter referred to as WestGold.

During the summer of 1989, concurrent with BIMA operations, WestGold initiated a test program called the Nome Expansion Project (NEP) in which new mining technologies were evaluated for the Norton Sound environment. The barge 250-1 was equipped with a backhoe, a 5-ft diameter bucket wheel, and a remote-operated underwater tramrod (suction dredge). The underwater miner, called Tramrod described in the source (6), was track-mounted and could move over the sea bottom. The different dredging methods were tested in nearshore waters over a three-month period with the underwater miner showing very favorable results in terms of yield and mitigation of environmental impacts relative to BIMA operations (11). The underwater miner was relatively insensitive to sea state and ice cover and presumably would have added 60 to 90 days to the mining season at Nome (20). It is highly likely that, if WestGold operations had continued in Nome, the underwater miner would have been incorporated into the production phase of the Nome Offshore Placer Project. Because the NEP was permitted separately from the BIMA operation (agency requirements included permits, plume modeling, and an individualized environmental monitoring program), it is not included here as part of the BIMA case study. BIMA mining operations continued at Nome on a seasonal basis until September 1990, when the BIMA mining operation was shut down. During the course of the Nome Offshore Placer Project from 1985 through 1990, more than 121,000 ounces of gold were recovered from less than 2 percent (Figure 1) of the lease area (20). It is estimated that during the years of BIMA production, the operation injected approximately \$8 million annually into the local Nome economy (5).

ENVIRONMENTAL AND PERMITTING REGULATORY PROCESS

The Nome Offshore Placer Project occurred offshore of Nome, Alaska on submerged State lands. The project involved the dredging of sediments from the seafloor. Those sediments were processed onboard the BIMA, using a physical process employing trommels and jigs to recover gold. The naturally occurring sediment-water slurry of tailings was then discharged back into the dredged area. The project activities under regulatory scrutiny included the dredging of sediments, the discharge of process water, and the discharge of dredged material back onto the seabed, approximately along the dredged path and to the rear of the advancing dredge.

The Nome Offshore Placer Project, as an offshore mining project, was unique for the United States and, therefore, presented many opportunities for creating new protocols in regulations. As noted by one regulator,³ "The closest analogue was harbor dredging. However, the Nome Offshore Placer Project had significant differences from harbor dredging, which did not fit into the regulatory mold. Many rules and regulations applied, but specific requirements were formulated to fit the situation of the Nome Offshore Placer Project. Because the project was unique and because many different agencies had regulatory jurisdiction, the process of formulating the requirements for the Nome Offshore Placer Project took time and coordination." As a result of the project being located within State waters and the Federally mandated coastal zone, other approvals were required at the State and local levels. A summary of the environmental and permitting regulatory structure and process in place for the Nome Offshore Placer Project follows.

Jurisdiction

Several agencies had regulatory jurisdiction over the Nome Offshore Placer Project. This jurisdiction was established through a variety of legislation at the Federal and State level. This included the National Environmental Policy Act (NEPA) of 1969; the Rivers and Harbors Act of March 3, 1899; the Clean Water Act; State of Alaska Water Quality Standards; and Standards of the Alaska Coastal Management Program enacted through the Federal Coastal Zone Management Act of 1972. A brief description of each follows.

"In 1969, the National Environmental Policy Act (NEPA) was passed to require all Federal government agencies to integrate environmental concerns into their planning and actions. NEPA created the Council on Environmental Quality (CEQ) and the Environmental Impact Statement (EIS)...The purpose of an EIS...[was]...to provide a consistent process for and record of an agency's efforts to formulate and evaluate actions in terms of their environmental consequences" (19).

The CEQ developed guidelines to implement NEPA (40 CFR Parts 1500-1508) and in effect to tell "...Federal agencies what they must do to comply with the procedures and achieve the goals of the Act. The ultimate objectives are to produce NEPA documents which...concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail...and generally...not to generate paperwork--even excellent paperwork--but to foster excellent action.' After declaring these laudable goals, the Guidelines proceed to describe when

³ Refer to the section titled "Nome Offshore Placer Project Case Study" for discussion of interviews.

the NEPA process should be invoked; when an EIS should be required and how it should be structured; and how the CEQ, Federal agencies, and the public are to interact in the process" (17).

Pursuant to NEPA and the CEQ Guidelines, regulatory agencies prepare a combined Decision Document and Environmental Assessment (EA) for a proposed activity. This document determines the need for a public interest of the proposed activity, and to assess impacts on endangered species, historic properties, water quality, general environmental effects, fish and wildlife values, navigation, safety, mineral needs, and other public interest factors. The EA presents an evaluation of the probable impacts, including cumulative impacts of the proposed activity and its intended use on the public interest (13). From this process, a Federal agency can choose to issue a "Finding of No Significant Impact" or FONSI. As stated in the CEQ Guidelines, the FONSI briefly presents the reasons why an action will not have a significant effect on the human environment and for which an EIS will therefore not be prepared. The CEQ Guidelines ensure that all Federal agencies operate under uniform standards when conducting environmental reviews (19).

For the EA, "...evaluation of the probable impacts which the proposed activity may have on the public interest requires a careful weighing of all those factors which become relevant in each particular case. The benefits which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. The recommendation whether to authorize a proposal, and if so the conditions under which it will be allowed to occur, are therefore determined by the outcome of the general balancing process. That decision should reflect the national concern for both protection and utilization of important resources"(13).

In Alaska, this EA process occurs within Federal agencies and can run concurrent with the actual permitting process. During the permitting process, an applicant submits permit applications to Federal, State and local agencies having jurisdiction for particular activities. Descriptions of the types of activities, relevant to the Nome Offshore Placer Project and covered by specific permits, are discussed in the following paragraphs.

Under Federal regulations, when work is performed in or affecting navigable waters of the United States, a U.S. Corps of Engineers (USCOE) Department of the Army Permit is required pursuant to Section 10 of the Rivers and Harbors Act of March 3, 1899 (33 U.S.C. 403). The discharge of dredged or fill material into waters of the United States also requires USCOE authorization pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344).

In addition, discharge into waters of the United States requires a National Pollutant Discharge Elimination System (NPDES) permit be issued by the U.S. Environmental Protection Agency (USEPA) pursuant to provisions of the Clean Water Act (33 U.S.C. 1251). Section 403 of the Clean Water Act requires that NPDES permits for such ocean discharges be issued in compliance with USEPA's Section 403(c) guidelines. These guidelines, referred to as the Ocean Discharge Criteria (40 CFR Part 125, Subpart M), are for preventing unreasonable degradation of ocean waters.

For both the USCOE and USEPA permits, Section 401 of the Clean Water Act of 1977 and provisions of the State of Alaska Water Quality Standards (18 AAC 70), require that the Alaska Department of Environmental Conservation (ADEC) issue a Certificate of Reasonable Assurance. This certifies that the proposed activity, as well as any discharge which may result, is in compliance with the requirements of the Clean Water Act, the Alaska Water Quality Standards,

and the Standards of the Alaska Coastal Management Program (6 AAC 80). In addition, with the concurrence of USEPA and ADEC, under Alaska Statute 46.03 and 18 AAC 15, the ADEC can issue a Waste Disposal Permit for the discharge of effluent until such time as the USEPA NPDES permit becomes effective; at that time, the NPDES permit supersedes the Waste Disposal Permit.

To assist in coordinating Federal and State responses within a regulatory framework, the State of Alaska has developed a system for reviewing and processing all resource-related approvals through the Alaska Coastal Management Program (ACMP) project consistency review. Through the Federal Coastal Zone Management Act of 1972, the State of Alaska adopted the Alaska Coastal Management Act (ACMA) in 1977. The ACMA provides for (1) a coordinated review program based on existing regulatory agency authorities and (2) the establishment of the Alaska Coastal Policy Council to govern development and implementation of the ACMP. "The ACMP consistency review regulations (6 AAC 50) include procedures for project review, issue resolution and decision-making, with the full involvement of State agencies, affected local coastal districts, and the project applicant"(25).

Permitting Process and Required Submittals

The State project consistency review is initiated with the developer's submittal of their Coastal Questionnaire to the Alaska Division of Governmental Coordination (ADGC). Through this questionnaire, ADGC identifies which permits or submittals would be required by the three State resource agencies [i.e., the Alaska Department of Natural Resources (ADNR), the Alaska Department of Environmental Conservation (ADEC), and the Alaska Department of Fish and Game (ADF&G)] in accordance with Alaska Statutes and the Alaska Administrative Code. If permits from more than one State agency or from a Federal agency are required, the consistency review is coordinated by a regional office of ADGC. If permits from only one State agency are required, the State agency responsible for issuing those permits coordinates the review. The State consistency review process then determines the project's consistency with the standards of the ACMP and approved district coastal management programs (23, 24).

