ALASKA POLLUTANT DISCHARGE ELIMINATION SYSTEM
PERMIT MODIFICATION FACT SHEET - DRAFT
Individual Permit: AK0053686 – Furie Operating Alaska, LLC
Kitchen Lights Unit Gas Production Julius R. Platform

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Wastewater Discharge Authorization Program
555 Cordova Street
Anchorage, AK 99501

Public Comment Period Start Date: **March 18, 2016**
Public Comment Period Expiration Date**: April 18, 2016**
Alaska Online Public Notice System

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Issuance of an Alaska Pollutant Discharge Elimination System (APDES) permit modification to

FURIE OPERATING ALASKA, LLC

For wastewater discharges from

Kitchen Lights Unit Gas Production Julius R. Platform
Cook Inlet Oil and Gas Lease Area (15 miles Northwest of Nikiski Bay)
1029 West 3rd Avenue, Suite 500
Anchorage, AK 99501

The Alaska Department of Environmental Conservation (Department or DEC) proposes to modify APDES individual permit (permit) to Furie Operating Alaska, LLC. The modified permit authorizes and sets conditions on the discharge of pollutants from this facility to waters of the U.S. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the facility and outlines best management practices to which the facility must adhere.

This modified fact sheet explains the nature of potential discharges from the construction and operation of Kitchen Lights Unit Gas Production Julius R. Platform and the development of the permit including:

- Information on public comment, public hearing, and appeal procedures
- A listing of proposed effluent limitations and other conditions
- Technical material supporting the conditions in the permit
- Proposed monitoring requirements in the permit

Public Comment

Consistent with 18 AAC 83.130(f), DEC will consider comments only on the proposed modifications to the existing Permit. Proposed permit modifications are underlined in the modified Permit. All other provisions of the existing Permit shall remain in effect for the term defined in the existing Permit unless those provisions are subject to a separate modification process consistent with 18 AAC 83.130(f).

Persons wishing to comment on, or request a public hearing for the draft Permit modification for this facility, may do so in writing by the expiration date of the public comment period.

Commenters are requested to submit a concise statement on the modified Permit condition(s) and the relevant facts upon which the comments are based. Commenters are encouraged to cite specific modified Permit requirements or conditions in their submittals.

A request for a public hearing must state the nature of the issues to be raised, as well as the requester's name, address, and telephone number. The Department will hold a public hearing whenever the Department finds, on the basis of requests, a significant degree of public interest in a draft permit. The Department may also hold a public hearing if a hearing might clarify one or more issues involved in a permit decision or for other good reason, in the Department's discretion. A public hearing will be held at the closest practicable location to the site of the operation. If the Department holds a public hearing, the Director will appoint a designee to preside at the hearing. The public may also submit written testimony in lieu of or in addition to providing oral testimony at the hearing. A hearing will be tape recorded. If there is sufficient public interest in a hearing, the comment period will be extended to allow time to public notice the hearing. Details about the time and location of the hearing will be provided in a separate notice.

All comments and requests for public hearings must be in writing and should be submitted to the Department at the technical contact address, fax, or email identified above (see also the public comments section of the attached public notice). Mailed comments and requests must be postmarked on or before the expiration date of the public comment period.

After the close of the public comment period and after a public hearing, if applicable, the Department will review the comments received on the draft Permit modification. The Department will respond to the comments received in a Response to Comments document that will be made available to the public. If no substantive comments are received, the tentative conditions in the draft Permit modification will become the proposed final modified Permit.

The proposed final modified Permit will be made publicly available for a five-day applicant review. The applicant may waive this review period. After the close of the proposed final modified Permit review period, the Department will make a final decision regarding modified

Permit issuance. A final modified Permit will become effective 30 days after the Department's decision, in accordance with the state's appeals process at 18 AAC 15.185.

Appeals Process

The Department will transmit the modified Permit, fact sheet (amended as appropriate), and the Response to Comments on the modified content to anyone who provided comments during the public comment period or who requested to be notified of the Department's final decision.

The Department has both an informal review process and a formal administrative appeal process for final APDES permit decisions. An informal review request must be delivered within 15 days after receiving the Department's decision to the Director of the Division of Water at the following address:

Director, Division of Water
Alaska Department of Environmental Conservation
410 Willoughby Street, Suite 303
Juneau AK, 99811-1800

Interested persons can review 18 AAC 15.185 for the procedures and substantive requirements regarding a request for an informal Department review.

See http://www.dec.state.ak.us/commish/InformalReviews.htm for information regarding informal reviews of Department decisions.

An adjudicatory hearing request must be delivered to the Commissioner of the Department within 30 days of the permit decision or a decision issued under the informal review process. An adjudicatory hearing will be conducted by an administrative law judge in the Office of Administrative Hearings within the Department of Administration. A written request for an adjudicatory hearing shall be delivered to the Commissioner at the following address:

Commissioner
Alaska Department of Environmental Conservation
410 Willoughby Street, Suite 303
Juneau AK, 99811-1800

Interested persons can review 18 AAC 15.200 for the procedures and substantive requirements regarding a request for an adjudicatory hearing. See http://www.dec.state.ak.us/commish/ReviewGuidance.htm for information regarding appeals of Department decisions.

