

**Pretty Creek Gas Storage Lease
ADL 390776**

Final Finding of the Director

**Prepared by
Alaska Department of Natural Resources
Division of Oil and Gas
Anchorage, Alaska
September 13, 2005**

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Introduction

On May 13, 2005, Union Oil Company of California (Unocal) applied to the Alaska Department of Natural Resources (ADNR), Division of Oil and Gas (Division) for a gas storage lease under AS 38.05.180(u) and 11 AAC 83.500-520. The application included a proposed form of storage lease and \$50 application fee as required by 11 AAC 83.520 and 11 AAC 88.105. Unocal revised the application, specifically the proposed lease area, on June 22, 2005. Additionally, Unocal supplied pertinent geological and geophysical data to support the application, which are held confidential under AS 38.05.035(a)(9).

Unocal applied to store natural gas in two reservoirs within a gas storage area utilizing an existing gas well and facilities located approximately 30 miles west of Anchorage in the Susitna Flats State Game Refuge (SFSGR). The State of Alaska (state) owns all of the lands within the proposed storage lease. The proposed storage lease is within the Pretty Creek Unit, and is subject to state oil and gas leases owned and operated by Unocal. The Pretty Creek Unit is connected to the Cook Inlet gas pipeline grid system via Enstar Natural Gas Company's 20-inch gas pipeline traversing the unit area. Unocal must obtain approval from agencies with jurisdiction, including the Alaska Oil and Gas Conservation Commission (AOGCC), prior to any gas injection.

This decision approves a smaller lease area than Unocal requested in its application. The approved storage lease area includes 1,640.00 acres in the following state lands:

T. 13 N., R. 9 W., Tract A, Seward Meridian, Alaska

Section 3, Unsurveyed, W1/2NW1/4, 80.00 acres;

Section 4, Unsurveyed, N1/2, N1/2SW1/4, SE1/4SW1/4, SE1/4, 600.00 acres;

T. 14 N., R. 9 W., Tract A, Seward Meridian, Alaska

Section 28, Unsurveyed, W1/2SW1/4, SE1/4SW1/4, SW1/4SE1/4, 160.00 acres;

Section 32, Unsurveyed, E1/2E1/2, 160.00 acres;

Section 33, Unsurveyed, W1/2NE1/4, SE1/4NE1/4, NW1/4, S1/2, 600.00 acres;

Section 34, Unsurveyed, SW1/4SW1/4, 40.00 acres;

The lease limits the gas storage area vertically to two gas reservoirs within the gas storage area, described as follows:

Sterling 45-0 Gas Sands and Beluga 51-5 Gas Sands between the measured depth of 4,503 feet and 5,173 feet below the surface of the ground in the Pretty Creek Unit #4 well, the surface wellhead of which is located in Section 33, Township 14 North, Range 9 West, Seward Meridian, Alaska.

Issuance of this gas storage lease will extend the terms of four oil and gas leases: ADLs 58810, 63048, 63049, and 58813, issued by the state, the sole owner of the mineral

estate under AS 38.05.180(u). Underlying oil and gas leases have either a fixed 12.5 percent or 16.667 percent royalty rate and their primary terms have been extended by ADNR indefinitely by unitization. Unocal agrees to segregate these leases at the gas storage lease boundary, creating four new separate and distinct leases outside the gas storage area having the same terms and conditions as the original leases within the gas storage area.

Statutory Background

The proposed gas storage lease will dispose of an interest in state land. Under AS 38.05.035(e), an ADNR director must make a written finding that a disposal of state land, resources, property, or interests will serve the best interests of the state. This best interest finding is a written analysis which describes for the public the facts and applicable law which are relevant to the disposal and gives a decision based on these factors. The finding must also discuss material issues that were raised during the period allowed for receipt of public comment. The Director must make this written finding public at least 21 days before issuing the storage lease.

Under AS 38.05.180(u), the Commissioner of ADNR may authorize the subsurface storage of oil or gas to avoid waste or to promote conservation of natural resources. It does not matter whether the oil or gas is produced from state land, so long as storage occurs in land leased or subject to lease under section AS 38.05.180. An oil and gas lease on which storage is authorized shall be extended at least for the period of storage and so long thereafter as oil or gas not previously produced is produced in paying quantities. By memorandum dated September 2, 2004, the Commissioner approved a supplement to Department Order 003, and delegated the authority to authorize subsurface storage to the Division Director.

This written finding meets the requirements of AS 38.05.035(e) for the authorization and issuance of gas storage lease ADL 390776 to Unocal. It describes for the public the facts and applicable law which are relevant to the disposal and sets forth the decision based on these factors. This finding also discusses material issues that were raised during the comment period.

The attached gas storage lease, ADL 390776 grants the lessee the exclusive right to store gas and associated substances in the gas storage formation reservoirs and area identified in Exhibit A to the gas storage lease, subject to the lease terms and applicable statutes and regulations, including mitigation measures and lessee advisories incorporated by reference into the lease.

Scope of Review

The scope of this administrative review is limited to reasonably foreseeable, significant effects of the disposal or leasing phase of this activity as set out in the attached lease. This review is limited to applicable statutes and regulations; material facts

pertaining to the land, resources, or property, or interest in them; and issues that are material based on the statutes, regulations and facts. Accordingly, the division has considered some generalized activities following issuance of the gas storage lease that are reasonably foreseeable and expected within the initial ten-year term of the lease. Unanticipated future uses or operations, however, are beyond the scope of this review and will be subject to future public reviews and authorizations by the state.

ADNR is allowed to review projects as "multi-phased development," when three conditions are met (AS 38.05.035(e)(1)(C)):

- (a) the only uses to be authorized are part of the discrete phase being reviewed;
- (b) ADNR's approval is required before the next phase may proceed (i.e., a plan of operations or permit must be authorized before another phase or segment may begin); and
- (c) ADNR describes its reasons for allowing phased review and conditions the approval to ensure that any additional uses or activities proposed for that or any later phase will serve the best interests of the state.

Phased review is based in part on the fact that some multiphased projects are subject to continued review throughout the succeeding stages. Phased review is intended to allow for consideration of subsequent issues when sufficient data are available upon which to make reasonable decisions. Future phases cannot be reviewed with any accuracy when information regarding future activities is unknown, nonspecific, undefined, unavailable, or unreliable.

Condition (a) is met because the proposed gas storage lease gives the lessee the right to conduct storage activities, it does not authorize other activities by the lessee on leased area. Before any operation may be undertaken on the leased area, the lessee is required to comply with all applicable statutes and regulations, and secure approval of a plan of operations and all applicable permits.

Condition (b) is met because state approval is required before the next phase may proceed. Before new activities can occur on leased lands, the lessee must secure all applicable permits. Additional permits must also be prepared, and approved by the state, for any later development or production phase.

The plans of operation must identify the specific measures, design criteria, construction methods, and standards that will be employed to meet the provisions of the lease. Plans of operation are subject to extensive technical review by a number of local, state, and federal agencies. They are also subject to consistency with the Alaska Coastal Management Program (ACMP) standards, if the affected lands are within the coastal zone. The plans are available for public review upon submission to the state. Oil and gas storage-related activities will be permitted only if proposed future operations comply with all borough, state, and federal laws and the provisions of the lease.

Condition (c) is met because ADNR is conditioning this best interest determination and the leases with a number of mitigation measures designed to ensure

that any future activities in the exploration, development, and production phases will serve the best interests of the state. These mitigation measures have been developed by ADNR through its review of the material facts and issues, including the reasonably foreseeable cumulative effects of storage in the lease area.

Therefore, the scope of review in this finding is limited to the applicable statutes and regulations; the material facts and issues that are known to the director that pertain to the storage lease phase; and the reasonably foreseeable, significant effects of gas storage. This includes all of the items referenced on the list in AS 38.05.035(g) and all material facts and issues raised by the public during the public comment period. Specific future storage activities will be considered at each phase, when permit applications for specific proposed activities at specific locations are reviewed by various government agencies and the public. Every individual activity on the proposed storage lease is or has been subject to public review and agency permitting.

Public Process

On June 24, 2005, in compliance with AS 38.05.945 the Division issued a public notice (Notice) of receipt of a gas storage lease application, and included in that notice, in compliance with AS 46.40.096(c), notice that the proposed storage area is within the Matanuska-Susitna Borough (MSB) Coastal Resource District. The Notice was published in the *Anchorage Daily News*, *Peninsula Clarion* and *The Frontiersman* on June 24, 2005; posted on the state public notice website and on the Division's website; and sent to interested parties on the Division's Cook Inlet lease sale mailing list, including public libraries, federal, state, and local governments, non-governmental organizations, and electric and natural gas utilities.

The Notice established a public comment period which ended at 5:00 p.m. on July 25, 2005. The Notice called for comments on the application's consistency with the ACMP, including the enforceable policies of the Matanuska-Susitna Borough (MSB) Coastal Resource District's Coastal Management Plan. The Notice stated that the proposed gas storage lease would be a phased activity under AS 46.40.094(a)(2), requiring additional permits and an ACMP review, including an opportunity for public comment, for any future development activities. Comments relative to ACMP consistency were required to identify the enforceable policy or standard at issue and explain how the application is inconsistent. In addition to the general public notice, the ACMP review package was mailed to ADNR's Office of Project Management and Permitting (OPMP), Office of Habitat Management and Permitting (OHMP), Division of Mining Land & Water (DMLW), and State Historic Preservation Office (SHPO), the MSB, Joint Pipeline Office, Alaska Department of Fish and Game (ADFG), Alaska Department of Environmental Conservation (ADEC), Alaska Oil and Gas Conservation Commission (AOGCC), and the applicant, Unocal.

