

# **Mitigation, Reclamation, and Monitoring**

## 6.0 MITIGATION, RECLAMATION, AND MONITORING

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### 6.1 INTRODUCTION

The term "mitigation" can have several meanings in an EIS process:

- (a) Avoiding the impact altogether by not taking a certain action or parts of an action.
- (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- (e) Compensating for the impact by replacing or providing substitute resources or environments or by enhancing the value of an existing environment.

Mitigation by avoiding impacts altogether, as in (a) above, was incorporated extensively throughout the EIS process through elimination or alteration of options or designs to avoid significant effects (Chapter 3.0). Minimizing impacts, rectifying impacts through repair, and eliminating impacts over time, are the forms of mitigation employed by Diamond Alaska in its planning for the Proposed Project.

From the standpoint of environmental regulatory processes, the Diamond Chuitna Coal Project has a number of features that are somewhat different from other large projects that have been reviewed in Alaska. Because of the duration of the project, impacts would be distributed over a substantial period. This contrasts with other kinds of projects (e.g., petroleum development) where impacts are normally greatest during the construction phase and decrease thereafter. The prolonged impact period requires special attention from the permitting agencies especially in planning and administering mitigation programs. In addition, the existence or severity of many of the impacts cannot be accurately predicted in advance. Therefore, extensive monitoring programs have been built into some permits (i.e., ASMCRA) to obtain information to be used in designing new mitigation strategies.

The mitigation plan included in the project proposal, consisting of mitigation measures committed to by the applicant for all project components, is described in Chapter 2.0. The discussion of environmental consequences (Chapter 5.0) has taken these mitigation measures into account. This chapter summarizes the detailed mitigation, reclamation, and monitoring requirements imposed by the State of Alaska through the Alaska Surface Coal Mining Program and other state permitting programs; requirements of federal and local permitting programs; and other measures which could be considered by the permitting agencies. It is therefore necessary to review both chapters 2.0 and 6.0 in order to ascertain all mitigation measures associated with this project which have been **committed** to by the applicant, required by the agencies, or which could be considered in permitting programs.

## 6.2 MITIGATION CONTAINED IN THE ALASKA SURFACE COAL MINING PERMIT AND OTHER STATE PERMITS

Concurrent with the development of the EIS, Diamond Alaska pursued a surface coal mining permit and other permits from the State of Alaska. The Alaska Surface Coal Mining Control and Reclamation Act (ASMCRA) requires that application be made to the Alaska Department of Natural Resources for a permit to conduct surface coal mining. The state program is overseen by the federal Office of Surface Mining Reclamation and Enforcement (**OSMRE**). The state regulations under ASMCRA must be as effective as the federal **OSMRE** regulations.

Diamond Alaska applied to the State in January 1985 for a Permit To Conduct Surface Coal Mining. This triggered an intensive state review process which was completed in August 1987 with the issuance of the Commissioner's decision to approve the permit with stipulations. Subsequently, the decision was subjected to an extensive administrative hearing process which resulted in June 1988 in a reaffirmation of the original decision with only minor modifications to two stipulations and extension of the permit term to 10 years.

It is a somewhat unique situation to have a major state permitting action completed before issuance of an EIS for the same project. Because this is the case with the Diamond Alaska project, much of the content of the EIS, particularly those sections relating to the mine area itself, has been determined by the State's ASMCRA permit conditions. These conditions have been reflected throughout this document and are discussed specifically in this chapter.

In addition, the project was reviewed for consistency under the Alaska Coastal Management Program (ACMP). A conclusive consistency decision was issued on June 29, 1988; several stipulations were attached to the decision. Other state permits have been issued including permits from ADF&G and ADEC. The stipulations attached to the ASMCRA permit, the consistency determination, and the other state permits constitute mitigation measures which are required of the applicant.

Two important points should be made regarding the state permitting effort for this project. First, the existing ASMCRA permit was limited to the 10 year mine and mine facilities area; the permit did not cover the haul road, conveyor, housing facilities, airstrip, or port. Further, the permit for this area is valid for 10 years and, by state law, can be renewed every 5 years for the remainder of the mine's 34 year life. Expansion of the mine beyond the 10 year mining area will require a new ASMCRA permit. The ASMCRA decision was made with the realization that predictions of the long term impacts of the mine and the effectiveness of mitigation measures could probably not be made for the entire life of the project. Therefore, monitoring programs and other reviews required during the first 10 years would enable more specific and informed decision making for the remainder of the project.

Secondly, the consistency determination and other state permits were not limited to the mine area; all components of the project were considered. The State divided its review of the Diamond Chuitna project into 3 phases. The June 1988 consistency determination applies to the permits reviewed under Phase 1 which includes the majority of state permits and authorizations for the mine, transportation and housing and port components of the project. In Phase 2, the DEIS and FEIS, EPA and COE permits, and 401 certifications will be reviewed. Plan approvals and air quality permits from ADEC and approvals for detailed facility design such as oil spill contingency plans will be reviewed in Phase 3.

Mitigation measures required by the State of Alaska (ASMCRA and other state permits) are discussed below by project component. Each component is further subdivided into the first ten years and the remainder of the project. This is in keeping with the ASMCRA permit. During the first ten years, construction of the various components and initial operation will take place. The remainder of the project, approximately 24 years, will consist of continued operations and project termination. Commitments contained in the ASMCRA permit application are considered to be permit requirements; permit stipulations comprise the remaining permit requirements.

## 6.2.1 Mine and Mine Area

### 6.2.1.1 First Ten Years

#### ASMCRA Permit Application and Permit Stipulations

The ASMCRA permit application (June 1987 rev.) states that the "**mining** objectives of the planned Diamond Chuitna Mine are to maximize coal recovery, minimize environmental disturbances, and to restore the mine area to land use capabilities that are similar to conditions existing prior to mining." To this end, the applicant has committed to many mitigation measures in the placement of facilities and operation of the mine.

Construction will take place during the first three years of the permit period. The general activities which will occur are: 1) construction of drainage and sediment control structures, 2) removal of topsoil from construction areas, 3) construction of roads and support facilities, and 4) equipment erection. These have previously been described in Chapter 2.0 of this document.

The following discussion summarizes the content of the ASMCRA permit.

#### - Drainage and Sediment Control

The drainage and sediment control systems have been designed to assure that sediment-laden drainage is not discharged from construction sites. A system of sediment ponds will be built and maintained within the permit area. Diversion ditches will also be located, built, and maintained to avoid erosion, minimize contributions of sediment to runoff, and serve as primary flow interceptors. Other sediment control measures will include use of sediment filter fabric, and sediment traps. Drainage and sediment control structures will be built before the surrounding drainage area is disturbed. Groundwater from the mine pit will be pumped into the sediment pond system and from there will flow back into the streams. Sediment-related parameters which will be monitored include total suspended solids, settleable solids and turbidity. Detailed descriptions of the drainage and sediment control systems may be found in Section 4.12, Vol. XVII, of the ASMCRA application (June 1987 rev.).

Potential adverse impacts from domestic sewage will be mitigated by installing secondary waste treatment package plants at the mine, housing, and port areas and by providing trained sewage treatment operators as described in the ASMCRA application.

ASMCRA permit stipulations 1 through 6 require additional drainage and sediment control measures. Stipulation 1 requires that single stage flocculation equipment be installed on sediment ponds 1-6, 8-12, 15, and 16. The location of the equipment installation is specified for each pond.

Stipulation 2 pertains specifically to Sediment pond 14 and requires the applicant to prepare revised design information prior to construction. The plans are to demonstrate that the pond has been designed to handle a "worst case" condition throughout its operational life. In Stipulation 3, several conditions are placed on ponds 7, 11, 13, and 15/16 which will receive winter baseflow.

A construction schedule for sediment pond 2A is called for in Stipulation 4. The plan is to be submitted within one year following permit issuance and the pond is to be constructed as quickly as possible. Stipulation 5 calls for plans for sediment pond spillways and outlet channels to be submitted to ADNR prior to construction in order to assure that the spillways and channels can withstand the spillway design flood. Specifications for **riprap** are established as well as criteria for filter fabric to be used below a **riprap** layer. It must be demonstrated that a failure of the outlet channel will not impact the integrity of the spillway.

Stipulation 6 requires preparation of a water quality contingency plan to be approved by ADNR and ADEC. The plan is to specifically identify and prioritize treatment measures which would be implemented in the field should the sediment pond discharges fail to meet state water quality standards. A number of options which should be included in the plan are specified, e.g., addition of floating baffles, increasing mixing at flocculation addition stations, addition of flocculant at the in-pit sumps or pump discharge lines, and filtration of drainage at low flows through a porous medium.

Stipulation 15 requires that the applicant inspect all diversion ditches in late summer or after major runoff events and perform any necessary maintenance. Maintenance will include removal of vegetation which is higher than the design flow depth for the ditch and removal of any litter or debris.

Final engineering of sediment pond embankments is treated in Stipulation 19. An engineering report must be submitted to ADNR which includes a complete description of the fill material to be used for the embankment, site-specific descriptions of the physical and engineering properties of the foundation materials, and a demonstration of the stability of each embankment.

## - Topsoil Handling and Overburden Stockpiles

Following construction of the drainage and sediment control structures, topsoil **will** be removed from the construction and mining areas. Topsoil handling plans are detailed in the ASMCRA permit application, Section 4.10, Vol. XVI. All topsoil removed will be stockpiled for later use in revegetation and reclamation. Soil removal and replacement within the area to be mined will be a phased operation coinciding with the overall mining schedule. Soils will be salvaged and reapplied to disturbed areas with two exceptions. Soil overlying light-use roads which are not compacted or contaminated will not be salvaged. Also, soils covering topsoil stockpile sites will not be salvaged.

