

**APPROVAL OF THE NORTH FORK UNIT FIRST EXPANSION**

Findings and Decision of the Director  
of the Division of Oil and Gas  
Under a Delegation of Authority  
from the Commissioner of the State Of Alaska  
Department of Natural Resources

**June 25, 2012**

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## **I. INTRODUCTION, BACKGROUND, AND DECISION SUMMARY**

The United States Department of the Interior Bureau of Land Management (BLM) approved the formation of the North Fork Unit (NFU) effective May 27, 1965, and the Gas Pool #1 Participating Area (GPA) effective December 20, 1965. The GPA held portions of four leases, two of which were leased by the BLM and two leased by the State of Alaska; the unit was co-managed. Effective January 2, 1971, the NFU contracted to the boundary of the GPA. On November 1, 2006, the BLM waived administration of the federal leases, transferring the leases to the State of Alaska which now manages the NFU.

The Division received the Application for the Approval of the First Expansion of the North Fork Unit, and the First Expansion of the Gas Pool #1 Participating Area on January 25, 2012 from the NFU Operator, Armstrong Cook Inlet, LLC (ACI). This decision addresses the application to expand the unit; a separate decision addresses the application to expand the participating area. The initial NFU included 640 acres. The proposed NFU expansion area covers approximately 4,801 acres. The approved expansion of the NFU includes approximately 2,903 acres. Attachments 1 and 2 set out the proposed Exhibits A and B, and Attachments 3 and 4 set out the approved Exhibits A and B.

“A unit must encompass the minimum area required to include all or part of one or more oil or gas reservoirs, or all or part of one or more potential hydrocarbon accumulations.” 11 AAC 83.356(a). ACI has submitted confidential geological, geophysical, and engineering data which demonstrate that the area approved for unit expansion includes all or part of a gas reservoir and all or part of one or more potential hydrocarbon accumulations.

The Division finds that the expansion of the NFU, promotes conservation of all natural resources, promotes the prevention of economic and physical waste and provides for the protection of all parties of interest, including the State. AS 38.05.180(p); 11 AAC 83.303. I approve the Application under the terms and conditions of Section V. The retroactive effective date of the First NFU Expansion is June 1, 2011.

## **II. APPLICATION AND LEASE SUMMARY**

ACI submitted the Application on January 25, 2012, and simultaneously paid the \$500.00 unit expansion application filing fee, in accordance with 11 AAC 83.306 and 11 AAC 05.010(a)(10)(D), respectively. The Application included: the unit operating agreement, the multiple royalty ownership state unit agreement form including Cook Inlet Regional Corporation (CIRI) and the State as royalty owners, Exhibit A (Attachment 1), legally describing the proposed expanded unit area, its leases, and ownership interests; Exhibit B (Attachment 2), a map of the proposed expanded unit; Exhibit E, participating area expense allocation, and Exhibit G, Plan of Development, for the NFU and the GPA. ACI

also submitted evidence of notice to proper parties. The Application also included confidential economic and technical data.

The Division notified ACI by email dated January 31, 2012 and by letter dated February 7, 2012, that the application was incomplete. The initial Application did not include the following items required under 11 AAC 83.306: (1) the unit agreement executed by the proper parties; (2) the unit operating agreement executed by all the WIOs; (3) evidence that all proper parties to the unit agreement were invited to join the unit. The Division deemed the Application complete on March 16, 2012.

ACI updated Exhibit C on March 27 and June 7, 2012 to reflect assignments of working interest that received Division approval since the Application submittal.

The Division published a public notice in the "*Anchorage Daily News*" and in the "*Peninsula Clarion*" on March 22, 2012, under 11 AAC 83.311. Copies of the Application and the public notice were provided to interested parties. The Division provided public notice to, among others, the Alaska Department of Environmental Conservation, the Kenai Peninsula Borough, the City of Kenai, the Village of Tyonek, the Salamatof Native Association, Cook Inlet Region, Incorporated, the Soldotna Postmaster, and the radio station KDLL in Kenai. The notice was also published on the State of Alaska Public Notice website and the Division's website. The public notices invited interested parties and members of the public to submit comments by April 23, 2012.

The Division received one comment regarding the Application from Mr. Stephen J. Easley, Esquire, as counsel on behalf of the Alliance Parties (AP), owners of overriding royalty interests in leases in the existing North Fork Unit. The Division received the letter on April 23, 2012. The Division considered the comment in the evaluation of the Application and the issuance of this decision. Mr. Easley's topics of concern related to establishing the standing of the AP as proper parties to the unit agreement, and the payment of overriding royalties by ACI to AP. More specifically, Mr. Easley requests that the Division approve ACI's requests for approval of the Application subject to three conditions: (1) payment of all past-due royalties, including specifically AP's overriding royalty payments within thirty (30) days of approval of ACI's Application; (2) payment of all future royalty payments in a timely fashion, and in no case later than sixty (60) days after the month in which such production occurred; and, (3) inclusion of language in both the unit agreement and the operating agreement that specifically requires payment in the fashion set forth in (1) and (2). "With these critical conditions, the Alliance Parties wholly support ACI's request for Expansion of the Unit, for Approval of the 47<sup>th</sup> Plan of Development, for transfer of oversight on the Unit to the State, and for Approval of the Draft Unit Agreement and the Draft Operating Agreement, subject only to the following conditions . . . ."

The proposed expanded unit is summarized below and fully described in Attachments 1 and 2.