Documents are Available

The modified Permit, fact sheet, and related documents can be obtained by visiting or contacting DEC between 8:00 a.m. and 4:30 p.m. Monday through Friday at the addresses below. The modified Permit, fact sheet, and other information are located on the Department's Wastewater Discharge Authorization Program website: http://www.dec.state.ak.us/water/wwdp/index.htm.

Alaska Department of Environmental Conservation Division of Water Wastewater Discharge Authorization Program 555 Cordova Street Anchorage, AK 99501 (907) 269-6285	Alaska Department of Environmental Conservation Division of Water Wastewater Discharge Authorization Program 43335 Kalifornsky Beach Rd. - Suite 11 Soldotna, AK 99669 (907) 262-5210

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1.0 INTRODUCTION – INDIVIDUAL PERMIT MODIFICATION

In a cover letter with an attached revised application dated February 25, 2016 and supporting materials dated March 2, 2016, Furie Operating Alaska LLC (Furie or applicant) requested modifications to Alaska Pollutant Discharge Elimination System (APDES) individual permit AK0053686 – Kitchen Lights Unit Gas Production Platform A (existing Permit) to change the name of the platform and allow for the additional discharges associated with a replacement mobile offshore drilling unit (MODU). The revised permit is AK0053686 – Kitchen Lights Unit, Gas Production Julius R. Platform (modified Permit). Per Alaska Administrative Code 18 AAC 83.135, DEC is modifying the existing Permit to authorize additional discharges for MODU deck drainage, uncontaminated ballast water, and non-contact cooling water with a mixing zone for temperature in accordance with Alaska Water Quality Standards (WQS) 18 AAC 70.240-70.270 (as amended June 26, 2003). Information contained in this fact sheet is based on the applicant's modification request and follow-up information requested by DEC. While conducting development and production drilling from the Julius R. Platform, associated discharges will be to coastal waters of Cook Inlet (Figure 1, Appendix A).

1.1 APPLICANT

This modified fact sheet provides information on the modified Permit for the following facility:

Name of Facility:	Kitchen Lights Unit Gas Production Julius R. Platform
APDES Permit Number:	AK0053686
Facility Location:	Latitude 60° 56' 12.2", Longitude -151° 9' 22.7"
Mailing Address:	1029 West 3rd Avenue, Anchorage, AK 99501
Facility Contact:	Mr. Bruce Webb

The applicant requests the following discharges be added to the existing Permit:

Discharge Outfall	Discharge Type	Receiving water
Outfall 002G	MODU Deck Drainage	Cook Inlet
Outfall 005	Non-Contact Cooling Water	Cook Inlet
Outfall 006	Uncontaminated Ballast Water	Cook Inlet

1.2 Authority

DEC is the APDES permitting authority for regulating discharges associated with the existing Permit and is modifying the existing Permit consistent with 18 AAC 83.135 and 18 AAC 83.480. Section 301(a) of the Clean Water Act (CWA) and 18 AAC 83.015 provide that the discharge of pollutants to waters of the United States (U.S.) is unlawful except in accordance with an APDES permit, including modified permits. A violation of a condition contained in the existing Permit or components of the final modified Permit constitutes a violation of the CWA and subjects the permittee to the penalties specified in Alaska Statute (AS) 46.03.020(13).

2.0 BACKGROUND INFORMATION

The Kitchen Lights Unit (KLU) Gas Production Julius R. Platform is a newly installed gas production facility, owned and operated by Furie. On January 24, 2013 Furie submitted an APDES application for a new gas development project located in state waters in Cook Inlet, Alaska. The new production facility is classified as a new source per Code of Federal Regulations, Title 40, Part 435 (40 CFR 435), Oil and Gas Extraction Point Source Category, Subpart D – Coastal Subcategory, which means New Source Performance Standards (NSPS) apply to facility discharges. The Platform is located approximately 15 miles northwest of Nikiski Bay in the coastal zone of Cook Inlet, Alaska in marine waters approximately 35 meters deep.

On April 18, 2014, the Department issued the existing Permit authorizing discharges of domestic wastewater (Outfall 001A and 001B), deck drainage (Outfalls 002A-002F), horizontal directional drilling (HDD) fluids and drill cuttings to the seafloor (Outfall 003) and fire control system test water (004). Outfalls 001 A, 001B, and 002A are associated with platform operation. Whereas, the remaining outfalls are associated with pipeline and platform construction, which has been completed as of the date of this permit modification. The existing Permit underwent minor modifications on March 20, 2015 and May 1, 2015 to address name changes for the fleet of barges discharging deck drainage during pipeline and platform construction. This major permit modification addresses additional discharges resulting from a substantial change to the operating facility. A new MODU is proposed for use that requires additional discharges and permit conditions, which the existing Permit would have included if the additional discharges were known previously. This modification reflects the necessary changes in discharges related to well development activities at the Kitchen Lights Unit (KLU) Julius R. Platform.