In addition, the Notice called for separate comments under AS 38.05.035(e) regarding whether the issuance of the proposed storage lease that would best serve the

interests of the state. To be eligible to appeal this final finding, a person must have provided written comments during the comment period as stated in the Notice.

The Division received comments from ADFG, the MSB, Enstar Natural Gas Company, and Trading Bay Oil and Gas, LLC. These comments are addressed below.

Comments on Proposed Gas Storage Application

The Mat-Su Borough found the proposed disposal to be consistent with the MSB Coastal District's Coastal Management Plan, and requested that within the District's 75-foot shoreline setback, all areas not occupied by allowed development must minimize disturbance of natural vegetation. This stipulation will be placed into the lease file and be included in all future Pretty Creek gas storage lease permit reviews.

ADFG requested that Cook Inlet Areawide Lease Sale mitigation measures and lessee advisories be attached to the gas storage lease. ADFG also commented that it understood the purpose of the recently approved Special Area Permit (FG 05-II-0043) was for installation of a boost compressor necessary to deplete remaining reserves, not for purposes of injection, but noted that ADFG did not object to its usage for storage.

Enstar Natural Gas Company commented that since no new facilities will be required, the project should be consistent with the ACMP. Enstar additionally commented that gas storage will play an increasingly important role in meeting gas supply requirements in the Cook Inlet region and will help meet peak demand needs for half the state's population. Enstar noted that having a facility at Pretty Creek (west side of Cook Inlet) is vital in the event of any disruption of storage at Swanson River Field (east side of Cook Inlet).

Trading Bay Oil and Gas, LLC (TBOG) commented on both the ACMP consistency and the state's best interest determination for this proposed gas storage lease application. Comments relative to the ACMP determination stated that if Unocal's proposed injection operations were to create an abnormally pressurized zone on TBOG's adjacent leases, it could result in unforeseen effects and would violate 11 AAC 112.230 regarding the siting of energy facilities. This regulation requires operators to cooperate with landowners and developers in the development of their facilities, and requires facilities to be located such that they are compatible with existing and subsequent adjacent uses. The Proposed Consistency Determination noted that a preliminary determination of discontinuity between the proposed storage zones and the TBOG production zones had been made; and further that the comment was not germane to ACMP consistency, which focuses on surface impacts.

TBOG's comments relative to the best interest finding stated that if Unocal's proposed injection were to affect the operations on TBOG leases, TBOG may not drill to explore or develop its leases, which would be contrary to the interests of the state. As stated in this finding, the state does not anticipate any effect on neighboring leases from

proposed injection operations. Should new information show otherwise, subsequent plan of operations permits may be amended or conditioned appropriately.

TBOG also commented on Unocal's application for a Storage Injection Order and requested a public hearing. At the hearing, held on August 10, 2005, TBOG expressed concern that injection operations could affect the natural pressure or fluid flow characteristics of the same sand horizon on its leases located approximately 2,600 feet north and 3,900 feet east of the storage lease boundary. TBOG also expressed concern that Unocal would someday claim that gas produced from its neighboring lease was Unocal's injected gas. The AOGCC said there is never any complete certainty that the injections will not affect TBOG leases, but that it was very unlikely, given that the sands mapped by Unocal do not extend onto TBOG leases, and that Beluga sands rarely extend that distance anywhere in Cook Inlet.

The Division has independently determined that all available data indicates that the reservoir sands proposed for storage are wholly contained in the proposed lease area. The Division has seen no evidence, nor was any presented, that would suggest that the Pretty Creek gas reservoir is in communication with any potential gas reservoir located on TBOG leases.

In addition, the terms of the proposed storage lease provide protections in the event of migrating gas and changes in pressure. Paragraph 1 provides that lessee's storage rights must be "exercised in a manner that will not unreasonably interfere with the rights of any permittee, lessee or grantee of the state consistent with the principle of reasonable concurrent uses as set out in Article VIII, Section 8 of the Alaska Constitution." Paragraph 12(b) requires the lessee to notify the division of any anticipated changes in a project resulting in alteration of conditions that were originally approved, including: increase in size of the project; increase in the approved zone pressure; changes in the injection and withdrawal intervals; changes in the observation and collection intervals; or monitoring procedures. No changes may be carried out without commissioner approval. Paragraph 21 of the lease states that if the Commissioner determines that stored gas is migrating from the gas storage formation to other formations or that stored gas within the gas storage formation is expanding beyond the limits of the leased area, this lease may be amended, effective as of the date prescribed by the Commissioner, to include formations or lands subject to the same terms and conditions applicable to the lands and formations previously committed to this lease.

Alaska Coastal Management Program

If the proposed activity (a disposal of interest in land) occurs in a coastal area, AS 46.40 requires that the activity be consistent with the ACMP, which includes approved local district coastal zone management plans. The Notice described above solicited comments relative to such a consistency determination.

Under 11 AAC 110.255, the Department issued a *Proposed ACMP Consistency Determination for Proposed Gas Storage Lease Application (ADL 390776), Pretty Creek*

Unit on July 28, 2005 which addressed all relevant comments received in response to the Notice.

Issued concurrently with this Best Interest Finding, the Final Consistency Determination finds this disposal to be consistent with the ACMP, including the MSB Coastal Resource District's Coastal Management Plan.

Material Facts and Issues

ADNR approved the Pretty Creek Unit (PCU) on October 10, 1977. Chevron, U.S.A., Inc. discovered the Pretty Creek gas field in 1979 with the *Pretty Creek Unit #2* well. The *PCU #2* was completed and immediately suspended on February 26, 1979 due to a lack of market for the gas. Following this discovery, two additional wells have been drilled in the unit area. In an effort to delineate the northern extent of the producing reservoir, the *PCU #224-28* was drilled and abandoned in August 1986. After Enstar Natural Gas Company built its 20-inch pipeline across the unit area, ADNR approved the Pretty Creek Unit Beluga Participating Area on August 19, 1986. The operator, Unocal, put the *PCU #2* well into production on December 17, 1986.

The *PCU #2* well produced 6.4 billion cubic feet of gas until Unocal shut-in the well in January 1999, due to sand accumulation in the wellbore. The *PCU #4* well was completed on November 30, 2001 and began producing gas from the commingled Beluga-Sterling Formation at an initial rate of 4.7 million cubic feet of natural gas daily (MMCFD). Recently, the Sterling Formation sand horizon (45-0) began producing water into the wellbore, and that horizon was sealed off from the deeper, producing Beluga sand with a sliding sleeve.

PCU #4 is currently producing 1.3 MMCFD, and Unocal expects the well to cease being economic to produce before the end of 2005, after having produced almost 3 billion cubic feet of gas. Currently, the gas must be compressed before it will flow into the Enstar sales pipeline that serves the Matanuska-Susitna Valley and Greater Anchorage Area. Without this storage project, Unocal would shut-in the well when there are no economically recoverable gas reserves remaining in the Beluga 51-5 sand. The Sterling 45-0 sand produces significant quantities of water in association with gas in the *PCU #4* well.

The applicant proposes to conduct injection and withdrawal operations from an existing well, gravel pads, roads, and utilities infrastructure. Installation of additional compression and possibly an additional well are foreseeable to fully exploit the working gas capacity of the storage lease area. It is anticipated that all future activities will occur on existing pads and roads in the lease area. Further, any future plan of operations approvals will undergo public and multi-agency ACMP review, and all activities must comply with mitigation measures attached to the storage lease. No additional impact to the surrounding environment, including the habitat and the fish and wildlife species that depend on that habitat, is foreseeable following issuance of the gas storage lease.

All relevant statutes and regulations have been considered in this finding, including AS 38.05.180(u), 11 AAC 83.500-520, AS 41.06, and 20 AAC 25.252. All terms are specified in the lease. To prevent the storage lease from extending the term of oil and gas leases covering large tracts of land not used for storage, this decision requires that the oil and gas leases underlying the storage lease area be segregated, and new leases issued for the acreage outside the storage lease.

The Division significantly amended the lease terms proposed by Unocal and added terms necessary to protect the interests of the state, such as Reserved Rights, Term, Renewal, Required Operations, Native Gas Royalty, Storage Operations Plan, Storage Development Plan, Diligence, Suspension, Surrender, Default and Termination, Rights upon Termination, and Local Hire.

Environmental Impacts

The proposed gas storage lease is within the Susitna Flats State Game Refuge (SFSGR), established in 1976 under AS 16.20.036 to protect:

(1) fish and wildlife habitat and populations, particularly waterfowl nesting, feeding, and migration areas; moose calving areas; spring and fall bear feeding areas; salmon spawning and rearing habitats; and

(2) public uses of fish and wildlife and their habitat, particularly waterfowl, moose, and bear hunting; viewing; photography; and general public recreation in a high quality environment.

The SFSGR is known for its public uses, such as wildlife viewing and hunting. Approximately ten percent of the statewide waterfowl harvest comes from the SFSGR. Producing gas fields within this refuge include Pretty Creek, Lewis River, Ivan River and Stump Lake. All approvals for activities are conditioned by mitigation measures designed to protect the recognized values of the SFSGR.

ADNR, ADFG, the MSB and various additional stakeholders participated in developing the Cook Inlet Areawide mitigation measures which address operations within the original oil and gas lease sale area, including the SFSGR. Those mitigation measures, as modified to specifically address this gas storage lease, address potential environmental impacts, and are incorporated by reference into the proposed gas storage lease

The storage lessee must comply with all applicable state and federal statutes and regulations, including the mitigation measures, and any terms imposed in the AOGCC Storage Injection Order. ADNR has the authority to amend the proposed storage lease if stored gas migrates from the gas storage formation to other formations, or if stored gas expands beyond the limits of the leased area. The storage lessee shall notify the Division

of any anticipated changes in the project resulting in alteration of conditions that were originally approved, and must obtain further approval before implementing those changes.

