

# Chapter Seven: Mitigation Measures and Licensee Advisory

## Table of contents

Chapter Seven: Mitigation Measures and Licensee Advisory .....	7-1
A. Mitigation Measures .....	7-2
General .....	7-2
Facilities and Structures .....	7-3
Gravel Mining and Use.....	7-3
Prehistoric, Historic, and Archeological Sites.....	7-4
Community Interaction and Local Hire .....	7-4
Subsistence Harvest Protection .....	7-5
Title 16 Streams .....	7-5
Waste Disposal .....	7-5
Wildlife/Human Interaction .....	7-6
Waterbody Buffers .....	7-7
B. Licensee Advisory .....	7-7



# Chapter Seven: Mitigation Measures and Licensee Advisory

AS 38.05.035(e) and the departmental delegation of authority provide the director, Division of Oil and Gas (DO&G), with the authority to impose conditions or limitations, in addition to those imposed by statute, to ensure that a resource disposal is in the state's best interests. Consequently, to mitigate the potential adverse social and environmental effects of specific selected license-related activities, DO&G has developed mitigation measures and will condition plans of operation, exploration, or development, and other permits based on these mitigation measures. Should the licensee convert all or part of the license area into oil and gas leases, these measures will apply to lease-related activities.

Under AS 38.05.035(e), ADNR has authority to apply the following mitigation measures for the Nenana Basin Exploration License, to all oil and gas activities performed to access the state's mineral interest, regardless of the ownership status of the land from which the licensee seeks access.

The licensee must obtain approval of a detailed plan of operations from the director before conducting exploratory or development activities (11 AAC 83.158). An approved plan of operations is the authorization by which DO&G regulates exploration, development and production activities. A plan of operations must identify the specific measures, design criteria, and construction methods and standards to be employed to comply with the restrictions listed below. It must also address any potential geohazards that may exist at the site.

The measures presented in this final best interest finding were developed after considering measures imposed in state oil and gas lease sales and other exploration license areas; fish and wildlife resource and harvest data submitted by ADF&G; and environmental data relating to air and water quality, solid and liquid waste disposal, and oil spills submitted by ADEC. Measures were also developed or modified after considering comments submitted by the public, industry, federal and state agencies, and local government. Additional project-specific mitigation measures may be imposed if and when the licensee submits plans of exploration, operation, or development.

In addition to compliance with these mitigation measures, the licensee must comply with all applicable local, state and federal codes, statutes and regulations, and any subsequent amendments. Portions of the exploration license area are located within the Minto Flats State Game Refuge. All activities within the refuge that might affect fish and wildlife, their habitats, and public use of the refuge require authorization from ADF&G under AS 16.20 and 5 AAC 95 in addition to ADNR authorization. Federal, state and local government powers to regulate the oil and gas industry are discussed in the *"Governmental Powers to Regulate Oil and Gas Exploration, Development, Production, and Transportation"* in Chapter One of this finding. Additionally, some applicable federal and state statutes and regulations are presented in Appendix B.

The Licensee Advisory section contains important information for the licensee and operators regarding the Minto Flats State Game Refuge.

The following abbreviations are used in these mitigation measures: Alaska Department of Natural Resources (ADNR), Alaska Department of Environmental Conservation (ADEC), Alaska Department of Fish and Game (ADF&G), Division of Oil and Gas (DO&G), Director of the Division of Oil and Gas (Director), Division of Mining, Land and Water (DMLW), Division of Parks and Outdoor Recreation (DPOR), Alaska Oil and Gas Conservation Commission (AOGCC), National Pollutant Discharge Elimination System (NPDES), State Historic Preservation Officer (SHPO), and Minto Flats State Game Refuge (MFSGR).

The restrictions listed below do not apply to geophysical exploration on state lands; geophysical exploration activities are governed by 11 AAC 96.