To initiate the consistency review process, the developer must submit an application packet that typically includes the coastal project questionnaire, copies of any necessary State permit applications, copies of any necessary Federal permit applications, and any additional pertinent information (including public notices from agencies) (ADGC, 1990). The USCOE Section 10/404 and USEPA NPDES permit applications each include additional submittal requirements, i.e., the issuance of Certificates of Reasonable Assurance by ADEC that the proposed activity is in compliance with the requirements of Section 401 of the Clean Water Act.

For the USEPA NPDES permit, the developer may also voluntarily submit an Ocean Discharge Criteria Evaluation (ODCE) data base with its USEPA NPDES Application to expedite the review process. If the applicant chooses not to submit the ODCE data base, the USEPA must still prepare the ODCE document, gathering the data themselves, which can add significantly to the processing time line. The ODCE data base is provided by the applicant to assist the USEPA in making the determination, as required under Section 403(c) of the Clean Water Act, as to whether unreasonable degradation of the marine environment will occur as a result of the discharge. The determination of unreasonable degradation is required by the Act to be based on the following factors: quantities, composition, and potential for bioaccumulation or persistence of the pollutants discharged; potential transport of such pollutants; the composition and vulnerability of biological communities exposed to such pollutants; the importance of

receiving water area to the surrounding biological community; the existence of special aquatic sites; potential impacts on human health; impacts on recreational and commercial fishing; applicable requirements of approved Coastal Zone Management Plans; and marine water quality criteria developed pursuant to Section 304(a)(1) of the Act.

Significant Milestones

When permits from more than one State or Federal agency are required (e.g., in the case of major projects), the consistency review is coordinated by a regional office of ADGC. If permits from only one State agency are required (with no Federal agency permits necessary), the State agency responsible for issuing those permits coordinates the review. For both scenarios, the coordinating agency must complete the review of the project within 30 or 50 days. A 30-day review schedule is used when all associated State permits must, by statute or regulation, be issued in 30 days. A 50-day review schedule is used for projects with approvals requiring a 30-day public notice. For a 50-day consistency review initiated on Day 1, requests for additional information by regional reviewers are required by Day 25; public and agency reviewers must submit comments by Day 34; the proposed consistency determination is made by Day 44; and the conclusive consistency determination is issued by Day 50. The coordinating agency may grant extensions to these schedules if it is requested by the applicant or to receive additional information requested by a resource agency. Following the coastal consistency determination by ADGC, State agencies must issue their respective permits within five days of the determination (23, 24).

Concurrent with the State consistency review are USCOE Section 10/404 and USEPA NPDES permit reviews that ideally run on 60-day and 180-day time lines, respectively. Typical processing for Federal permits consists of the issuance of a Public Notice within 15 days of receipt of all information and a subsequent 30-day comment period for significant projects. The proposed project is reviewed by the issuing agency and other agencies (local, State and Federal), special interest groups, and the general public. Reviewers at this time may submit comments to ADEC as input for their State Certification of Reasonable Assurance or to ADGC as input for their State Determination of Consistency with the ACMP. The issuing agency considers all comments and consults other Federal agencies, if appropriate. The issuing agency may grant extensions to their review schedule if the applicant fails to submit information or to receive additional information requested by a reviewer. A public hearing may be held, if needed, and then the issuing agency makes the decision to issue or deny the permit. A decision to issue will not be made unless the applicant is in receipt of all other Federal, State, or local permits required by law. For example, denial of ADEC's Section 401 Water Quality Certification or the ADGC's consistency finding with the ACMP are automatic reasons to deny an application. Non-compliance with the EPA's 404(b)(1) guidelines is also an automatic denial, unless it is precluded by economic impacts to navigation and anchorage (13).

Discussions with regulators indicate that the Federal permit review time lines are typically much longer, even if no controversial issues exist. Therefore, the 60-day and 180-day time lines are an agency goal but, in reality, are not often met.

Regulatory Authority for Environmental Monitoring

There are mechanisms built into both the Federal and State permitting process to allow regulatory agencies to require environmental monitoring programs. If the USEPA determines that the discharge to be regulated under the NPDES permit will cause unreasonable

degradation, an NPDES permit will not be issued. However, if a determination of unreasonable degradation cannot be made because of lack of sufficient information, the USEPA must then determine whether a discharge will cause irreparable harm to the marine environment and whether there are reasonable alternatives to on-site disposal. To assess the probability of irreparable harm, the USEPA is required to make a determination that the discharger, operating under appropriate permit conditions, will not cause permanent and significant harm to the environment during the period in which monitoring will take place. If further data gathered through monitoring indicate that continued discharge may cause unreasonable degradation, the discharge must be halted or additional permit limitations must be established. Under Section 308 of the Clean Water Act, the EPA must require a discharger to conduct monitoring to determine compliance with effluent limitations and to assist in the development of effluent limitations.

The State of Alaska also has the regulatory authority to require environmental monitoring through its ACMP project consistency review and its conclusive consistency determination. Per the Alaska Administrative Code (6 AAC 50), the conclusive consistency determination applies to the following State and Federal authorizations: USEPA NPDES permits, USCOE Section 10/404 authorizations, ADEC Section 401 Certificates of Reasonable Assurance for NPDES and USCOE permits, and the ADNR Plan of Operations. Based on its review, the ADGC can determine that a proposed activity is consistent with the ACMP provided that certain project-specific stipulations (i.e., environmental monitoring requirements) are met.

Regulatory Authority for Post-Mining Requirements

The State of Alaska can stipulate post-mining requirements through the Alaska Coastal Management Program (6 AAC 50) that provides authority for conditioning ADNR Approved Plans of Operations, USEPA NPDES permits, or USCOE Section 10/404 permits. Post-mining requirements can also be stipulated by the ADNR in the Approved Plan of Operations (Miscellaneous Land Use Permit), in accordance with Alaska Statutes 38.05 (Alaska Land Act) and Alaska Administrative Code 11 AAC 86.800 through 11 AAC 86.815.

The USEPA can stipulate, as a condition of NPDES permit issuance, that there be post-mining requirements. Typically, post-mining monitoring may be required in the USEPA NPDES permit through ADEC's Section 401 Certificate of Reasonable Assurance.

The USCOE does not impose monitoring as part of its post-mining requirements in the Department of Army permits. The USCOE has imposed reclamation requirements for onshore mining projects as part of the post-mining requirements of its permit. The USCOE does not require monitoring because that would imply that the USCOE regulates 402 discharges which are under USEPA jurisdiction (13). Instead, post-mining monitoring is typically attached to a USCOE permit through ADEC's Section 401 Certificate of Reasonable Assurance.

NOME OFFSHORE PLACER PROJECT CASE STUDY

For each topic presented below, there is an initial description of what occurred on the Nome Offshore Placer Project with regards to that topic (if appropriate), followed by opinions concerning that topic from the developer's and regulators' perspectives. The two groups' perspectives, unless noted otherwise, are based on information gathered from interviews with agency (Federal, State, local) and WestGold project personnel (1,2,4,7,8,10,13-16,18,21).

The opinions expressed by interviewees are segregated by group, where possible, and are presented in this case study under "Perspectives." The author cautions that the information contained under "Perspectives" is based on interviewees' own perceptions and may or may not accurately reflect actual events that took place.