Unit Tract	Lease No.	Lease Date	Royalty Rate	Acres	Description
1	C-061614	N/A	N/A	239.09	T4S, R13W, S.M. Section 19: E/2, E/2W/2. Lots 3 and 4
2	ADL 391353	1/1/2009	12.50%	79.03	T4S, R13W, S.M. Section 19: Surveyed, Fractional, Lots 1 and 2
3	ADL 391211	4/1/1955	12.50%	160.00	Segment 2 T4S, R14W, S.M. Section 24: NE/4
4	ADL 391211	4/1/1955	12.50%	1120.00	Segment 1 T4S, R14W, S.M. Section 23: S/2 Section 24: NW/4 Section 26: W/2 Section 27: E/2
5	ADL 391211	4/1/1955	12.50%	320.00	Segment 3 T4S, R14W, S.M. Section 24: S/2
6	C-061636	5/30/2008	N/A	319.30	T4S, R13W, S.M. Section 30: Surveyed, Lots 1 thru 4, E/2W/2, NE/4
7	ADL 2095	10/1/1954	12.50%	280.00	Segment 3 T4S, R14W, S.M. Section 25: N/2NE/4, SE/4NE/4, E/2SE/4, N/2NW/4
8	ADL 391211	4/1/1955	12.50%	160.00	Segment 4 T4S, R14W, S.M. Section 26: NE/4
9	ADL 391211	4/1/1955	12.50%	80.00	Segment 6 T4S, R14W, S.M. Section 26: W/2SE/4
10	ADL 391211	4/1/1955	12.50%	80.00	Segment 5 T4S, R14W, S.M. Section 26: E/2SE/4
11	ADL 2095	10/1/1954	12.50%	360.00	Segment 1 T4S, R14W, S.M. Section 25: SW/4, S/2NW/4, W/2SE/4, SW/4NE/4
12	ADL 00733	2/1/1955	12.50%	320.00	Segment 1 T4S, R14W, S.M. Section 36: NE/4, SW/4
13	ADL 00733	2/1/1955	12.50%	120.00	Segment 3 T4S, R14W, S.M. Section 36: S/2NW/4 NE/4NW/4
14	ADL 00733	2/1/1955	12.50%	40.00	Segment 2 T4S, R14W, S.M. Section 36: NW/4 NW/4
15	ADL 391210	4/1/1955	12.50%	160.00	Segment 3 T4S, R14W, S.M. Section 35: NE/4
16	ADL 391210	4/1/1955	12.50%	480.00	Segment 2 T4S, R14W, S.M. Section 35: S/2NW/4, S/2
17	ADL 391210	4/1/1955	12.50%	320.00	Segment 1 T4S, R14W, S.M. Section 34: E/2
18	ADL 390603	6/1/2005	12.50%	763.49	T5S, R14W, S.M. Section 2: Surveyed, Fractional, Lots 3 and 4, SW/4NW/4 Section 3: Surveyed, Fractional, All
19	C-031638	5/30/2008	N/A	40.00	T5S, R14W, S.M. Section 2: Surveyed, SE/4NW/4
<b>TOTAL ACRES PROPOSED FOR EXPANSION OF UNIT</b>				<b>4800.91</b>	

### **III. DISCUSSION OF DECISION CRITERIA**

A unit may be expanded to conserve the natural resources of all or a part of an oil or gas pool, field, or like area when determined and certified to be necessary or advisable in the public interest (AS 38.05.180(p)). Conservation of the natural resources of all or part of an oil or gas pool, field or like area means “maximizing the efficient recovery of oil and gas and minimizing the adverse impacts on the surface and other resources.” 11 AAC 83.395(1).

The DNR Commissioner (Commissioner) reviews applications related to units under 11 AAC 83.303 - 11 AAC 83.395. By memorandum dated September 30, 1999, the Commissioner approved a revision of Department Order 003 and delegated this authority to the Division Director.

The Commissioner will approve a proposed expanded unit upon a finding that it will (1) promote conservation of all natural resources, including all or part of an oil or gas pool, field, or like area; (2) promote the prevention of economic and physical waste; and (3) provide for the protection of all parties of interest including the state. 11 AAC 83.303(a).

In evaluating these three criteria, the Commissioner will consider (1) the environmental costs and benefits of unitized exploration or development; (2) the geological and engineering characteristics of the potential hydrocarbon accumulation or reservoir proposed for unitization; (3) prior exploration activities in the proposed unit area; (4) the applicant’s plans for exploration or development of the unit area; (5) the economic costs and benefits to the state; and (6) any other relevant factors, including measures to mitigate impacts identified above, the commissioner determines necessary or advisable to protect the public interest. 11 AAC 83.303(b).

A discussion of the subsection (b) criteria, as they apply to the Application, is set out directly below, followed by a discussion of the subsection (a) criteria.

#### **A. Decision Criteria considered under 11 AAC 83.303(b)**

##### **1. Environmental Costs and Benefits**

The proposed expansion area is habitat for various mammals, waterfowl, and fish. Area residents may use this area for subsistence hunting and fishing. Oil and gas activity in the proposed unit area may affect some wildlife habitat and some subsistence activity. DNR develops lease stipulations through the lease sale process to mitigate the potential environmental impacts from oil and gas activity.

DNR also considers environmental issues during the lease sale process, and the unit Plan of Operations approval process. Alaska statutes require DNR to give public notice and issue a written finding before disposal of the state's oil and gas resources. AS 38.05.035(e); AS 38.05.945; 11 AAC 82.415. In the written best interest finding, the Commissioner may impose additional conditions or limitations beyond those imposed by law. AS 38.05.035(e).

Approval of the NFU expansion has no direct environmental impact. This decision is an administrative action and does not authorize any on-the-ground activity. The unit expansion does not entail any environmental costs in addition to those that may occur when permits to conduct lease-by-lease exploration or development are issued. The Unit Operator must obtain approval of a plan of operations from the State and permits from various agencies on State leases before drilling a well or wells or initiating development activities to produce reservoirs within the unit area. 11 AAC 83.346. Potential effects on the environment are analyzed when permits to conduct exploration or development in the unit area are reviewed. ACI is operating under an approved plan of operations and plan of development.

## **2. Geological and Engineering Characteristics**

### **Early Exploration History**

Oil and gas exploration within the upper Cook Inlet Basin began during the 1950's and was fueled by the discovery of oil in the Hemlock Formation at Swanson River in 1957 by Richfield Corporation and the discovery of gas in the Sterling Formation in the Kenai gas field in 1959 by Unocal. From that time until the early 1970's several oil fields were discovered in the lower Tyonek and Hemlock formations. En route to drilling the deeper oil prospects, gas-charged sands were encountered in the overlying Tyonek, Beluga, and Sterling formations that became the targets of separate exploration endeavors. Gas pipelines were constructed to produce the gas for Southcentral Alaska residential and business use. Until recently a lack of pipeline infrastructure precluded development of gas fields south of the town of Kenai.

### **Regional Tectonic and Structural Setting**

Cook Inlet is an elongated northeast-southwest trending forearc basin that is part of an active continental margin associated with the oblique subduction and underthrusting of oceanic crust of the Pacific Plate along the Aleutian trench. The upper Cook Inlet Basin extends from the Matanuska Valley in the north to the Alaska Peninsula on the south, bounded on the northwest by the Bruin Bay and Castle Mountain faults, right lateral strike-slip faults with considerable dip slip, and on the southeast by the high angle normal Border Ranges fault. The forearc basin forms an elongate topographic depression between the volcanic arc of the Alaska Range to the northwest and the accretionary complex of the Kenai Range to the southeast. The present day thickness of the Tertiary strata varies along the axis of the basin. The deepest part of the Cook Inlet Basin is

located in the northwest corner of the Kenai Peninsula where 25,000 feet of Tertiary non-marine sediments overlie a thick sequence of marine Mesozoic sediments. The section thins dramatically to the south towards the Seldovia Arch where only 1,500 feet of Tertiary strata are present. The presence of volcanic material within the sandstone reservoirs can affect reservoir quality depending on the composition, depth of burial, and diagenesis of the sediments.