## **A. Mitigation Measures**

### **General**

1. Pursuant to regulations 18 AAC 75 administered by ADEC, licensees are required to have an approved oil discharge prevention and contingency plan (c-Plan) prior to commencing operations. The plan must include a response action plan to describe how a spill response would occur, a prevention plan to describe the spill prevention measures taken at the facility, and supplemental information to provide background and verification information.
2. Detonation of explosives within or in close proximity to fish-bearing waters must not produce instantaneous pressure changes that exceed 2.7 pounds per square inch in the swim bladder of a fish, or produce a peak particle velocity greater than 0.5 inches per second in a fish spawning bed during the early stages of egg incubation. Blasting criteria have been developed by ADF&G and are available on request.
3.
  - a. Except for approved off-road travel, only ice roads, winter roads, winter trails, existing road systems or air or boat service may be used to support exploration activities. Wintertime off-road travel will be approved only for areas where snow and ice depth are sufficient to protect the ground surface. Summertime off-road travel will be approved only if it can be accomplished without damaging vegetation or the ground surface, including stream banks that may be crossed. The director of DMLW and the Director may grant exceptions if an emergency condition exists, or, if it is determined, after consulting with ADF&G, that off-road travel can be accomplished without damaging vegetation or the ground surface.
  - b. Exploration facilities, including roads and pads, must be temporary and constructed of ice, though, the construction of winter roads may also be allowed. The Director, on a site-specific basis, may grant exceptions, including the use of gravel, if it is determined, after consulting with ADF&G, that no feasible and prudent alternatives exist.
  - c. Upon abandonment of material sites, drilling sites, roads, buildings, airstrips, or other facilities, such facilities must be removed and the site rehabilitated unless the Director, in consultation with ADF&G and ADEC, determines that such removal and rehabilitation is not in the state's best interest. In the MFSGR, this decision will be made by the Director with the concurrence of ADF&G. (See Paragraph 16 of the License Agreement or Paragraph 22 of the Conversion Lease for a detailed discussion of Rights of Termination).
4. Winter ice bridge crossings of all anadromous and resident fish streams will require prior ADF&G permit authorization under AS 16.05.840 and AS 16.05.870. Summer ford crossings of anadromous fish streams will require prior ADF&G permit authorization under AS 16.05.870. All upland and in-water activities within the MFSGR will require permit authorization under AS 16.20 and 5 AAC 95 in addition to any authorizations required by ADNR.
5. Water withdrawal from fish-bearing waters is subject to prior written approval by DMLW and ADF&G, and shall reserve adequate flow to support indigenous aquatic life. The watercourse must not

be blocked to the passage of fish. Each water intake directly accessible by fish shall be designed to prevent the intake, impingement, or entrapment of fish. Maximum screen mesh size and approach velocities for various fish species is available from ADF&G.

### Facilities and Structures

6. Licensees should minimize the impact of development on key wetlands. Key wetlands are those that are important to fish, waterfowl, shorebirds, and other wildlife species because of their high value or scarcity in the region. The DO&G shall consult with the ADF&G to identify the least sensitive areas within the study area during the course of its review of the licensees' plan of operation.
7. Licensees should minimize sight and sound impacts from facilities through the use of insulation and other muffling techniques, acoustic enclosures, screening to conceal facilities, and using alternative techniques to minimize impacts.
8. All pipelines, including flow and gathering lines, should be designed and constructed to provide adequate protection from water currents, scouring, subfreezing conditions, and other hazards as determined on a case-by-case basis. Wherever possible, pipelines must utilize existing transportation corridors.
  - a. Gas pipelines: Prior to burying a gas pipeline an engineering analysis must be completed in order to prevent alterations of surface hydrology and subsurface drainage, and interception of groundwater upwelling.
  - b. Oil pipelines should be located so as to facilitate the containment and cleanup of spilled hydrocarbons. Where feasible and prudent, oil pipelines must be located on the upslope side of roadways and construction pads unless the director, DMLW, determines that an alternative site is environmentally acceptable. Elevated oil pipelines shall be designed and constructed to avoid restrictions to safe public travel or significant alteration of moose and other wildlife and movement and migration patterns. Licensees shall consider snow depth in the study area in relation to pipe elevation to ensure adequate clearance for wildlife.
9.
  - a. Impermeable linings, dikes, or equivalent measures (such as double-walled tanks), will be required for sewage ponds and liquid hydrocarbon storage facilities with a total above ground storage capacity greater than 1,320 gallons, or with a single tank capacity greater than 660 gallons. Additional site-specific measures may be required as determined by ADNR, with the concurrence of ADEC, and will be addressed in the existing review of project permits or oil spill contingency plans (c-Plans).
  - b. Buffer zones of not less than 500 feet will be required to separate oil storage facilities and sewage ponds from freshwater supplies, streams, lakes, and key wetlands. Sumps and reserve pits must be impermeable and otherwise fully contained through diking or other means.

### Gravel Mining and Use

10.
  - a. Gravel mining required for exploration, development, or production facilities will be restricted to the minimum necessary to develop the field efficiently and with minimal environmental damage. Gravel mine sites will be prohibited within an active floodplain of a watercourse unless the Division of Mining, Land, and Water, after consultation with ADF&G, determines that there is no feasible and prudent alternative, or that a floodplain mine site would enhance fish and/or wildlife habitat after mining operations are completed and the site is reclaimed and closed.
  - b. Mine site development and rehabilitation within floodplains should follow the general procedures and guidelines outlined in McLean, R.F. 1993, *North Slope Gravel Pit Performance Guidelines*, ADF&G

Habitat and Restoration Division Technical Report 93-9. These guidelines were developed for North Slope Alaska industrial and infrastructure development but are equally applicable in Interior Alaska.