Topsoil will be stockpiled initially in association with early mining stages. Stockpiles will be designed to minimize wind and water erosion. Unnecessary compaction of the soil will be avoided and stockpiles will be sited away from centers of activity to avoid contamination. Soil will be redistributed such that appropriate soil thickness for revegetation and drainage is achieved; compaction, contamination, and erosion is avoided; soil moisture is conserved; revegetation is promoted; and deterioration of the physical, biological, and chemical properties of the soil is minimized.

In addition to topsoil handling procedures in the ASMCRA application, stipulation 7 of the ASMCRA permit states that topsoil shall be replaced on all reclaimed areas to a depth of six inches. In Stipulation 20, the applicant is required to salvage topsoils and underlying soils to a minimum depth of six inches in all disturbed areas with mineral soils.

Mining will proceed from the east to the west in the pit to be opened in the first ten years of the project and a permanent overburden stockpile will be created. The permanent overburden stockpile **will** consist of overburden and interburden material from the initial box cuts in the north and south mining areas. This material will not be needed for reclamation at the end of mine life. Section 4.15 (Vol. XX) of the ASMCRA permit application **describes** the design, construction, operation, and maintenance of the overburden stockpile.

Overburden and interburden will be required following mining to restore approximate original contours. Material which is unsuitable will be diluted with suitable material during primary mixing within the shovel buckets at excavation. Additional mixing will occur in the truck loads. The result will be vertical and horizontal mixing of materials. Selected chemical and physical properties of overburden and interburden will be monitored after the spoils are regraded but prior to the application of topsoil.

The overburden stockpile will be constructed with side slopes which will minimize erosion and will be located on an essentially flat part of the permit area. The stockpile will be inspected periodically by a registered professional engineer and in accordance with a plan approved by ADNRR under Stipulation 8 of the ASMCRA permit. This stipulation requires that the permanent overburden stockpile be inspected at least quarterly and detailed mapping provided for each lift of the stockpile. Strength tests as well as ground-water tests are to be conducted on any areas of fine-grained material.

Backfilling operations will begin as soon as mineable coal is removed from a given pit area. **Dragline** spoils will be graded to establish drainage. Final graded slopes will undulate to minimize erosion and will approximate pre-mining contours. Depressions approximately 5 ft. deep will be left in the graded spoil to mitigate for loss of wetland habitats. Diamond Alaska will replace a 4 ft zone of non-toxic material over the surface of the mined area. Topsoil will be spread over this layer. The surface will be scarified and the site revegetated.

#### - Revegetation

The details of the revegetation and reclamation plan are discussed in Section 4.08, Vol. **XVI** (June 1987 rev.) of the ASMCRA permit application. The short-term goal of the reclamation plan is the immediate stabilization of the disturbed sites including erosion and sedimentation control. Diamond Alaska plans to achieve this goal through controlled mining practices, construction of sediment control and retention structures, revegetation with rapidly growing plant species, proper seedbed preparation, and application of mulch.

The long-term goals of reclamation are to establish productive wildlife habitat and create an aesthetically acceptable site which blends with the surrounding terrain and vegetation. The revegetation plan is set forth in Section 4.11, Vol. **XVI** (June 1987 rev.) of the ASMCRA permit application. Annual monitoring of revegetation will be done to determine success and identify positive and negative factors. ASMCRA permit stipulation **11** requires a minimum density of 500 woody plants per acre be planted in mixed woodland, spruce woodland, and birch woodland areas. At least 100 trees of any combination of spruce, birch, or poplar may be include. Stipulation 16 also establishes requirements for species diversity in woodland communities.

Section **4.11.9**, Vol. **XVI** (June 1987 rev.) of the ASMCRA permit application details the wetland revegetation plan. This wetland restoration program will be conducted on a trial basis and will be monitored to determine its success. Depressions 1 to 2.5 acres in size will be created in the



graded spoil. These depressions, which will be approximately 5 ft. deep, will be revegetated with peat from existing bogs within the permit area. Side slopes will be revegetated with herbaceous and woody plant species.

In addition, sediment ponds 7, 17, and 18 **will** be converted to wildlife habitat revegetation with peat, woody shrubs and other appropriate species. Aquatic insects will be transferred to the ponds from adjacent open water areas; transferal of bottom muck should ensure establishment of macroinvertebrate communities.

#### - Fish and Wildlife

ASMCRA stipulations 10, 12, 13 and 14 apply to fish and wildlife within the permit area. A complete description of the **applicant's** fish and wildlife protection plan is found in Section 4.07, 1 **XV** (June 1987 rev.) of the ASMCRA permit application. **ASMCRA** permit stipulation 10 requires that the applicant conduct a three year telemetry program focusing on the moose using the Lone Ridge rutting area. The study will include radio-collaring of adult moose and aerial surveys. The results of the study will be reported to ADNR and **ADF&G** on a yearly basis. In addition, beginning in **permit** year 7, ground surveys to determine moose use of revegetated areas is required. **Moose/vehicle** collision data is to be collected throughout the permit period and submitted to the agencies annually. A monitoring program for the first three years of the project must be formulated and submitted for approval to ADNR to aid in determination of future mitigation requirements.

Stipulation 12 requires verification of flood impact on fish habitat during 1987 spring floods using in-stream flow methodology. The requirement for a fish monitoring program is set out in Stipulation 13. The applicant's proposed program is summarized on Table 6-1 and presented in more detail in Vol. **XV**, Section 4.07 of the ASMCRA permit application. The ASMCRA permit requires that the program be expanded to include annual adult salmon spawner surveys in drainages 2002, 2003, and 2004. The surveys are to be conducted from mid-July until freeze-up. ADNR and **ADF&G** will review the survey program at the end of the third year to determine if changes are warranted. Also in the third year juvenile salmon population estimates are to be made in drainages 2002, 2003, and 2004. These surveys are to be conducted every other year in August. A detailed monitoring plan including the above requirements must be submitted to ADNR shortly after issuance of the mining permit. Continuous monitoring of stream and gravel temperatures is required for three locations in Lone Creek and stream 2003 per Vol. **XVII** of the ASMCRA permit application. ADNR reserves the opportunity to require additional mitigation for fish resources if necessary.

Stipulation 14 deals with fish habitat mitigation. The applicant is required to construct replacement fish habitat to mitigate for the unavoidable loss of two miles of anadromous fish habitat in tributaries 200305, 200304, and 20030502. The mitigation is to include construction and maintenance of at least four 1/2 acre coho salmon rearing ponds adjacent to coho salmon spawning habitat in tributary 2003. Plans for the construction must be submitted to and approved by ADNR and ADF&G. Monitoring to determine the success of the ponds will show whether or not alternative mitigation will be necessary.

■ Hydrologic Monitoring

A major goal of the reclamation plan is to restore hydrologic balance and integrity of streams affected by the project as quickly as possible after mining. One of the keys to successfully restoring the hydrologic balance is to restore ground-water equilibrium within the mined-out area as quickly as possible so that the affected streams would again receive a full baseflow. The applicant has proposed to do this by altering the temporary drainage control system at the end of its useful life in order to create permanent depressions in the gradient terraces. These depression would enable water to pond and infiltrate to the ground water. In addition, the applicant expects that natural differential settling in the regraded areas will provide numerous small depressions which will enhance infiltration of precipitation. The wetland restoration program will also aid in ground-water infiltration and **baseflow** restoration in streams. These mitigation measures, coupled with the restoration of premining slope grades and vegetation, should provide an effective means to enhance the re-establishment of the ground-water equilibrium.

Restoration of mined-out streams to conditions similar to premining is a stated goal of the applicant. If successful, net loss in fish habitat would be minimized (**ASMCRA** permit application Vol. XVII, section 4.12.3.2). The applicant's proposed plan to hydraulically assess and review the premining stream conditions should provide them with the appropriate baseline information to accomplish this task. Their plan to include the appropriate agencies including hydrologists and fish habitat specialists in the reclamation design phase should enable them to satisfy necessary requirements including reclamation and development of riparian habitat.

The hydrologic monitoring program is detailed in Vol. XVII, section 4.12.9 of the ASMCRA application. ASMCRA permit stipulation 17 requires a quality **assurance/quality** control program and monitoring reports. Hydrologic monitoring reports are to be submitted quarterly; a summary and analysis report is to be done annually. The purpose of the hydrologic monitoring and reporting program is to

determine if actual results are consistent with predictions and that state and federal water quality requirements are being met.

Continuous flow monitoring at seven surface water stations **will** begin **immediately** upon commencement of construction and will continue thereafter for the life of the mine. The monitoring locations include two on the Chuitna River, three on Lone Creek (**2002**), and two on stream 2003. One of the stations on Lone Creek is required by Stipulation 18 which calls for establishment of a continuous gauging station above all mining disturbances. Gauging stations are also required on reclaimed permanent drainages **P1** and **P2**. These stations are to be located below the reconstructed stream channels **immediately** downstream from the mine area. Water samples are to be taken quarterly.

In addition to the continuous monitoring stations, the applicant will maintain five limited monthly stations located on streams 2002 and 2003. The continuous stations will have continuous recording stream gauges and instantaneous flow will be measured monthly. At the limited stations, instantaneous measurements will be made monthly. Water quality parameters (**TSS** and turbidity) will be measured at selected stations.