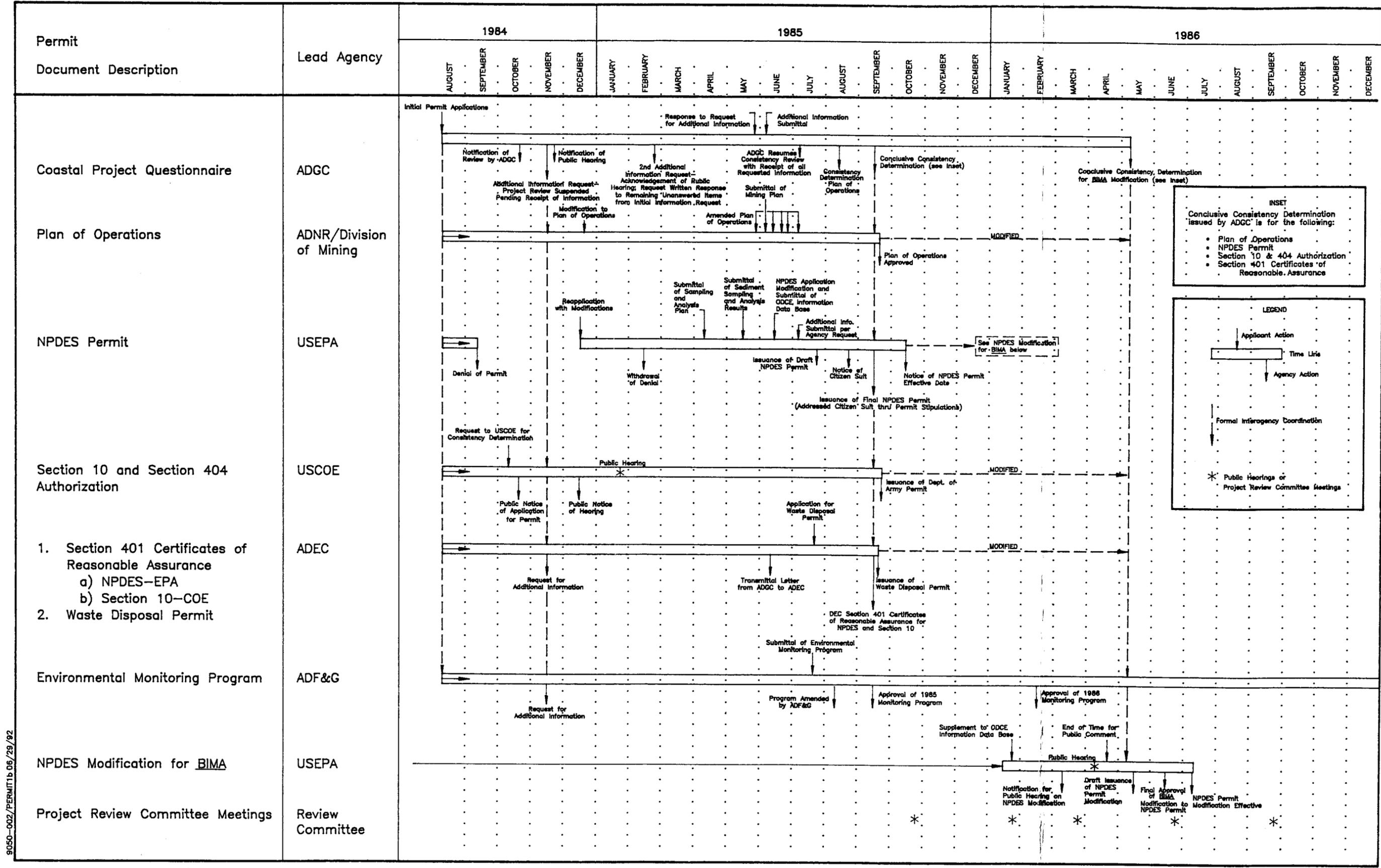
Agency Involvement/Agency Coordination

The agencies involved are those indicated by the permitting time line provided in Figure 2 and the project time line in Figure 3. The permitting process was coordinated by ADGC through the ACMP consistency review process.

Under NEPA, the USCOE and the USEPA were required to prepare an EA for the Nome Offshore Placer Project to determine whether the marine environment would be irreparably harmed by the project. Initially, both agencies determined that Kokohead operations would not have a significant impact on the environment and, therefore, a FONSI was issued and no EIS required. When WestGold requested an increase in discharge volume to accommodate the BIMA, the USEPA determined that a separate EA would not be required since such a document was only required for a "new source." The USEPA determined that this permit action was a modification to an existing permit and was an existing operation; consequently, the issuance of a new source permit was not required. Only the discharge of pollutants by a new source was deemed a major Federal action subject to the NEPA process (i.e., preparation of an EA, followed by a FONSI or EIS). Therefore, in the case of the BIMA, no EA was prepared and consequently no EIS was required.

Perspectives--Developers and regulators commented on the fact that, because of the lengthy duration of the project, new industry and agency personnel were constantly being assigned through the course of the project. This was a function of high employee turnover typical of mining; of high turnover within consulting firms; and of the tendency for agency personnel to transfer within and between agencies. These personnel changes impacted the project since extra time and effort were required to educate newcomers and "bring them up to speed" on the project. This became more of a problem as time went on and project history grew.

Regulators felt that agency requests were often coordinated. Although there was no lead agency formally designated to deal with environmental matters, the ADGC took the lead coordination role as delineated under the ACMA. Most regulators felt the ADGC was diligent in distributing project information to all interested parties. In some cases, it was noted, particular agency requirements were communicated directly to WestGold. Regulators noted that time lines set out under CZM drove the process. They noted that, "Due to the complexity of the original permit [and its modification for the BIMA], the time frames in processing the permit were kept to a minimum to facilitate the project staying on schedule." From most regulators' perspective, any untimeliness during the Nome Offshore Placer Project permitting process was



INSET

Conclusive Consistency Determination issued by ADGC is for the following:

- Plan of Operations
- NPDES Permit
- Section 10 & 404 Authorization
- Section 401 Certificates of Reasonable Assurance

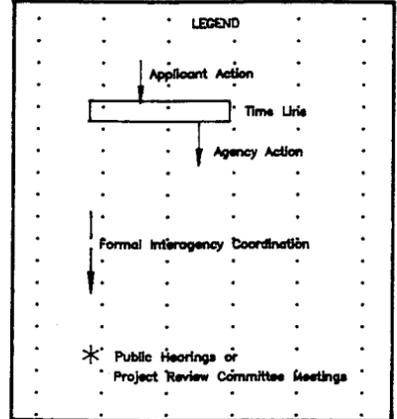
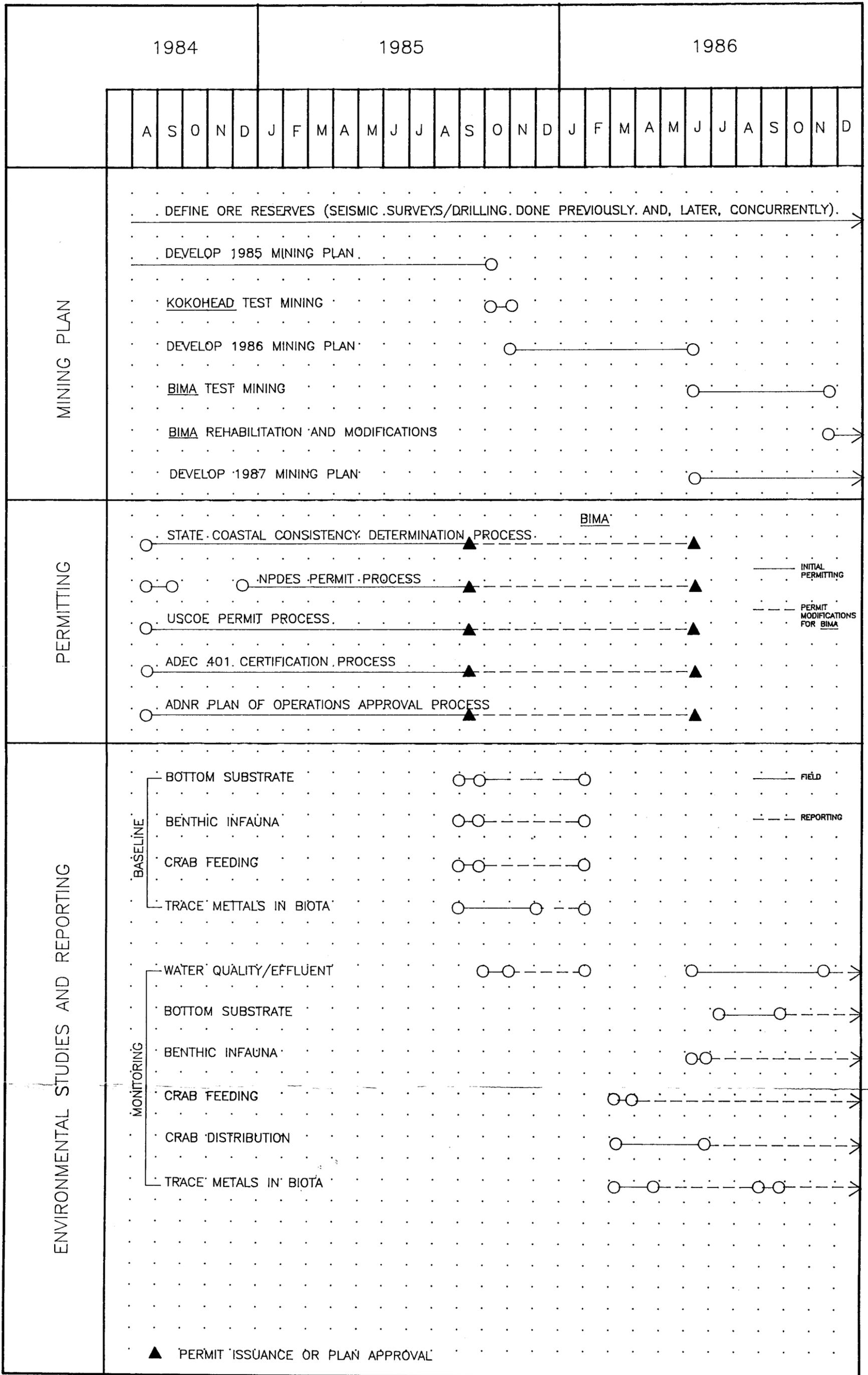


Figure 2: Permitting Time Line for Nome Offshore Placer Project During 1984, 1985 & 1986.