2.1 Modified Facility Information

Furie is replacing the previously proposed Spartan 151 MODU with the Randolph Yost (Yost) MODU for development drilling under the modified Permit due to safety concerns and reduced risk of spills to water. The use of the Yost eliminates safety concerns related to maneuvering next to the Platform. Discharges from the Yost that were not applicable to the Spartan include deck drainage comingled with fire control test water and equipment washdown, non-contact cooling water and uncontaminated ballast water.

The Yost treats the commingled deck drainage using an oil water separator (OWS). While the Spartan utilized a closed-loop glycol cooling system, the Yost employs a once-through, non-contact seawater cooling system. The seawater experiences an increase in temperature as it passes through the equipment cooling system. Ballast water originates from local Cook Inlet seawater, which is then proposed to be discharged to maintain the proper ballast float level and MODU draft for the purpose of stabilization. When setting the legs of the MODU, the seawater is discharged back to Cook Inlet. In older MODUs, ballast water was often stored with other wastewater in the ballast water tanks. However, this is not the case in newer MODUs such as the Yost where ballast water is not commingled with other waste.

In order to use the safer Yost MODU, this permit modification adds an additional deck drainage discharge (Outfall 002G), non-contact cooling water (Outfall 005), and uncontaminated ballast water (Outfall 006). The non-contact cooling water discharge is associated with an authorized mixing zone for anticipated increase in the temperature of the seawater as it passes through the cooling systems. All other remaining discharges under the existing Permit remain unchanged.

3.0 EFFLUENT CHARACTERIZATION

3.1 Deck Drainage (002)

The KLU Gas Production Julius R. Platform will have a deck drainage discharge (Outfalls 002A) continuously over the full term of the existing Permit. The MODU will have a deck drainage discharge (Outfall 002G) only during periodic developmental drilling activities.

The deck drainage from the MODU will include fire control test water and equipment wash water. A small volume, approximately 400 gallons, of seawater is discharged to the deck drainage system approximately once per month to test fire pumps to ensure the system is ready in case of a fire. No chemicals are used in the test water. The deck equipment on the Yost (cranes, jacking mechanism, etc.) is electric in nature rather than hydraulic, thus reducing the risk of fuel, oil, and hydraulic spills and subsequent contamination of deck drainage water. Hence, equipment wash water is anticipated to contribute minimal oil and grease to the deck drainage system. Equipment washdown does not include chemicals (e.g., detergents or degreasers).

The commingled deck drainage (potentially including fire control test water and equipment wash water) is held in an interim holding tank before being treated by an OWS prior to discharge to the receiving waters. The deck drainage interim holding tank is isolated from other ballast and pre-loading holding tanks to prevent potential cross contamination or discharge of contaminated seawater. Table 1 provides an estimate of effluent characteristics of deck drainage covered in the permit. Table 1 is a revision to Table 3 in the existing permit, which showed the discharge volume of 002G was previously not applicable.

Table 1: Effluent Characteristics for Outfalls 002A -002G, Deck Drainage

Maximum Daily Flow – Platform A (Outfall 002A)	1,000 gpd
Maximum Daily Flow – Seasonal MODU (Outfall 002G)	**5,250 gpd**
Maximum Daily Flow – 60 person Pipe Lay Barge (Outfall 002B)	750 gpd
Maximum Daily Flow – Pipe Barge (Outfall 002C)	750 gpd
Maximum Daily Flow – six person Crane Barge (Outfall 002D)	1,750 gpd
Maximum Daily Flow – five person Crane Barge (Outfall 002E)	750 gpd
Maximum Daily Flow – Platform Barge (Outfall 002F)	1,750 gpd
Average Winter Temperature (Outfalls 002A and 002G only)	4º C
Average Summer Temperature	13º C

3.2 Non-contact Cooling Water (005)

Non-contact cooling water is seawater used for non-contact, once-through cooling of various pieces of machinery on the MODU (e.g., power generators or drawwork brakes) that is discharged overboard. The volume of non-contact cooling water depends on the configuration of heat exchange systems on the MODU. Some systems use smaller volumes of water that are heated to a greater extent, resulting in a higher temperature differential between wastewater and receiving water. Other systems use larger volumes of water to cool equipment, resulting in a smaller difference between the temperatures of waste water and receiving water. The MODU has

two separate systems that discharge to the same location. These combined discharges are estimated to be discharged at a maximum rate of 1.8 MGD (42,000 bbls/day) and maximum temperature of 14.2 degrees Celsius (°C). This temperature is based on the anticipated ambient water temperature of 8.6°C and a potential thermal increase due to the process of up to 5.6°C. Because a thermal discharge may not increase the ambient temperature more than 1°C per 18 AAC 70.020(b)(22), a small chronic mixing zone is required.

3.3 Uncontaminated Ballast Water (006)

Uncontaminated ballast water is unaltered seawater that has been taken into the hull and has not been comingled with wastes. The deployment of the legs of the Yost jack-up rig will require pre-loading of seawater, which will be discharged as uncontaminated ballast water. The applicant indicates the volume can be 1.2 million gallons (27,500 bbls) per each positioning attempt at a well location. Although there are no chemical additives or other contaminants anticipated in the discharge, ballast water is considered a point source applicable to coverage under an APDES permit.