The applicant will include an extensive ground-water monitoring program including 55 wells, located up-gradient, down-gradient, and within the mining permit area. Selected wells will be used to monitor water levels, water quality, and spoil resaturation.

The surface water and ground water monitoring network will allow for the examination of the impact of the mining operations on relative and absolute differences between surface water and ground water contributions to the stream flows in affected areas during the life of the mine. The data will be collected, analyzed, and evaluated on an annual basis and will include a determination of the consistency between predicted and actual changes.

- Bonding

Volume XXII of the AMSCRA application contains detailed information on bonding requirements including projected costs of labor, equipment, and supplies. Bonds are required in three increments. The Increment A bond covers the initial construction and start-up phase (years **1-3**) and must be submitted before any work in the ASMCRA permit area may begin. ASMCRA permit stipulation 9 requires establishment of bonding before mining begins in mining increments B and C. Bonding for increment **3** must be approved before the mine begins operation in year 4.

## Coastal Consistency Determination and Other State Permits

State and federal permits for activities within the Alaska coastal zone must be reviewed for consistency with the Alaska Coastal Management Program (ACMP). The state conclusive coastal consistency determination of June 29, 1988 was issued for the state permits issued in Phase 1 of the state review. The permits (other than the ASMCRA permit) which have been issued to date for the mine component include ADF&G Title 16 permits, ADEC solid waste disposal permits, ADNR water rights permits, ADNR material site sales, rights-of-way, and other land leases. Each of these authorizations are conditioned; many of the stipulations are necessary to bring the project into compliance with the coastal management program.

### - Alaska Department of Natural Resources

ADNR has major authority over surface coal mining in the State as discussed earlier in this section as well as water rights, rights-of-way over state land, land leases and use permits and material sales. To date, ADNR has issued water rights, material sales contracts, and land leases for the mine and mine area.

#### ADNR Water Rights, LAS No. 5557

Water rights are granted to develop a drilled well for the mine component. The applicant is required to ensure that wastewater discharges comply with the Alaska Wastewater Disposal Regulations. A metering system must be established and records submitted to ADNR on a quarterly basis.

#### ADNR, Material Sale Contracts (Chuitna River Site, Old Tyonek Creek Site and Nikolai Creek Site)

The sales agreement requires the contract holder to formulate a material site development and operation plan to be approved by ADNR. The contract holder will be responsible for all aspects of site preparation, material extraction, and site restoration. A performance bond is required.

#### ADNR, Leases for Permanent and Temporary Solid Waste Disposal

The lessor is required to construct and operate the site in accordance with ADEC solid waste disposal permits. A performance bond is required.

- Alaska Department of Fish and Game

**ADF&G** is responsible for permitting work within anadromous fish streams of the state and for stream crossings on any fish streams. Bridges, culverts, fords, material sites within floodplains, and water intakes are some of the activities which fall under **ADF&G's** authority. **ADF&G** also provides input to ADNR on right-of-way leases, to Corps of Engineers on 404 and Section permits through the Fish and Wildlife Coordination Act, and to Division of Governmental Coordination on ACMP consistency determinations.

**ADF&G, Title 16 permit, Instream Work in Anadromous Waters**

**ADF&G** has issued four permits for streams within the mine component: 1) Middle Creek Tributary (200304) sediment pond no. 9, 2) Middle Creek Tributary (200305) instream mining, 3) Middle Creek Tributary (200305) sediment pond no. 12, and 4) Middle Creek Tributary (200304) instream mining.

The conditions on each of these permits are the same. The permits require that the applicant mitigate for unavoidable loss of fish habitat by construction of replacement habitat. Mitigation **will** consist of four 1/2 acre ponds for coho salmon rearing to be located adjacent to coho salmon spawning habitat in tributary 2003. Plans and specifications are to be submitted to **ADF&G** for approval prior to commencement of construction. Maintenance of the rearing ponds is also required.

An additional four permits have been issued for culvert installation in the mine road within the mine area: 1) Middle Creek tributary (200305) mine road culvert C-6, 2) Middle Creek (2003) mine road culvert C-8, 3) Middle Creek tributary (200306) mine road culvert C-9, and 4) Middle Creek tributary (200306) mine road culvert C-10. The stipulations are the same as those placed on culvert installation in the haul road which are discussed below (6.2.2.1).

- Alaska Department of Environmental Conservation

Solid waste disposal permits, wastewater disposal permits, burning permits, and air quality control permits to operate fall under the purview of ADEC. It should be noted that, although ADEC will issue the appropriate air quality permits, EPA will review and approve the implementation plans. Also, ADEC must issue a state water quality certificate for the Corps of Engineers and EPA actions to assure that discharges into waters of the state comply with Alaska State Water Quality Standards. The water quality standards provide for mixing zones, establishment of which will enable the project to meet receiving water standards.

ADEC, Solid Waste Disposal Facility (construction waste)

This permit allows the development and operation of a construction debris waste disposal landfill facility. The site must be fenced and properly signed. Ditches must be constructed to divert runoff. Extensive stipulations govern the access to the dumping site, burning, hazardous waste, litter, salvage, animal control, monitoring, site closure, and records and reporting.

ADEC, Solid waste Disposal Facility (commercial waste)

This permit covers the development and operation of a sanitary landfill for incinerated commercial waste within the mine site. The stipulations are essentially identical to those listed for the construction waste site above.

6.2.1.2 Remainder of the Project Life

The remainder of the project life includes the period from year 10 through year 34 (project termination). It is anticipated that operations will continue as described above and in Chapter 2.0 of this document. Volumes XI and XVI of the ASMCRA permit application contain further details of project termination. However, the ASMCRA permit does not extend beyond 10 years; therefore, no mitigation in the form of permit stipulations has yet been formulated for the remainder of the project. Future permits will be based on the mitigation and monitoring programs that have occurred in the first ten years. Many of the permits discussed above are for activities which will occur during construction or are for specific permit terms; none extend beyond the SMCRA period.

6.2.2 Transportation Corridor

The transportation corridor, which includes the haul road and conveyor systems, is described in Chapter 2.0 of this document. Only those portions of the transportation system which exist within the mining area are included in the ASMCRA application and permit.

6.2.2.1 First Ten Years

- ADNR Water Rights, LAS No. 5556

ADNR has issued water rights for development of a water source for both the transportation corridor and the housing area. The rights are for a 25,000 **gallon/day** drilled well. Wastewater discharges must comply with disposal regulations promulgated by ADEC. The system must be metered in a manner acceptable to ADNR and daily water use records must be submitted to the agency on monthly basis.

- **ADF&G, Title 16 permit, Instream work in Anadromous Waters**

**ADF&G** has issued six permits for culvert installation in the southern transportation corridor: 1) Middle Creek tributary (200302) haul road culvert no. 2, 2) Middle Creek tributary haul road culvert no. 6, 3) Tyonek Creek haul road culvert no. 16, 4) Old Tyonek Creek haul road culvert no. 23, 5) Old Tyonek Creek tributary haul road culvert no. 28, and 6) Old Tyonek Creek tributary no. 30.

The stipulations for each permit are similar. The permittee must schedule a preconstruction meeting with **ADF&G** and submit full plans and specifications, a description of culvert installation methods, and a revegetation plan. The culvert locations must be staked by surveyors and inspected by **ADF&G** prior to culvert installation. The average cross-sectional water velocity at the culvert outlet cannot exceed 1.8 fps except for a period not to exceed 48 hours during the mean annual flood. At least 1/5 of the diameter of round culverts must be set below the stream bed at both the inlet and the outlet and culverts must be placed in and aligned with the natural stream. Finally, all cut banks, slopes and fills must be stabilized to prevent erosion. Each of the transportation corridors under consideration for this project would be subject to the above stipulation requirements.

6.2.2.2 Remainder of the Project

To date, no state permits have been issued beyond the first ten years. Permits will be applied for as part of the 5 year renewals.

6.2.3 Port Area

The state permits which have been issued are for the Granite Point site; no permits have been issued for the Ladd site.

6.2.3.1 First Ten Years

- **ADNR Water Rights, LAS 5558**

Water rights have been granted to develop a 2,000 gallon/day drilled well at the proposed Granite Point port site. The permittee is required to establish an acceptable metering system and submit daily water use records to ADNR on a monthly basis. **Wastewater** discharges are to comply with ADEC regulation.

#### 6.2.3.2 Remainder of the Project Life

No state permits have been issued for port areas for the remainder of the project.

#### 6.2.4 Housing and Airstrip

##### 6.2.4.1 First Ten Years

- **ADF&G**, Title 16 permit, **Instream** Work in Anadromous Waters

**ADF&G** has issued a permit for culvert installation in Middle Creek tributary (**200302**) for the proposed airstrip. The conditions are similar to those described above for haul road culvert installation (Section **6.2.2.1**).

- ADEC, Solid Waste Disposal Permit

This permit was issued to allow development and operation of a sanitary landfill for incinerated waste from a 500 person camp. Stipulations are similar to those described for landfills in the mine area (Section **6.2.1.1**).

##### 6.2.4.2 Remainder of Project Life

No state permits have been issued for the housing area and airstrip for the remainder of project life.

#### 6.3 FEDERAL AND LOCAL PERMITTING AUTHORITIES

##### 6.3.1 U.S. Environmental Protection Agency

###### 6.3.1.1 National Pollutant Discharge Elimination System (NPDES)

The mine, housing area, and port (either Granite Point or **Ladd**) will require NPDES permits for discharge of pollutants to waters of the United States. Draft NPDES permits are found in Appendix D of this document. Four NPDES permits are proposed covering the Granite Point port site, the mine site (sediment pond discharges), the housing area and Ladd coal loading facility. The stipulations proposed for these permits are extensive and include such things as watershed monitoring programs, limitations on chemical composition of effluents, sampling and reporting requirements and development of best management plans. These permits will be issued in conjunction with the EPA Record of Decision on this EIS.