9050-002/PERMIT1b 06/29/92



9050-002/FIG3 1.0 3/16/92

Figure 3: Project Time Line for Nome Offshore Placer Project During 1984, 1985 & 1986.

not due to a lack of coordination by ADGC. Instead, most regulators noted that WestGold's application materials were often incomplete. This led to additional information requests from regulators; all regulators felt they did their part in expediting these requests, given their time and budgetary constraints. Many regulators felt that inadequate submittals by WestGold resulted in several requests for additional information; the permitting time line for the Nome Offshore Placer Project (Figure 2) shows agency requests for additional information for the Plan of Operations, the NPDES permit application, and Section 401 Certificates of Reasonable Assurance.

Some **developers and regulators** noted, however, that even with these processing delays, the project was never delayed by lack of a permit (although, in selected instances, they said they came close).

Most **developers** felt that coordination was poor and that the agencies usually delayed permit issuance until the last possible minute. Developers felt that this was not in the project's best interest and that these "last minute" actions ultimately helped to drive a wedge between developers and regulators. One developer noted that these incidents, and the perception of unreasonable demands, "...contributed to a feeling that [the] agencies were talking a different language."

Approach to Permitting

WestGold and the regulatory agencies adopted a unique, shared risk approach to the permitting of the Nome Offshore Placer Project. Since little information existed on potential impacts from a large scale offshore mining operation, agencies thought that more could be gained by monitoring actual operational performance against criteria established on the basis of their best professional judgement. By evaluating the mining operation on an ongoing basis against performance criteria, a sound foundation for permitting future offshore mining operations could be established. From this project, realistic "best management practices" could be developed and relevant environmental parameters identified. Additionally, the quantification of direct dredging impacts and recolonization rates would provide the basis for development of reduced long-term monitoring strategies. The monitoring strategies would reflect expected impacts rather than potential ones (20).

The project was authorized on a tiered basis where risks were shared by industry and the regulatory agencies in manageable and discrete units (i.e., relative risks were kept proportioned; open-ended authorizations were not approved). Regulation was set up in phases, with each phase having well-defined activities. Monitoring and information obtained was immediately disclosed and then used to formulate and define the next phase of regulation. Through this iterative process, environmental issues were addressed and, in many instances, resolved.

Perspectives--Many regulators felt that the tiered approach was a good way to approach a project that had so many unknowns up front, since there were little baseline data or impact assessments. Their other alternative would have been to deny the permits until all questions could be answered. The tiered approach limited potential impacts at each phase of the project; baseline resources were identified during monitoring. The approach was intended to ultimately limit costs to industry by reducing subsequent monitoring as issues were resolved. The approach was flexible; regulators imposed areal and operational restrictions, but felt they gave WestGold time to demonstrate that the operation could, for example, meet water quality standards.

Opinions amongst **developers** varied. One developer summarized their approach to permitting as follows: "WestGold spent more than they needed to and did more than they had to. [They] got [the] time line they wanted. It was a shared risk approach. There was no EIS; instead [WestGold] used those dollars by putting them into monitoring and research and answering questions. [WestGold] addressed significant perceived issues. [The] agencies got information they would not have gotten through the standard EIS process."

However, one **regulator** that at the time of the initial permitting of the Nome Offshore Placer Project, WestGold management "...had purchased the BIMA for 10 cents on the dollar [and] they wanted to put it to work immediately and start producing huge amounts of gold. They were willing to short-cut permitting procedures any way they could, including proposing massive environmental studies and promises of local hire to get the gold production going."

One **developer** expressed the opinion that the approach gave an "open WestGold check" to regulators and environmental consultants. This developer felt that, as a result of this approach, WestGold had lost control of the scope and therefore, the cost of the environmental work; they felt that WestGold was in a position of having no defense against subsequent agency requests. This developer noted that, especially during the later stages of the project, WestGold wanted to minimize costs as much as possible, particularly environmental costs that reduced their "bottom line." However, this developer noted that it seemed to some within WestGold that agencies were demanding more and more each year and that it seemed to take a very long time (if ever) for regulators to finally say, "Enough data."

Other **developers** noted, however, that during the permitting process for the Nome Offshore Placer Project, selected agencies (e.g., USEPA and ADF&G) reconsidered many monitoring requirements under their respective jurisdictions. This ultimately minimized costly sampling, by eliminating components of the monitoring program deemed no longer necessary, when issues and concerns had been addressed.

Environmental Issues

On November 15, 1984, the City of Nome requested the USCOE hold a public hearing in Nome regarding the application by Power Resources Corporation to dredge for gold in the waters of Norton Sound near Nome. The USCOE public hearing was held on January 23, 1985 (Figure 2). Local agencies, including Kawerak, Inc. (the regional nonprofit Native corporation), the Nome Eskimo Community, the King Island Native Corporation, and the Bering Straits Coastal Management Program were particularly active in reviewing and commenting on the application. From the public hearing testimony, and numerous scoping meetings involving the applicant and technical staff from ADEC and ADF&G, a series of 11 environmental issues were identified. These issues were the main focus of the 1985 permitting effort for the project. They were:

1. The project could interfere with present subsistence uses of the area through loss of habitat, accessibility of traditional areas, or by driving animals away from traditional use areas.
2. The project could threaten renewable resources; protection of renewable resources of the area would be essential, particularly for cod, salmon, herring fry, clams, shrimp, crab and seal.

3. The project could lead to increased human health risks as a result of potential mercury contamination of the food chain from naturally occurring cinnabar deposits and fugitive mercury from previous land-based mining operations. Mercury levels in foods that were thought to already have high levels of mercury could increase.
4. The project could increase mercury in the natural environment by disturbing sediments that might have high mercury levels.
5. The project could degrade the natural environment as a result of excessive amounts of turbidity; smothering of habitat would occur due to settling of fines and the turbidity plume could block movement of salmon to streams.
6. The project would rely on a very poor collection of baseline data; only data from a 1973 Norton Sound environmental study by the University of Alaska existed (6). An adequate basis for the assessment of impacts would not be available.
7. The project could disrupt benthic habitat, driving crab away from the Nome area. While changes to both the substrate type and relief will occur, restabilization and recolonization rates for important crab habitat are unknown, as are the effects upon crab.
8. The project could have a major impact on crab through loss of habitat or food source, avoidance of mined areas, or alteration of nearshore behavior.
9. The project would present the risks of fuel spills or weather-related damage which would degrade the local environment and cause extensive pollution of habitat.
10. The project would need to modify the monitoring program to address current issues of concern since these may change over time.
11. The project could adopt a short-term, exploitative perspective, leaving the community of Nome to resolve the various problems that would be left behind. The project could overlook important considerations such as local hire, Native hire, local economic benefits, revenues, and taxes (22).

Perspectives--Developers and regulators agreed that environmental or social considerations were a factor from Day 1 of the project and that WestGold was very interested in informing the local community about their project with respect to those issues and concerns.

At the outset, one **developer** noted that selected individuals at WestGold who had been involved in permitting of other projects, were aware of issues that would certainly come up during the initial permitting process. This developer recalled that issues identified initially included subsistence (protection of the subsistence lifestyle), effects on red king crab and anadromous fish, and polluting the marine waters. The developer noted that WestGold felt that any issues could be handled with a monitoring program and that the mercury issue did not come up until later scoping meetings with agencies.

Permit Requirements

Environmental issues and concerns were handled in two basic ways within the project--permit stipulations and the Project Review Committee.

Stipulations and Monitoring Requirements

Specific stipulations were developed to address issues identified and additional information was submitted to clarify WestGold's actions, internal policies, and ability to operate within the legal framework of State and Federal permits. Specific issues addressed in this manner included onboard use of mercury for beneficiation, fuel spills, weather/shipwreck concerns, disturbance of mercury-laden sediments, interference with migrant salmonids, and navigation hazards (22).

Permits and authorizations were issued, provided that WestGold develop and implement an environmental monitoring program with several elements. Specific monitoring requirements were delineated in the permits to ensure that adequate information was obtained to resolve data deficiencies and to provide an early warning of serious environmental harm. A unique feature of the environmental monitoring program was that each of the components was a flexible part of the program and was reviewed on an annual basis for relevance and satisfaction of monitoring goals. Each component was subject to modification based on agency perceptions and information gathered in the previous year(s) of monitoring. An emphasis of the monitoring program was on flexibility in design so that it could be readily adjusted and modified as study results resolved issues or as improved procedures/technologies were developed (20).

This flexibility was, perhaps, best demonstrated by the final year of environmental monitoring by WestGold in 1991, one year after BIMA operations were terminated. This post-mining study, a requirement of the final Mine Closure Plan to be submitted to ADNR, consisted of only two components: (1) the seafloor bathymetric and side scan surveys; and (2) the benthic infauna recolonization studies.