Periodic uplift and erosion occurred near the margins of the basin in response to deformation along these basin bounding faults. During the Late Pliocene to Pleistocene right lateral transpressional deformation on oblique-slip faults formed north-northeast trending asymmetric faulted anticlines that were tightly folded along the northwest margin of the basin and more gently folded along the southeastern margin (Haussler and others, 2000). During this time of regional deformation the Tertiary non-marine clastic facies became trapped as hydrocarbon reservoirs in a series of north-northeast-trending, discontinuous folds arranged in an en echelon pattern that trended parallel to sub parallel to the basin axis. Most of the discovered oil and gas accumulations within the Cook Inlet Basin are trapped in structures formed during this regional Late Pliocene to Pleistocene deformation event.

### **Structure of the North Fork Area**

The NFU is located in the southeastern part of the upper Cook Inlet Basin on the southern Kenai Peninsula approximately ten miles north-northwest of Homer. A series of en echelon north-northeast trending folds occur between Kasilof and Homer. Dry gas accumulations have been discovered on each of these anticlinal trends, including (from northwest-to-southeast) Kasilof, Ninilchik - Falls Creek, Deep Creek - Happy Valley, and Nikolaevsk - North Fork. A 3-D seismic survey recently shot by ACI has greatly improved the regional structural definition of the four-way anticlinal North Fork closure. Other four-way closures occur along the North Fork anticlinal trend, but are isolated from the North Fork closure by small cross-faults and changes in plunge on the fold axis.

### **Depositional Systems and Stratigraphic Framework**

Two major non-marine depositional systems: alluvial fans and axial fluvial systems comprise the Tertiary basin fill of the forearc Cook Inlet basin. Alluvial fan-braided stream systems occur along the margins of the basin and were sourced from adjacent highlands created by the basin-bounding faults. The fans are conical, lobate deposits of predominantly coarse-grained sediments emplaced by water and gravity induced density flows. Migrating axial fluvial systems occupy the central portion of the basin and interfinger with the fans towards the basin margin. These meandering fluvial systems consist of thick sequences of sandstone, siltstone and coal in the basin center. The sedimentary accumulations of these two systems are regionally time transgressive and represent laterally equivalent facies deposited across the basin.

The Tertiary rocks deposited in Cook Inlet comprise the Kenai Group that range in age from Paleocene to Pliocene and contain both local and regional unconformities. The group is comprised of five formations (deepest to shallowest): West Foreland, Hemlock, Tyonek, Beluga and Sterling. The West Foreland is Early Eocene to Late Oligocene in age and consists of tuffaceous sandstones and conglomerates with poor to fair reservoir quality. The Hemlock is Late Eocene to Early Miocene in age and is comprised of sandstone and conglomerate with relatively good reservoir quality and is a proven oil reservoir in many parts of the basin. The overlying Tyonek formation consists largely of siltstone, sandstone and coals of Late Eocene to Late Miocene age. The Beluga is of Miocene age and represents a meandering fluvial system that is comprised of siltstone and sandstones with abundant thin coals. The Sterling Formation ranges in age from Middle Miocene to Late Pliocene and is a fluvial system that contains large stacked porous sandstones with blocky SP (Spontaneous Potential) and GR (Gamma Ray) log patterns. Coals are less abundant in the Sterling than in the underlying Beluga.

### **Hydrocarbon Systems**

Two separate and distinct hydrocarbon systems are present in Cook Inlet. One system produced predominantly oil and the other gas.

#### **Oil**

The Middle Jurassic Tuxedni formation is considered the source of oil for the Hemlock and lower Tyonek reservoirs. The oil is generated by thermogenic processes in which oil prone kerogen is transformed into oil with minor amounts of associated gas as a result of burial deep enough and long enough within the basin at the correct range of temperature and pressure (that geochemists refer to as the 'kitchen') to generate hydrocarbons. As the hydrocarbons were generated they became buoyant and migrated into traps in the overlying Hemlock and lower Tyonek formations.

#### **Gas**

The gas trapped within the Tertiary formations in Cook Inlet is biogenic in origin. The biogenic methane (dry natural gas) was generated from bacteria present within the decayed organic matter that were present in the Tertiary sediments when they were buried at shallow depths and at temperatures less than about 80 degrees. The methane then dissolved into the surrounding pore waters and was adsorbed in coal beds (Claypool and others, 1980). When the Tertiary section was uplifted the fluid pore pressure was reduced and the gas was expelled from the coals and organic siltstones and migrated into the adjoining fluvial reservoir sands.

### **North Fork Development History**

#### **Previous Activity**

The NFU #41-35 well, drilled and completed by Standard Oil Company of California (SOCAL) in December 1965, is the discovery well for North Fork gas accumulation.

Two Tyonek sands were tested. The lower Tyonek sand, referred to as the Tyonek 8500 sand (present at depths between 8,563' to 8,602' measured depth (md), produced at a rate of 1.77 Million Cubic Feet Per Day (MMCFPD). The upper Tyonek sand, referred to as the Tyonek 8000 sand (present at depths between 8,005' to 8045' md), tested at a rate of 4.36 MMCFPD. A short (90 minute) open hole formation test was conducted in the Hemlock formation and recovered a small amount of oil at the rate of 25 Barrels of Oil Per Day (BOPD) and a small amount of salt water at the rate of 19 barrels of water per day along with a minor amount of sand. SOCAL announced the Tyonek 8000 sand as a dry gas discovery tested at a rate of 3.370 MMCFPD in the press release on December 16, 1965. The well was then shut-in due to the absence of a pipeline to transport the gas to existing infrastructure. In 1970 SOCAL drilled the NFU #11-4 about six miles northeast of the NFU #41-35. Some gas shows were encountered on the mudlog and many sidewall cores were taken in the Beluga and Tyonek Formations, but no tests were conducted and log calculations did not indicate any reservoir quality sands. Several changes of ownership of the North Fork Unit have transpired since 1970 and no drilling, development, or exploration activities occurred until 2007.

### **Characteristics of the Reservoir**

The North Fork field currently has produced gas from six separate Tyonek sandstones. The Tyonek reservoirs consist of discontinuous sandstone channel lenses that are part of a coarse-grained meandering fluvial system. As the stream meanders over time, the sandy point bar deposits also migrate creating discontinuous reservoir sands. Correlations of individual sands between wells can only be positively confirmed by pressure measurements. Due to the stratigraphic correlation complications of mapping individual productive fluvial sands, ACI provided structure maps for the currently producing Tyonek zones incorporating well information for lowest known gas and gas/water contacts.

