

Chapter Nine

Mitigation Measures

Agency abbreviations used in this chapter are:

Abbreviation	Agency Name	Abbreviation	Agency Name
ADF&G	Alaska Department of Fish and Game	DO&G	Division of Oil and Gas (DNR)
ADEC	Alaska Department of Environmental Conservation	DPOR	Division of Parks and Recreation
DNR	Alaska Department of Natural Resources	USACOE	U.S. Army Corps of Engineers
DMLW	Division of Mining, Land, and Water (DNR)	USFWS	U.S. Fish and Wildlife Service

To ensure that this disposal is in the state’s best interest ((AS 38.05.035(e)), and in approving the exploration phase, operations will be conditioned by mitigation measures found in Section A of this chapter, for those occurring under the license, and in Section B for operations under a lease if Ahtna, Inc. (Ahtna) converts all or a part of the license area into leases. These measures were developed to mitigate potential effects of license- and lease-related activities, considering the information found in the preceding chapters and issues identified during the public comment period. Additional measures may be imposed when Ahtna submits a proposed plan of operations. Ahtna must also comply with all applicable local, state, and federal laws and regulations, as amended.

The director may grant exceptions to these mitigation measures. Exceptions will only be granted upon a showing by Ahtna that compliance with the mitigation measure is not practicable and that Ahtna will undertake an equal or better alternative to satisfy the intent of the mitigation measure. Requests and justifications for exceptions must be included in the plan of operations. Decisions of whether to grant exceptions will be made during the plan of operations review.

A. Exploration Phase Mitigation Measures

1. Facilities and Operations

- a. Exploration activities must be supported by air service, an existing road system, ice roads, or by off-road vehicles that do not cause significant damage to the ground surface or vegetation. Construction of temporary drill pads, airstrips, and roads may be allowed.
- b. A plan of operations must be submitted and approved before conducting exploration and must describe Ahtna’s plans to eliminate or minimize impacts on residential, commercial, and recreational areas, Native allotments and subsistence use areas. At the time of application, Ahtna must submit a copy of the proposed plan of operations to all surface owners whose property will be entered.
- c. Permanent facilities will not be constructed during the exploration phase.

- d. Impacts to identified wetlands must be minimized to the satisfaction of the director, in consultation with ADF&G and ADEC. Further, certain activities within wetlands require permission from the USACOE.

2. Fish and Wildlife Habitat

- a. Before beginning any activities, Ahtna will consult with ADF&G to identify the locations of known bear den sites that are occupied in the season of the proposed activities. Exploration activities started between October 15 and April 30 may not be conducted within one-half mile of known occupied brown bear dens, unless alternative mitigation measures, as described in a bear-human interaction plan, are approved by the director, in consultation with ADF&G. Discovery of an occupied bear den not previously identified by ADF&G must be reported to ADF&G, within 24 hours. Mobile activities will avoid such discovered occupied dens by one-half mile unless alternative mitigation measures, as described in a bear-human interaction plan, are approved by the director in consultation with ADF&G. Non-mobile facilities will not be required to be relocated.
- b. The director, in consultation with ADF&G, may impose seasonal restrictions on activities located in, or requiring travel through or overflight of important moose and caribou calving and wintering areas.
- c. The director, in consultation with ADF&G, may impose seasonal restrictions on activities located in important waterfowl habitat during the plan of operations approval stage.
- d. Surface entry is prohibited within one-quarter mi of trumpeter swan nesting sites between April 1 and August 31. USFWS will identify trumpeter swan nesting sites at Ahtna's request.
- e. Aircraft flying over the trumpeter swan fall staging areas at Old Man Lake must maintain a minimum altitude of 1,500 feet above ground level or a horizontal distance of one mile from April 1 to October 31. Human safety will take precedence over this provision.
- f. Pesticide use is prohibited in the exploration license area.