The environmental studies program for the Nome Offshore Placer Project addressed the biological concerns raised during the project scoping and permitting process. The environmental studies program for the Nome Offshore Placer Project was developed in two phases (Figure 3). The first phase was 1985 baseline biological and physical surveys to collect data in the Nome vicinity and proposed mining locations. The data from these surveys, along with the issues and concerns identified during the permitting process, were used to develop phase two, the flexible long-term environmental monitoring program initiated in 1986 (20).

From the 11 specific issues and concerns identified in the scoping process, a long-term monitoring program was developed that focussed on five general areas. They were: physical changes to the seafloor (water depth, bottom relief, and substrate changes); king crab distribution and abundance; king crab feeding dynamics; biological characteristics of seafloor habitats and recolonization of those habitats after mining; and the potential for trace metals accumulation in the food chain. For the latter, a total of eight priority metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc) were monitored in various marine animals, including red king crab, major crab prey items, several species of fish, and selected marine mammals (20).

In addition to the long-term monitoring program, WestGold was required to monitor water process effluents and sediments as part of the NPDES permit administered by the USEPA and authorized by the ADEC through its Section 401 Certificate of Reasonable Assurance (20).

Perspectives--Most regulators said they felt they were reasonable and clear in their permit stipulations and within their regulatory mandates. They felt they had been lenient in the handling of this project by being flexible with time lines, meeting WestGold's mining schedule by moving at a "deliberate speed," and working with WestGold on their compliance problems rather than simply fining them when they were out of compliance. One regulator mentioned that, "A lot of discussion went on between industry and agency staff to make sure the requirements were clear. There were...modifications, particularly [concerning] monitoring requirements, as problems were identified; for example, sampling close to the BIMA anchors was eliminated when industry called...attention to the navigation [and safety] hazards involved."

Other regulators pointed out that, in the case of the NPDES environmental monitoring program, stipulations were purposely unspecified so that each year's program could be tailored to fit existing information and issues/concerns. One regulator noted, "Such things as recolonization rates and recovery of bottom topography were signaled as important in the early days of permitting and were reaffirmed at the...[NPDES] permit renewal [in 1990] and again when post-mining monitoring was determined [in 1991]."

Developers had very different opinions regarding the stipulations and monitoring requirements placed upon them. One developer stated, "It was our duty to meet the regulatory requirements designed by agencies. This was very difficult. For example, the crew would be fired if they threw a paper cup off the BIMA, but some of the people of Nome put all their garbage out on the ice. There were two standards. A second example [was] we had to stop operations for the walrus, but we could see decapitated walrus [for ivory] laying on the beaches. We had to be more than good citizens... Here we were working in an area where there was a plume being produced by an onshore causeway... Add to it, the Alaska Gold dredge plume. Alaska Gold's silty pond overflow was being discharged directly into the sea. This increased the credibility gap of what the BIMA was being required to do and what everyone knew was happening in practice. Add to it the fact that the Yukon River discharged every summer into Norton Sound with a 200-mile long natural mixing zone. It was like being prosecuted for wetting the sidewalk--during a thunderstorm and flood... The agencies apparently had to represent uninformed public opinion--not follow their own training." This developer also noted that, at times, requirements were unattainable. They noted that one post-mining requirement was to place the "...sediments exactly where you dug them from--but impossible in practice. If an agency had chosen to enforce the requirement, then the BIMA would have worked for only one day."

Another developer commented that some regulators never explained the rationale (biological, physical, chemical) behind permit stipulations or monitoring requirements. This developer felt "...it was very productive to be able to discuss in person with [the regulators their]...objectives behind regulatory requirements." They felt that an understanding by the permittee, as to why they were collecting certain types of data, would ultimately facilitate regulators getting the information they were looking for. After all, how could one be asked to answer a question when one did not know what the question was?

Project Review Committee

Monitoring requirements and stipulations did not address the concerns and perceptions within the agencies and general public that could also ultimately affect the project. Another mechanism was needed to build community support on the project and to show that their concerns were being addressed in the project (20). Therefore, a third element, the Project Review Committee (PRC), was established to monitor project activities and build community support by addressing issues and concerns (Figure 4). This committee was modelled after other advisory committees previously established in such groups as the International North Pacific Fisheries Commission, the Law of the Sea, and the North Pacific Fisheries Management Council (16). The PRC also had similarities to the U.S. Minerals Management Service (MMS) Task Force established to evaluate marine mineral prospects in the U.S. Exclusive Economic Zone (17).

The PRC for the Nome Offshore Placer Project consisted of State and Federal agencies, project staff and consultants (ENSR, Engineering Hydraulics, Inc., University of Alaska Institute of Marine Science, and Meacham and Associates), regional and local regulatory groups, regional native groups, and special interest groups (Figure 4) identified during the permitting process. All interested groups were invited; private citizens participated through the organized groups, but not as individuals (21, 22). The meetings were chaired by WestGold's consultant, ENSR (previously known as NORTEC). ENSR scheduled and established the agenda for each meeting, provided the meeting materials, made most meeting arrangements, and composed/finalized the meeting minutes.

The PRC met on a quarterly basis, alternating between Anchorage and Nome. Meetings in Nome (March and September) were held to encourage local community participation; Anchorage meetings (January and June) were held to encourage agency participation. To ensure input from the Nome Native community at Anchorage meetings, WestGold provided plane fare for two Nome Native community leaders to attend. The two individuals were selected by the Nome Native community. Travel expenses incurred by environmental consultants were also paid by WestGold. State and Federal agencies were responsible for meeting travel expenses incurred by their staff.

The annual meeting held in January was the most well-attended and was the meeting at which all data from the previous year's monitoring were presented. At that meeting, a draft Annual Report distributed in advance to committee members, was presented by WestGold and its consultants. To encourage candid participation by agency and local community members alike, the meetings were run as informally as possible with meeting minutes reported in a generalized manner. Meetings were not tape recorded and representatives of the media/press were not notified (note, however, when representatives of the media did attend, they were allowed to stay).

The PRC formed the primary mechanism for information transfer to all interested parties on a regular basis. It provided an opportunity for groups/agencies to track the mining activity, comment on those activities, and to see the ongoing results of those efforts. The PRC provided a casual forum for ongoing interaction and a problem-solving "Think Tank." With this forum, the political aspects of the permitting process were minimized and the technical aspects were emphasized (3). Specific functions of the PRC were as follows:

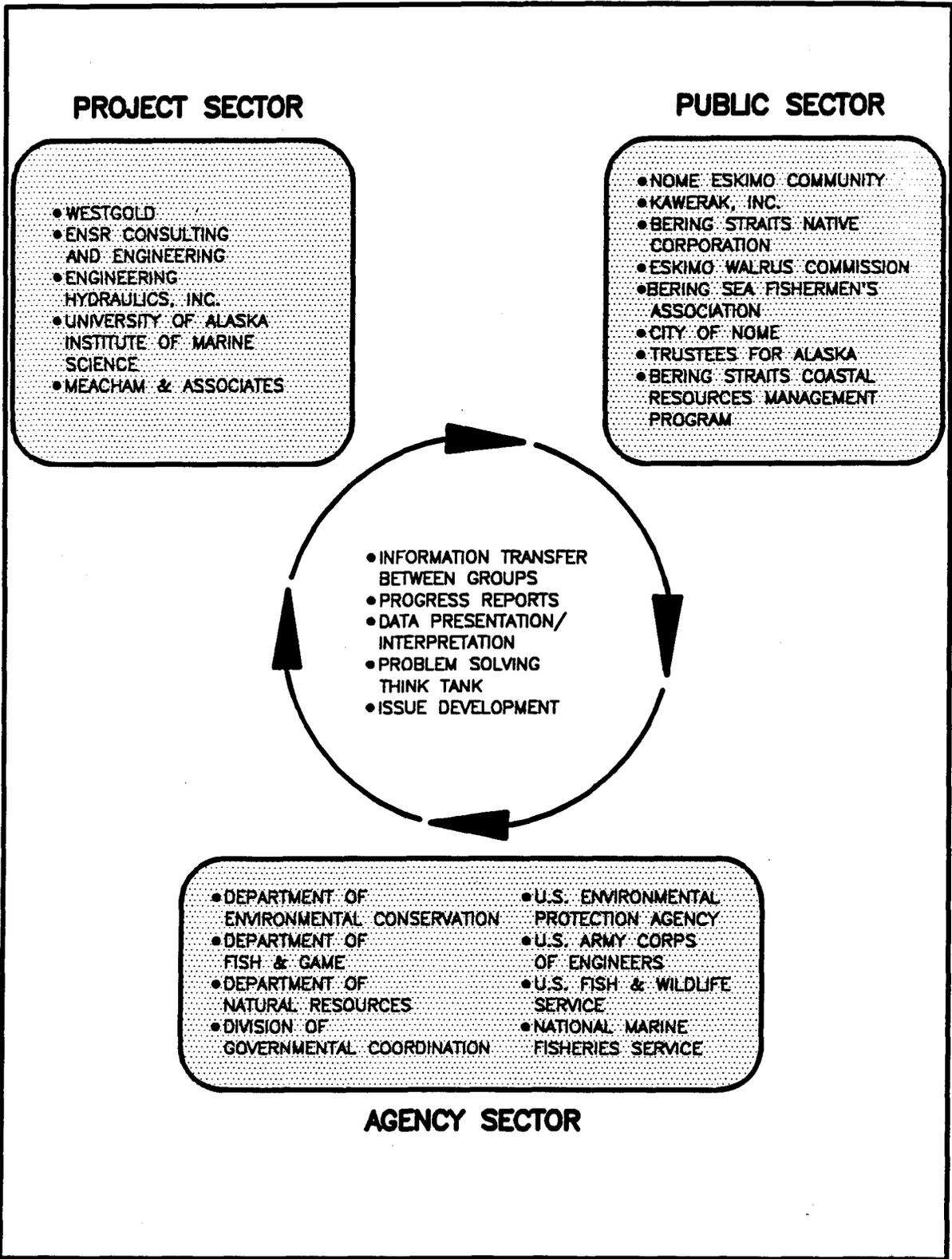


Figure 4. Organization and Activities of the Nome Offshore Placer Project Review Committee.