### **Current Activity and Production**

ACI acquired the North Fork field in September 2007. ACI acquired a 19.59 square mile 3D seismic survey over the existing field and surrounding area and drilled three new development wells: the NFU# 34-26 well in 2008 and the NFU #14-25 and NFU #32-35 wells in 2010. ACI re-entered the NFU #41-35 well in late 2010 and re-perforated both the Tyonek 8000 and 8500 sands. The Tyonek 8000 sand tested at a rate of 4.079 MMCFPD and the Tyonek 8500 sand tested at a rate of 6.100 MMCFPD. ACI began sustained Tyonek gas production from six separate Tyonek sandstones from these four wells (NFU #41-35, NFU #14-25, NFU #32-35, and NFU #34-26) in April 2011 following the completion of a twelve mile gas pipeline that tied into existing infrastructure at Anchor Point. To date, ACI has produced gas at rates from the original NFU #41-35 well dependent on the gas needs outlined in its contract with Enstar for its Southcentral Alaska customers. ACI produced up to 4.3 MCFPD from the well during the cold winter month of February 2012. Cumulative production from all four wells as of March 2012 is 1,775 MMCF. The NFU #41-35 well has produced the most cumulative gas to date at 884 MMCF from the Tyonek 8000 and

8500 sands, the two most productive sands of the six currently producing Tyonek sands. The NFU #14-25 has produced the least amount of cumulative gas, 5.900 MMCF.

### **Conclusion**

ACI submitted sufficient technical data in support of the expansion of the North Fork Unit. The data submitted included: depth structure maps for the producing Tyonek sands, map of lowest know gas of proven reservoirs, map of structural closures of proven reservoirs, structural and stratigraphic cross sections, and strike and dip seismic profiles with well ties, type logs, and production profiles. The approved expansion outline includes all quarter sections that touch the composite outline of the structural closures of the proven reservoirs. The approved expansion outline also includes portions of one or more potential hydrocarbon accumulations. The Division reviewed ACI's data and found that the geological, geophysical, and engineering data submitted justifies the geographic extent of the NFU.

### **3. Plans of Development**

The proposed unit expansion is based upon wells which have already been drilled. Future NFU drilling may target areas previously not accessed by wells and form the basis for future unit and participating area expansions.

The Division approved the 47th NFU Plan of Development (POD) effective March 7, 2012 for the period April 1, 2012 through March 31, 2013.

ACI fulfilled all of the obligations required under the approved 46<sup>th</sup> POD--the company continued to pursue and complete development activities as required under the lease, the unit agreement, and 11 AAC 83.343(a). It completed construction of a pipeline and processing facility and commenced gas sales on March 31, 2011. It brought four wells on line--the North Fork #41-35, #14-25, #32-35 and #34-26.

ACI development activity under the 47<sup>th</sup> POD includes:

- monitoring and analyzing pressures to optimize production;
- testing additional zones in the North Fork #34-26 and drilling a fifth well targeting the Tyonek formation in a fault block that has not yet been drilled; and
- working with Enstar, ACI plans to enable the first delivery of natural gas to the Village of Nikolaevsk during the winter of 2011/2012.

#### **4. The Economic Costs and Benefits to the State and Other Relevant Factors**

The expanded NFU will provide economic benefits to the State through royalty payments on production, although, because the expansion area is already producing or contributing to production, there is no additional direct economic benefit. Unitized development conducted under the NFU Agreement provides for development of all the unitized leases as a single lease, rather than development conducted on a lease-by-lease basis. Unitized development maximizes oil and gas recovery, promotes conservation, prevents waste, and protects all of the parties of interest.

The primary term of ADL 390603, Tract 18, would have expired May 31, 2012 if not under a pending unit expansion application. The Division and ACI have agreed that portions of ADL 390603 will be severed and not included in the unit. The nonunitized portion is assigned ADL 392255. The primary term of ADL 392255 will be extended for two years, the maximum time allowed under 11 AAC 83.373(b). To partially offset any potential loss of lease sale bonus bids on this acreage, the State is increasing the lease rentals for this lease as authorized under AS 38.05.180(m). (“Upon extension, the commissioner may increase lease rentals so long as the increased rental rate does not exceed 150 percent of the rate for the preceding year.”) The rental rate for ADL 392255 will increase from \$3.00 per acre to \$4.50 per acre effective May 31, 2012. AS 38.05.180(m). Rental is payable in advance, and continues until income to the state from royalty exceeds rental income to the state for that year. AS 38.05.180(n).

#### **B. Decision Criteria considered under 11 AAC 83.303(a)**

##### **1. Promote the Conservation of All Natural Resources**

A unit may be formed under AS 38.05.180(p) “[t]o conserve the natural resources of all or a part of an oil or gas pool, field, or like area.” Conservation of the natural resources of all or part of an oil or gas pool, field or like area means “maximizing the efficient recovery of oil and gas and minimizing the adverse impacts on the surface and other resources.” 11 AAC 83.395(9). The unitization of oil and gas reservoirs or accumulations and the formation and expansion of unit areas to develop hydrocarbon-bearing reservoirs or accumulations are well-accepted means of hydrocarbon conservation. Unitization, with development occurring under the terms of a unit agreement, can promote efficient evaluation and development of the State’s resources, and minimize impacts to the area’s cultural, biological, and environmental resources.

Expansion of an existing unit, with development occurring under the terms of a unit agreement, promotes efficient evaluation and development of the State’s resources, and minimizes impacts to the area’s cultural, biological, and environmental resources.

## **2. The Prevention of Economic and Physical Waste**

Unitization, as opposed to activity on a lease-by-lease basis, may prevent economic and physical waste. Economic waste is often referred to as the drilling of wells in excess of the number necessary for the efficient recovery of the oil and gas in place. Physical waste, among other things, includes the inefficient, excessive, or improper use of, or unnecessary dissipation of, reservoir energy.

Unitization may also prevent economic and physical waste by eliminating redundant expenditures for a given level of production, or by avoiding loss of ultimate recovery with the adoption of a unified reservoir management plan. Annual approval of the NFU development activities as described in the future plans of development must also provide for the prevention of economic and physical waste. Using the NFU infrastructure and facilities eliminates the need to construct stand-alone facilities.

## **3. The Protection of All Parties of Interest, Including the State**

The people of Alaska have an interest in the development of the State's oil and gas resources to maximize the economic and physical recovery of the resources, AS 38.05.180(a). Approval of the expansion under future annually approved plans of development will provide for continued review and approval of ACIs plans to develop the NFU in a manner which will maximize economic and physical recovery. Combining interests and operating under the terms of the NFU Agreement and NFU Operating Agreement assures an equitable allocation of costs and revenues commensurate with the resources.