4.0 BASIS OF EFFLUENT LIMITS

4.1 Deck Drainage (002G)

The limitations and monitoring requirements for deck drainage in the existing Permit for Outfall 002A are applied to deck drainage discharges on the MODU (Outfall 002G). Technology based effluent limits (TBELs) of no discharge of a sheen is established based on effluent limitations guidelines (ELGs) for Oil and Gas facilities in 40 CFR 435.45. In addition, the Department has included a prohibition of chemical additives in fire test water and equipment washdown to ensure compliance with WQS. Similar to the existing Permit, the deck drainage from the Yost while actively conducting development and production drilling activities at the Julius R. Platform is subject to whole effluent toxicity (WET) testing to demonstrate compliance with 18 AAC 70.030.

4.2 Non-contact Cooling Water (005)

For noncontact cooling water, the Department establishes water quality-based effluent limits (WQBELs) for hydrocarbons and residues. The modified Permit prohibits the discharge of any sheen or oil and grease per 18 AAC 70.020(17) and floating solids, debris, foam, scum, or other residues per 18 AAC 70.020(20). In order to evaluate facility specific thermal inputs in subsequent permit reissuances, monitoring effluent temperature is required in relation with the authorization of a mixing zone for temperature. The discharge of non-contact cooling water must comply with the temperature water quality criteria at the boundary of the chronic mixing zone.

4.1 Uncontaminated Ballast Water (006)

Similar to non-contact cooling water, the Department has determined that no free oil shall be discharged in from uncontaminated ballast water consistent with 18 AAC 70.020(17). When uncontaminated ballast water is discharged during broken or unstable ice conditions, or during stable ice conditions, EPA Method 1617 will be used to determine compliance with the no free oil limitation. In addition, the Department includes a prohibition on the discharge of residues,

include floating solids, debris, sludge, deposits, foam, scum, or other residues per 18 AAC 70.020(20).

5.0 EFFLUENT LIMITS AND MONITORING REQUIREMENTS

5.1 Deck Drainage (002G)

Deck drainage refers to any waste resulting from rig washing, deck washing, spillage, rainwater, and runoff from curbs, gutters, and drains, including drip pans and wash areas. This could also include oil, grease, and drilling fluids spilled during normal operations. On the MODU, the deck drainage will be held in an interim holding tank prior to treatment in an OWS. The monitoring location must be downstream of the OWS prior to discharging. Table 2 represents a revised Table 1 in the modified Permit to include addition of Outfall 002G.

Table 2: Effluent Limits and Monitoring Requirements for Outfalls 002A - 002G

Parameter	Effluent Limits				Monitoring Requirements		
	Daily Minimum	Monthly Average	Daily Maximum	Units	Sample Location	Sample Frequency	Sample Type
Total Discharge Flow	N/A	Report	Report	gpd	Effluent	Monthly	Estimated
Free Oil [a, b, c]	No Discharge			---	Effluent	Daily [d]	Visual
WET Testing [e]	Report			Chronic Toxicity Unit (TUc)	Effluent	Once per First Two Years	Permit Section 1.3.1

Notes:

a. The permittee must monitor by observing the surface of the receiving water in the vicinity of the outfall(s) during daylight at the time of maximum estimated discharge and during conditions when observation on the surface of the receiving water is possible in the vicinity of the discharge. Visual tests must be recorded in daily operating logs and made available upon request by DEC.

b. For 002A and 002G: Deck drainage must be treated using an oil water separator (OWS) prior to discharge. If discharge occurs during broken or unstable ice conditions or during stable ice conditions, the Static Sheen Test must be used (see 40 CFR Part 435 Subpart A, Appendix 1) and a grab sample is required. Results must be recorded on Discharge Monitoring Reports (DMRs) and submitted monthly to DEC.

c. For 002B through 002F: Deck drainage must be treated to remove free oil prior to discharge. Monitoring results must be recorded on DMRs and submitted with the End of Construction Report (See Section 3.4).

d. Daily when discharging and the facility is manned. The monitoring frequency is reduced to weekly when the facility is unmanned.

e. WET testing per Permit Section 4.1.1 is applicable to Outfall 002A and 002G only. Samples must be collected downstream of the OWS during periods of significant rainfall or snowmelt.

5.2 Non-Contact Cooling Water Discharges (005)

Non-contact cooling water (005) discharges must comply with the following effluent limitations and monitoring requirements as shown in Table 3. The permit includes monitoring for temperature to support future thermal dispersion analysis during reissuance of the permit.

Table 3: Effluent Limitations and Monitoring Requirements for Outfall 005

Parameter	Effluent Limits				Monitoring Requirements		
	Daily Minimum	Monthly Average	Daily Maximum	Units	Sample Location	Sample Frequency	Sample Type
Total Discharge Flow	N/A	Report	Report	mgd	Effluent	Monthly	Estimated
Free Oil [a]	No Discharge			---	Effluent	Daily [b]	Visual
Floating Solids, Foam, and Garbage [a]	No Discharge				Effluent	Daily [b]	Visual
Chemical Additives [c]	Prohibited				Effluent	---	---
Temperature	Report				Effluent	Monthly	Measure

Notes:

a. Monitoring shall be performed using the visual sheen method on the surface of the receiving water once per week during periods of slack tide when discharging, or by use of the static sheen method at the Permittee's option. The number of days a sheen is observed must be recorded. Observations must be recorded in daily operating logs and made available upon request by DEC.

b. When Discharging.

c. The use of chemical additives in the fire control system test water is prohibited.