- Review and analyze all data associated with the environmental aspects of the project.
- Review and analyze the monitoring programs as required to optimize the information received from these programs.
- Recommend modification of permit stipulations in order to mitigate adverse impacts as identified by the review and analysis of the monitoring program data.
- Keep all interested agencies and groups aware of project progress through the issuance of periodic reports and data dissemination.
- Identify and report potential problems and recommend modifications to ensure compliance with permit stipulations; if required, recommend reopening of the permitting process.

Rather than reviewing an annual report for a project, with little opportunity to change project direction when the situation demanded it, the PRC provided an opportunity for interested parties to comment and review the operation on an ongoing basis and to focus and direct attention on those issues of most concern to committee members. The purpose of the PRC was not to supersede or replace agency review and responsibilities, but rather to coordinate between the agency responsibilities. Through round-table discussions and transfer of information, issues were more easily resolved and potential problems diffused since a specific topic could be discussed until it was understood by all. Some of the committee members had direct permitting authority for the project. Through dialogue during PRC meetings, unresolved issues or concerns were highlighted so that agency authorities could subsequently take actions within their jurisdictions (3, 12, 20, 22).

Perspectives--The PRC itself did not have any regulatory authority; however, every developer and regulator interviewed felt that the PRC was very successful and an excellent way to handle the permitting of large projects. However, most felt the PRC was not practical for small projects because it was very labor and time intensive. It was estimated that each PRC meeting cost the regulatory agencies and WestGold combined approximately \$28.5 K in travel, labor, and room costs for the meeting and preparation time (assumes 30 attendees with travel costs for 15 of those individuals). In addition, it was estimated that each PRC meeting required approximately 160 person-hours (assuming one week preparation time for one WestGold employee and three consultants).

One aspect of the PRC, that most **developers and regulators** felt was helpful to the project, was the diverse background/experience that members brought to it. One regulator commented that each "... member of the PRC had...strengths with lots of overlap of those strengths between members." Where one member lacked knowledge, PRC members could always rely on others within the PRC to provide that expertise. One Nome community leader commented that it was very helpful that the technical experts "...were participants from the very beginning all the way to the end of the project." As a result, "They knew the issues, local concerns, and helped build trust between the group members." Both developers and regulators felt that PRC member diversity was a main reason the PRC worked well.

In regard to specific expertise, many **developers and regulators** felt that it would have been more productive to have had regulators on the PRC with mining or some industry background. Both groups noted that because this was a unique project, mining technology was often a major topic of discussion at the PRC meetings. Therefore, many felt having mining engineers, or at least persons with business experience, more actively involved on the PRC would have made things run smoother.

Many **developers and regulators** commented that, at project startup, quarterly PRC meetings were tremendously successful in keeping all parties informed. One regulator noted that, "The PRC was a good move as it helped diffuse concerns and formed a cohesive group." Another regulator noted that "...issues were not resolved...[the meetings] were, however, valuable in that they gave industry a forum to present the status of the operation and to explain data collection and trends. They also gave community leaders and agency staff a chance to voice concerns. [Later], issues were resolved between industry and individual agencies at smaller meetings and through other formal processes such as written correspondence." Another regulator noted that discussions were held "...most often to clarify information and in this sense were productive." However, one regulator commented that "...later, certain parties used the PRC as an opportunity to grandstand, which was not productive. The concept of the PRC was to be iterative, voice concerns, and come up with solutions..."; several individuals from both groups felt that some individuals had lost sight of this agenda.

In addition, as time went on and the project proceeded into the production phase, **developers and regulators** noted that interest seemed to wane among participants and attendees were less prepared. One developer noted, that by 1990, "For the January meeting, the audience had usually not read the annual report ahead of time, although it had been provided to them in advance of the meeting. This lack of meeting preparation was evident in the types of questions they asked. A lot of productive discussion that could have been held was not because a lot of meeting time was used in updating [the] audience." As a result, the meetings became more "show and tell" rather than a problem-solving forum. On the other hand, one developer noted that this lack of interest demonstrated by poor preparation and/or attendance was somewhat comforting because that indicated that agency scrutiny would be directed elsewhere.

In terms of attendance, several **developers and regulators** noted that USEPA Region X personnel were often absent from PRC meetings due to lack of travel funds. This was very frustrating to other PRC members since the NPDES permit was such a key component of the project's permitting process. Many developers felt that the agencies, in general, needed to allow for more travel in their budgets (to both meetings and project sites). As another solution, some developers and regulators suggested, in the case of the USEPA, their Anchorage office be given the personnel and the same authority as Seattle Region X office for Alaska-based projects.

Most **developers and regulators** suggested that, in the initial stages of the project, quarterly meetings were an appropriate frequency for PRC meetings. However, almost all suggested that once the project was in operation, meetings should have been held less frequently to retain interest and because there was less need. Many felt that PRC meetings held twice a year (January in Anchorage, June in Nome) would have been more appropriate during the production phase. Both developers and regulators agreed that the PRC was a useful and very viable mechanism to use for major projects.

Permitting Costs

Originally, basic monitoring estimates by environmental consultants for the Nome Offshore Placer Project were:

Year 1 - expected \$200 K
Year 2 - expected \$250-500 K
Year 3 - expected \$250-500 K
Year 4 - expected \$100-125 K
Year 5 - expected \$100-125 K
Year 6 - expected \$100-125 K

Years 1 through 3 would have concluded the first NPDES permitting cycle. Note that what ultimately happened was the NPDES 3-year permit was actually extended to 5 years by the USEPA. Estimates for Years 4 through 6 reflected less costs in the second permitting cycle due to information gained during the initial permitting process.

Actual environmental program costs to WestGold (estimates) for the Nome Offshore Placer Project were:

Year	1: 1985 - \$200 K
	2: 1986 - \$485 K
	3: 1987 - \$700 K
	4: 1988 - \$600 K
	5: 1989 - \$500 + K
	6: 1990 - approximately \$400 K
	7: 1991 - \$250 K

Included in 1988, 1989, and 1990 costs was \$300 K that was spent with Engineering Hydraulics, Inc. over the three-year period for turbidity modeling. Because WestGold was able to get a good handle on discharges, and how to control discharge and optimize operating conditions, subsequent costs were expected to have decreased.

As mentioned previously, it was estimated the PRC meetings cost approximately \$13 K to WestGold and approximately \$15.5 K to regulatory agencies for a total effective cost of \$28.5 K per meeting (\$114 K per year, if quarterly).

The initial project permitting documents for the Kokohead were prepared, submitted, reviewed, and approved over an approximate 13-month period of time (Figure 3). The permit modifications for the BIMA were prepared, submitted, reviewed, and approved over a 9-month period of time (Figure 3).

Perspectives--Developers felt they were basically on budget until 1988 when the preparation of an offshore EIS by MMS raised concerns regarding heavy metals concentrations, in particular mercury, in the project area. **Developers and regulators** felt that issues raised primarily by the MMS led to renewed public scrutiny of project permit decisions and, at one point, brought into question the validity of the project's ongoing monitoring program. While these concerns were subsequently dismissed, many developers and regulators felt they nonetheless significantly affected the project's environmental costs by producing heightened concerns and raising issues outside of the scope of the BIMA project review. This resulted in a new round of mercury

monitoring of the environment at considerable cost. In one instance, USFWS initially required WestGold to perform a mercury study of peregrine falcon feathers for which the agency ultimately absorbed the cost. One **developer** noted that this study should have been identified from the outset as research being done for general information and not because of any expected impacts from dredging since the nest sites were 60 or more miles away from the project area.

The environmental costs were minimal when compared to annual project operating costs, but the environmental costs were going up and did not decrease as initially anticipated in estimates for Year 4 and thereafter. These costs were only 3 to 5 percent of the operating costs but these costs were a large percentage of the controllable costs.