The NFU expansion protects the economic interests of the WIOs and the State. The expansion promotes the State's economic interests because hydrocarbon recovery will be maximized and additional production-based revenue will be derived from the increased production. Diligent exploration and development under a single approved unit plan without the complications of competing leasehold interests promotes the State's interest. Operating under the NFU Agreement provides for accurate reporting and record keeping, State approval of plans of exploration and development and operating procedures, royalty settlement, in-kind taking, and emergency storage of oil and gas, all of which will further the State's interest.

The existing NFU has been administered by the State under a Federal unit agreement form since 1965. When the NFU administration transferred to the State, the state determined that any future NFU or GPA application should include submittal of the appropriate state model unit agreement form. The Application included the multiple royalty owner state model unit model agreement form because the expansion proposed inclusion of leases owned by CIRI. The approved expanded unit area does not include

leases owned by CIRI. ACI has agreed to submit the state only model unit agreement form within sixty days of the issuance of this decision.

AP is a group of Overriding Royalty Interest Owners (ORRIs) which, among others, holds certain percentages of overriding interest in leases within the existing and expanded North Fork Unit. The approval of the expanded North Fork Unit as described in Attachments 3 and 4, the state only unit agreement model form, the 47<sup>th</sup> North Fork POD, and the unit operating agreement protect all parties of interest.

WIOs may assign a portion of their working interest to ORRIs. The Division does not approve these assignments, and only records in the lease ownership records the first separation of working interest. The assignment of an overriding royalty interest is a third party transaction, and the WIOs are responsible for the distribution of revenues to the ORRIs under a third party agreement that the Division does not receive or review. Neither AP nor the other ORRIs has received revenue from the four producing wells. ACI has applied with this Application to expand the GPA to include additional acreage associated with the producing wells. ACI has placed revenues from current production into escrow for distribution to the ORRIs. ACI has correctly submitted royalty payments to the State. Until the Division issues the decision approving the tract factors associated with an expanded GPA, ACI does not know the approved allocations by which to pay the ORRIs of the tracts within the expanded GPA.

Because the State has no relation to the ORRIs beyond noting the first separation of interest, a third party agreement establishes the obligations of the WIOs to the ORRIs, the Operator holds the revenues in escrow for distribution under approved allocation factors, all parties are protected and the conditions requested by AP are inappropriate for inclusion as conditions of the approval of the expanded NFU or the NFU POD.

#### **IV. FINDINGS AND DECISION**

##### **A. The Conservation of All Natural Resources**

1. Expansion of the NFU will provide for continued development of the expansion areas under the NFU Agreement and will maximize the efficient recovery of oil and gas and minimize the adverse impacts on the surface and other resources, including hydrocarbons, gravel, sand, water, wetlands, and valuable habitat.
2. The unitized development and operation of the leases in this expansion will reduce the amount of land and fish and wildlife habitat that would otherwise be disrupted by individual lease development. This reduction in environmental impacts and preservation of subsistence access is in the public interest.
3. There is potential for environmental impacts associated with development. All unit development must proceed according to an approved plan of development.

Additionally, before undertaking any specific operations, the Unit Operator must submit a unit Plan of Operations to the Division and other appropriate state and local agencies for review and approval. The lessees may not commence any drilling or development operations until all agencies have granted the required permits. DNR may condition its approval of a unit Plan of Operations and other permits on performance of mitigation measures in addition to those in the modified leases and the Agreement, if necessary or appropriate. Compliance with mitigation measures will minimize, reduce or completely avoid adverse environmental impacts.

**B. The Prevention of Economic and Physical Waste**

1. ACI submitted geological, geophysical and engineering data to the Division in support of the Application. Division technical staff determined that the expanded NFU area encompasses all or part of one or more gas reservoirs and part of one or more potential hydrocarbon accumulations.
2. The available geological, geophysical and engineering data justify including the proposed lands, as described in Section III, B.3. of this decision.
3. The production of hydrocarbons through the existing production and processing facilities reduces the environmental impact of the additional production. Using existing facilities will avoid unnecessary duplication of development efforts on and beneath the surface.

**C. The Protection of All Parties in Interest, Including the State**

1. The unit expansion as approved protects all parties' interests including the people of Alaska who have an interest in the development of the State's oil and gas resources to maximize the economic and physical recovery of the resources.
2. The economic, geological, geophysical, and engineering data that ACI provided reasonably justify the inclusion of the NFU expansion acreage under the terms of the applicable regulations governing formation, expansion, and operation of oil and gas units and participating areas (11 AAC 83.301 – 11 AAC 83.395) and the terms and conditions under which these lands were leased from the State.
3. ACI provided evidence of reasonable effort to obtain joinder of any proper party to the Agreement.
4. ACI holds sufficient interest in the unit area to give reasonably effective control of operations.

5. The unit expansion meets the requirements of 11 AAC 83.303.
6. The Division complied with the public notice requirements of 11 AAC 83.311.
7. The unit expansion will not diminish access to public and navigable waters beyond those limitations (if any) imposed by law or already contained in the oil and gas leases covered by this decision.
8. The NFU Agreement provides for additional expansions and contractions of the unit area in the future, as warranted by data obtained by exploration or otherwise. The NFU Agreement thereby protects the public interest, the rights of the parties, and the correlative rights of adjacent landowners.
9. The approved expanded unit is retroactively effective to June 1, 2011 in order to accommodate the revised GPA.
10. The leases approved for inclusion in the expanded North Fork Unit are as follows:

Lease No.	Lease Date	Royalty Rate	Acres	Description
ADL 391211	4/1/1955	12.50%	700.00	Segment 1 T4S, R14W, S.M. Section 23: SE/4 Section 24: NW/4 Section 26: S/2NW/4, SW/4 Section 27: E/2SE/4, SE/4NE/4 Section 24: SW/4
ADL 391211	4/1/1955	12.50%	160.00	Segment 3 T4S, R14W, S.M. Section 24: SW/4
ADL 391211	4/1/1955	12.50%	160.00	Segment 4 T4S, R14W, S.M. Section 26: NE/4
ADL 391211	4/1/1955	12.50%	80.00	Segment 5 T4S, R14W, S.M. Section 26: E/2SE/4
ADL 391211	4/1/1955	12.50%	80.00	Segment 6 T4S, R14W, S.M. Section 26: W/2SE/4
ADL 2095	10/1/1954	12.50%	360.00	Segment 1 T4S, R14W, S.M. Section 25: SW/4, S/2NW/4, W/2SE/4, SW/4NE/4
ADL 2095	10/1/1954	12.50%	160.00	Segment 3 T4S, R14W, S.M. Section 25: N/2NW/4, SE/4NE/4, NE/4SE/4
ADL 00733	2/1/1955	12.50%	320.00	Segment 1 T4S, R14W, S.M. Section 36: NE/4, SW/4
ADL 00733	2/1/1955	12.50%	40.00	Segment 2 T4S, R14W, S.M. Section 36: NW/4 NW/4
ADL 00733	2/1/1955	12.50%	80.00	Segment 3 T4S, R14W, S.M. Section 36: SE/4NW/4, NE/4NW/4
ADL 391210	4/1/1955	12.50%	480.00	Segment 2 T4S, R14W, S.M. Section 35: NW/4, S/2
ADL 391210	4/1/1955	12.50%	160.00	Segment 3 T4S, R14W, S.M. Section 35: NE/4
ADL 390603	6/1/2005	12.50%	763.49	T5S, R14W, S.M. Section 2: Surveyed, Fractional Lots 3 and 4, SW/4NW/4 Section 3: Surveyed, Fractional
<b>TOTAL ACRES APPROVED FOR EXPANDED UNIT</b>				
2903.49				

11. ADL 390603 is severed with the nonunitized portion being assigned ADL 392255. The primary term of ADL 392255 will be extended for two years and the rental rate for ADL 392255 will increase from \$3.00 per acre to \$4.50 per acre effective May 31, 2012.
12. ACI shall submit a revised NFUA using the state only model unit agreement form, including revised Exhibits A, B, and E, within 60 days of the issuance of this decision.

For the reasons discussed in this Findings and Decision, I hereby approve the NFU expansion.

A person affected by this decision may appeal it, in accordance with 11 AAC 02. Any appeal must be received within 20 calendar days after the date of "issuance" of this decision, as defined in 11 AAC 02.040(c) and (d) and may be mailed or delivered to Daniel S. Sullivan, 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@alaska.gov](mailto:dnr.appeals@alaska.gov). This decision takes effect immediately. An eligible person must first appeal 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.

If you have any questions regarding this decision, contact Temple Davidson with the Division at 907-269-8784.

  
\_\_\_\_\_  
W.C. Barron Director  
Division of Oil and Gas

6/25/12  
\_\_\_\_\_  
Date

cc: Jeff Landry, Department of Law

#### ATTACHMENTS

1. North Fork Unit Description of Lands within the Proposed Expanded Unit
2. North Fork Unit Map of Proposed Expanded Unit Area
3. North Fork Unit Description of Lands within the Approved Expanded Unit
4. North Fork Unit Map of Approved Expanded Unit Area

**ATTACHMENT ONE**

North Fork Unit Proposed Exhibit A

Description of Lands within the Proposed Expanded Unit

Exhibit A  
to the North Fork Unit Agreement

Tract No.	Lease No.	Lease Date	Acres	Description	Working Interest Owners & Percentage of Working Interest	Royalty and ORRI Owners & Percentage of Interest
1	C-031614		239.09	T4S, R13W, S1M, Section 18, E7W/2, Lots 3 and 4	Union Oil Company of California 100.000000%	Cook Inlet Region, Inc. 20.00000000%
2	ADL 391353	1/1/2009	78.03	T4S, R13W, S1M, Section 19 Surveyed Fractional, Lots 1 and 2	Dele Resources Alaska, LLC 33.000000% GMT Exploration Company, LLC 30.000000% Armstrong Cook Inlet, LLC 20.000000% Nerd Gas Company, LLC 7.500000% Jonah Gas Company, LLC 7.500000%	State of Alaska 12.50000000%
3	ADL 391211	4/1/1955	160.00	(Segment 2) T4S, R14W, S1M, Section 24 NE/4	Dele Resources Alaska, LLC 22.851785% GMT Exploration Company, LLC 16.415815% Armstrong Cook Inlet, LLC 48.224831% Nerd Gas Company, LLC 4.859355% Jonah Gas Company, LLC 4.859355% 100.000000%	State of Alaska 12.50000000% Samuel Neppi 1.4587489% William A. Hutto 1.5471940% Ronald E. Demoy 0.4831484% Bryr Fooker 0.4852500% Robert E. Hinkel 0.4457156% Verlon W. Hinkel 0.4457156% Walter Hecker 0.4457156% Stephen J. Easley 0.2233588% William H. Stevens 0.1582793% Daniel B. Dennis 0.1582793% J. Lawrence Sheard 0.1582793% Keith G. Sumner 0.1582793% William A. Brown Family Partnership 0.1582793% Cyde T. Boyer, Jr. 0.1119789% IQ Gas, LLC 0.0929329% Kroll Acres Associates, LLC 0.0929329% CPB Alaska Oil & Gas, LLC 0.0658172% Jason Paschal, as custodian for Conrad Pascal 0.0558400% Dele Resources Alaska, LLC 0.0658400% GMT Exploration Company, LLC 0.0005273% Armstrong Cook Inlet, LLC 0.0004520% Nerd Gas Company, LLC 0.0003013% 0.0001130%

**REGULATORY**  
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Exhibit A  
to the North Fork Unit Agreement

Tract No.	Lease No.	Lease Date	Acres	Description	Working Interest Owners & Percentage of Working Interest	Royalty and OIRRI Owners & Percentage of Interest		
7	ADL 2095	10/1/1954	280.00	(Bearing) 3/1 T2S, E1/4E1/4, S.M. Section 26, N21N1/4, SE1/4NE1/4, E1/2SE1/4 N21NW1/4	Dale Resources Alaska, LLC GNT Exploration Company, LLC Armstrong Cook Inlet, LLC Nerd Gas Company, LLC John Gas Company, LLC	State of Alaska Prudhoe Oil Co. Samuel Napi William A. Hult Dale Resources Alaska, LLC GNT Exploration Company, LLC Robert E. Hickey Vernon W. Hickey Walter Hickey Steven Mursco Finlay MacLennan Armstrong Cook Inlet, LLC Ronald E. Dowdy William H. Stevens Barry Foote Daniel B. Dennis Nerd Gas Company, LLC John Gas Company, LLC Oyde T. Boyer, Jr. Stephen J. Finley William A. Brown Family Partnership J. Lawrence Sneed J. Lawrence Sneed Keith G. Sumner IQ Gas, LLC Kroll Acres Associates, LLC Jason Pascal, as custodian for Conrad Pascal Jason Pascal, as custodian for Erik Pascal CPB Alaska Oil & Gas, LLC L.E. Grammer Union Oil Company of California	32.233270% 27.629817% 26.323855% 6.907129% 6.907129% 100.000000%	12.800000% 2.085000% 0.780233% 0.684740% 0.684740% 0.249122% 0.249122% 0.448718% 0.448718% 0.329232% 0.329232% 0.329232% 0.329232% 0.223356% 0.253408% 0.025117% 0.138020% 0.138020% 0.114578% 0.128570% 0.108282% 0.082852% 0.082852% 0.063788% 0.065840% 0.065840% 0.045728% 0.037500% 0.516480%