### 6.3.2 U.S. Army Corps of Engineers

The Corps of Engineers must issue permits under Section 404 of the Clean Water Act and under Section 10 of the Rivers and Harbors Act. The public notice and 404(b)(1) evaluation for this project is found in Appendix C of this document. The permits will be issued in conjunction with the Corps of Engineers Record of Decision for the EIS. No permit stipulations have yet been formulated.

### 6.3.3 U.S. Fish and Wildlife Service

The USFWS has no permit authority over the Diamond Chuitna Coal Project. However, the agency has prepared a mitigation policy statement which appears in Appendix B of this document. In addition, USFWS reviews COE and other permit actions under the Fish and Wildlife Coordination Act.

### 6.3.4 Local Permits

#### 6.3.4.1 Kenai Peninsula Borough

Currently, the mine and mine area fall outside the proposed Kenai Peninsula Borough coastal zone; no permits are required under this authority. The Borough does not require building permits and there is no zoning in this area. Therefore, no local permits will be required for the coal project. Rights-of-way over KPB land may need to be obtained depending upon the route chosen for the transportation corridor.

## 6.4 OTHER POTENTIAL MITIGATION STRATEGIES

This section addresses alternative mitigation strategies and additional potential mitigation measures which may be considered by the permitting agencies. This includes additional mitigation beyond that already committed to in the project mitigation plan (Chapter 2.0) or already required under existing permit approvals (Sections 6.2 and 6.3). It is important to note that the mitigation plan included in the project proposal which consists of mitigation measures committed to by DACC for all project components is not repeated here. The reader is encouraged to refer to Chapter 2.0 which describes those mitigation measures incorporated by the applicant into the project proposal.

The ASMCRA permit review process undertaken by the State of Alaska and DACC was lengthy and exhaustive. Measures which augment those contained in the ASMCRA permit are discussed below. This in no way reflects negatively on the ASMCRA process, but rather shows where mitigation presented in that program might be further addressed within the total ASMCRA mine permit area or applied to project components outside the mine area.

#### 6.4.1 Terrestrial Environment

##### 6.4.1.1 Vegetation

The revegetation program for the mine permit area as reflected in the ASMCRA permit is ambitious and involves a variety of techniques. **However**, the following items are offered for consideration. Previous experience on other projects within Alaska (**e.g.**, trans-Alaska oil pipeline) suggests that replacement of woody plant species using nursery stock could have inconsistent and unpredictable results (**Hilliker** 1985). Also, revegetation may be facilitated by the inclusion of native species in the program as much as possible. Use of such species (**e.g.**, **Norcoast** Bering **Hairgrass**) would help speed the transition from revegetation communities to natural communities. Moreover, the feasibility of using islands of natural vegetation should be tested as soon as possible as this method would supply seed and propagule source from which naturally-occurring species could **reinvade** reclaimed areas. Nursery stock, when used, should be from ecotypes that are adapted to the area.

In areas outside the mine permit area, revegetation and monitoring as applied within the ASMCRA area should be required for all disturbed sites which will not be used beyond the life of the mine. Revegetation for erosion control and reclamation should be done throughout the mine life using the same principles discussed for the mine area above.

##### 6.4.1.2 Wildlife

Many of the same types of revegetation, drainage, and reclamation measures described in the ASMCRA permit for the mine and mine facilities would provide for habitat reclamation and enhancement and mitigation of impacts to aquatic and terrestrial wildlife resources along the alternative coal transportation corridors and port sites. The location and design of individual mitigation features should be refined and modified according to information provided by ongoing wildlife monitoring programs.

Right-of-way leases for the coal transportation system should include provisions for siting large animal crossings at locations most likely to be used by wildlife. The minimum average frequency, should be as proposed by the applicant in Chapter 2.0, **i.e.**, at least one wildlife crossing each 962 yds. Detailed wildlife utilization patterns should be confirmed by the wildlife monitoring program during the first two years of road operation.

A prohibition of animal feeding should be strictly enforced. The **ADF&G** regulation prohibiting such feeding (5 AAC 81.218) could be posted conspicuously throughout the camp. All workers should receive environmental orientation which should stress the importance of not feeding wildlife, the usual consequences to the animals themselves, and the potential danger to humans.

Drivers should be made aware of the potential for collisions between moose and vehicles along the haul road. Before construction begins, measures could be developed to minimize the possibility of collisions. The applicant plans to clear vegetation for a distance of between 7.9 m and 15.2 m (25 and 50 **ft**) from the edges of road surfaces to discourage feeding and increase visibility. In moose concentration areas (*e.g.*, at conveyor crossings), reduced speed limits could be used at dusk and dawn. Additional precautions might include continual clearing of snow from all road surfaces for a sufficient width to permit moose to use the road shoulders rather than compete with vehicles for the road surface itself. Snowblowers could be used to eliminate deep roadside snow berms. On steep or blind curves, lighting could be installed. In the event of collisions, procedures for reporting to **ADF&G** and salvaging the meat should be established.

Before construction begins, plans could also be developed for dealing with nuisance animals. Measures for handling all situations from removing animals which have wandered into a work area to dealing with dangerous animals could be included in the plan. Trained personnel with proper equipment for animal removal could be available at all times. **ADF&G** should be apprised of any situations involving animals which may arise during construction or mine operation as required by regulation.

To minimize disturbance of eagle nest trees, construction of roads or other facilities could be avoided within 100 m (110 **yd**) of the trees between March 1 and July 1. This standard buffer is used by USFS and USFWS in southeast Alaska. If eagles have not nested and laid eggs at the site by May 15, construction could begin. A 457 m (1,500 **ft**) vertical and horizontal exclusion zone for helicopters could be established around the eagle trees from March 1 through May 15. If nesting did occur, the exclusion zone could continue until September 1.

## 6.4.2 Freshwater Environment

### 6.4.2.1 Hydrology

Maintaining the hydrological integrity of the Chuitna River was one of the primary issues identified during the scoping process. As described in Chapter 5.0, significant short- and long-term alterations to hydrological characteristics would result from the proposed project. Two general goals of mitigation would be: 1) to assure adequate flow in the affected Chuitna River tributaries during the period of disruption and 2) to restore hydrologic balance and stream integrity as quickly as possible after mining.

Mine operation would involve development of a complex system of drainage control including peripheral drainage ditches, sediment ponds, and mine pit dewatering. The **surface and** ground water captured by the mine drainage would represent a loss to the annual flow of several streams. To accomplish the first goal described above, it would be necessary to continuously return the water accumulated by the mine drainage to the affected streams in approximately the same proportions as it was removed. Under current project plans, water releases would necessarily be tied to the settling pond systems and discharge would normally be to the most easily accessible drainages. Allocation of return flows to optimize downstream flow conditions is, therefore, proposed as an optional mitigation measure for consideration by the permitting agencies. Such allocations would be complex, especially in the later years of mining when three streams would be affected. Decisions regarding allocation of return water to the various streams would involve impact trade-offs and should consider the protection and/or optimization of fish habitat.

There is no assurance that sufficient unfrozen water would be available in the winter in the mine pit to supplement stream flows; consequently, some form of water storage might be needed to meet target flows in the winter. The system would need to be continually modified to accommodate mine expansion; this would add considerable cost.

Monitoring of winter flows to assure integrity of fish habitat is also suggested. The hydrology of areas affected by the transportation corridor can generally be maintained by installation of properly designed and installed drainage structures. There are no streams which would be directly affected by the housing area, airstrip, or port sites.

#### 6.4.2.2 Surface and Ground-water Quality

Concern was expressed during scoping regarding the quality of water running off or leaching through coal storage piles. Leaching tests (Bookcliffs 1985) indicate that the water quality would be relatively high and, consequently, Diamond Alaska does not plan to install an impermeable liner under the coal stockpiles at the mine service area or port site. Installation of such liners is suggested as an optional mitigation measure to prevent the remote possibility of ground-water contamination and as a contingency against the possibility that coal from untested portions of the mine could contaminate water to a greater degree than the existing tests indicate. An impermeable liner could have the potential detrimental effect of increasing the amount of contaminated surface runoff collected by perimeter drainage systems. This situation would require additional treatment measures before the water was ultimately discharged to surface waters. The use of impermeable liners is technically feasible but would represent a substantial expense.

#### 6.4.2.3 Aquatic Biology

Physical changes to the Chuitna River drainage and resulting adverse impacts to fish resources represent one of the major issues identified during the scoping process. Adverse impacts to fish, especially salmon, have been identified in Chapter 5.0 as one of the more significant potential project effects. Impacts would include temporary loss of rearing and spawning habitat for coho and chinook salmon because of direct impacts during mine development (Table 5-14) and perhaps a net loss of these habitats in the long-term because of difficulty in restoring streams that have been mined. Because of the significance of these impacts and the interest expressed by regulatory agency representatives, a workshop was held on August 20, 1985, to discuss impacts to aquatic resources, mitigation options, and monitoring needs. Several of the mitigation concepts and monitoring approaches discussed in that meeting have been included by the applicant in the ASMCRA permit application or have been adopted as stipulations on the ASMCRA permit (Section 6.2.1.1). These documents put in place commitments to protect fish habitats, assure adequate restoration, and minimize impacts in those areas where some impact is unavoidable during the first 10 years of mining.