3. Subsistence and Sport Harvest Activities

- a. License and lease-related use will be restricted if the director determines it is necessary to prevent unreasonable conflicts with subsistence activities. In enforcing this term DO&G, during review of plans of operation, will work with other agencies and the public to identify and avoid potential conflicts. In order to avoid conflicts with subsistence and sport harvest activities, restrictions may include alternative site selection, directional drilling, seasonal drilling restrictions, and other technologies deemed appropriate by the director.
- b. Traditional and customary access to subsistence areas will be maintained unless reasonable alternative access is provided to subsistence users. "Reasonable access" is access using means generally available to subsistence users.
- c. Exploratory drilling operations may be restricted during the fall caribou migration

(August 1 through October 31) when caribou are present to allow for subsistence hunting.

- d. Exploration activities may be restricted during fall caribou migration (August 1 through October 31).

4. Fuel and Hazardous Substances

- a. Ahtna will provide secondary containment for the storage of fuel or hazardous substances. Secondary containment means an impermeable diked area or portable impermeable containment structure capable of containing 110% of the volume of the largest independent container. Double walled tanks do not qualify as secondary containment unless an exception is granted for a particular tank.
- b. Containers with a storage capacity larger than 55 gallons that contain fuel or hazardous substances will not be stored within 100 feet of a water body or within 1,500 feet of a current surface drinking water source. Secondary containment shall be provided for the storage of fuel or hazardous substances 55 gallons or more, up to the minimum DEC volume requirements, and comply with 18 AAC 75.065 through 18 AAC 75.075.
- c. During equipment storage or maintenance, the site will be protected from leaking or dripping fuel and hazardous substances by the placement of drip pans or other surface liners designed to catch and hold fluids under the equipment, or by creating an area for storage or maintenance using an impermeable liner or other suitable containment mechanism.
- d. During fuel or hazardous substance transfer, secondary containment or a surface liner must be placed under all container or vehicle fuel tank inlet and outlet points, hose connections, and hose ends. Appropriate spill response equipment, sufficient to respond to a spill of up to 5 gallons, must be on hand during any transfer or handling of fuel or hazardous substances. Trained personnel will attend transfer operations at all times.
- e. Vehicle refueling will not occur within the annual floodplain, except as addressed and approved in the plan of operations.
- f. All independent fuel and hazardous substance containers will be marked with the contents and Ahtna's or its contractor's name using paint or a permanent label.

5. Waste Disposal

- a. Waste from operations must be reduced, reused, or recycled to the maximum extent practicable. Garbage and domestic combustibles remaining after reuse or recycling must be incinerated whenever possible or disposed at an approved site in accordance with DEC regulations. Proper disposal of garbage and putrescible waste is essential to minimizing attraction of wildlife. Ahtna must use the most appropriate and efficient method to achieve this goal.
- b. On-site temporary storage of waste will not be permitted for longer than six months; the operator will exclude people, domestic animals and wildlife from solid waste disposal areas using fencing or other barriers approved by DO&G. Open pit solid

waste storage is not allowed in residential areas. In these areas, solid waste must be stored in a closed container.

- c. Wherever practicable, the preferred method for disposal of muds and cuttings from oil and gas activities is by underground injection, as regulated by AOGCC. Other methods of disposal will be allowed only upon approval by the director, in consultation with DEC and ADF&G.
- d. New solid waste disposal sites will not be approved or located on state property during exploration license activities. Exceptions may be provided for drilling waste if the facility complies with DEC regulations

6. Access

- a. Public access to, or use of, the license area may not be restricted except within the immediate vicinity of drill sites, buildings, and other related facilities. Areas of restricted access must be identified in the plan of operations. Facilities and operations will not be located so as to block access to or along navigable or public waters as defined in AS 38.05.965.