Analysis of State Benefits

Gas storage increases reliability of gas delivery to electric utility companies, industrial users, and all residents who use gas in the Cook Inlet Basin. Nearly sixty percent of Alaskans depend on Cook Inlet gas to heat or light their homes and businesses (ADOLWD, 2004). All electric utilities in the Cook Inlet region depend on reliable supplies of natural gas. Most homes located along the natural gas pipeline grid system are heated with natural gas or gas-generated electricity. The ConocoPhillips-Marathon Liquefied Natural Gas (LNG) Facility, Tesoro Petroleum Refinery, and Agrium fertilizer/ammonia plant rely on natural gas delivered from the Cook Inlet pipeline grid (USDOE, 2004).

There exists at times a shortage of gas for use in Cook Inlet along the gas pipeline distribution system during the winter months of peak demand. When demand exceeds supply, gas delivery contracts specify that industrial use be curtailed, requiring plant operators to shut down facilities and output. Of the 200 billion cubic feet of gas consumed in Cook Inlet in 2003, 20 percent was sold to Agrium for urea/ammonia production, 37 percent to ConocoPhillips-Marathon plant for LNG production, and the remainder was used for power generation (18 percent), utility gas (16.5 percent), field operations and other uses (8.3 percent). Industrial consumption is level, but residential and commercial demand is growing (ADNR, 2004).

During the winter of 2004-2005, industrial use at Nikiski was curtailed at times because producers could not supply enough natural gas to all markets. Unlike previous years, in the future diverting supply from industrial users such as the Agrium fertilizer plant or the ConocoPhillips-Marathon LNG plant may not compensate for the forecasted shortfall. Sufficient gas storage will help alleviate peak demand shortages, thereby helping to provide a reliable supply to industrial, commercial and residential end users.

On July 29, 2005, Alaska Governor Murkowski's *Agrium Task Force* recommended that state and federal government and industry actively support and promote the establishment of new natural gas storage facilities within the Cook Inlet Basin to address the issue of natural gas deliverability shortfalls in winter. "The natural gas system may be challenged to meet future peak demand periods in winter. Without adequate natural gas storage capacity in place, industrial users are the first to feel the effects of deliverability shortfalls through curtailment of their natural gas supplies in deference to the needs of utility consumers. Curtailments of supply create increasingly unfavorable economic conditions for industrial users that may ultimately result in the closure of one or more natural gas based industrial plants."

Total Cook Inlet gas reserves are estimated at 2.087 trillion cubic feet; of which about 300 billion cubic feet are undeveloped. Reserves will eventually be produced, but

daily demand for gas, especially on cold winter days, exceeds the supply that currently can be delivered (ADNR, 2004).

While industrial demand is relatively stable throughout the year, residential and commercial demand for gas ranges from 35 MMCFD in the summer to 200 MMCFD or higher on the coldest days of the year. Enstar forecasts daily gas contract needs to grow 2% each year over the next 10 years. Demand for gas on an average annual basis will exceed contracted supply beginning in 2009 (Enstar, 2005). Some of the gas after 2009 will come from undeveloped reserves; however production rates from ageing fields and existing wells are declining and there are virtually no new large gas discoveries in Cook Inlet to replace existing production. Unocal's proposed gas storage facility at Pretty Creek may deliver a maximum of 20 MMCFD to the Cook Inlet gas pipeline grid or 700 MMCF annually. The Division estimates Cook Inlet will require an additional 9 to 14 billion cubic feet of annual storage capacity to meet peak winter spikes in demand (ADNR, 2005).

Best Interest Determination

State oil and gas leases exclude storage rights except for secondary or tertiary enhanced oil recovery or reservoir pressure maintenance. AS 38.05.180(u) allows ADNR to authorize underground storage of hydrocarbons as a separate activity from conventional oil and gas leasing. In Alaska, depleted reservoirs with established well control data are preferred storage zones.

Some unproduced "native" gas remains in the gas storage reservoirs and serves as "cushion gas" to support gas withdrawal and delivery rates. Cushion gas is the volume of gas intended as permanent inventory in a storage reservoir to maintain adequate pressure and deliverability rates throughout the withdrawal season. Royalty on this native cushion gas will be paid from a percentage of each year's annual gas withdrawal as if it were originally produced from the overlying oil and gas lease, and allocated according the Pretty Creek Unit Agreement. Injected gas will mix with native gas in the reservoirs. Royalty on the native gas within the gas storage formation under the leased area will be computed at the royalty rate and paid at the value as specified in the applicable oil and gas leases. Paragraph 7 of the lease stipulates the methodology for determining monthly royalty payments for the native gas that will be allocated to the individual existing oil and gas leases as prescribed in the Pretty Creek Unit Agreement.

The storage lease is for only specified sand horizons and does not give the lessee the right to drill, develop, produce, extract, remove or market gas other than injected gas. No other horizons in the *PCU #4* well are known to contain commercial quantities of gas. The Pretty Creek commingled Sterling-Beluga gas pool is the only known accumulation in the leased area and is the basis for the Pretty Creek Unit, discovered in 1979. Unocal is the sole working interest owner of the storage lease and all overlying oil and gas leases. The storage lease allows the overlying oil and gas leases to continue as long as their original terms are met. The storage operator or lessee will be subject to terms and

conditions identical to existing oil and gas lease permit and bonding requirements. Storage operations may not interfere with existing oil and gas lease operations.

The underground storage of hydrocarbons is prohibited except as ordered by the AOGCC. On June 20, 2005, Unocal applied for a Storage Injection Order as required by 20 AAC 25.252. A public hearing was held on July 27 and continued on August 10. The operator must comply with 20 AAC 25, specifically 20 AAC 25.252. There are no wells within 1,500 feet of the injection well (*PCU #4*). Adjacent lease ownership lines are greater than 1,500 feet from the injection well, thus no spacing exception is required (20 AAC 25.055(a)(2)). Before any gas may be injected, Unocal must obtain approval of the Injection Order from AOGCC.

Well data and interpretations of seismic surveys indicate that the horizontal and vertical extent of the horizons proposed for injection are wholly contained within the storage lease area. Data and interpretations of those data reasonably demonstrate that injection operations will not affect the pressure or movement of fluid beneath adjacent leases.

ADNR and Unocal agree that the estimated ultimate recovery of gas from the gas storage formation is 2.991 billion cubic feet. This estimate is based upon an engineering assessment which considers both mechanical constraints and well and reservoir performance, and utilizes decline curve, material balance, and nodal analysis techniques. Using the ultimate recovery value of 2.991 billion cubic feet, there remained 33 MMCF of royalty-bearing recoverable reserves as of October 1, 2005.

Developing the state's energy resources and ensuring reliability of supply is vital to the state economy and the well-being of its citizens. The state will be paid royalties on cushion gas that would not otherwise be produced. The gas storage project increases Unocal's ability to meet demand, results in operational efficiencies, and does not diminish royalty and tax payments that would occur without storage.

Alaska's population is growing as is residential and commercial demand for natural gas. This growth will exacerbate gas deliverability shortages in the near future, unless gas storage or other deliverability measures are encouraged and implemented.

Underground gas storage feasibility depends on favorable geological and engineering properties of the storage reservoir, its size and its cushion, or base, gas requirements. It also depends on access to transportation pipeline infrastructure, existing production infrastructure, gas production sources, and delivery points.

Favorable geologic characteristics and location along an important gas pipeline make the Pretty Creek gas reservoir an ideal candidate for storing natural gas, conserving it for use during times of peak demand. All gas consumers in Cook Inlet, and especially industrial users, will benefit from efficiencies created by reliable gas service. Consumers or end users of natural gas in Cook Inlet may benefit from lower utility rates because of

firm supply contracts between the producer (Unocal) and the gas delivery company (Enstar).

The Pretty Creek natural gas storage facility is designed to help manage seasonal load variations, hourly swings, and emergency situations when consumer demand for gas exceeds available deliverability. The storage lease allows the operator to store gas during lower demand periods (usually summer) and withdraw and deliver that gas during the high demand periods of winter. This helps Unocal to meet contract demands year-round, furthering the goal of uninterrupted service for all consumers of gas in Cook Inlet.

The proposed gas storage lease is conditioned by its terms, including mitigation measures and lessee advisories. It provides for a reasonable fee in exchange for exclusive use of the subsurface storage container, two nearly depleted gas reservoirs. The storage lease will have a ten year primary term with one optional renewal, and will continue in effect as long as the terms are met. The storage lessee must inject and withdraw gas on a regular basis to keep the lease. The state will be paid a fixed annual fee for use of the storage reservoirs.

The Division tailored the fee to the stated purpose of the gas storage lease and finds this fee reasonable. The division based the fee on estimated working gas usage and considered the stated purpose of the gas storage facility, namely operational balancing and system supply, and not direct customer service. Should the purpose of the storage facility change the lessee must file an amended storage operations plan. Further, state interests are protected because any change in the material conditions under which this lease was originally approved, including any increase in the size of the project or increase in zone pressure, requires ADNR approval.

On the basis of the facts and issues, comments received, applicable laws and regulations, and the documents reviewed during preparations of this finding, I conclude that issuing gas storage lease ADL 390776 will best serve the interests of the state of Alaska.