- c. Gravel mining is prohibited within the MFSGR core area, unless the Director, with the concurrence of ADF&G, determines that a mine site within the core area would enhance fish and/or wildlife habitat after mining operations are completed and the site is reclaimed and closed.

### **Prehistoric, Historic, and Archeological Sites**

- 11. a. Prior to any ground disturbing activity resulting from exploration, development or production activities, the licensee must conduct an inventory of prehistoric, historic and archeological sites within the area affected by activity. The inventory must include consideration of literature provided by Doyon, Ltd., Toghothele Village Corporation of Nenana, Seth-De-Ya-Ah Village Corporation of Minto, Tanana Chiefs Conference, Inc. Archeology Program and local residents; documentation of oral history regarding historic and prehistoric 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 potential effects that might result from the activity. The inventory must be submitted to the Director for distribution to DPOR for review and comment.
- b. In the event that an archeological, prehistoric or historical site or area may be adversely affected by an activity, the Director, after consulting DPOR, will direct the licensee as to what course of action will be necessary to avoid or minimize the adverse effect.
- c. In the event any site, structure, or object of prehistoric, historic, or archaeological significance is discovered during operations, the licensee must immediately report such findings to the Director and the licensee must make every reasonable effort to preserve and protect such site, structure, or object from damage until the Director, after consulting the SHPO, has given directions as to its preservation.

### **Community Interaction and Local Hire**

- 12. To the extent they are available and qualified, the licensee is encouraged to employ local and Alaska residents and contractors for work performed on the license area. Licensees shall submit, as part of the plan of operations, a proposal detailing the means by which the licensee will comply with the measure. The proposal must include a description of the operator's plans for partnering with local communities to recruit and hire local and Alaska residents and contractors. The licensee is encouraged, in formulating this proposal, to coordinate with employment services offered by the state of Alaska and local communities and to recruit employees from local communities.
- 13. Licensees must include in any plan of exploration or plan of development, a training program for all personnel, including contractors and subcontractors, involved in any activity. The program must employ effective 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.
- 14. Plans of operation submitted for review and approval must describe the licensee's efforts to communicate with local communities, and interested local community groups, if any, in the development of such plans.

### **Subsistence Harvest Protection**

15. a. Exploration, development or production operations should be conducted in a manner that prevents unreasonable conflicts between license-related activities and subsistence activities. In enforcing this mitigation measure DO&G, during review of plans of operations, shall consult with ADF&G and work with other agencies and the public to assure that potential conflicts are identified and avoided to the fullest extent possible. Available options include alternative site selection, requiring directional drilling, seismic and threshold depth restrictions, seasonal drilling restrictions, and the use of other technologies deemed appropriate by DO&G.
- b. No restriction of public access to, or use of, the license area should be permitted as a consequence of the licensee's activities except in the immediate vicinity of drill sites, buildings, and other related facilities.

### **Title 16 Streams**

16. Under Title 16 of the Alaska Statutes, the measures listed below will be imposed by ADF&G for all activities below the ordinary high water mark in specified anadromous fish waterbodies and for activities in fish-bearing waters that could block fish passage. Exceptions to these requirements, including exceptions for the use of spill containment and recovery equipment, may be allowed on a case-by-case basis. Specific information on the locations of anadromous or fishbearing waters in and near the area may be obtained from ADF&G.
  - a. Alteration of river, stream or lake banks or beds, except for approved permanent crossings, will be prohibited.
  - b. The operation of equipment, excluding boats, in open water areas of rivers and streams may be prohibited. (Note: Certain exceptions may be authorized by ADF&G as noted under Measures 22 and 23).
  - c. Bridges are the preferred watercourse crossings in fish spawning and important rearing habitats. In areas where culverts are used, they must be designed, installed, and maintained to provide efficient passage of fish.

### **Waste Disposal**

17. Solid Waste Disposal:
  - a. Garbage and domestic combustible refuse must be incinerated. Nonburnable wastes must be disposed of at an approved upland site.
  - b. The preferred method for disposal of muds and cuttings from oil and gas activities is by underground injection. Injection of non-hazardous oil field wastes generated during development is regulated by AOGCC through its Underground Injection Control (UIC) Program for oil and gas wells. Annular disposal of muds and cuttings associated with drilling an exploratory well is permitted by AOGCC. Surface discharge of drilling muds and cuttings into lakes, streams, rivers, and high value wetlands is prohibited. Surface discharge of drilling muds and cuttings into reserve pits shall be allowed only when the Director, in consultation with ADEC, determines that alternative disposal methods are not feasible and prudent. If use of a reserve pit is proposed, the operator must demonstrate the advantages of a reserve pit over other disposal methods, and describe methods to be employed to reduce the disposed volume. Onpad temporary cuttings storage will be allowed as necessary to facilitate annular injection and/or backhaul operations.