7. Prehistoric, Historic, and Archeological Sites

- a. Before the construction or placement of any gravel or other structure, road, or facility resulting from exploration, development, or production activities, Ahtna must conduct an inventory of prehistoric, historic, and archeological sites within the area affected by an activity. The inventory must include consideration of literature provided by nearby communities, Native organizations, and local residents; documentation of oral history regarding prehistoric and historic uses of such sites; evidence of consultation with the Alaska Heritage Resources Survey and the National Register of Historic Places; and site surveys. The inventory must also include a detailed analysis of the effects that might result from the activity.
- b. The inventory of prehistoric, historic, and archeological sites must be submitted to the director, and to DPOR Office of History and Archaeology who will coordinate with the local government for review and comment. If a prehistoric, historic, or archeological site or area could be adversely affected by an activity, the director, after consultation with DPOR Office of History and Archaeology, will direct Ahtna as to the course of action to take to avoid or minimize adverse effects.
- c. If a site, structure, or object of prehistoric, historic, or archaeological significance is discovered during operations, Ahtna must report the discovery to the director as soon as possible. Ahtna must make reasonable efforts to preserve and protect the discovered site, structure, or object from damage until the director, after consultation with the DPOR Office of History and Archaeology, has directed the Ahtna as to the course of action to take for its preservation.

8. Local Hire, Communication, and Training

- a. Ahtna is encouraged to employ local and Alaska residents and contractors for work performed in the license area to the extent they are available and qualified. Ahtna will submit, as part of the plan of operations, a proposal detailing the means by which the Ahtna will comply with this measure. The proposal must include a description of

the operator's plans for partnering with local communities to recruit, train, and hire local and Alaska residents and contractors. In formulating this proposal, Ahtna is encouraged to coordinate with employment services offered by the State of Alaska and local communities and to recruit employees from local communities.

- b. A plan of operations application must describe Ahtna's past and prospective efforts to communicate with local communities and interested local community groups.
- c. A plan of operations application must include a training program for all project personnel, including contractors and subcontractors. The program must be designed to inform each person working on the project of environmental, social, and cultural concerns that relate to that person's job. The program must use methods to ensure that personnel understand and use techniques necessary to preserve geological, archeological, and biological resources. In addition, the program must be designed to help personnel increase their sensitivity and understanding of community values, customs, and lifestyles in areas where they will be operating.

B. Development and Transportation Phases Mitigation Measures

1. Facilities and Operations

- a. A plan of operations must be submitted and approved before conducting development or production activities, and must describe the Ahtna's plans to avoid or minimize impacts on residential, commercial, and recreational areas, Native allotments and subsistence use areas. At the time of application, Ahtna must submit a copy of the proposed plan of operations to all surface owners whose property will be entered.
- b. Facilities must be designed and operated to avoid or minimize sight and sound impacts in areas of high residential, commercial, recreational, and subsistence use and important wildlife habitat. Methods may include providing natural buffers and screening to conceal facilities, sound insulation of facilities, or by using alternative means approved by the director, in consultation with ADF&G.
- c. The siting of facilities other than docks, roads, and utility and pipeline crossings is prohibited within 500 feet of all fish-bearing streams and water bodies and 1,500 feet from all current surface drinking water sources. Additionally, siting of facilities is prohibited within one-half mile of the banks of the Copper, Klutina, and Tazlina rivers, Mendeltna and Tolsona creeks, and Moose, Tolsona, and Mud lakes. Facilities may be sited within any of these buffers if Ahtna demonstrates to the satisfaction of the director, in consultation with ADF&G, that a site location inside the buffer is environmentally preferred. Road, utility, and pipeline crossings must be consolidated and aligned perpendicular or near perpendicular to watercourses.
- d. Impacts to identified wetlands must be minimized to the satisfaction of the director, in consultation with ADF&G and ADEC. The director will consider whether facilities are sited in the least sensitive areas. Further, certain activities within wetlands require permission from the USACOE.
- e. Pipelines must use existing transportation corridors where conditions permit. Pipelines and gravel pads must be designed to facilitate the containment and cleanup of spilled fluids. Pipelines must be located on the upslope side of roadways and construction

pads unless an alternative site is environmentally acceptable, as determined by the director, in consultation with DMLW. Wherever possible, pipelines must be buried where soil and geophysical conditions permit. All pipelines, including flow and gathering lines, must be designed, constructed and, maintained to maximize integrity against climatic conditions, geophysical hazards, corrosion and other hazards as determined on a case-by-case basis.