Exhibit A  
to the North Fork Unit Agreement

Tract No.	Lease No.	Lease Date	Acres	Description	Working Interest Owners & Percentage of Working Interest	Royalty and O&RI Owners & Percentage of Interest
9	AOL 391211	4/1/1955	150.00	(Segment 4) T4S, R14W, S1M, Section 26; NE/4	Data Resources Alaska, LLC GMT Exploration Company, LLC Armstrong Cook Inlet, LLC Nord Gas Company, LLC Jonah Gas Company, LLC  32.233270% 27.623577% 28.923855% 8.907129% 8.907129%  100.000000%	State of Alaska William A. Hukko Samuel Napol Berry Poole Robert E. Hickel Vernon W. Hickel Valner Hickel Ronald E. Dowdy Stephen J. Esley William H. Stevens Daniel B. Dennis Data Resources Alaska, LLC GMT Exploration Company, LLC J. Lawrence Smead Keith G. Sumner William A. Brown Family Partnership Clyde I. Boyer, Jr. Armstrong Cook Inlet, LLC Q Gas, LLC Kina Acres Associates, LLC CFB Alaska Oil & Gas, LLC Jason Pascal, as custodian for Conrad Pascal Jason Pascal, as custodian for Erik Pascal Nord Gas Company, LLC Jonah Gas Company, LLC Union Oil Company of California  12.5000000% 1.6471540% 1.6741387% 0.5246375% 0.4467189% 0.4467189% 0.4467189% 0.4292356% 0.2623377% 0.2233568% 0.1402855% 0.1718557% 0.1473500% 0.1738005% 0.1402854% 0.1402854% 0.1383838% 0.1110788% 0.0992604% 0.0923892% 0.0923892% 0.0583074% 0.0584900% 0.0584900% 0.0368478% 0.0368478% 0.6551220%

Exhibit A  
to the North Fork Unit Agreement

Tract No.	Lease No.	Lease Date	Acres	Description	Working Interest Owners & Percentage of Working Interest	Royalty and ORRI Owners & Percentage of Interest
9	ADL 381211	4/1/1955	80.00	(Section 8) T4S, R14W, S1M Section 28, W12S21/4	Dale Resources Alaska, LLC GMT Exploration Company, LLC Arnsstrong Cook Inlet, LLC Nord Gas Company, LLC Jordan Gas Company, LLC  32.233270% 27.628517% 28.523955% 8.907129% 8.907129%  100.000000%	State of Alaska William A. Hutto Samuel Neapel Barry Foote Robert E. Hicdel Vernon W. Hicdel Walter Hicdel Ronald E. Dowdy Stephen J. Easley William H. Stevens Daniel B. Dennis J. Lawrence Stead Keith G. Sumnar William A. Brown Family Partnership Clyde T. Boyer, Jr. Dale Resources Alaska, LLC GMT Exploration Company, LLC IQ Gas, LLC Knoll Acres Associates, LLC Arnsstrong Cook Inlet, LLC CFB Alaska Oil & Gas, LLC Jason Paschal, as custodian for Conrad Paschal Nord Gas Company, LLC Jordan Gas Company, LLC Union Oil Company of California
						12.50000000% 1.64719405% 1.64834615% 0.51559815% 0.44671695% 0.44671695% 0.44671695% 0.44120715% 0.28778645% 0.22335895% 0.14454435% 0.14454435% 0.14237515% 0.11197895% 0.13946975% 0.11354215% 0.08486455% 0.08486455% 0.07393475% 0.08711035% 0.03584005% 0.03584005% 0.02898595% 0.65312205%









Exhibit A  
to the North Fork Unit Agreement

Tract No.	Lease No.	Lease Date	Acres	Description	Working Interest Owners & Percentage of Working Interest	Royalty and ORRI Owners & Percentage of Interest
14	ADL 733	2/1/1935	40.00	(Segment 2) T4S, R14W, S1M, Section 38, NW1/4 NW1/4	Dale Resources Alaska, LLC GMT Exploration Company, LLC Nord Gas Company, LLC Jonah Gas Company, LLC  35.000000% 20.000000% 7.500000% 7.500000%  100.000000%	Spink of Alaska Leche Jacobs, Jr. Dale Resources Alaska, LLC GMT Exploration Company, LLC William A. Hutto Amalongo Cook Ink, LLC Samuel Nappi Robert E. Hickey Vernon W. Hickey Walter Hickey Steven Muroco Ronald E. Dowdy Daniel B. Dennis William H. Stevens Nord Gas Company, LLC Jonah Gas Company, LLC Barry Foote Cyde T. Boyer, Jr. William A. Brown Family Partnership Stephen J. Easley J. Lawrence Shepard Kellin G. Surimar Jason Paschal, as custodian for Conrad Paschal Nord Gas, LLC Nord Acres Associates, LLC CPB Alaska Oil & Gas, LLC  12.5000000% 1.00000000% 0.8674423% 0.8674423% 0.2782424% 0.5529271% 0.8144914% 0.4467195% 0.4467195% 0.3090430% 0.2654680% 0.0867428% 0.2231688% 0.2073102% 0.2073102% 0.2048443% 0.1116799% 0.0657899% 0.1024328% 0.0867427% 0.0558400% 0.0558400% 0.0510517% 0.0510517% 0.0907872%