This finding is a final administrative decision of the department. A person affected by this decision who provided timely written comment or public hearing testimony on this decision may request reconsideration, in accordance with 11 AAC 02. Any reconsideration request must be received by 5:00 p.m. (local time), October 3, 2005 and may be mailed or delivered to Tom Irwin, Commissioner, Department of Natural Resources, 550 W. 7th Avenue, Suite 1400, Anchorage, Alaska 99501; faxed to 1-907-269-8918, or sent by electronic mail to dnr_appeals@dnr.state.ak.us. If reconsideration is not requested by that date or if the commissioner does not order reconsideration on his own motion, this decision goes into effect as a final order and decision on October 14, 2005. Failure of the commissioner to act on a request for reconsideration within 30 days after issuance of this decision is a denial of reconsideration and is a final administrative order and decision for purposes of an appeal to Superior Court. The decision may then be appealed to Superior Court within a further 30 days in accordance with the rules of the court, and to the extent permitted by applicable law. An eligible person must first request

reconsideration of this decision in accordance with 11 AAC 02 before appealing this decision to Superior Court. A copy of 11 AAC 02 may be obtained from any regional information office of the Department of Natural Resources.



Mark D. Myers
Director

September 13, 2005

I concur with the director that the issuance of Gas Storage Lease ADL 390776 is in the best interests of the state.



Thomas E. Irwin
Commissioner

September 13, 2005

References

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2004 Alaska Population Estimates 2000-2004. Alaska Department of Labor & Workforce Development, Research & Analysis Section.

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2005 Unpublished estimate. Alaska Department of Natural Resources, Division of Oil & Gas, Commercial Section, August.

2004 Annual Report. Alaska Department of Natural Resources, Division of Oil & Gas, December.

Enstar Natural Gas Company

2005 Personal communication with Dan Dickegraff, Enstar Natural Gas Company, August 18, 2005.

USDOE (United States Department of Energy)

2004. South-Central Alaska Natural Gas Study. Charles P. Thomas, et al. United States Department of Energy, National Energy Technology Laboratory, Arctic Energy Office, Final Report, June.

Attached: ADL 390776 Gas Storage Lease (including Mitigation Measures and Lessee Advisories

STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES

Gas Storage Lease
ADL No. 390776

THIS LEASE is entered into _____, between the State of Alaska, "the state," and

Union Oil Company of California, a California Corporation,

"the lessee," whether one or more, whose sole address for purposes of notification is under Paragraph 27.

In consideration of the payment made by the lessee to the state, and subject to the provisions of this lease, including the mitigation measures and lessee advisories attached to this lease and by this reference incorporated in this lease, the state and the lessee agree as follows:

1. GRANT. (a) Subject to the provisions in this lease, the state grants and leases to the lessee, without warranty, the exclusive right for Storage of Gas and Associated Substances in the Gas Storage Formation under the following described tract of land:

T. 13 N., R. 9 W., Tract A, Seward Meridian, Alaska

Section 3, Unsurveyed, W1/2NW1/4, 80.00 acres;

Section 4, Unsurveyed, N1/2, N1/2SW1/4, SE1/4SW1/4, SE1/4, 600.00 acres;

T. 14 N., R. 9 W., Tract A, Seward Meridian, Alaska

Section 28, Unsurveyed, W1/2SW1/4, SE1/4SW1/4, SW1/4SE1/4, 160.00 acres;

Section 32, Unsurveyed, E1/2E1/2, 160.00 acres;

Section 33, Unsurveyed, W1/2NE1/4, SE1/4NE1/4, NW1/4, S1/2, 600.00 acres;

Section 34, Unsurveyed, SW1/4SW1/4, 40.00 acres;

containing approximately 1,640.00 acres, more or less (referred to in this lease as the "leased area"); and the nonexclusive right to install pipelines and build structures on the leased area for the purpose of Storage and to house and board employees in its operations on the leased area. The rights granted by this lease are to be exercised in a manner that will not unreasonably interfere with the rights of any permittee, lessee or grantee of the state consistent with the principle of reasonable concurrent uses as set out in Article VIII, Section 8 of the Alaska Constitution.

(b) For the purposes of this lease, the leased area contains the legal subdivisions as shown on the attached plat marked Exhibit A.

(c) If the leased area is described by protracted legal subdivisions and, after the effective date of this lease, the leased area is surveyed under the public land rectangular system, the boundaries of the leased area are those established by that survey, when approved, subject, however, to the provisions of applicable regulations relating to those surveys.

(d) If the state's ownership interest in the leased area is less than an entire and undivided interest, the grant under this lease is effective only as to the state's interest and the payments provided in this lease must be paid to the state in the proportion that the state's interest bears to the entire undivided fee.

(e) The state makes no representations or warranties, express or implied, as to title, or access to, or quiet enjoyment of, the leased area. The state is not liable to the lessee for any deficiency in title to the leased area, nor is the lessee or any successor in interest to the lessee entitled to any refund due to deficiency in title for any payments made under this lease.

2. **GAS STORAGE FORMATION.** Lessee proposes to use two gas sand horizons for the Storage of Gas, whether or not produced from state owned lands, which are defined in this lease as the "Gas Storage Formation" and are described as follows:

Sterling 45-0 Gas Sands and Beluga 51-5 Gas Sands between the measured depth of 4,503 feet and 5,173 feet below the surface of the ground in the Pretty Creek Unit #4 well, the surface wellhead of which is located in Section 33, Township 14 North, Range 9 West, Seward Meridian, Alaska.

3. **RESERVED RIGHTS.** (a) The state, for itself and others, reserves all rights not expressly granted to the lessee by this lease. These reserved rights include:

(1) the right to explore for Oil, Gas, and Associated Substances by geological and geophysical means;

(2) the right to explore for, develop, and remove natural resources including Oil, Gas, and Associated Substances on or from the leased area;

(3) the right to establish or grant easements and rights-of-way for any lawful purpose, including without limitation for shafts and tunnels necessary or appropriate for the working of the leased area or other lands for natural resources including Oil, Gas, and Associated Substances;

(4) the right to dispose of land within the leased area for well sites and well bores of wells drilled from or through the leased area to explore for or produce Oil, Gas, and Associated Substances in and from lands not within the leased area; and

(5) the right otherwise to manage and dispose of the surface of the leased area or interests in that land by grant, lease, permit, or otherwise to third parties.

(b) The rights reserved may be exercised by the state, or by any other person or entity acting under authority of the state, in any manner that does not unreasonably interfere with or endanger the lessee's operations under this lease.

4. **TERM.** This lease is issued for an initial term of 10 years from the effective date of this lease.

5. **RENEWAL.** This lease is renewable for one additional, successive term of 10 years subject to any terms and conditions the Commissioner may impose, provided the lessee has complied fully with the terms of this lease. The annual fee for the renewal period will be the higher of (1) the annual fee set for the initial term increased by the PPI for Industrial Commodities, published by the Bureau of Labor Statistics, U.S Dept. of Labor, during the initial term of this lease, or (2) the highest annual fee for any other Cook Inlet Basin Gas Storage lease or agreement predominantly on state, federal, or a combination of state and federal land that is issued during the initial term of this lease. If the payment for such lease or agreement is other than an annual fee, that payment will be converted to an equivalent annual fee.

6. **REQUIRED OPERATIONS.** Lessee shall use the Gas Storage Formation for storage operations to maintain the lease. Any consecutive 24 month period without storage operations will constitute a default of the lease under paragraph 22, unless cessation of storage operations is undertaken pursuant to an approved suspension of operations under paragraph 17. For the purposes of this paragraph, storage operations mean the Injection or Withdrawal of Gas.

7. **NATIVE GAS ROYALTY.** (a) The state and lessee agree that the estimated ultimate recovery of Native Gas from the Gas Storage Formation is 2,991 million cubic feet (MMcf) and that there are 33 MMcf of recoverable reserves (Native Gas) in the Gas Storage Formation under the leased area. Ten percent (10%) of all Gas withdrawn from the Gas Storage Formation is deemed to be royalty bearing Native Gas until a total of 330 MMCF of Gas has been withdrawn.

(b) Lessee shall make additional royalty payments to the state for all Gas withdrawn from the Gas Storage Formation that exceeds the sum of the total Gas injected plus the 33 MMcf Native Gas.

(c) Royalty on the Native Gas withdrawn from the Gas Storage Formation under the leased area will be paid under the terms of the applicable Oil and Gas leases and unit agreements. If Native Gas is withdrawn from state land with no applicable Oil and Gas lease, the lessee shall pay the state monthly royalty of the full market value of the Gas at the time it is withdrawn.

(d) The lessee may inject only Produced Gas into the Gas Storage Formation.

8. FEE. The lessee shall pay an annual fee to the state of \$25,000, plus \$5,000 for each well in addition to the PCU #4 well used for Storage operations.

(b) The lessee shall pay the annual fee to the state, in advance, on or before the annual anniversary date of this lease. The state may designate another depository with at least 60 days notice to the lessee. The state is not required to give notice that fees are due. If the state's (or depository's) office is not open for business on the annual anniversary date of this lease, the time for payment is extended to include the next day on which that office is open for business.

9. RECORDS. The lessee shall keep and have in its possession books and records showing the development and Storage operations (including records of development, Injection and Withdrawal expenses) and disposition (including records of sale prices, volumes, and purchasers) of all Gas and Associated Substances injected or withdrawn from the leased area. The lessee shall permit the state or its agents to examine these books and records at all reasonable times. Upon request by the state, the lessee's books and records must be made available to the state at the state office designated by the state. These books and records must employ methods and techniques that will ensure the most accurate figures reasonably available. The lessee shall use generally accepted accounting principles consistently applied.

10. PAYMENTS. All payments to the state under this lease must be made payable in the manner directed by the state, and unless otherwise specified, must be delivered to the state at:

DEPARTMENT OF NATURAL RESOURCES
550 WEST 7TH AVENUE, SUITE 1410
ANCHORAGE, ALASKA 99501-3561
ATTENTION: FINANCIAL SERVICES SECTION

or in person at either of the Department's Public Information Centers located at

550 W. 7th Ave., Suite 1260
Anchorage, Alaska

3700 Airport Way
Fairbanks, Alaska

or to any depository designated by the state with at least 60 days notice to the lessee.