The range of measures included in the ASMCRA permit is considered adequate within the context of the relatively minor impacts that would occur during the early years of mining. However, the following additional suggestions are made:

1. Emphasis in the monitoring program should be placed on quantitative, rather than qualitative measures of fish **useage**. Where qualitative electroshocking is required, as per Stipulation 13, little additional effort would be required in streams the size of 2002, 2003, and 2004 to conduct 2- or 3-pass quantitative removal estimates. The increased information content in the results would allow much improved assessment of project impacts and the success of mitigation efforts. Quantitative surveys should also be required to evaluate the success of ponds constructed for coho rearing.

2. Performance standards, by which to judge the effectiveness of mitigation or the need for compensatory mitigation, are essential elements of the mitigation strategy. To achieve a goal of no net loss of habitat or fish production, a combination of the following standards might be used to recognize when and where an impact is occurring, to quantify its influence, and to mitigate accordingly:

- ° **Instream** flow relationships and requirements among various evaluation species (chinook, coho and pink salmon, and rainbow trout; planned for year 7).
- ° Numbers of fish **normally** produced by the affected stream system (statistical comparison of spawner counts and juvenile fish density with **pre-project** data).
- ° EPA and/or State of Alaska water quality standards (assessments of likely risk due to any changes in water quality documented during monitoring).
- ° Correlation of fish abundance trends with any changes in stream hydrology.
- ° Reclamation of mined out streams outside the 10 year ASMCRA boundary and within the 30 year boundary.

3. During times when construction is undertaken coincident with critical periods of fish spawning and egg incubation, there should be a full-time, on-site environmental monitor, preferably a fisheries biologist, with authority to stop work that may cause major stream disturbances. Such disturbances might include flow interruptions or surges, effects resulting from failure of sediment control structures, and severe water quality effects outside of areas affected by sediment control structures (**e.g.**, along the transportation corridor). This individual should have direct access to and the backing of construction management.

4. The study of the "**instream** flow needs for spawning, incubation, rearing and migration life stages of anadromous

fish" referred to in Stipulation 13 should consist of construction of habitat time series plots showing actual habitat available for each life history stage through the appropriate times of the year under preproject flows and for year 7 and year 10 flows (assuming sufficiently accurate model calibrations were achieved in the initial IFIM modeling and assuming that no major changes have occurred in channel morphology). This would allow direct comparison of the effects of any project-altered flow regimes on fish habitat of concern and should aid in interpretation of results of monitoring adult and juvenile fish densities.

Many complex decisions possibly involving impact trade-offs would be required over the mine life. Successful implementation of mitigation and restoration measures would require a concerted effort by well-informed persons. A mitigation option is the formation of an aquatic habitat advisory committee consisting of agency and industry personnel which could provide recommendations to project management. Committee members could be selected on the basis of professional qualifications as well as long-term commitment to the project to assure consistency of input. Operation procedures and channels of communication would need to be well defined to avoid unnecessary delays and to allow timely resolution of key issues. Such a committee would tend to minimize impacts by providing the best professional advice on how to maximize the effectiveness of the mitigation opportunities available.

In the initial years of mine operation, a considerable information base will be developed on the actual impacts of mining operations, the success of mitigation measures taken, and the success of reclamation of mined-through streams. This knowledge **will** be invaluable in planning and implementing mitigation for the greater impacts to surface waters, including two anadromous fish streams (2003 and **2004**). Streams to be mined through will require additional mitigation measures beyond those described in detail in the ASMCRA permit application for the initial stages of mining through year 10.

Compensatory mitigation measures and their feasibility in the project vicinity were discussed at the aquatic habitat workshop. A list of options was developed which should be evaluated during the initial years of mining, along with those actually implemented in the first years so that the most attractive options can be put into service on an appropriate timetable. Options include:

- ° Creation of stream access to existing ponds or lakes; this could be combined with deliberate introduction of fish (e.g., sockeye salmon) or without fish introduction.

- Creation of additional new rearing ponds within mined or unmined areas.
- **Additional instream** habitat improvements similar to, or modified from those planned in the initial mining period.
- Incubation of eggs in incubation boxes within selected portions of the Chuitna River drainage.
- Creation of spawning and incubation channels through enhancement of existing Chuitna River side channels.
- Beaver control and/or dam removal; this may have marginal value as a permanent mitigation measure because of habitat trade-offs.
- Annual removal of stream blockages (including beaver dams) as directed on an as-needed basis by a professional fishery biologist.
- Installation of fish ladders to increase range of fish movements in the Chuitna drainage (workshop participants were not aware of any obvious potential for fish ladder use).
- Optimization of stream habitat via flow allocation; technical and economic feasibility may be limited.

All of the above mitigation options would require detailed site-specific evaluations to determine optimum locations for mitigation sites. A study of compensatory mitigation opportunities in the Chuitna River watershed should be conducted during the first two years of mine site preparation to allow the development of a detailed mitigation plan prior to the time when habitat losses might occur. Such an approach would be consistent with the statutory responsibilities of **ADF&G** relative to the issuance of Fish Habitat Permits per Alaska Statute 16.05 as well as the goals of Appendix B. Detailed mitigation planning could be phased to correspond with the permit terms dictated by the ASMCRA permit. The aquatic habitat committee described in the previous section should continue to function as described for the remainder of the project life and through completion of the reclamation phase.

#### 6.4.3 Marine Environment

Pile driving and other highly disruptive in-water activities that might be required for trestle construction could be discontinued during the peak periods for chinook and sockeye salmon migration to minimize adverse impact on set net fisheries and on the fish themselves.



Commercial fishing success near the port area could be monitored in cooperation with **ADF&G** after trestle construction. Monitoring could be continued for at least 3 years to detect whether the port facilities affect fishing success.

#### 6.4.4 Air Quality

The generation and transport of dust and other particulate emissions created by various project activities should be monitored with emphasis on potential impacts to centers of human habitation. Primary emphasis should be placed on fine particulate matter (**PM-10**) and visibility impacts on the Tuxedni National Wildlife Refuge (Class I airshed).

#### 6.4.5 Socioeconomic Aspects

The scoping response indicated considerable concern on the part of Tyonek residents that they have the opportunity to reap some benefit from the project to offset some of the adverse impacts that might occur to Native lifestyles and traditional subsistence resources. Programs by the applicant to promote employment of Tyonek residents, to enhance the quality of life in other ways, and to generally establish good relations between the mine development organization and the village of Tyonek might be appropriate and desirable.

#### 6.4.6 Cultural Resources

Baseline studies did not examine all project facility sites in detail for antiquities and historic resources because not all facilities locations were clearly identified at the time of the studies. Therefore, additional surveys could be conducted prior to construction. When project siting is definitely within areas proposed for development, the location could be adjusted to avoid the site or the site could be examined and cleared using a methodology approved by the State Historic Preservation Officer.

#### 6.4.7 Subsistence and Recreation

Periodic monitoring of postproject subsistence and recreation use patterns and success rates could detect project-induced changes. Monitoring efforts should be coordinated with **ADF&G** subsistence monitoring programs.

# **Consultation and Coordination**

## 7.0 CONSULTATION AND COORDINATION

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### 7.1 INTRODUCTION

A designated purpose of an EIS is to actively involve regulatory agencies and the public in the decision making process. EPA conducted a broad public and interagency consultation and coordination program throughout development of this EIS. Input was solicited from the beginning of the project and this input has been incorporated into the document. Specific public and agency involvement is described below.

### 7.2 SCOPING

The scoping process conducted by EPA provided an opportunity for members of the public, special interest groups, and agencies involved in the EIS process to assist in defining significant environmental issues. Main objectives of these scoping meetings were to:

- present an overview of the proposed Diamond Chuitna Coal Project;
- identify the major environmental issues to be addressed in the EIS;
- identify areas where additional information was needed;
- receive comments and questions regarding environmental impact concerns; and
- incorporate those comments and questions into the EIS planning process.

The formal scoping meetings and the approximate number of persons in attendance were as follows:

| Date          | Location  | Attendance | Participants             |
|---------------|-----------|------------|--------------------------|
| Jan. 8, 1985  | Anchorage | 17         | State & federal agencies |
| Jan. 8, 1985  | Anchorage | 80         | Public meeting           |
| Jan. 9, 1985  | Soldotna  | 20         | Public meeting           |
| Jan. 10, 1985 | Tyonek    | 27         | Public meeting           |

In addition to the formal scoping meetings, the following prescoping meetings were held to provide information about the project and solicit questions and comments:

| Date          | Location  | Attendance | Participants   |
|---------------|-----------|------------|--|
| Dec. 11, 1984 | Anchorage | 16         | State & federal agencies                                     |
| Dec. 12, 1984 | Anchorage | 2          | Alaska Center for the<br>Environment; Trustees<br>for Alaska |

The oral and written comments and questions received during and following the scoping meetings were documented in a Responsiveness Summary (EPA 1985). Its purpose was to provide a public record of the issues and concerns raised, to provide a response to those issues and concerns, and to serve as a blueprint for the EIS process to follow. A summary of the comments received at the scoping meetings and from written responses is shown in Table 7-1.