- f. Pipelines will be designed and constructed to minimize alteration of caribou and other large ungulate movement and migration patterns in areas known to contain significant numbers of these animals. At a minimum, above-ground pipelines will be elevated 10 ft (ground to bottom of pipe) for a distance of at least 60 feet, at maximum intervals of one-half mile, except where the pipeline intersects a road, pad, or a ramp installed to facilitate wildlife passage. Ahtna will consider increased snow depth in the sale area in relation to pipe elevation to ensure adequate clearance for wildlife. DNR may, after consultation with ADF&G, require additional measures to mitigate impacts to wildlife movement and migration.
- g. Dismantlement, Removal and Rehabilitation (DR&R): Upon abandonment of material sites, drilling sites, roads, buildings, or other facilities, such facilities must be removed and the site rehabilitated to the satisfaction of the director, unless the director, in consultation with DMLW, ADF&G, and DEC, determines that such removal and rehabilitation is not in the state's interest.
- h. Gravel mining sites required for exploration and development activities is restricted to the minimum necessary to develop the field efficiently and with minimal environmental damage. Where practicable, gravel sites must be designed and constructed to function as water reservoirs for future use, unless the director approves a proposed alternative. Gravel mine sites required for exploration activities must not be located within an active floodplain of a watercourse unless DMLW, after consultation with ADF&G, approves a proposed alternative, or that a floodplain site would enhance fish and wildlife habitat after mining operations are completed and the site is closed.

2. Fish and Wildlife Habitat

- a. Before beginning any activities, Ahtna will consult with ADF&G to identify the locations of known bear den sites that are occupied in the season of the proposed activities. Development activities started between October 15 and April 30 may not be conducted within one-half mile of known occupied brown bear dens, unless alternative mitigation measures, as described in a bear-human interaction plan, are approved by the director in consultation with ADF&G. Discovery of an occupied bear den not previously identified by ADF&G must be reported to ADF&G, within 24 hours. Mobile activities will avoid such discovered occupied dens by one-half mile unless alternative mitigation measures, as described in a bear-human interaction plan, are approved by the director in consultation with ADF&G. Non-mobile facilities will not be required to be relocated.
- b. The director, in consultation with ADF&G, may impose seasonal restrictions on activities located in, or requiring travel through or overflight of, important moose and caribou calving and wintering areas.

- c. The director, in consultation with ADF&G, may impose seasonal restrictions on activities located in important waterfowl habitat during the plan of operations approval stage.
- d. Surface entry is prohibited within one-quarter mile of trumpeter swan nesting sites between April 1 and August 31. The siting of permanent facilities, including roads, material sites, storage areas, powerlines, and above-ground pipelines is prohibited within one-quarter mile of known nesting sites. USFWS will identify trumpeter swan nesting sites at Ahtna's request.
- e. Aircraft flying over the trumpeter swan fall staging areas at Old Man Lake must maintain a minimum altitude of 1,500 feet above ground level or a horizontal distance of one mile from April 1 to October 31. Human safety will take precedence over this provision.
- f. Pesticide use is prohibited in the lease area.
- g. Pipelines that must cross fish bearing streams will be constructed beneath those streams using directional drilling techniques, unless the director, in consultation with ADF&G, approves an alternative method.
- h. Ahtna is required to prepare and implement a human-bear interaction plan designed to minimize conflicts between bears and humans. The plan will include measures to:
 - i. minimize attraction of bears to facility sites, including garbage and food waste;
 - ii. organize layout of buildings and work areas to minimize interactions between humans and bears such as including the use of electric fencing;
 - iii. warn personnel of bears near or on facilities and the proper actions to take;
 - iv. if authorized by ADF&G, deter bears from the drill site;
 - v. provide contingencies in the event bears do not leave the site;
 - vi. provide for proper storage and disposal of materials that may be toxic to bears; and
 - vii. document and communicate the sighting of bears onsite or in the immediate area to all shift employees.