5.3 Uncontaminated Ballast Water Discharges (006)

Uncontaminated ballast water (006) discharges must comply with the following effluent limitations and monitoring requirements as shown in Table 4.

Table 4: Effluent Limitations and Monitoring Requirements for Outfall 006

Parameter	Effluent Limits				Monitoring Requirements		
	Daily Minimum	Monthly Average	Daily Maximum	Units	Sample Location	Sample Frequency	Sample Type
Total Discharge Flow	N/A	Report	Report	mgd	Effluent	Monthly	Estimated
Free Oil [a]	No Discharge			---	Effluent	Daily [b]	Visual
Floating Solids, Foam, and Garbage [a]	No Discharge			---	Effluent	Daily [b]	Visual

Notes:

a. Discharge is limited to those times that a visible sheen observation is possible unless the permittee uses the static sheen method which would require a grab sample. Monitoring shall be performed using the visual sheen method on the surface of the receiving water once per week during periods of slack tide when discharging, or by use of the static sheen method at the Permittee's option. The number of days a sheen is observed must be recorded. For discharges during stable ice, below ice, to unstable ice or broken ice conditions, a water temperature that approximates surface water temperatures after breakup shall be used. Observations must be recorded in daily operating logs and made available upon request by DEC.

b. When Discharging.

6.0 RECEIVING WATER BODY

6.1 Water Quality Standards

Section 301(b)(1)(C) of the CWA requires the development of limits in permits necessary to meet WQS by July 1, 1977. Per 18 AAC 83.435, permits must include conditions to ensure compliance with WQS. The WQS are composed of waterbody use classifications, numeric

and/or narrative water quality criteria, and an antidegradation policy. The use classification system designates the beneficial uses that each water body is expected to achieve. The numeric and/or narrative water quality criteria are the criteria deemed necessary by the state to support the beneficial use classification of each waterbody.

Waterbodies in Alaska are designated for all uses unless the water has been reclassified under 18 AAC 70.230 as listed under 18 AAC 70.230(e). Some waterbodies in Alaska can also have site–specific water quality criterion per 18 AAC 70.235, such as those listed under 18 AAC 70.236(b). The Department has determined that there has been no reclassification nor has site-specific water quality criteria been established at the location of the permitted facility in Cook Inlet. The Department has determined that all of the marine use classes must be protected in state waters in Cook Inlet.

6.2 Water Quality Status of Receiving Water

Any part of a waterbody for which the water quality does not, or is not expected to, intrinsically meet applicable WQS is defined as a "water quality limited segment" and is placed on the State impaired waterbody list. For an impaired waterbody, Section 303(d) of the CWA requires states to develop a Total Maximum Daily Load (TMDL) management plan for the waterbody. The TMDL documents the amount of a pollutant a waterbody can assimilate without violating WQS and allocates that load to known point sources and nonpoint sources.

Cook Inlet is not included on the *Alaska's Final 2010 Integrated Water Quality Monitoring and Assessment Report*, July 15, 2010 as an impaired waterbody nor is the subject waterbody listed as a CWA 303(d) waterbody requiring a TMDL.

6.3 Mixing Zone Analysis

Per 18 AAC 70.240 – 70.270, as amended through June 23, 2003 (mixing zone regulations) the Department, at their discretion, may authorize a mixing zone.

On March 2, 2016 the applicant submitted another mixing zone application and study, "*KLU Production Julius R. Platform Non-Contact Cooling Water Discharge Analysis*," to provide information to the Department to consider in authorizing a mixing zone for non-contact cooling water. The applicant used the Cornell Mixing Zone Expert System (CORMIX) 9.0G mixing zone model with input data representing critical ambient conditions in Cook Inlet and estimated effluent temperatures of the non-contact cooling water discharges.

Based on the Department's interpretation of the modeling results, a mixing zone for the non-contact cooling water discharges for Outfall 005 is authorized to have a 20-meter chronic mixing zone for temperature with a chronic dilution factor of 5.6. The chronic mixing zone configuration is a cylinder extending from the sea surface to the sea floor with a radius of 20 meters centered at the point of discharge. Water quality criteria for temperature must be met at the boundary of the authorized mixing zone.

Appendix B, Mixing Zone Analysis Checklist, outlines criteria per mixing zone regulations that must be considered when the Department reviews an application for mixing zones. These criteria include consideration of the size of the mixing zone, treatment technology, and existing uses of the water body, human consumption, spawning areas, human health, aquatic life, and endangered species. All criteria must be met in order to authorize a mixing zone.