11. STORAGE OPERATIONS PLAN. 11 AAC 83.158 will apply to all operations under this lease. Lessee shall have an approved operations plan prior to commencing Storage operations.

12. STORAGE DEVELOPMENT PLAN. (a) The lessee shall file annually two copies of an application for approval by the state of a development plan that must describe the lessee's plans under this lease. The plan must include the estimated size in surface acreage or shape, total capacity, and working capacity of the Gas Storage Formation and any other engineering, geological or operational data that may be requested by the Division. The development plan must include maps and statements describing: long-range activities for the leased area; plans for expansion or contraction of this lease; details of proposed operations for at least one year following submission of the plan; and the sequence and schedule of the operations (Injection and Withdrawal volumes) to be conducted on or in the leased area, including the date operations are proposed to begin and their proposed duration. Lessee shall have an approved development plan prior to commencing Storage operations.

(b) The development plan must be revised, updated, and submitted to the state for approval 60 days before the anniversary date of the previously approved plan. If no changes from an approved plan are contemplated for the following year, the lessee shall file a statement to that effect for approval in lieu of the required revision and update. The Lessee shall notify the Division of any anticipated changes in a project resulting in alteration of conditions that were originally approved, including: increase in size of the project; increase in the approved zone pressure; changes in the Injection and Withdrawal intervals; changes in the observation and collection intervals; or monitoring procedures. No changes may be carried out without Commissioner approval.

(c) The lessee may, with the approval of the state, modify an approved development plan.

13. INFORMATION ACQUIRED FROM OPERATIONS. (a) The lessee shall submit to the state all geological, geophysical and engineering data and analyses obtained from the lease within 30 days following the completion of a well. The lessee shall submit to the state data and analyses acquired subsequent to well completion within 30 days following acquisition of that data. The state may waive receipt of operational data from some development, service or injection wells. The state will inform the operator of the waiver prior to well completion. The lessee shall submit the data and analyses to the Division at the location specified in paragraph 27 of this lease. The data and analyses must include the following:

(1) a copy of the completion report (AOGCC form 10-407) with an attached well summary, including daily drilling reports, formation tops encountered, a full synopsis of drillstem and formation testing data, an identification of zones of abnormal pressure, Oil and Gas shows and cored intervals;

(2) latitudinal and longitudinal coordinates for the completed surface and bottom hole locations;

(3) a copy of the permit to drill (AOGCC form 10-401 only) and the survey plat of the well location;

(4) a paper copy (no sepia copies) of all final 2-inch open hole and cased hole logs, including measured depth and true-vertical depth versions, specialty logs (such as Schlumberger's cyberlook, formation microscanners and dipmeter logs), composite mud or lithology log and report, measured-while-drilling (MWD) and logged-while-drilling (LWD) logs, velocity and directional surveys;

(5) a digital version of well logs in LAS, LIS or ASCII format on IBM format floppy disks, a digital version of velocity surveys in SEG Y format, a digital version of directional surveys in ASCII format (other formats may be acceptable upon agreement with the Division); and

(6) a paper copy of all available well analyses, including geochemical analyses, core analyses (porosity, permeability, capillary pressure, photos, and descriptions), paleontologic and palynologic analyses, thermal maturation analyses, pressure build up analyses, and fluid PVT analyses (an ASCII format digital version of the above information shall also be submitted, if available). The state may require the lessee to submit additional information in accordance with the applicable statutes and regulations in effect at the time of the completion date of the well.

(b) Any information submitted to the state by the lessee in connection with this lease will be available at all times for use by the state and its agents. The state will keep information confidential under AS 38.05.035(a)(9) and its applicable regulations. In accordance with AS 38.05.035(a)(9)(C), in order for geological, geophysical and engineering information submitted under paragraph 13(a) of this lease to be held confidential, the lessee shall request confidentiality at the time the information is submitted. The information must be marked **CONFIDENTIAL**.

14. GAS MEASUREMENT. The lessee shall measure all Gas injected into and withdrawn from the Gas Storage Formation, and keep a record of all Injections and Withdrawals. Lessee shall submit to the Division within 30 days after each calendar month, a statement certified by lessee showing the total amount of Gas injected into and withdrawn from the Gas Storage Formation during that preceding calendar month, a copy of the Monthly Injection Report (AOGCC Form 10-406) and Facility Report of Produced Gas Disposition (AOGCC Form 10-422), and any other engineering, geological, or operational data that may be requested by the state. The amount of injected and withdrawn Gas reported each month must be computed at a standard pressure of 14.65 pounds per square inch absolute and a standard temperature of 60 degrees Fahrenheit, regardless of the pressure and temperature at which the Gas was actually measured.

15. DILIGENCE AND PREVENTION OF WASTE. (a) The lessee shall exercise reasonable diligence in Drilling wells and conducting Storage operations on the leased area unless consent to suspend operations temporarily is granted by the state.

(b) The lessee shall perform all operations under this lease in a good and workmanlike manner in accordance with the methods and practices set out in the approved operations plan and development plan, with due regard for the prevention of waste of Oil, Gas, and Associated Substances and the entrance of water into the Oil and Gas-bearing sands or strata, and to the preservation and conservation of the property for future productive operations. The lessee shall carry out at the lessee's expense all orders and requirements of the state regarding the prevention of waste and the preservation of the leased area. If the lessee fails to carry out these orders, the state will have the right, together with any other available legal recourse, to enter the leased area to repair damage or prevent waste at the lessee's expense.

(c) The lessee shall securely plug in an approved manner any well before abandoning it.

16. INSPECTION. The lessee shall keep open at all reasonable times, for inspection by any duly authorized representative of the state, the leased area, all wells, improvements, machinery, and fixtures on the leased area, and all reports and records relative to operations and surveys or investigations on or with regard to the leased area

or under this lease. Upon request, the lessee shall furnish the state with copies of and extracts from the reports and records.

17. **SUSPENSION.** The state may from time to time direct or approve in writing suspension of Storage operations under this lease in accordance with 11 AAC 82.670. Nothing in this paragraph suspends the obligation to pay fees, royalties or other production or profit-based payments to the state from operations on the leased area that are not affected by any suspension.

18. **FORCE MAJEURE.** If the state determines that the lessee has been prevented by Force Majeure, after efforts made in good faith, from performing operations under this lease, this lease will not expire during the period of Force Majeure. Nothing in this paragraph suspends the obligation to pay fees, royalties or other production or profit-based payments to the state from operations on the leased area that are not affected by any Force Majeure.

19. **ASSIGNMENT.** This lease, or an interest in this lease, may, with the approval of the state, be assigned, subleased, or otherwise transferred to any person or persons qualified to hold a lease in accordance with 11 AAC 82.605-11 AAC 82.630.

20. **SURRENDER.** The lessee at any time may file with the state a written surrender of rights under this lease in accordance with 11 AAC 82.635.

21. **EXPANSION.** If the Commissioner determines that Gas is migrating from the Gas Storage Formation to other formations or that Gas within the Gas Storage Formation is expanding beyond the limits of the leased area, this lease may be amended, effective as of the date prescribed by the Commissioner, to include additional formations or lands subject to the same terms and conditions applicable to the lands and formations previously committed to this lease.

22. **DEFAULT AND TERMINATION; CANCELLATION.** (a) The failure of the lessee to perform timely its obligations under this lease, or the failure of the lessee otherwise to abide by all express and implied provisions of this lease, is a default of the lessee's obligations under this lease. Whenever the lessee fails to comply with any of the provisions of this lease, and fails within 60 days after written notice of that default to begin and diligently prosecute operations to remedy that default, the state may terminate this lease if at the time of termination there is no Non-Native Gas within the Gas Storage Formation under the leased area. If there is Non-Native Gas within the Gas Storage Formation under the leased area, the lessee shall be given a reasonable period, not to exceed two years, in which to withdraw the Non-Native Gas from the Gas Storage Formation prior to termination.

(b) The state may cancel this lease at any time if the state determines, after the lessee has been given notice and a reasonable opportunity to be heard, that:

(1) continued operations under this lease will cause serious harm or damage to biological resources, to property, to mineral resources, or to the environment (including the human environment);

(2) the threat of harm or damage will not disappear or decrease to an acceptable extent within a reasonable period of time; and

(3) the advantages of cancellation outweigh the advantages of continuing this lease in effect. Any cancellation under this subparagraph will not occur unless and until operations under this lease have been under suspension or temporary prohibition by the state, with due extension of the term of this lease, continuously for a period of five years or for a lesser period upon request of the lessee.

(c) Any cancellation under subparagraph (b) will entitle the lessee to receive compensation that the lessee demonstrates to the state is equal to the lesser of:

(1) the value of the cancelled rights as of the date of cancellation, with due consideration being given to both anticipated revenues from this lease and anticipated costs, including costs of compliance with all applicable regulations and stipulations, liability for clean-up costs or damages, or both, in the case of an Oil spill, and all other costs reasonably anticipated under this lease; or

(2) the excess, if any, over the lessee's revenues from this lease (plus interest on the excess from the date of receipt to date of reimbursement) of all consideration paid for this lease and all direct expenditures made by the lessee after the effective date of this lease and in connection with exploration or development, or both, under this lease, plus interest on that consideration and those expenditures from the date of payment to the date of reimbursement.