Although the PRC meetings added costs to the overall environmental program, **developers and regulators** felt that it was money well spent. Both groups felt that PRC costs could have been best contained by changing from quarterly to semiannual meetings once the mining project was in production.

Agency Performance

Agency Review and Agency Approval

As a result of the dynamic nature of the Nome Offshore Placer Project, the project permitting could be divided into four general phases. They were:

1. Initial permitting of the barge Kokohead (1984-85).
2. Permitting modifications to the original NPDES permit for the BIMA mining vessel (1986).
3. Annual monitoring for NPDES permit compliance (1985-91).
4. NPDES permit renewal (1990).

The scope of this case study was to detail the two initial phases of the project permitting process. Therefore, the permitting time line (Figure 2) and the project time line (Figure 3) are for the period from August 1984 through 1986. Major milestones depicted on these time lines for the initial permitting of the Kokohead include: the initiation of the ADGC project review consistency process in August 1984; the USCOE public hearing held in Nome on January 23, 1985; the conclusive consistency determination by ADGC and subsequent issuance of State and Federal permits in September 1985.

Permit Process

The Nome Offshore Placer Project initially required a number of permits and authorizations as described previously under Environmental and Permitting Regulatory Process. The major permit items needed for regulatory approval of the Kokohead and clamshell bucket operation included:

- Alaska Division of Governmental Coordination (ADGC) Consistency Review--Norton Sound 45; Nome Gold Project State I.D. No. AK841023-08F: Conclusive consistency determination issued on September 12, 1985.

- Alaska Department of Natural Resources (ADNR) Approved Plan of Operations MLUP/MC 185-186: Issued on September 18, 1985.
- U.S. Environmental Protection Agency (USEPA) National Pollutant Discharge Elimination System (NPDES) Permit No. AK-004319-2: Issued on September 13, 1985; effective date was October 14, 1985 at which point it superseded the ADEC Waste Disposal Permit issued on September 17, 1985.
- U.S. Army Corps of Engineers (USCOE) Section 10/404, Permit File No. 071-OYD-2-840353, Norton Sound 45: Issued on September 27, 1985.
- Alaska Department of Environmental Conservation (ADEC) Certificate of Reasonable Assurance to the COE (Re: Norton Sound 45, NPACO 871-OYD-2-840353): Issued on September 12, 1985.
- Alaska Department of Environmental Conservation (ADEC) Certificate of Reasonable Assurance to the EPA (Re: NPDES AK-004319-2): Issued on September 12, 1985.
- Alaska Department of Fish and Game (ADF&G) Approved Environmental Monitoring Program: Granted on September 12, 1985.

The above-referenced permits and authorizations were received for the Kokohead approximately 13 months after the project permitting was initiated by WestGold, with submittal of the ADGC Coastal Questionnaire, and nine months after the USCOE Public Notice of Hearing.

After initial permitting of the Kokohead, subsequent permit modifications were required in 1986 when WestGold chose to change to the BIMA mining vessel. All permits were amended to reflect the changes in the mining plan related to the BIMA and are shown in the permitting time line (Figure 2) and project time line (Figure 3) that accompany this report. Major milestones during this phase of the project permitting included the public hearing held in Nome on April 11, 1986; the conclusive consistency determination by ADGC on May 5, 1986; and subsequent modification of the NPDES permit (and other major permit items identified above) for BIMA operations effective July 10, 1986. However, an additional stipulation for the monitoring of heavy metals was placed on the amended ADEC 401 Certificate of Reasonable Assurance and the ADNR Plan of Operations.

Perspectives--In regards to the permitting process, only **regulators** seemed to understand the process. **Developers** were often unclear on how the process was tied together; coordination between agencies and permits was extremely unclear to non-regulators.

As a consequence, there were diverse opinions concerning regulatory overlapping jurisdictions and other permitting process inefficiencies. It was noted by several **regulators**, that because of the unique nature of the Nome Offshore Placer Project and because many different agencies had regulatory jurisdiction, one regulator noted, "...the process of formulating requirements...took time and coordination." This was particularly the case since many of the regulations were originally developed for onshore mines, dredging projects, or for projects affecting freshwater/wetland habitat.

Even amongst regulators, there were differing opinions on whether regulatory jurisdictions overlapped, and if so, where those overlaps occurred. The regulatory areas identified by regulators as having conflict during the Nome Offshore Placer Project and resulting in some inefficiencies included:

- a) USCOE vs USEPA: According to the USCOE, "There is a continuing conflict between the USCOE and the USEPA on 402 discharges versus 404 discharges. This conflict has been recognized to the point that the USCOE and the USEPA signed a Memorandum of Agreement (MOA) between them ['Memorandum of Agreement Between the Assistant Administrators for External Affairs and Water USEPA and the Assistant Secretary of the Army for Civil Works Concerning Regulation of Discharges of Solid Waste Under the Clean Water Act,' dated January 17, 1986]. However, the MOA does not resolve all issues. For instance, at present if there is processed mining waste, the USCOE says it is a 402 discharge. The USEPA says the water is a 402 discharge, but the [ultimate fate of the] solids are not. The USCOE says the solids should be under USEPA.

Obviously, of paramount importance is what is the final purpose for the discharge. If it is a discharge from a mine, then it is a 402 discharge; however, if it is fill, it is a 404 action. There is also the case that if it is a discharge from a mine (not a fill), but when left on its own it would eventually go back to a wetland, then it too, is a 404 action. Also, if the discharge would be modified/processed and end up going back into the waters of the United States, then that would be a COE action..."

- b) USCOE vs U.S. Coast Guard (USCG): Navigational hazards come under the scrutiny of both the USCOE and the USCG. However, different aspects of this hazard apply to each agency. For offshore mining projects, the USCOE does regulate navigational hazards and traffic patterns. The USCOE regulates structures that could cause navigational hazards and would, therefore, regulate the discharge of material that posed a navigational hazard. The BIMA tailings piles were potential USCOE navigational hazards. This jurisdiction is different from the USCG which regulates vessels in motion. For example, in the case of the BIMA, the BIMA itself was a USCG navigational hazard with its long anchor lines. As a result, its position was reported to the USCG for the next several months and published in the appropriate official marine bulletins.
- c) USEPA vs ADEC: According to other regulators, there was a jurisdictional problem concerning the two plumes the BIMA produced: one from the excavation by the buckets and the other from the tailings discharges. All BIMA pipe discharges were regulated by the USEPA under their NPDES permit; the USEPA was not concerned with what was coming off the bucket ladder (or digging end). However, in contrast, the ADEC did not care where the turbidity was from--only that water quality had to be enforced at the edge of the mixing zone.

The differences between USEPA and ADEC also arose concerning differences in mixing zone requirements. For example, as was noted by one regulator, "During the final NPDES renewal, there was a lack of coordination between USEPA and ADEC." The USEPA extended the mixing zone around the BIMA without soliciting

input from ADEC. "Since ADEC did not disagree with this decision, although it should have been ADEC's decision to make, [ADEC]...did not protest the decision." One developer commented on the fact that ADEC often asked for things that no other agency was requiring; that developer noted that it, "...sometimes felt like we [WestGold] were the football between the agencies. No one cared if the football was being punctured each time it was kicked."

- d) ADF&G vs ADEC: Much later in the BIMA permitting process, there was a procedural problem that occurred, needing a procedural process to address potential conflict between ADF&G and ADEC. One regulator noted that "The Nome Expansion Project and the NPDES Renewal also created an interpretive conflict as there were nearshore operations with turbidity/mixing zone problems. The ADF&G biological perspective was they could have gone to a larger mixing zone in the nearshore environment. The ADEC position was that the nearshore environment was highly productive. It had not adequately been defined who had 'due deference,' ADF&G or ADEC. This was not fully resolved, so both sides compromised. The problem was how to balance the water quality standards against what would be best for the biological resources on a site-specific basis. The ADF&G wanted tiered mixing zones that reflected site-specific biological concerns. The ADEC wanted a single mixing zone size that addressed water quality standards. Although ADEC's water quality standards have a biological basis, the difference in approach reflects differing statutory mandates as well as regulatory/procedural requirements."

ADVANTAGES AND DISADVANTAGES OF SPECIFIC APPROACH USED BY MINING DEVELOPER

Initial Approach to Permitting

The specific approach that WestGold and the regulatory agencies used in permitting the Nome Offshore Placer Project was a unique, shared risk approach.

Advantages

Since little baseline data or information existed on potential impacts from a large-scale offshore mining operation, both the developers and regulators felt that more could be gained by monitoring actual operational performance against criteria established on the basis of best professional judgement. Permit stipulations and monitoring requirements were used to obtain this information.