The following summarizes the Department's regulatory mixing zone analysis:

6.3.1 Size

Per 18 AAC 70.255, the Department determined that the size of the regulatory mixing zone (as described above) for non-contact cooling water discharges from the MODU is appropriate and is as small as practicable based critical ambient receiving water conditions and estimates of near worst case thermal content in the discharge. The average seafloor depth in the vicinity of the Platform is 27 meters and the outfall height is 23 meters above the sea surface. A range of discharge flowrates were evaluated to arrive at critical discharge rates used in the model. Based on data from the equipment manufacturer, the anticipated temperature of the non-contact cooling water at the point of discharge is estimated to be 14.2°C (5.6°C above ambient). The resulting discharge density is 1022 kilograms per meter cubed representing seawater (29.8 psu) at this temperature. The critical ambient tidal velocities used in the model are 2.3 meters per second (m/s) and 0.2 m/s representing the 90th and 10th percentiles, respectively. These ambient tidal velocities are based on previous mixing zone studies conducted in the vicinity of the discharge.

There is no acute criterion established in 18 AAC 70 for temperature in marine waters, so authorization of an acute mixing zone is not applicable. Therefore, evaluation of lethality to a passing organism is not applicable. The appropriate size of the chronic mixing zone for temperature was determined using critical receiving water conditions and appropriate temperature estimates in the discharge.

6.3.2 Technology

Per 18 AAC 70.240(a)(3), the Department must determine if "an effluent or substance will be treated to remove, reduce, and disperse pollutants, using methods found by the department to be the most effective and technologically and economically feasible, consistent with the highest statutory and regulatory treatment requirements" before authorizing a mixing zone.

Applicable "highest statutory and regulatory requirements" are defined in 18 AAC 70.990(30) [2003]. Accordingly, there are three parts to the definition, which are:

- Any federal TBEL identified in 40 CFR 125.3 and 40 CFR 122.29, as amended through August 15, 1997, adopted by reference at 18 AAC 83.010;
- Minimum treatment standards in 18 AAC 72.040; and
- Any treatment requirement imposed under another state law that is more stringent than the requirement of this chapter.

For non-contact cooling water, there are no applicable ELGs. The Department is prohibiting the discharge of oil and grease and chemical additives.

The second part of the definition from the WQS appears to be in error, as 18 AAC 72.040 considers discharge of sewage to sewers and not minimum treatment. The correct reference appears to be 18 AAC 72.050, minimum treatment for domestic wastewater. This part of the definition does not apply as the modification does not include domestic wastewater discharges.

The third part of the definition includes any treatment required by state law that is more stringent than 18 AAC 70. Other regulations beyond 18 AAC 70 that may apply to this permitting action include 18 AAC 83, 18 AAC 72 and 18 AAC 15. The modified Permit includes prohibitions and

BMP requirements that are consistent with 18 AAC 83. Neither 18 AAC 15 nor another state legal requirement that the Department is aware of impose more stringent treatment requirements than 18 AAC 70.

6.3.3 Existing Use

Per 18 AAC 70.245, the mixing zone must be appropriately sized to fully maintain and protect existing receiving water uses. The discharge volumes and ambient receiving water characteristics at the discharge location have been examined to ensure the biological integrity of Cook Inlet as a whole is protected. Based on the volume and characteristics (temperature) of the non-contact cooling water being discharged, the large tidal fluctuations and flushing occurring in Cook Inlet, and the small size of the authorized mixing zones the Department has determined that the existing uses and biological integrity of the waterbody will be maintained and fully protected under the terms of the permit as required in 18 AAC 70.245 (a)(1) and (a)(2).

6.3.4 Human Consumption

Per 18 AAC 70.250(b)(2) and (b)(3), the subject pollutants must not produce objectionable color, taste, or odor in aquatic resources harvested for human consumption; nor will the discharge preclude or limit established processing activities or commercial, sport, personal use, or subsistence fish and shellfish harvesting. Significant flushing in Cook Inlet is expected to rapidly disperse the elevated temperatures of the non-contact cooling water discharge and will not result in objectionable color, taste, odor in aquatic resources harvested for human consumption or preclude or limit harvesting aquatic resources.

6.3.5 Spawning Areas

Per 18 AAC 70.255(h), a mixing zone is not authorized in an area of anadromous fish spawning or resident fish spawning redds for Arctic grayling, northern pike, rainbow trout, brook trout, cutthroat trout, whitefish, sheefish, Arctic char (Dolly Varden), burbot, and landlocked coho, king, and sockeye salmon. The permit does not allow the discharge of effluent to open waters of a freshwater lake or river. Therefore, there are no associated discharges to anadromous fish spawning areas or the resident freshwater fish listed in the regulation.

6.3.6 Human Health

Per 18 AAC 70.250 and 18 AAC 70.255, the mixing zone shall be protective of human health and will not result in pollutants discharged at levels that will bioaccumulate, bioconcentrate, or persist above natural levels in sediments, water, or biota or at levels that otherwise will create a public health hazard through encroachment on a water supply or contact recreation uses. The pollutants being discharged in non-contact cooling water (i.e., temperature) do not include bioaccumulative or bioconcentrating pollutants that could persist above natural levels. Analysis of the proposed wastewater discharge characteristics along with the limitations and prohibitions of chemicals in the non-contact cooling water protects human health.