23. **RIGHTS UPON TERMINATION.** Upon the expiration or earlier termination or cancellation of this lease as to all or any portion of the leased area, the state shall direct the lessee in writing and the lessee shall have the right at any time within a period of one year after the expiration, termination or cancellation, or any extension of that

period as may be granted by the state, to remove from the leased area or portion of the leased area all machinery, equipment, tools, and materials. Upon the expiration of that period or extension of that period and at the option of the state, any machinery, equipment, tools, and materials that the lessee has not removed from the leased area or portion of the leased area become the property of the state and may be removed by the state at the lessee's expense. At the option of the state, all improvements such as roads, pads, and wells must either be abandoned and the sites rehabilitated by the lessee to the satisfaction of the state, or be left intact and the lessee absolved of all further responsibility as to their maintenance, repair, and eventual abandonment and rehabilitation. Subject to the above conditions, the lessee shall deliver up the leased area or those portions of the leased area in good condition.

24. DAMAGES AND INDEMNIFICATION. (a) No rights reserved under the AS 38.05.125 may be exercised by the lessee until the lessee has provided to pay the owner of the land, his lessees and permittees, upon which the AS 38.05.125 reserved rights are sought to be exercised, full payment for all damage sustained by the owner by reason of entering the land. If the owner for any reason does not settle the damages, the lessee may enter the land after posting a surety bond determined by the state, after notice and an opportunity to be heard, to be sufficient in form, amount, and security to secure to the owner, his lessees and permittees, payment for damages, and may institute legal proceedings in a court of competent jurisdiction where the land is located to determine the damages which the owner of the land may suffer. The lessee agrees to pay for any damages that may become payable under AS 38.05.130 and to indemnify the state and hold it harmless from and against any claims, demands, liabilities, and expenses arising from or in connection with such damages. The furnishing of a bond in compliance with this paragraph will be regarded by the state as sufficient provision for the payment of all damages that may become payable under AS 38.05.130 by virtue of this lease.

(b) The lessee shall indemnify the state for, and hold it harmless from, any claim, including claims for loss or damage to property or injury to any person caused by or resulting from any act or omission committed under this lease by or on behalf of the lessee. The lessee is not responsible to the state under this subparagraph for any loss, damage, or injury caused by or resulting from the sole negligence of the state.

(c) The lessee expressly waives any defense to an action for breach of a provision of this lease or for damages resulting from an Oil spill or other harm to the environment that is based on an act or omission committed by an independent contractor in the lessee's employ. The lessee expressly agrees to assume responsibility for all actions of its independent contractors.

25. BONDS. Lessee agrees to maintain bonds in accordance with 11 AAC 83.505(4) and 11 AAC 83.160.

26. AUTHORIZED REPRESENTATIVES. The Director of the Division of Oil and Gas, Department of Natural Resources, State of Alaska, and the person executing this lease on behalf of the lessee will be authorized representatives for their respective principals for the purposes of administering this lease. The state or the lessee may change the designation of its authorized representative, or the address to which notices to that representative are to be sent, by a notice given in accordance with Paragraph 27 below. Where activities under a development plan are underway, the lessee shall also designate, by a notice under Paragraph 27 below, by name, job title, and address, an agent who will be present in the state during all lease activities.

27. NOTICES; PROTEST. (a) Any notices required or permitted under this lease must be by electronic media producing a permanent record or in writing and must be given personally or by registered or certified mail, return receipt requested, addressed as follows:

TO THE STATE:

DIRECTOR, DIVISION OF OIL AND GAS
DEPARTMENT OF NATURAL RESOURCES
550 WEST 7TH AVENUE, SUITE 800
ANCHORAGE, ALASKA 99501-3560

TO THE LESSEE:

UNION OIL COMPANY OF CALIFORNIA
909 WEST NINTH AVENUE
ANCHORAGE, ALASKA 99501
ATTENTION: LAND MANAGER

(b) Any notice given under this paragraph will be effective when delivered to the above authorized representative.

(c) A lessee who wishes to protest the amount of money due the state under this lease or any action of the state regarding a provision of this lease must file a written protest with the Division within 30 days after the mailing date of the state's notice or bill. A lessee who fails to file a protest within the required time waives any further right to protest. The state will establish the administrative appeal procedure to be followed and will inform the lessee of the procedure no later than 30 days after the filing of the written protest.

28. **STATUTES AND REGULATIONS.** This lease is subject to all applicable state and federal statutes and regulations in effect on the effective date of this lease, and to all statutes and regulations placed in effect after the effective date of this lease. A reference to a statute or regulation in this lease includes any change in that statute or regulation whether by amendment, repeal and replacement, or other means. This lease does not limit the power of the state or the United States of America to enact and enforce legislation or to promulgate and enforce regulations affecting, directly or indirectly, the activities of the lessee or its agents in connection with this lease or the value of the interest held under this lease. In case of conflicting provisions, statutes and regulations take precedence over this lease.

29. **INTERPRETATION.** (a) This lease is to be interpreted in accordance with the rules applicable to the interpretation of contracts made in the State of Alaska. The paragraph headings are not part of this lease and are inserted only for convenience. The state and the lessee expressly agree that the law of the State of Alaska will apply in any judicial proceeding affecting this lease.

(b) The term "including" when used in this lease will be by way of example only and shall not be considered in any way to be in limitation.

(c) Any reference to a dollar amount contained in this lease will refer to United States dollars.

(d) Unless the context requires otherwise, any reference in this lease to any document or instrument is a reference to that document or instrument and all schedules, exhibits, and attachments as amended and in effect from time to time.

(e) Unless otherwise stated, any reference in this lease to any person, entity, or organization includes its permitted successors and assigns and, in the case of any governmental authority, any person succeeding to its functions and capacities.

(f) Unless the context requires otherwise, the present tense will be read to include the past tense and the past tense will be read to include the present tense, and the singular will be read to include the plural and the plural will be read to include the singular.

(g) This lease is the product of negotiation and collaboration between the state and lessee and interpretation of the terms of this lease shall favor neither party.

30. **INTEREST IN REAL PROPERTY.** It is the intention of the state and lessee that the rights granted to the lessee by this lease constitute an interest in real property in the leased area.

31. **WAIVER OF CONDITIONS.** The state reserves the right to waive any breach of a provision of this lease, but any waiver extends only to the particular breach waived and does not limit the rights of the state with respect to any future breach; nor will the waiver of a particular breach prevent cancellation of this lease for any other cause or for the same cause occurring at another time. Notwithstanding the foregoing, the state will not be deemed to have waived a provision of this lease unless it does so in writing.

32. **SEVERABILITY.** If it is finally determined in any judicial proceeding that any provision of this lease is invalid, the state and the lessee may jointly agree by a written amendment to this lease that, in consideration of the provisions in that written amendment, the invalid portion will be treated as severed from this lease and that the remainder of this lease, as amended, will remain in effect.

33. **LOCAL HIRE.** The lessee is encouraged to hire and employ local and Alaska residents and companies, to the extent they are available and qualified, for work performed on the leased area. Lessees shall submit, with the operations plan, a proposal describing the means by which the lessee will comply with this measure. The lessee is encouraged, in formulating this proposal, to coordinate with employment services offered by the state and local communities and to recruit employees from local communities.

34. NONDISCRIMINATION. The lessee and the lessee's contractors and subcontractors may not discriminate against any employee or applicant because of race, religion, marital status, change in marital status, pregnancy, parenthood, physical handicap, color, sex, age, or national origin as set out in AS 18.80.220. The lessee and its contractors and subcontractors must, on beginning any operations under this lease, post in a conspicuous place notices setting out this nondiscrimination provision.

35. DEFINITIONS. All words and phrases used in this lease will be interpreted in accordance with AS 01.10.040. However, the following words have the following meanings unless the context unavoidably requires otherwise:

(1) "Associated Substances" means all substances except helium produced as an incident of production of Oil or Gas by ordinary production methods and not defined in this lease as Oil or Gas;

(2) "Commissioner" means the Commissioner of Natural Resources;

(3) "Division" means Division of Oil and Gas, Department of Natural Resources;

(4) "Drilling" means the act of boring a hole to reach a proposed bottom hole location through which Gas may be injected or withdrawn, and includes re-drilling, sidetracking, deepening, or other means necessary to reach the proposed bottom hole location, testing, logging, plugging, and other operations necessary and incidental to the actual boring of the hole;

(5) "Force Majeure" means war, riots, acts of God, unusually severe weather, or any other cause beyond the lessee's reasonable ability to foresee or control and includes operational failure of existing transportation facilities and delays caused by judicial decisions or lack of them;

(6) "Gas" means all natural Gas (except helium gas) and all other hydrocarbons that are not defined in this lease as Oil;

(7) "Gas Storage Formation" means the reservoirs described in paragraph 2;

(8) "Injection" means the deposit of Non-Native Gas into the Gas Storage Formation;

(9) "Native Gas" means Gas within the Gas Storage Formation that has not been produced and for which production royalties have not been paid;

(10) "Non-Native Gas" means Gas injected into the leased area that has been previously produced and for which production royalties have been paid.

(11) "Oil" means crude petroleum Oil and other hydrocarbons, regardless of gravity, that are produced in liquid form by ordinary production methods, including liquid hydrocarbons known as distillate or condensate recovered by separation from Gas other than at a Gas processing plant;

(12) "Produced Gas" means Gas for which royalty has been paid to the mineral owner;

(13) "Storage" means the compression, Injection, containment, Withdrawal, treatment, processing, transportation, marketing and selling of Non-Native Gas;

(14) "Withdrawal" means the removal of Non-Native Gas from the Gas Storage Formation;

36. EFFECTIVE DATE. This lease takes effect on _____ .
BY SIGNING THIS LEASE, the state as lessor and the lessee agree to be bound by its provisions.