Exhibit A  
to the North Fork Unit Agreement

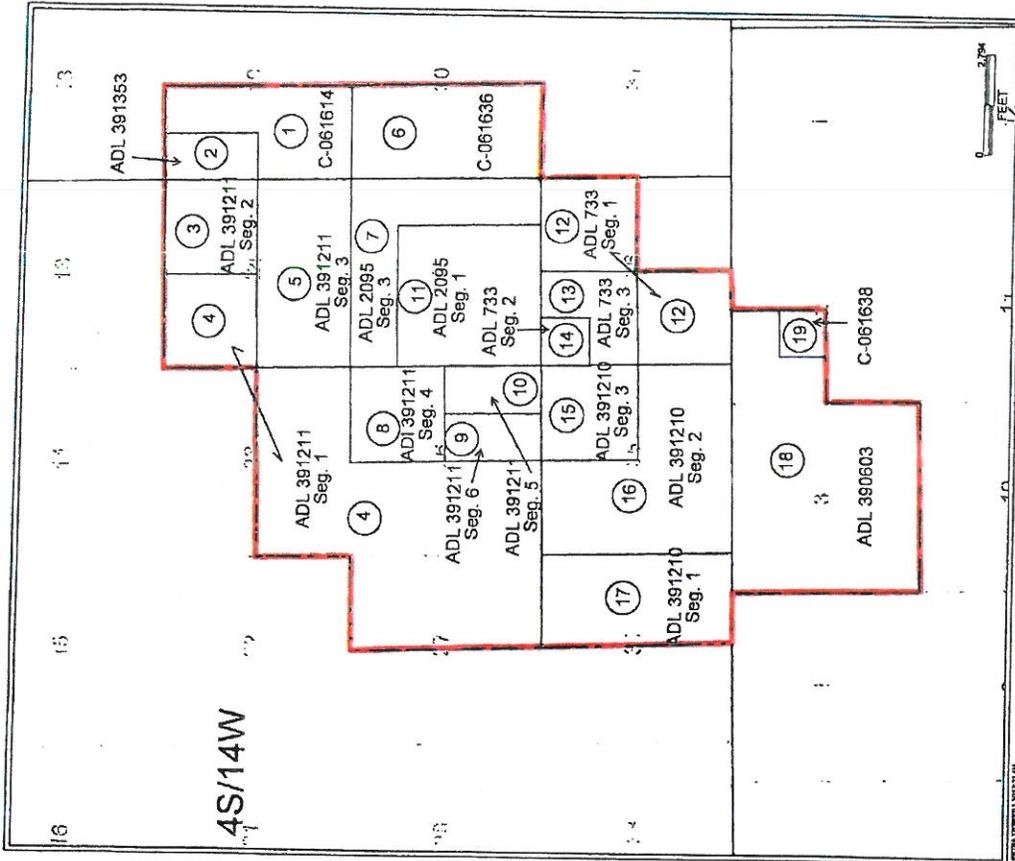
Tract No.	Lease No.	Lease Date	Acres	Description	Working Interest Owners & Percentage of Working Interest	Royalty and O&RI Owners & Percentage of Interest
15	ADL 981210	4/1/1955	160.00	(Segment 3) T4S, R14W, S1M, Section 35, NE/4	<p>Dale Resources Alaska, LLC 35.0000000%</p> <p>GMT Exploration Company, LLC 30.0000000%</p> <p>Amatong Cook Inlet, LLC 20.0000000%</p> <p>Nord Gas Company, LLC 7.6000000%</p> <p>Jonah Gas Company, LLC 7.6000000%</p> <p>100.0000000%</p>	<p>State of Alaska 12.5000000%</p> <p>William A. Hutto 1.7362514%</p> <p>Samuel Nagel 1.2495817%</p> <p>Berry Fodde 0.5159011%</p> <p>Robert E. Hicker 0.4487188%</p> <p>Vernon W. Hicker 0.4487188%</p> <p>Walker Hicker 0.4487188%</p> <p>Ronald E. Downy 0.4487188%</p> <p>Dale Resources Alaska, LLC 0.4487188%</p> <p>Stephen J. Easley 0.2487328%</p> <p>Daniel B. Dennis 0.2233585%</p> <p>William H. Stevens 0.2132162%</p> <p>GMT Exploration Company, LLC 0.1465442%</p> <p>J. Lawrence Sheard 0.1465442%</p> <p>Kevin G. Sumner 0.1465442%</p> <p>William A. Brown Family Partnership 0.1465442%</p> <p>Amatong Cook Inlet, LLC 0.1465442%</p> <p>Onge T. Boyer, Jr. 0.1116758%</p> <p>O Gas, LLC 0.0848861%</p> <p>Kirk Aages Associates, LLC 0.0848861%</p> <p>OHS Alaska Oil &amp; Gas, LLC 0.0611085%</p> <p>Jason Pascal, as custodian for Conrad Pascal 0.0559402%</p> <p>Nord Gas Company, LLC 0.0559402%</p> <p>Jonah Gas Company, LLC 0.0553641%</p>





**ATTACHMENT TWO**  
North Fork Unit Proposed Exhibit B  
Map of Proposed Expanded Unit Area

Exhibit B  
To the North Fork Unit Agreement



**RECEIVED**

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**ATTACHMENT THREE**

North Fork Unit Description of Lands within the Approved Expanded Unit

Lease No.	Lease Date	Royalty Rate	Acres	Description
ADL 391211	4/1/1955	12.50%	700.00	Segment 1 T4S, R14W, S.M. Section 23: SE/4 Section 24: NW/4 Section 26: S/2NW/4, SW/4 Section 27: E/2SE/4, SE/4NE/4 Section 24: SW/4
ADL 391211	4/1/1955	12.50%	160.00	Segment 3 T4S, R14W, S.M. Section 24: SW/4
ADL 391211	4/1/1955	12.50%	160.00	Segment 4 T4S, R14W, S.M. Section 26: NE/4
ADL 391211	4/1/1955	12.50%	80.00	Segment 5 T4S, R14W, S.M. Section 26: E/2SE/4
ADL 391211	4/1/1955	12.50%	80.00	Segment 6 T4S, R14W, S.M. Section 26: W/2SE/4
ADL 2095	10/1/1954	12.50%	360.00	Segment 1 T4S, R14W, S.M. Section 25: SW/4, S/2NW/4, W/2SE/4, SW/4NE/4
ADL 2095	10/1/1954	12.50%	160.00	Segment 3 T4S, R14W, S.M. Section 25: N/2NW/4, SE/4NE/4, NE/4SE/4
ADL 00733	2/1/1955	12.50%	320.00	Segment 1 T4S, R14W, S.M. Section 36: NE/4, SW/4
ADL 00733	2/1/1955	12.50%	40.00	Segment 2 T4S, R14W, S.M. Section 36: NW/4 NW/4
ADL 00733	2/1/1955	12.50%	80.00	Segment 3 T4S, R14W, S.M. Section 36: SE/4NW/4, NE/4NW/4
ADL 391210	4/1/1955	12.50%	480.00	Segment 2 T4S, R14W, S.M. Section 35: NW/4, S/2
ADL 391210	4/1/1955	12.50%	160.00	Segment 3 T4S, R14W, S.M. Section 35: NE/4
ADL 390603	6/1/2005	12.50%	763.49	T5S, R14W, S.M. Section 2: Surveyed, Fractional, Lots 3 and 4, SW/4NW/4 Section 3: Surveyed, Fractional, All
<b>TOTAL ACRES APPROVED FOR EXPANDED UNIT</b>				
2903.49				

**ATTACHMENT FOUR**  
North Fork Unit Map of Approved Expanded Unit Area