6.3.7 Aquatic Life and Wildlife

Per 18 AAC 70.250(a)(2)(A-C), 18 AAC 70.250(b)(1), 18 AAC 70.255(g)(1) and (2), and 18 AAC 70.255(b)(1) and (2), pollutants for which the mixing zone will be authorized will not result in concentrations outside of the mixing zone that are undesirable, present a nuisance to aquatic life, permanent or irreparable displacement of indigenous organisms, or a reduction in fish or shellfish population levels. The temperature criterion that protects aquatic life and wildlife will be met at the boundary of the 20-meter chronic mixing zone. The Department concludes

aquatic life and wildlife will be maintained and protected outside the boundary of the mixing zone.

6.3.8 Endangered Species

The National Marine Fisheries Service and the United States Fish and Wildlife Service indicated that there are two listed endangered species. The following endangered species may occur in Cook Inlet in the vicinity of the discharge: Cook Inlet Beluga Whale (Delphinapterus leucas) and Stellar Sea Lion (Eumetopias jubatus). Per 18 AAC 70.250(a)(2)(D), the mixing zone will not cause an adverse effect on threatened or endangered species. Impacts to overall water quality, and any threatened or endangered species therein, are not expected based on the small size of the mixing zone, the discharge characteristics, and the extreme tidal fluctuations associated with the receiving water.

7.0 ANTIBACKSLIDING

7.1 Legal Basis

Per 18 AAC 83.480, "effluent limitations, standards, or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit." Per 18 AAC 83.480(c), a permit may not be reissued "to contain an effluent limitation that is less stringent than required by effluent guidelines in effect at the time a permit is renewed or reissued."

Effluent limitations may be relaxed as allowed under 18 AAC 83.480, CWA §402(o) and CWA §303(d)(4). Per 18 AAC 83.480(b), relaxed limitations are allowed in renewed, reissued, or modified permits when there have been material and substantial alterations or additions to the permitted facility that justify the relaxation or the Department determines that technical mistakes were made.

CWA §303(d)(4)(A) states that, for waterbodies where the water quality does not meet applicable WQS, effluent limitations may be revised under two conditions; the revised effluent limitation must ensure the attainment of the WQS (based on the waterbody TMDL or the waste load allocation) or the designated use which is not being attained is removed in accordance with the WQS regulations. CWA §303(d)(4)(B) states that, for waterbodies where the water quality meets or exceeds the level necessary to support the waterbody's designated uses, WQBELs may be revised as long as the revision is consistent with the State's antidegradation policy. Even if the requirements of CWA §303(d)(4) or 18 AAC 83.480(b) are satisfied, 18 AAC 83.480(c) prohibits relaxed limits that would result in violations of WQS or ELGs.

18 AAC 83.480(b) only applies to effluent limitations established on the basis of CWA §402(a)(1)(B), and modification of such limitations based on effluent guidelines that were issued under CWA §304(b). Accordingly, 18 AAC 83.480(b) applies to the relaxation previously established case-by-case TBELs developed using BPJ. To determine if backsliding is allowable under 18 AAC 83.480(b), five regulatory criteria (18 AAC 83.480[b][1-5]) must be evaluated and satisfied.

This permitting action does not modify limits set through ELGs or WQS. Instead, the permitting action includes additional volumes to already established discharges and adds new discharges with limits and monitoring to protect existing uses. Per 18 AAC 83.480(a), interim effluent limitations, standards, or conditions must be at least as stringent as the final effluent limitations,

standards, or conditions in the previous permit, unless the circumstances on which the previous permit was based have materially and substantially changed since the permit was issued, and the change in circumstances would constitute cause for permit modification or revocation and reissuance under 18 AAC 83.135.

Per 18 AAC 83.135(a), when the Department receives any new information, including information received through a request to modify, the Department may in accordance with this section determine if there is cause to modify. If the Department finds cause, the Department may modify in accordance with this section.

> (b) Cause to modify a permit, but not to revoke and reissue the permit unless the permittee requests or agrees, includes: (1) a material and substantial alteration or addition to the permitted facility or activity occurred after permit issuance, and the alteration or addition justifies the imposition of permit conditions different from the existing permit;

As additional discharges have been added to the permit through this major modification that will increase the potential total volume of wastewater discharged, specific requirements have been included to ensure that water quality is protected. Based on the characterization details and discharge requirements, these discharges will meet water quality criteria. In addition, no limits were removed or relaxed. The Department determines that no backsliding has occurred in the modified Permit.

8.0 ANTIDEGRADATION

Section 303(d)(4) of the CWA states that, for water bodies where the water quality meets or exceeds the level necessary to support the water body's designated uses, WQBELs may be revised as long as the revision is consistent with the State's antidegradation policy.

The antidegradation policy in the WQS (18 AAC 70.015) states that the existing water uses and the level of water quality necessary to protect existing uses must be maintained and protected. This section of the fact sheet analyzes and provides rationale for the Department's decisions in the permit issuance with respect to the antidegradation policy.