### 7.3 AGENCY INVOLVEMENT

Because of the size and nature of the project, several federal, state, and municipal agencies have been involved in the EIS process. These entities and their major responsibilities are listed below:

#### Federal Agencies

- U.S. Environmental Protection Agency: The EPA is the lead federal agency for the Diamond Chuitna Coal Project and has responsibility for preparation of an EIS that meets National Environmental Policy Act (NEPA) requirements. Additionally, EPA has responsibility for issuing National Pollutant Discharge Elimination System (NPDES) permits for wastewater discharge. EPA must also concur on issuance of a Section 404 permit (see U.S. Army Corps of Engineers below).
- U.S. Army Corps of Engineers: The Corps is a cooperating agency for the EIS and has responsibility for issuing Section 404 wetlands and Section 10 navigable waters dredge and fill permits.
- U.S. Fish and Wildlife Service: The USFWS has responsibility for certain threatened and endangered species and has advised and consulted with other federal and state agencies on fish and wildlife issues.
- National Marine Fisheries Service: The NMFS has responsibility for certain threatened and endangered species and has advised and consulted with other federal and state agencies on anadromous, marine, and intertidal fish and marine mammal issues.

TABLE 7-1

## MATRIX OF COMMENTS RECEIVED FROM SCOPING MEETINGS AND WRITTEN RESPONSES

|                                 | Comment Sources |                  |                 |               |                  |                      |              |                         |     |                    |                        |                    |                          | Summary            |         |                   |                      |                         |
|---------------------------------|-----------------|------------------|-----------------|---------------|------------------|----------------------|--------------|-------------------------|-----|--------------------|------------------------|--------------------|--------------------------|--------------------|---------|-------------------|----------------------|-------------------------|
|                                 | Meetings        |                  |                 |               | Written Comments |                      |              |                         |     |                    |                        |                    |                          | Number<br>Comments | Sources |                   |                      |                         |
|                                 | Agencies        | Anchorage public | Soldotna public | Tyonek public | Public           | Environmental groups | Other groups | Fish & Wildlife Service | EPA | Nat'l Park Service | Adv. Coun. Hist. Pres. | Corps of Engineers | Dept. Nat'l Res. (Parks) |                    |         | Dept. Fish & Game | Dept. Environ. Cons. | Diamond Alaska Coal Co. |
| A. Physical Environment         |                 |                  |                 |               |                  |                      |              |                         |     |                    |                        |                    |                          |                    |         |                   |                      |                         |
| 1. <u>Water</u>                 |                 |                  |                 |               |                  |                      |              |                         |     |                    |                        |                    |                          |                    |         |                   |                      |                         |
| <u>Quality</u>                  |                 |                  | 1               | 2             | 8                | 8                    | 1            | 4                       |     |                    |                        |                    |                          | 2                  | 3       |                   | 29                   | 8                       |
| <u>Quantity</u>                 |                 |                  |                 |               |                  |                      |              | 4                       |     |                    |                        |                    |                          |                    |         |                   | 4                    | 1                       |
| Surface hydrology               |                 | 1                |                 |               |                  | 1                    |              | 2                       | 1   |                    |                        |                    |                          | 3                  | 1       |                   | 9                    | 6                       |
| Groundwater hydrology           |                 |                  | 1               |               |                  | 2                    |              | 2                       |     |                    |                        |                    |                          | 2                  | 1       |                   | 8                    | 5                       |
| Marine hydrology                |                 |                  |                 |               |                  | 1                    |              |                         |     |                    |                        |                    |                          |                    |         |                   | 1                    | 1                       |
| 2. <u>Air quality</u>           |                 | 2                | 1               |               | 1                | 1                    | 1            |                         | 8   |                    |                        |                    |                          |                    |         |                   | 14                   | 6                       |
| B. Biological Environment       |                 |                  |                 |               |                  |                      |              |                         |     |                    |                        |                    |                          |                    |         |                   |                      |                         |
| 1. <u>Wetlands</u>              |                 |                  |                 |               |                  |                      | 1            |                         |     |                    |                        | 3                  |                          |                    |         |                   | 4                    | 2                       |
| 2. <u>Freshwater fish</u>       |                 |                  | 1               | 1             | 3                | 2                    |              | 1                       |     |                    |                        |                    |                          | 1                  |         |                   | 9                    | 6                       |
| 3. <u>Marine Biology</u>        |                 |                  |                 |               | 1                | 1                    |              | 1                       |     |                    |                        | 1                  |                          | 1                  |         |                   | 7                    | 6                       |
| 4. <u>Wildlife</u>              |                 |                  |                 |               | 5                | 4                    |              | 4                       |     |                    |                        |                    |                          | 11                 |         |                   | 24                   | 4                       |
| C. Human Environment            |                 |                  |                 |               |                  |                      |              |                         |     |                    |                        |                    |                          |                    |         |                   |                      |                         |
| 1. <u>Employment</u>            |                 | 2                |                 | 2             | 1                |                      |              |                         |     |                    |                        |                    |                          |                    |         |                   | 5                    | 3                       |
| 2. <u>Subsistence</u>           |                 | 1                |                 | 1             | 5                | 2                    |              |                         |     |                    |                        |                    |                          |                    |         |                   | 10                   | 5                       |
| 3. <u>Lifestyle</u>             |                 | 1                |                 | 1             | 7                | 1                    |              |                         |     |                    |                        |                    |                          | 1                  |         |                   | 10                   | 4                       |
| 4. <u>Commercial fishing</u>    |                 |                  | 1               |               | 5                | 1                    | 1            |                         |     |                    |                        |                    |                          |                    |         |                   | 8                    | 4                       |
| 5. <u>Increased access</u>      |                 | 1                |                 |               | 1                | 1                    | 1            |                         |     |                    |                        |                    |                          |                    |         |                   | 8                    | 4                       |
| 6. <u>Population increase</u>   |                 |                  |                 | 1             | 1                |                      |              | 1                       |     |                    |                        |                    |                          | 2                  |         |                   | 8                    | 6                       |
| 7. <u>Socioeconomics</u>        |                 | 1                | 1               |               | 1                |                      | 1            |                         |     |                    |                        |                    |                          |                    |         |                   | 3                    | 3                       |
| 8. <u>Land use</u>              |                 |                  |                 |               |                  |                      |              |                         |     |                    |                        | 1                  |                          |                    |         |                   | 4                    | 4                       |
| 9. <u>Wilderness</u>            |                 | 1                |                 |               | 1                |                      |              |                         |     |                    |                        |                    |                          |                    |         |                   | 1                    | 1                       |
|                                 |                 |                  |                 |               |                  |                      |              |                         |     |                    |                        |                    |                          |                    |         |                   | 2                    | 2                       |
| Project Design and Construction |                 |                  |                 |               |                  |                      |              |                         |     |                    |                        |                    |                          |                    |         |                   |                      |                         |
| 1. <u>Facilities siting</u>     |                 |                  |                 |               |                  |                      | 1            |                         |     |                    |                        |                    |                          |                    |         |                   |                      |                         |
| 2. <u>Mine area</u>             |                 |                  |                 |               |                  |                      |              |                         |     |                    |                        |                    |                          |                    | 1       |                   | 2                    | 2                       |
| Strip mining                    |                 | 1                |                 |               | 2                |                      |              |                         |     |                    |                        |                    |                          |                    |         |                   | 3                    | 2                       |
| Overburden stockpile            |                 |                  |                 |               | 1                | 3                    |              | 1                       |     |                    |                        |                    |                          |                    | 2       |                   | 8                    | 5                       |
| Topsoil storage                 |                 | 2                |                 |               |                  | 1                    |              |                         |     |                    |                        |                    |                          |                    |         |                   | 3                    | 2                       |
| Coal stockpiles                 |                 | 1                |                 |               |                  | 1                    | 1            | 1                       |     |                    |                        |                    |                          |                    |         |                   | 4                    | 4                       |
| Coal processing                 |                 | 1                | 1               |               |                  | 1                    |              | 3                       |     |                    |                        |                    |                          |                    |         |                   | 6                    | 4                       |
| 3. <u>Transportation</u>        |                 |                  |                 |               |                  |                      |              |                         |     |                    |                        |                    |                          |                    |         |                   |                      |                         |
| Corridor location               |                 |                  | 1               |               | 2                | 1                    |              |                         |     |                    |                        |                    |                          |                    |         |                   | 4                    | 3                       |
| Conveyor system                 |                 | 1                | 2               | 1             | 4                | 1                    | 1            | 1                       |     |                    |                        |                    |                          |                    | 1       |                   | 12                   | 8                       |
| Road system                     |                 |                  |                 | 1             |                  |                      |              | 2                       |     |                    |                        |                    |                          |                    |         |                   | 3                    | 2                       |
| 4. <u>Port site</u>             |                 |                  |                 |               |                  |                      |              |                         |     |                    |                        |                    |                          |                    |         |                   |                      |                         |
| Trestle                         |                 | 1                | 2               |               | 1                |                      |              | 2                       |     |                    |                        | 2                  |                          |                    |         |                   | 8                    | 5                       |
| Vessel traffic                  |                 |                  |                 | 1             | 1                |                      |              |                         |     |                    |                        | 1                  |                          |                    |         |                   | 3                    | 3                       |
| 5. <u>Housing/airstrip</u>      |                 |                  |                 |               |                  |                      |              | 2                       |     |                    |                        |                    |                          |                    |         |                   | 2                    | 1                       |
| 6. <u>Power generation</u>      |                 | 1                | 1               |               |                  |                      |              | 1                       |     |                    |                        |                    |                          |                    | 1       |                   | 7                    | 6                       |