STATE OF ALASKA

By: _____
Mark D. Myers
Director, Division of Oil and Gas

STATE OF ALASKA)
) ss.
Third Judicial District)

On _____, before me appeared Mark D. Myers of the Division of Oil and Gas of the State of Alaska, Department of Natural Resources, and who executed this lease and acknowledged voluntarily signing it on behalf of the State of Alaska as lessor.

Notary public in and for the State of Alaska
My commission expires September 28, 2007

UNION OIL COMPANY OF CALIFORNIA

By: _____
Kevin A. Tabler
Attorney in Fact

STATE OF ALASKA)
) ss.
Third Judicial District)

On _____, before me appeared Kevin A. Tabler, Attorney in Fact for Union Oil Company of California, and who executed this lease and acknowledged voluntarily signing it on behalf of Union Oil Company of California as lessee.

Notary public in and for the State of Alaska
My commission expires February 14, 2006

Mitigation Measures

The proposed gas storage lease is entirely within the Susitna Flats State Game Refuge (SGR). Management of the Susitna Flats SGR is the co-responsibility of ADNR (AS 38.05.027) and ADF&G (AS 16.20.050-060). For activities occurring within the refuge, the lessee will be required to obtain permits from both ADNR and ADF&G. The decision whether to grant an exception to these mitigation measures will be based on review of the Plan of Operations by the public and in consultation with appropriate state resource agencies. Mitigation measures subject to exceptions are noted with an asterisk (*), followed by the initials of the agency that must be consulted in any decision to grant an exception. Agency abbreviations are: ADF&G (Alaska Department of Fish and Game), ADEC (Alaska Department of Environmental Conservation), OHMP (ADNR/Office of Habitat & Management Permitting) and DMLW (ADNR/Division of Mining, Land & Water).

Operations within this refuge must comply with the terms and conditions of the lease and the regulations at 5 AAC 95. Where the requirements of this lease are more restrictive than the requirements of other sources, the provisions of this lease prevail.

General

1. Use of explosives will be prohibited in open water areas of fish bearing streams and lakes. Explosives must not be detonated beneath, or in close proximity to fish bearing streams and lakes if the detonation of the explosive produces a pressure rise in the waterbody greater than 2.5 pounds per square inch (psi) unless the waterbody, including its substrate, is solidly frozen.

Explosives must not produce a peak particle velocity greater than 0.5 inches per second (ips) in a spawning bed during the early stages of egg incubation. The minimum acceptable offset from fish bearing streams and lakes for various size buried charges is:

Charge Weight	Distance from Stream
1 pound charge	37 feet (11.2 m)
2 pound charge	52 feet (15.8 m)
5 pound charge	82 feet (25.0 m)
10 pound charge	116 feet (35.4 m)
25 pound charge	184 feet (50.1 m)
100 pound charge	368 feet (112.2 m)

Specific information on the location of these fish bearing waterbodies may be obtained by contacting ADF&G.

- 2.* Onshore exploration activities must be supported by air service, an existing road system or port facility, ice roads, or by vehicles which do not cause significant damage to the ground surface or vegetation. Unrestricted surface travel may be permitted by the directors of DO&G, DMLW, and by ADF&G if an emergency condition exists.

Construction of temporary roads may be allowed. Temporary means that a road must be removed to the extent that it is rendered impassable or is otherwise rehabilitated in a manner such that any placed gravel remaining approximates surrounding natural features. Construction of permanent roads will be prohibited during the exploration phase. *Exception – DMLW, ADF&G

3. a. Removal of water from fish bearing rivers, streams, and natural lakes shall be subject to prior written approval by DMLW, OHMP.
- b. Compaction or removal of snow cover overlying fish bearing waterbodies will be prohibited except for approved crossings. If ice thickness is not sufficient to facilitate a crossing, ice and/or snow bridges may be required.
4. Water intake pipes used to remove water from fish bearing waterbodies must be surrounded by a screened enclosure to prevent fish entrainment and impingement. Screen mesh size shall not exceed 0.04 inches unless another size has been approved by OHMP and ADF&G. The maximum water velocity at the surface of the screen enclosure may be no greater than 0.1 foot per second.

Facilities and Structures

5. a. The siting of onshore facilities, other than docks, or road and pipeline crossings, will be prohibited within 500 feet of all fish bearing streams and lakes. Additionally, siting of facilities will be prohibited within one-half mile of the banks of the Theodore and Beluga rivers. New facilities may be sited within the one-half mile buffer if the lessee demonstrates that the alternate location is environmentally preferable, but in no instance will a facility be located within one-quarter mile of the river bank. ADF&G concurrence will be required for siting within the one-half mile buffer. Road and pipeline crossings must be aligned perpendicular or near perpendicular to watercourses.
- b. Lessees will minimize sight and sound impacts for new facilities sited less than one-half mile from river banks and in areas of high recreational use by (1) providing natural buffers and screening to conceal facilities; (2) conducting exploration operations between October 1 and April 30; and (3) using alternative techniques to minimize impacts.
6. The siting of new facilities in key wetlands and sensitive habitat areas should be limited to the extent possible. If facilities are to be located within these areas, the lessee should demonstrate to the satisfaction of the Director and ADF&G that impacts are minimized through appropriate mitigation measures.
- 7.* Measures will be required by the Director or ADF&G, after consultation with ADEC, to minimize the impact of industrial development on key wetlands. Key wetlands are those wetlands that are important to fish, waterfowl, and shorebirds because of their high value or scarcity in the region or that have been determined to function at a high level using the

hydrogeomorphic approach. Lessees must identify on a map or aerial photograph the largest surface area, including reasonably foreseeable future expansion areas, within which a facility is to be sited, or an activity will occur. The map or photograph must accompany the plan of operations. DO&G will consult with ADF&G and ADEC to identify the least sensitive areas within the area of interest. To minimize impacts, the lessee must avoid siting facilities in the identified sensitive habitat areas. *Exception – ADEC.

- 8.* Impermeable lining and diking, or equivalent measures such as double-walled tanks, will be required for onshore oil storage facilities and for sewage ponds. 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).

Buffer zones of not less than 500 feet will be required to separate onshore oil storage facilities and sewage ponds from marine waters and freshwater supplies, streams, lakes, and key wetlands. Sumps and reserve pits must be impermeable and otherwise fully contained through diking or other means. *Exception – ADEC, ADF&G.

- 9.* With the exception of drill pads, airstrips, and roads permitted under Measure 2, exploration facilities must be consolidated, temporary, and must not be constructed of gravel. Use of abandoned gravel structures may be permitted on an individual basis. *Exception – DMLW, ADF&G.

10. a. Wherever possible, onshore pipelines must utilize existing transportation corridors and be buried where soil and geophysical conditions permit. In areas where pipelines must be placed above ground, pipelines must be sited, designed and constructed to allow free movement of moose and caribou.
- b. Pipelines must be located upslope of roadways and construction pads and must be designed to facilitate the containment and cleanup of spilled hydrocarbons. Pipelines, flowlines, and gathering lines must be designed and constructed to assure integrity against climatic conditions, tides and currents, and other geophysical hazards.

Local Hire

11. To the extent they are available and qualified, the lessee is encouraged to employ local and Alaska residents and contractors for work performed on the leased area. Lessees shall submit, as part of the plan of operations, a proposal detailing the means by which the lessee 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 lessee 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.

Training

12. Lessee 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 be designed to inform each person working on the project of environmental, social, and cultural concerns which relate to the individual's job. 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.

Access

13.
 - a. Public access to, or use of, the leased area may not be restricted except within the immediate vicinity of onshore drill sites, buildings, and other related structures. Areas of restricted access must be identified in the plan of operations.
 - b. No lease facilities or operations may be located so as to block access to or along navigable and public waters as defined at AS 38.05.965(13) and (17).
14. Lease-related use will be restricted when the commissioner determines it is necessary to prevent unreasonable conflicts with local subsistence harvests and commercial fishing operations. In enforcing this term the division, during review of plans of operation or development, will work with other agencies and the public to assure that potential conflicts are identified and avoided. In order to avoid conflicts with fishing activities, restrictions may include alternative site selection, requiring directional drilling, seasonal drilling restrictions, and other technologies deemed appropriate by the commissioner.

Prehistoric, Historic, and Archeological Sites

15.
 - a. Prior to the construction or placement of any structure, road, or facility resulting from exploration, development, or production activities, the lessee 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 the Matanuska-Susitna Borough (MSB) 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 must be submitted to the Director for distribution to Division of Parks and Outdoor Recreation (DPOR) for review and comment. In the event that a prehistoric, historic, or archeological site or area may be adversely affected by a leasehold activity, the Director, after consultation with DPOR and the MSB, will direct the lessee as to what course of action will be necessary to avoid or minimize the adverse effect.
 - c. Discovery of prehistoric, historic, or archaeological objects: In the event any site, structure, or object of prehistoric, historic, or archaeological significance is discovered during leasehold operations, the lessee must immediately report such findings to the Director. The lessee must make every reasonable effort to preserve and protect such site, structure, or object from damage until the Director, after consultation with the SHPO, has given directions as to its preservation.

Fish bearing Streams

16. Under Title 41 of the Alaska Statutes, the measures listed below may be imposed by OHMP to protect designated anadromous fish-bearing streams. Similar provisions will be imposed by the Director to protect non-anadromous fish bearing streams. Specific information on the location of anadromous waterbodies in and near the area may be obtained from OHMP.
 - a. Alteration of river banks will be prohibited.
 - b. Operation of equipment within riparian habitats will be prohibited.
 - c. The operation of equipment, excluding boats, in open water areas of rivers and streams will be prohibited.
 - d. Bridges or non-bottom founded structures will be required for crossing fish spawning and important rearing habitats. In areas where culverts are used, they must be designed, installed, and maintained to provide for the efficient passage of fish.