The project was authorized on a tiered basis where risks were shared by the developers and the regulators in manageable, discrete units. Regulation was set up in phases, with each phase having well-defined activities. Monitoring and information obtained was immediately disclosed and then used to formulate and define the next phase of regulation.

Developers and regulators felt it advantageous that the mining operation be evaluated on an ongoing basis against performance criteria, so that a sound basis for permitting future offshore mining operations could be achieved. Through the permit stipulations and monitoring requirements, realistic "best management practices" could be developed and relevant environmental parameters identified for subsequent monitoring. Additionally, the quantification of direct dredging impacts and recolonization rates could provide the basis for reduced long-term monitoring since the monitoring would reflect expected impacts rather than potential ones. This would eventually result in cost savings to the developer for long-term monitoring by ultimately producing an efficient monitoring program tailored specifically to the unresolved issues.

With this approach, WestGold management was able to get the project schedule they wanted. They were able to immediately use the BIMA that they had obtained at rock-bottom prices, and at a time when higher gold prices (more than \$400 per ounce) were in the market place. Dollars that would have normally gone for an EIS were, instead, put into monitoring and research to answer questions. With this approach, regulators got data they would not have otherwise gotten through the standard EIS process.

However, this shared risk approach utilizing permit stipulations and monitoring requirements did not address the concerns and perceptions within the agencies and general public that could also ultimately affect the project. Therefore, another mechanism, the Project Review Committee (PRC), was used to facilitate regular information transfer, to monitor project activities, and to build community support by showing that issues and concerns were being addressed. The PRC ensured that the permitting process was an iterative one. The advantage to the developer was that, through the round-table discussions, issues were more easily resolved and potential problems diffused since a specific topic could be discussed until it was understood by all. This aspect of the PRC would be particularly advantageous for major projects where issues and solutions could be quite complex.

Some of the PRC members had direct permitting authority for the project. Through dialogue during PRC meetings with other regulators, public members and project staff, unresolved issues or concerns were highlighted so that individual regulators could subsequently take actions within their jurisdictions. As a result of these meetings, regulators knew where other regulators stood on the issues and the reactions of affected communities. The more frequent review of the project by regulators also ensured that the data collected were used efficiently.

In situations where a regulator lacked experience, technical expertise, or decision-making abilities, it was found that the PRC could be an effective tool for educating individuals (e.g., new regulatory staff) on technical and/or procedural issues and bring them "up to speed."

Disadvantages

For the shared risk approach to permitting, most disadvantages were related to added costs. This approach required a PRC, and its associated costs, to ensure an iterative permitting process. Without the PRC, the ultimate goals of reducing long-term monitoring costs would probably not have occurred. Also, as a result of this approach, there were more up-front environmental costs since regulators tended to err on the cautious side. Therefore, developers of this project felt they "...spent more dollars than they needed to on environmental costs, and that they did more than they needed to." On the regulatory side, because the environmental monitoring program was flexible, this approach also required more frequent project review by regulators.

It was unfortunate, in the case of this project, that WestGold never had the opportunity to recoup their considerable up-front environmental costs over the long term because of premature project shutdown. If the project had continued, long-term monitoring costs would have been minimized under their renewed NPDES permit. This was because several components of the environmental monitoring program were eliminated by regulators after issues and concerns had been adequately addressed.

Some project personnel felt that the permitting approach allowed WestGold to do things at a very fast pace, perhaps too fast. One developer and one regulator each mentioned that if WestGold had been put through the EIS process, perhaps WestGold would have put more thought into their feasibility studies and the selection of their dredge--or the alternatives.

Another disadvantage expressed by developers was that the approach gave an "open WestGold check" to regulators and environmental consultants. Developers felt they had lost control of the scope, and therefore the cost of the environmental work. There was no defense against subsequent agency requests. Although this approach ultimately resulted in more reasonable monitoring costs for the long term, some developers felt that it took a very long time for some regulators to finally concede that enough data had been collected and that an issue was resolved.

It was noted by many individuals on this project that the success of the tiered, shared risk approach depends on the regulators themselves and the technical expertise and permitting experience that they bring to a project. Such individuals must be confident of their own abilities in order to be an effective decision-maker. This approach requires that regulators be experienced, technically-qualified, capable decision-makers. When even one regulator lacks these abilities, this can create innumerable problems for the permitting process under this approach.

Approach to Permitting Problem Areas on Mining Projects

The following are some possible solutions to problems encountered during the permitting of the Nome Offshore Placer Project and as described previously. Some suggestions included here coincide with recommendations considered by the Alaska Minerals Commission Committee (3). They are the following:

1. Designate the Division of Mining (DOM) at ADNOR to act as lead agency for the permitting of mining projects wherein mining engineers or individuals with considerable mining background would provide project oversight. The DOM would be the single point to which a mining developer would go to obtain all permits, licenses, leases, etc. necessary to do a project. The DOM would act as liaison between the applicant and other State agencies. However, the ADGC would continue to serve in a coordinating "clearinghouse" role for associated State and Federal permits (e.g., submitting/distributing materials simultaneously to all interested parties).
2. For major mining projects, to prevent a perception of the "fox being in the henhouse" (see Item 1), a PRC would be formed at the very initial stages of the project and be chaired by DOM. The PRC would consist of all interested parties. To maintain a manageable size, private citizens could participate through organized groups, but not as individuals. During the initial stages of the project, meetings would be quarterly. Meeting locations would alternate between a major in-State regulatory center (e.g., Anchorage, Fairbanks) and the nearest affected community. After the project was operational, PRC meetings would be semi-annual, rotating between previously described locations. During initial permitting and permit renewals, the PRC chairperson would arrange for smaller meetings more frequently with key regulatory staff to deal with specific issues and generate decisions.
3. Have ADEC assume responsibilities for the permitting of water discharges within the State of Alaska for mining projects. This system would be similar to that instituted in the State of California with its State Board of Water Quality Control. Any Federal programs (e.g., USEPA, USCOE) would be implemented by ADEC. ADEC would establish standards, criteria, and procedures that met all Federal requirements and then assign the personnel necessary to administer and monitor existing and future permits. Prepare language to establish whether other agencies would have "due deference" concerning particular issues (e.g., ADF&G and biological issues).
4. If Item 3 is not done, give the USEPA Anchorage office the personnel and the same authority as Seattle Region X office for Alaska-based projects.
5. Have Federal and State agencies encourage (or require) regulators to have at least one year experience in working directly for industry or as a consultant. However, to accomplish this would require rewriting of civil service procedures since the present system penalizes career-track government workers that leave civil service for private sector work experience. Agencies could require personnel to obtain work experience outside civil service as a requisite for further

advancement. Such experience could give regulators hands-on field experience and an appreciation of the costs associated with "doing business." An alternative mechanism, more easily implemented, would be via increased joint government/industry training opportunities. Both developers and regulators could ultimately benefit from these joint ventures.

6. Discourage agency-imposed research requirements on the permitting process that do not address issues of regulatory concern.
7. Encourage regulators to more fully explain to industry the rationale (biological, physical, chemical) for their permit stipulations or monitoring requirements.
8. When conflicts occur between agencies, then a single, unified position should be worked out between regulatory agencies consistent with Federal/State law, environmentally sound practices, and cognizant of existing local environmental conditions.

MAJOR INCENTIVES AND DISINCENTIVES TO METAL-MINE DEVELOPMENT

Mineral extraction in Alaska is a costly proposition, whether it is onshore or offshore. The mining industry is based on fluctuating commodity prices--fluctuations over which a mine developer has no control over. Therefore, any uncertainties that can be removed from the development process, the greater the incentive a developer would have to operate in Alaska.

Incentives

The single greatest incentive for industry remains Alaska's vast mineral resource potential with very little exploration work completed, as well as its relatively unpopulated status. The following is a list of the major incentives for metal-mine development in Alaska:

- Vast mineral resource potential
- Large resource potential creates favorable economies of scale
- A pro-development administration in the State government
- Need for long-term employment opportunities in rural Alaska
- Need for employment throughout Alaska because of decreasing oil revenues and oil development
- Relatively uncomplicated land ownership patterns
- Relatively unpopulated areas

Disincentives

The single largest disincentive for mining development in Alaska is high up-front costs. The following is a list of the major disincentives for metal-mine development in Alaska:

- A limited mining season for offshore developments using conventional dredge methods due to ice in the winter months as well as severe weather and storms throughout the year.
- As a result of the low population in most areas of the state, there is a lack of infrastructure, such as transportation, available for use in development; this is part of the high up-front costs of development.
- High permitting costs/complex procedures associated with increased agency scrutiny.
- High level of attention by local and national environmental groups opposing development. In some cases, their opposition is to air, soil, and water quality degradation and to ensure adequate restoration.
- Mental Health trust lands suit because of which some State lands are in a state of "limbo".
- Reduced opportunity for State involvement in construction of infrastructure as State revenues decline.
- Metal-mine development may be generally perceived to affect subsistence and fisheries.
- Question of stability in State tax structure.

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