TABLE 7-1  
(continued)  
MATRIX OF COMMENTS RECEIVED FROM SCOPING MEETINGS AND WRITTEN RESPONSES

|   | Comment Sources |                  |                 |                  |        |                      |              |                         |     |                    |                        |                    |                          | Summary                    |   |                   |                      |                         |
|---|-----------------|------------------|-----------------|------------------|--------|----------------------|--------------|-------------------------|-----|--------------------|------------------------|--------------------|--------------------------|----------------------------|---|-------------------|----------------------|-------------------------|
|   | Meetings        |                  |                 | Written Comments |        |                      |              |                         |     |                    |                        |                    |                          | Number<br>Comments Sources |   |                   |                      |                         |
|   | Agencies        | Anchorage public | Soldotna public | Byonek public    | Public | Environmental groups | Other groups | Fish & Wildlife Service | CPA | Nat'l Park Service | Adv. Coun. Hist. Pres. | Corps of Engineers | Dept. Nat'l Res. (Parks) |                            |   | Dept. Fish & Game | Dept. Environ. Cons. | Diamond Alaska Coal Co. |
| 7. <u>Drainage control and wastewater treatment</u> | 1               |                  |                 |                  |        | 7                    |              | 4                       | 3   |                    |                        |                    |                          | 2                          | 2 |                   | 19                   | 6                       |
| 8. <u>Sewage &amp; solid waste disposal</u>         |                 |                  |                 |                  | 2      |                      | 2            |                         |     |                    |                        |                    |                          |                            |   |                   | 4                    | 2                       |
| 9. <u>Soil erosion/stabilization</u>                |                 | 1                | 1               | 1                | 1      | 2                    |              |                         |     |                    |                        |                    |                          |                            |   |                   | 6                    | 5                       |
| 10. <u>Blasting</u>                                 |                 |                  |                 |                  |        |                      |              | 1                       | 1   |                    |                        |                    |                          | 1                          |   |                   | 3                    | 3                       |
| 11. <u>Fuel/reagent spills</u>                      |                 |                  |                 |                  | 1      |                      |              | 2                       |     |                    |                        |                    |                          |                            | 1 |                   | 4                    | 3                       |
| 12. <u>Herbicides</u>                               |                 |                  |                 |                  |        |                      |              | 1                       |     |                    |                        |                    |                          |                            |   |                   | 1                    | 1                       |
| 13. <u>Borrow sources</u>                           |                 |                  |                 |                  |        |                      |              | 1                       |     |                    |                        |                    |                          | 1                          |   |                   | 2                    | 2                       |
| 14. <u>Dust control</u>                             |                 |                  |                 |                  | 7      |                      |              | 2                       |     |                    |                        |                    |                          |                            |   |                   | 9                    | 2                       |
| 15. <u>Noise</u>                                    |                 |                  |                 |                  | 3      |                      |              |                         |     |                    |                        |                    |                          |                            |   |                   | 3                    | 1                       |
| 16. <u>Economics</u>                                |                 | 3                |                 |                  | 1      |                      |              |                         |     |                    |                        |                    |                          |                            |   | 1                 | 5                    | 3                       |
| 17. <u>Technical feasibility</u>                    |                 |                  |                 |                  |        |                      |              |                         |     |                    |                        |                    |                          |                            |   | 1                 | 1                    | 1                       |
| 18. <u>Reclamation</u>                              | 4               |                  | 2               | 1                | 3      | 1                    |              | 2                       | 1   |                    |                        | 1                  |                          | 4                          |   |                   | 19                   | 9                       |
| 19. <u>Mitigation</u>                               | 3               |                  |                 |                  |        | 2                    | 1            |                         | 3   |                    |                        | 1                  |                          |                            |   |                   | 10                   | 5                       |
| 20. <u>Monitoring</u>                               | 1               |                  | 1               | 2                | 2      | 1                    |              |                         | 1   |                    |                        |                    |                          |                            |   |                   | 8                    | 6                       |
| E. EIS PROCESSES                                    |                 |                  |                 |                  |        |                      |              |                         |     |                    |                        |                    |                          |                            |   |                   |                      |                         |
| 1. <u>Generally applicable comments</u>             |                 |                  |                 |                  | 5      | 1                    | 1            |                         |     |                    |                        |                    |                          |                            |   |                   | 13                   | 7                       |
| 2. <u>Baseline data presentation</u>                | 2               |                  |                 |                  |        |                      |              | 2                       | 2   |                    |                        |                    |                          |                            |   |                   | 6                    | 3                       |
| 3. <u>Cumulative impacts</u>                        |                 | 2                |                 |                  |        | 2                    |              | 1                       |     |                    |                        |                    |                          |                            |   |                   | 6                    | 4                       |
| 4. <u>Tiered EIS</u>                                |                 |                  |                 |                  |        |                      |              | 1                       |     |                    |                        |                    |                          |                            |   |                   | 1                    | 1                       |
| 5. <u>Alternate energy source analyses</u>          |                 | 1                | 1               |                  |        | 2                    |              |                         |     |                    |                        |                    |                          |                            |   |                   | 4                    | 3                       |
| 6. <u>Regional perspective</u>                      |                 | 1                | 1               |                  |        | 1                    |              |                         |     |                    |                        |                    |                          |                            |   |                   | 3                    | 3                       |

## State Agencies

- Department of Natural Resources: The DNR has responsibility for issuing the Surface Mining Permit under authority of the Alaska Surface Coal Mining Control and Reclamation Act. In addition, DNR has responsibility for issuing right-of-way permits across state land, tidelands permits and leases, water rights permits, gravel source permits, permits to construct and modify a dam, and burning permits.
- Department of Fish and Game: The **ADF&G** has responsibility for issuing Title 16 permits for any actions in anadromous fish streams or which might obstruct fish passage.
- Department of Environmental Conservation: The DEC has responsibility for issuing a Certificate of Reasonable Assurance that states the proposed project would meet state water quality standards. It must also authorize plans, specifications, and proposed methods of operation to assess air quality emission standards and to assure proper disposal of solid wastes. The agency also reviews oil spill contingency plans.
- State Historic Preservation Office: The SHPO has responsibility for issuing a clearance for construction following adequate archaeological surveys.
- Governor's Council of Management and Budget OMB must concur with the applicant's coastal zone management consistency determination that, to the extent practicable, the project would be consistent with the approved state coastal zone management plan.

## Local Government

- Kenai Peninsula Borough: The Borough has local government responsibilities for planning, zoning, and solid waste disposal permitting and, as a landowner, must issue a right-of-way for the transportation corridor across borough lands.

The first formal meeting with the agencies was held on December 11, 1984 in Anchorage. Since then, agency involvement has continued via: 1) formal review of the Responsiveness Summary and issue identification process; 2) field visits to the Diamond Chuitna project site; 3) review of a preliminary draft of the DEIS; 4) a July 25, 1985, meeting to discuss the preliminary draft; and 5) informal phone calls among EPA, EIS team members, and agency personnel.

In addition, the Corps and DNR are formal cooperating agencies for the EIS, as provided for in the Council on Environmental Quality Regulations governing preparation of an EIS. As such, the Corps and DNR throughout the EIS process provided technical assistance in their areas of expertise and in matters relating to permits within their jurisdictions.

#### 7.4 PUBLIC INVOLVEMENT

Public meetings were held January 8-10, 1985 as part of the scoping process. In addition, a meeting was held with environmental groups in Anchorage on December 12, 1984. Oral and written comments from the general public and these groups were documented and addressed in the Responsiveness Summary (Table 7-1).

Environmental groups in Anchorage reviewed a preliminary draft of the DEIS and a meeting with those groups was held on July 26, 1985, to discuss the draft. The Native Village of Tyonek (NVT) and the Tyonek Native Corporation (TNC) reviewed a preliminary draft of the DEIS. A meeting was held with representatives of the two organizations in Anchorage on July 26, 1985.

The public may informally submit questions and requests for information or express concern at any time. In addition, public participation opportunities include:

- the formal 60-day period for public review and written comment following publication of the draft **EIS**.
- public hearings during the draft EIS review period to discuss updated project status, answer questions, and receive comments on the draft EIS. All written comments received during the draft EIS review period will be individually addressed in the EIS.
- a formal review comment period following publication of the final EIS.

Public hearings on the draft EIS were held during August 1988 in Anchorage, Tyonek, and Soldotna. Chapter 10.0 describes the public comments and responses to the DEIS.