- c. Proper disposal of garbage and putrescible waste is essential to minimize attraction to wildlife. The licensee must use the most appropriate and efficient method to achieve this goal. The primary method of garbage and putrescible waste disposal is prompt, on-site incineration in compliance with State of Alaska air quality regulations in 18 AAC 50. The secondary method of disposal is on-site frozen storage in animal-proof containers with backhaul to an approved waste disposal facility. The tertiary method of disposal is on-site non-frozen storage in animal proof containers with backhaul to an approved waste disposal facility. Daily backhauling of non-frozen waste only must be achieved unless safety considerations prevent this.

18. Wastewater Disposal:

- a. Unless authorized by NPDES or state permit, disposal of wastewater into freshwater bodies, including Class III, IV, VI, and VIII wetlands, is prohibited.
- b. Surface discharge of reserve pit fluids will be prohibited unless authorized by ADEC permit and approved by DMLW.
- c. Disposal of produced waters in upland areas, including wetlands, will be by subsurface disposal techniques. ADEC may permit alternate disposal methods if the licensee demonstrates that subsurface disposal is not feasible or prudent.

**Wildlife/Human Interaction**

- 19. a. Surface entry may be prohibited within ¼-mile of trumpeter swan nesting sites from April 1 through August 31. Permanent facilities, including roads, material sites, storage areas, powerlines, and above-ground pipelines may be prohibited within ¼-mile of known nesting sites. ADF&G will identify trumpeter swan nesting sites at the request of the licensee.
  - b. The licensee is advised to contact the U.S. Fish and Wildlife Service for information on locations of, and recommended measures to accommodate, bald eagle and peregrine falcon nest sites.
20. Exploration and production activities must not be conducted within ½-mile of occupied grizzly and black bear dens, unless alternative mitigation measures are approved by ADF&G. Known den sites must be obtained from ADF&G's Division of Wildlife Conservation, phone 459-7313, prior to commencement of any activities. Occupied dens encountered in the field must be reported to the above, and subsequently avoided by ½-mile
21. For projects in close proximity to areas frequented by bears, licensees must prepare and implement bear interaction plans to minimize conflicts between bears and humans. These plans must include measures to: (a) minimize attraction of bears to the drill sites; (b) organize layout of buildings and work areas to minimize human/bear interactions; (c) warn personnel of bears near or on drill sites and the proper procedures to take; (d) if authorized, deter bears from the drill site; (e) provide contingencies in the event bears do not leave the site or cannot be deterred by authorized personnel; (f) discuss proper storage and disposal of materials that may be toxic to bears; and (g) provide a systematic record of bears on the site and in the immediate area. ADF&G offers to assist licensees in developing educational programs and camp layout and management plans as licensees prepare their operations plans.



## Waterbody Buffers

22. To the extent feasible and prudent, facilities other than docks, or road and pipeline crossings, will be prohibited within 500 feet of fish-bearing waterbodies. Facilities may be sited within the buffer zone if the licensee demonstrates to the satisfaction of the Director, after consultation with ADF&G, that such facility restrictions are not feasible or prudent, or that the alternate location is environmentally preferable. Road and pipeline crossings must be aligned perpendicular or near perpendicular to watercourses.
- 23.a. Surface occupancy may not be allowed within ¼-mile of anadromous fish spawning areas, such as those located on the Nenana River, Tetlanika River, Chatanika River, Tolovana River, Kantishna River, Toklat River, Swanneck Slough, Lost Slough, Glacier Creek, Julius Creek, Clear Creek (Clear/Anderson Area), and Seventeen Mile Slough. Additional spring upwelling water bodies within these areas that support anadromous fish species may be included in this restriction as they are identified through ongoing field evaluation. The Director may require additional restrictions, after consultation with ADF&G, for high value resident fish spawning habitat.
- b. The Director, in consultation with ADF&G, may grant exceptions to the ¼-mile setback if the licensee demonstrates to the satisfaction of the Director that the scientific data indicate the proposed surface occupancy will have no significant impact on anadromous fish spawning habitat.
- c. Setback distances should not prohibit: (1) water use from streams to support drilling and (2) ADF&G-approved floodplain material sites that benefit fish and wildlife.

## B. Licensee Advisory

1. a. Licensees are advised that ADNR and ADF&G have joint management authority of the Minto Flats State Game Refuge (MSFGR)
- b. ADF&G and ADNR may require additional mitigation measures for activities within the refuge and may, in some instances, find some oil and gas development incompatible with the refuge's purposes as defined by state statute.