3. Subsistence and Sport Harvest Activities

- a. Lease-related use will be restricted if the director determines it is necessary to prevent unreasonable conflicts with subsistence activities. In enforcing this term DO&G, during review of plans of operation or development, will work with other agencies and the public to identify and avoid potential conflicts. In order to avoid conflicts with subsistence and sport harvest activities, restrictions may include alternative site selection, directional drilling, seasonal drilling restrictions, and other technologies deemed appropriate by the director.
- b. Traditional and customary access to subsistence areas will be maintained unless reasonable alternative access is provided to subsistence users. "Reasonable access" is access using means generally available to subsistence users.

- c. Exploratory drilling operations may be restricted during the fall caribou migration (August 1 through October 31) when caribou are present to allow for subsistence hunting.
- d. The siting of permanent facilities, except for roads or pipelines, are prohibited unless Ahtna demonstrates to the satisfaction of the director, that the development will not preclude reasonable subsistence user access to caribou.

4. Fuel and Hazardous Substances

- a. Ahtna will provide secondary containment for the storage of fuel or hazardous substances. Secondary containment means an impermeable diked area or portable impermeable containment structure capable of containing 110% of the volume of the largest independent container. Double walled tanks do not qualify as secondary containment unless an exception is granted for a particular tank.
- b. Containers with a storage capacity larger than 55 gallons that contain fuel or hazardous substances will not be stored within 100 feet of a water body or within 1,500 feet of a current surface drinking water source. Secondary containment shall be provided for the storage of fuel or hazardous substances 55 gallons or more, up to the minimum DEC volume requirements, and comply with 18 AAC 75.065 through 18 AAC 75.075.
- c. During equipment storage or maintenance, the site will be protected from leaking or dripping fuel and hazardous substances by the placement of drip pans or other surface liners designed to catch and hold fluids under the equipment, or by creating an area for storage or maintenance using an impermeable liner or other suitable containment mechanism.
- d. During fuel or hazardous substance transfer, secondary containment or a surface liner must be placed under all container or vehicle fuel tank inlet and outlet points, hose connections, and hose ends. Appropriate spill response equipment, sufficient to respond to a spill of up to five gallons, must be on hand during any transfer or handling of fuel or hazardous substances. Trained personnel will attend transfer operations at all times.
- e. Vehicle refueling will not occur within the annual floodplain, except as addressed and approved in the plan of operations.
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5. Waste Disposal

- a. Waste from operations must be reduced, reused, or recycled to the maximum extent practicable. Garbage and domestic combustibles remaining after reuse or recycling must be incinerated whenever possible or disposed at an approved site in accordance with DEC regulations. Proper disposal of garbage and putrescible waste is essential to minimize attraction of wildlife. Ahtna must use the most appropriate and efficient method to achieve this goal.
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waste storage is not allowed in residential areas. In these areas, solid waste must be stored in a closed container.

- c. Wherever practicable, the preferred method for disposal of muds and cuttings from oil and gas activities is by underground injection, as regulated by AOGCC. Other methods of disposal will be allowed only upon approval by the director, in consultation with DEC and ADF&G.
- d. New solid waste disposal sites will not be approved or located on state property during exploration activities. Exceptions may be provided for drilling waste if the facility complies with DEC regulations

6. Access

- a. Public access to, or use of, the lease area may not be restricted except within the immediate vicinity of drill sites, buildings, and other related facilities. Areas of restricted access must be identified in the plan of operations. Facilities and operations will not be located so as to block access to or along navigable or public waters as defined in AS 38.05.965.