#### 7.5 PROJECT INFORMATION CENTERS

Project information and related documents, including the baseline studies, Responsiveness Summary, Table of Contents for the detailed Permit Application to Conduct Surface Mining and the draft EIS, are available for review during normal business hours at the following locations:



Z.J. **Loussac** Library  
3600 Denali Street  
Anchorage, Alaska 99503

Kenai Community Library  
163 Main Street Loop  
Kenai, Alaska 99611

Tyonek Village Community Center  
Tyonek, Alaska 99682

Sets of the detailed 27-volume Permit Application to Conduct Surface Coal Mining are at the following locations:

Division of Mining  
**Dept.** of Natural Resources  
Eighth Floor  
3601 C Street (Frontier Bldg)  
Anchorage, AK 99503

Diamond Alaska Coal Company  
1227 W. 9th Avenue, Ste. 201  
Anchorage, AK 99501

Resource Development Dept.  
Kenai Peninsula Borough  
147 N. Binkley  
Soldotna, AK 99669

Dames & Moore  
5761 Silverado Way, Bldg. P  
Anchorage, AK 99518-1657

## 7.6 AGENCY CONTACTS

For additional information or submittal of questions and concerns relating to the proposed Diamond Chuitna Coal Project or the **EPA's** EIS, please contact:

### EPA

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Environmental Protection Agency  
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### EIS Consultant

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Diamond Alaska Coal EIS Project Officers

### DAMES & MOORE (Third Party EIS Consultant)

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| J.W. Morsell, M.S.   | Wetlands                                   |
| Michael C.T. Smith, <b>Ph.D.</b><br>(Terra <b>Nord</b> )                     | Assistant Project Manager<br>and Wildlife  |
| <b>David</b> E. Erikson, M.S.  | Habitat Evaluation                         |
| J. Michael Stanley   | Geology                                    |
| Douglas Brewer   | Air Quality                                |
| Gene R. Andrews, M.S.  | Water Quality                              |
| L.A. Peterson, M.S.<br>( <b>L.A.</b> Peterson &<br>Associates, <b>Inc.</b> ) | Water Quality                              |
| Jonathan P. Houghton, <b>Ph.D.</b>   | Freshwater and Marine Biology              |
| Jerry C. Wilson, M.S., <b>Ph.D.</b>  | Oceanography                               |
| David C. Clark, M.A., <b>M.En.</b><br>(Economic Planning<br>Resources)       | Visual Resources and Cultural<br>Resources |
| Loren Hettinger, M.S., <b>Ph.D.</b>  | Vegetation, Soils                          |
| Stephen R. Braund, M.A.<br>(Stephen R. Braund &<br>Associates)               | Subsistence & Socioeconomics               |
| Nancy Hemming<br>(Falls Creek Environmental)                                 | Report Coordinator,<br>Technical Editor    |

# **EIS Distribution List**

## 9.0 EIS DISTRIBUTION LIST

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### 9.1 FEDERAL AGENCIES

#### U.S. Environmental Protection Agency

Office of Federal Activities, Washington, D.C.  
Region VIII, Denver, CO  
Alaska Operations Office, Anchorage, AK  
Air and Energy Research Laboratory, Research  
Triangle Park, NC

#### U.S. Department of the Interior

Office of Environmental Project Review,  
Washington, D.C.  
Regional Environmental Officer, Anchorage, AK

U.S. Fish and Wildlife Service  
State Director's Office, Anchorage, AK  
Alaska Regional Office, Anchorage, AK  
Western Alaska Ecological Services, Anchorage, AK

U.S. Geological Survey, Anchorage, AK

Bureau of Mines, Juneau, AK and Anchorage, AK

National Park Service  
Regional Director's Office, Anchorage, AK  
Lake Clark National Park, Kenai, AK

Alaska Resources Library, Anchorage, AK

Bureau of Land Management  
State Director's Office, Anchorage, AK

#### U.S. Department of Commerce

National Marine Fisheries Service, Anchorage, AK  
Director's Office, Juneau, AK  
Office of Surface Mining, Washington, D.C. and  
Denver, CO  
National Oceanic and Atmospheric Administration,  
Juneau, AK

U.S. Department of Agriculture

U.S. Forest Service, Juneau, AK  
Director's Office  
Tongass National Forest, Sitka, AK  
Soil Conservation Service, Anchorage, AK  
State Conservationist

U.S. Department of Defense

Department of the Army, Alaska District,  
Corps of Engineers, Anchorage, AK  
District Engineer

U.S. Congress

Honorable Ted Stevens, U.S. Senator  
Honorable Frank Murkowski, U.S. Senator

U.S. Department of Health and Human Services

Advisory Council on Historic Preservation,  
Washington, D.C.  
Indian Health Service, Anchorage, AK

9.2 JOINT FEDERAL/STATE

Alaska Land Use Council

Federal Co-Chairman, Anchorage, AK  
State Co-Chairman, Anchorage, AK

9.3 STATE AGENCIES

Office of the Governor

Honorable Steve Cowper, Governor  
Division of Governmental Coordination,  
Anchorage, AK

Alaska House of Representatives

Honorable F. Kay Wallis

Department of Environmental Conservation

Commissioner's Office, Juneau, AK  
Southcentral Regional Office, Anchorage, AK  
Division of Environmental Quality Management,  
Juneau, AK

Department of Fish and Game

Office of the Commissioner, Juneau, AK  
Habitat Division, Anchorage, AK  
Game Division, Soldotna, AK and Anchorage, AK  
Sport Fish Division, Anchorage, AK

DeDartment of Natural Resources

Commissioner's Office, Juneau, AK  
Div. of Land and Water Management, Anchorage, AK  
State Historic Preservation Office, Anchorage, AK  
Division of Agriculture, Palmer, AK  
Division of Geological and Geophysical Survey,  
Eagle River, AK  
Division of Forestry, Anchorage, AK  
Division of Mining, Anchorage, AK  
Northcentral District Office, Fairbanks, AK  
Coastal Coordinator's Office, Juneau, AK

DeDartment of Transportation and Public Facilities

Commissioner's Office, Juneau, AK

DeDartment of Community and Resional Affairs

Division of Community Planning, Anchorage, AK  
and Juneau, AK

DeDartment of Commerce and Economic Development

Office of the Commissioner, Juneau, AK and  
Fairbanks, AK

DeDartment of Labor

Commissioner's Office, Juneau, AK

Department of Law

Office of the Attorney General, Juneau, AK

9.4 LOCAL AGENCIES

Tyonek Native Corporation, Anchorage, AK  
City of Seward, Seward, AK  
City of Kenai, Kenai, AK  
City of Soldotna, Soldotna, AK  
Kachemak City, Homer, AK  
City of Seldovia, Seldovia, AK  
City of Homer, Homer, AK

Kenai Peninsula Borough, Soldotna, AK  
Arctic Slope Regional Corp., Barrow, AK  
Native Village of Tyonek, Tyonek, AK

#### 9.5 MEDIA

Homer Weekly News, Homer, AK  
Seward Phoenix Log, Seward, AK  
Peninsula Clarion, Kenai, AK  
Anchorage Times, Anchorage, AK  
Anchorage Daily News, Anchorage, AK

KRXA Radio, Seward, AK  
KGTL/KCNL, Homer, AK  
KBBI, Homer, AK  
KIMO TV, Anchorage, AK  
KSKA, Anchorage, AK

#### 9.6 INTERESTED GROUPS AND BUSINESSES

AEIDC, University of Alaska, Anchorage, AK  
College of Environmental Sciences, U of A,  
Fairbanks, AK  
School of Mineral Engineering, U of A, Fairbanks, AK  
Resource Development Council, Anchorage, AK  
Alaska Geological Society, Anchorage, AK  
Western Mining Council, Kenai Chapter, Seward, AK  
National Audubon Society, Anchorage, AK  
Placer U.S. Inc., San Francisco, CA  
ENSR, Fort Collins, CO and Anchorage, AK  
Kenai Community Library, Kenai, AK  
Joyce C. Carver Memorial Library, Soldotna, AK  
Yukon Pacific Corp., Anchorage, AK  
Coffman Engineers, Anchorage, AK  
Exploration Supply & Equipment Inc., Anchorage, AK  
Anderson Tug and Barge Co., Seward, AK  
U.S. Borax and Chemical Corp., Ketchikan, AK,  
San Francisco, CA, and Los Angeles, CA  
OMD, Fairbanks, AK  
Riverside Technology, Inc., Ft. Collins, CO  
HWW Consultant, Anchorage, AK  
Ott Water Engineers, Inc. Bellevue, WA  
Ott Water Engineers, Inc., Anchorage, AK  
Alaska Miners Association, Anchorage, AK  
Institute of Water Resources, U of A, Fairbanks, AK  
Sierra Club, Juneau, AK and Anchorage, AK  
Alaska Center for the Environment, Anchorage, AK  
Dames & Moore, Seattle, WA  
Sierra Club Legal Defense Fund, Juneau, AK  
and Washington, D.C.



National Wildlife Federation, Washington, D.C.  
 Seattle City Light, Seattle, WA  
 Elmer E. Rasmuson Library, Fairbanks, AK  
 Stone & Webster, Denver, CO  
 Northwest Mining Assoc., Spokane, WA  
 Colorado St. Univ. Libraries, Fort Collins, CO  
 AMAX Exploration Inc., Golden, CO  
 Z.J. Loussac Library, Anchorage, AK  
 Alaska Geological Survey, Fairbanks, AK  
 R.A. Kreig and Associates, Inc., Anchorage, AK  
 Natural Resources Defense Council, Washington, D.C.  
 Chugach Alaska Corp., Anchorage, AK  
 Piledrivers and Divers Local Union 2520,  
     Anchorage, AK  
 Kiewit Mining and Engineering, Sheridan, WY  
 Terra Nord, Anchorage, AK  
 Pacific Coast Coal Co., Black Diamond, WA  
 Trustees for Alaska, Anchorage, AK  
 Kerr McGee Coal Corp., Oklahoma City, OK  
 Chugach Electric Assoc., Anchorage, AK  
 Union Pacific Minerals, Westminster, CO  
 Specialty Consultants Group, Redmond, WA  
 Resource Economics, Anchorage AK  
 Fluor Daniel Alaska, Inc., Anchorage, AK  
 Woodward-Clyde Consultants, Anchorage, AK  
 RDC, Anchorage, AK  
 Riverside Technology Inc., Ft. Collins, CO  
 Pacific Coast Coal Co., Black Diamond, WA  
 ERT, Inc., Anchorage, AK  
 HWW Consultants, Anchorage, AK

## 9.7 INTERESTED CITIZENS

Pat Chuitt, Tyonek, AK  
 Wayne McCord, Tyonek, AK  
 Robert Freeman, Beluga River, AK  
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 W.M. George, Anchorage, AK  
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