Waste Disposal

17. Solid waste disposal:
 - a. Solid waste generated from the development and/or operation of the lease areas shall be reduced, reused, or recycled to the maximum extent practicable. Garbage and domestic combustible refuse remaining following reuse or recycling must be incinerated where appropriate. Remaining solid waste shall be taken to an approved disposal site, in accordance with 18 AAC 60.

New solid waste disposal sites will not be approved or located on state property during the exploratory phase. Exceptions may be provided for drilling waste if the facility will comply with the applicable provisions of 18 AAC 60.
 - b. The preferred method for disposal of muds and cuttings from oil and gas activities is by underground injection. AOGCC regulates both the Underground Injection Control (UIC) program and annular disposal of wastes.
 - c. 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 it is determined that annular injection is not technically achievable. A solid waste disposal permit must be obtained from ADEC. 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. On pad temporary cuttings storage will be allowed as necessary to facilitate annular injection and/or backhaul operations in accordance with ADEC solid waste regulations 18 AAC 60.

18. Wastewater disposal:

- a. Unless authorized by NPDES and/or state permit, disposal of wastewater into freshwater bodies, intertidal areas, or estuarine waters is prohibited.
- b. Disposal of produced waters to freshwater bodies, intertidal areas, and estuarine waters is prohibited.
- c. Disposal of produced waters in upland areas, including wetlands, will be by subsurface disposal techniques.
- d. Surface discharge of reserve pit fluids will be prohibited unless authorized in a permit issued by ADEC and approved by DMLW.

Gravel Mining

19. Gravel mining within an active floodplain will be prohibited. Upland sites will be restricted to the minimum necessary to develop the field in an efficient manner.

Special Areas

20. Since the lease area is wholly located within the Susitna Flats SGR, a legislatively designated Special Area, the following measures apply:
- a. Surface entry for drilling and above ground lease-related facilities and structures will be prohibited within the primary shorebird area in Susitna Flats SGR. Surface entry may be allowed on uplands within the SGR. Directional drilling from adjacent sites may be allowed.
 - b. Exploration, development, and major maintenance within important Tule goose and trumpeter swan habitat in the Susitna Flats SGR and within the primary waterfowl area above mean high tide within the Susitna Flats SGR will be allowed only between November 1 and March 31, unless an extension is approved by ADF&G and DO&G. Routine maintenance and emergency repairs will be permitted on a year-round basis during the production phase. A detailed plan describing routine maintenance activities to be conducted between April 1 and October 31 must be submitted to ADF&G and DO&G for review and approval.
 - c. Gravel pads and wellheads are the only above ground structures that will be allowed within the primary waterfowl area above mean high tide and in important Tule goose and trumpeter swan habitat in the Susitna Flats SGR.
 - d. Construction activities within a refuge must utilize the best available technology to minimize the visual, biological, and physical impacts of these structures and must be approved in writing by ADF&G and the Director.
 - e. Surface discharge of produced waters will be prohibited.
 - f. Disposal of drilling muds and cuttings will be allowed only at upland sites approved by the Director and ADF&G, after consultation with DMLW and ADEC.

- g. Facilities must be designed and constructed to prevent the spill and spread of hydrocarbons and to facilitate cleanup efforts.
 - h. Facilities must be designed to minimize the possibility of spills or fires resulting from vandalism or hunting accidents.
 - i. Upon abandonment or expiration of a lease, all facilities must be removed and the sites rehabilitated to the satisfaction of ADF&G and the Director. The departments may determine that it is in the best interest of the public to retain some or all of the facilities. Rehabilitation requirements will be identified in a Special Area Permit (AS 16.20.060).
 - j. Gravel roads will not be allowed during exploration unless an exception is granted as provided above.
- 21.* Surface entry will be prohibited within one-quarter mile of trumpeter swan nesting sites between April 1 through August 31. The siting of permanent facilities, including roads, material sites, storage areas, powerlines, and above-ground pipelines will be prohibited within one-quarter mile of known nesting sites. Trumpeter swan nesting sites will be identified by ADF&G at the request of the lessee. *Exception - ADF&G.
22. Lessees must disclose any requests for exceptions to these mitigation measures and advisories in their plans of operation and applicable permit applications.
23. Plans of operation submitted for review and approval must describe the lessee's efforts to communicate with local communities, and interested local community groups, if any, in the development of such plans.
24. Lessees must submit a plan of operations to the state for approval as required by 11 AAC 83.158. Where surface activities are proposed on non state-owned land, lessees must submit a copy of the plan of operations to the private surface owner. Plans of operation must describe the lessee's efforts to minimize impacts on residential areas and privately-owned surface lands.

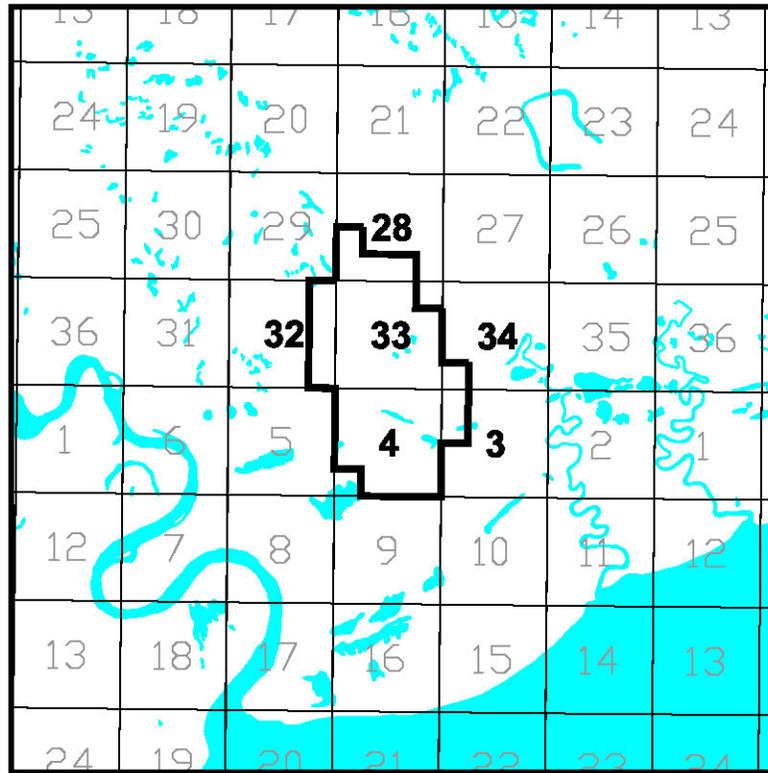
Lessee Advisories

- 1.
 - a. Aircraft flying over the primary shorebird habitat within the Susitna Flats SGR should maintain a minimum altitude of 1,500 feet above ground level or a horizontal distance of one mile.
 - b. Aircraft flying over the primary waterfowl habitat above mean high tide within the Susitna Flats SGR should 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.
- 2.
 - a. Because of the state's interest in encouraging clean air, lessees are encouraged to adopt conservation measures to reduce hydrocarbon emissions.

- b. The state recognizes that in the long run sources of energy other than oil and gas will be needed. Lessee participation in conducting research on alternative energy sources is appreciated.
3. In populated areas where there is no local planning and zoning, ADNR may require, in approval of plans of operation, that permanent structures be designed to be compatible with the aesthetics of the surrounding area.
4. Bald eagles are protected under the Bald Eagle Protection Act (16 U.S.C. 668-668c) and the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-712) and are under authority of the U.S. Fish and Wildlife Service (USFWS). Lessees are responsible to ensure their actions do not take bald eagles. The Eagle Protection Act defines “take” to include disturbing birds. Any nests located within ½-mile of the project site must be mapped, and destruction of nest trees or locations is prohibited. If any nests are located within ½-mile of a project site, Lessees shall meet with the USFWS to review any site-specific concerns regarding the subject nest. USFWS generally recommends no clearing of vegetation within 330 feet of any nest. No activity should occur within 660 feet of any nests between March 1 and June 1. Between June 1 and August 31, no activity should occur within 660 feet of active eagle nests until after juvenile birds have fledged, unless specifically authorized by the USFWS. While the USFWS can recommend ways to avoid the take of eagles, final accountability lies with the party responsible for the action.
5. For projects in proximity to areas frequented by bears, lessees are encouraged to prepare and implement bear interaction plans to minimize conflicts between bears and humans. These plans could include measures to: (a) minimize attraction of bears to drill sites; (b) organize layout of buildings and work areas to minimize human/bear interactions; (c) warn personnel of bears near or on work sites and the proper procedures to take; (d) if authorized, deter bears from the work site; (e) provide contingencies in the event bears do not leave the site; (f) discuss proper storage and disposal of materials that may be toxic to bears; and (g) provide a systematic record of bears on site and in the immediate area.

Exhibit A

ADL 390776



T. 13 N., R. 9 W., Tract A, Seward Meridian, Alaska

Section 3, Unsurveyed, W1/2NW1/4, 80.00 acres;

Section 4, Unsurveyed, N1/2, N1/2SW1/4, SE1/4SW1/4, SE1/4, 600.00 acres;

T. 14 N., R. 9 W., Tract A, Seward Meridian, Alaska

Section 28, Unsurveyed, W1/2SW1/4, SE1/4SW1/4, SW1/4SE1/4, 160.00 acres;

Section 32, Unsurveyed, E1/2E1/2, 160.00 acres;

Section 33, Unsurveyed, W1/2NE1/4, SE1/4NE1/4, NW1/4, S1/2, 600.00 acres;

Section 34, Unsurveyed, SW1/4SW1/4, 40.00 acres;

This tract contains 1,640.00 acres, more or less.