7. Prehistoric, Historic and Archaeological Sites

- a. Before the construction or placement of any gravel or other structure, road, or facility resulting from development or production activities, Ahtna must conduct an inventory of prehistoric, historic, and archeological sites within the area affected by an activity. The inventory must include consideration of literature provided by nearby communities, Native organizations, and local residents; documentation of oral history regarding prehistoric and historic uses of such sites; evidence of consultation with the Alaska Heritage Resources Survey and the National Register of Historic Places; and site surveys. The inventory must also include a detailed analysis of the effects that might result from the activity.
- b. The inventory of prehistoric, historic, and archeological sites must be submitted to the director, and to DPOR Office of History and Archaeology who will coordinate with the local government for review and comment. If a prehistoric, historic, or archaeological site or area could be adversely affected by an activity, the director, after consultation with DPOR Office of History and Archaeology, will direct Ahtna as to the course of action to take to avoid or minimize adverse effects.
- c. If a site, structure, or object of prehistoric, historic, or archaeological significance is discovered during operations, Ahtna must report the discovery to the director as soon as possible. Ahtna must make reasonable efforts to preserve and protect the discovered site, structure, or object from damage until the director, after consultation with the DPOR Office of History and Archaeology, has directed the Ahtna as to the course of action to take for its preservation.

8. Local Hire, Communication and Training

- a. Ahtna is encouraged to employ local and Alaska residents and contractors for work performed in the license area to the extent they are available and qualified. Ahtna will submit, as part of the plan of operations, a proposal detailing the means by which Ahtna will comply with this measure. The proposal must include a description of the operator's plans for partnering with local communities to recruit, train, and hire

local and Alaska residents and contractors. In formulating this proposal, Ahtna is encouraged to coordinate with employment services offered by the State of Alaska and local communities and to recruit employees from local communities.

- b. A plan of operations application must describe Ahtna's past and prospective efforts to communicate with local communities and interested local community groups.
- c. A plan of operations application must include a training program for all project personnel, including contractors and subcontractors. The program must be designed to inform each person working on the project of environmental, social, and cultural concerns that relate to that person's job. The program must use methods to ensure that personnel understand and use techniques necessary to preserve geological, archeological, and biological resources. In addition, the program must be designed to help personnel increase their sensitivity and understanding of community values, customs, and lifestyles in areas where they will be operating.

C. Definitions

Facilities are any structure, equipment, or improvement to the surface, whether temporary or permanent, including, but not limited to, roads, pads, pits, pipelines, power lines, generators, utilities, airstrips, wells, compressors, drill rigs, camps and buildings.

Geophysical hazard means the following natural processes or adverse conditions that present a threat to life or property in the area of operations: flooding, earthquakes, active faults, landslides, ice formations, snow avalanches, and erosion.

Hazardous substance is (A) an element or compound that, when it enters into or on the surface or subsurface land or water of the state, presents an imminent and substantial danger to the public health or welfare, or to fish, animals, vegetation, or any part of the natural habitat in which fish, animals, or wildlife may be found; or (B) a substance defined as a hazardous substance under 42 USC 9601 - 9675 (Comprehensive Environmental Response, Compensation, and Liability Act of 1980); "hazardous substance" does not include uncontaminated crude oil or uncontaminated refined oil (AS 46.09.900).

Identified wetlands are those areas that have been identified as wetlands by the USACOE under Section 404 of the Clean Water Act.

Minimize is to reduce adverse impacts to the smallest amount, extent, duration, size, or degree reasonable in light of the environmental, social, or economic costs of further reduction.

Permanent facility is a facility that will remain at a single location for a period in excess of six months, excluding exploration wells.

Plan of operations is a license or lease plan of operations under 11 AAC 83.158, and a unit plan of operations under 11 AAC 83.346.

Practicable means feasible in light of overall project purposes after considering cost, existing technology, and logistics of compliance with the mitigation measure.

Reasonable access is access using means generally available to subsistence users.