The Department's approach to implementing the antidegradation policy in 18 AAC 70.015, is based on the requirements in 18 AAC 70 and the Department's *Policy and Procedure Guidance for Interim Antidegradation Implementation Methods, July 14, 2010 (Interim Methods).* Using these requirements and policies, the Department determines whether a water body, or portion of a water body, is classified as Tier 1, Tier 2, or Tier 3 where a higher numbered tier indicates a greater level of water quality protection. The receiving water for the discharges from the MODU is Cook Inlet, which is a Tier 2 water.

Wastewater discharged under the modified Permit is subject to a Tier 2 antidegradation analysis, as detailed in the *Interim Methods*. The State's antidegradation policy in 18 AAC 70.015(a)(2) states that if the quality of water exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water (Tier 2), that quality must be maintained and protected unless the Department finds that the five specific requirements of the antidegradation policy at 18 AAC 70.015(a)(2)(A)-(E) are satisfied. The Department's five findings are:

1. 18 AAC 70.015(a)(2)(A). *Allowing lower water quality is necessary to accommodate important economic or social development in the area where the water is located.*

   Based on the evaluation required per 18 AAC 70.015(a)(2)(D) below, the Department has determined that the most reasonable and effective pollution prevention, control, and treatment methods are being used and that the localized lowering water of quality is necessary.

   The 2009 Alaska Economic Performance Report written by the Department of Commerce, Community and Economic Development (DCCED) indicates that Alaska's oil and gas industry continues to be the largest source of state revenue while creating some of the highest paying jobs in the State (DCCED, 2011). The oil and gas extraction industry supports local economies by purchasing significant amounts of equipment, parts, fuel, food, freight, and other services.

   In addition, Alaska's Department of Natural Resources (DNR) tracks oil and gas activity in the State when it develops findings for lease sales (DNR, 2011). The January 2009 Best Interest Finding for the lease sale in Cook Inlet included the following socio-economic information on the oil and gas industry:

   - The oil and gas industry has been important to the economy of the Kenai Peninsula for over 40 years, and five of the top 10 employers are connected to the oil industry. Direct impact of the oil and gas industry has been estimated at 674 jobs with a payroll of $63 million. Indirect economic impacts are estimated to be an additional 2,822 jobs and $94 million in payroll. The induced impacts were 777 jobs and $20 million in payroll. Total economic impact on the Kenai Peninsula was 4,273 jobs and $177 million in payroll, which was 26 percent of the area's employment and 36 percent of the area's payroll. Taxable properties for the oil and gas industry were reported at $607 million, and 8 of the top 10 property tax payers in the borough were oil and gas industry companies.

   - As reported in the January 2015 Alaska Economic Trends report published by the Alaska Department of Labor and Workforce Development, the current low oil prices are predicted to slow job growth in the oil and gas industry in 2015, but a dramatic downturn isn't expected (ADLWD 2015). Despite the fall in oil prices, industry intends to invest $300 million to $350 million in its Alaska operations in 2015.

   - Investment in Cook Inlet infrastructure and leases demonstrates a commitment to long term production of oil and gas in the region continuing the economic and social benefits the industry has provided to Alaska in general, and Kenai Peninsula communities in particular, for over 40 years.

   - Demand for natural gas in the Cook Inlet area was projected to exceed supply by 2013 unless new reserves are discovered and developed. Decreasing supplies of Cook Inlet natural gas led to the closure of the Agrium fertilizer

plant in 2007, resulting in the loss of 250 jobs in the Kenai Peninsula Borough. The liquefied natural gas (LNG) export license and supply contracts expired in 2011, and continued operation of the Kenai LNG plant may be jeopardized without long-term proven supplies of natural gas. The LNG Plant is still in a state of limbo, employing approximately 30 while waiting for proven gas resources to be developed. The LNG Plant employs approximately 75 at full production. Meanwhile, regional power utilities and resource development projects are developing contingency plans to use diesel instead of gas should sufficient gas not be secured. The switch to diesel for power generation will escalate user rates and increase the discharge of pollution into the air.

- Without increased Cook Inlet natural gas supplies, prices for residential and commercial natural gas and for electricity will continue to increase. Between 2000 and 2006, the price of natural gas increased 91 percent for Anchorage households, the cost of electricity increased 28 percent, and rates for home heating are expected to continue to rise as gas supplies deplete.

- Efforts have led to the development of increased production of affordable gas for Alaskans from Cook Inlet and addressed the recent concerns of reliable and affordable energy in the surrounding communities. Continued improvements and efficiencies in 2013 and 2014, investing more than $300 million each year. The Alaska Journal of Commerce reported on August 28, 2014, that oil production in Cook Inlet has increased 25% in the fiscal year ending June 30, 2014.

- The Furie production facility provides natural gas from the KLU reservoir area to utility companies to heat homes, schools, government facilities, military bases, and businesses as well as to generate electricity throughout the South-central Alaska region.

- Furie estimates that this project will generated 113 full-time and 56 part-time positions, including jobs directly related to development drilling, production and maintenance, administrative and management, completion operations, logistical support, and contractors in 2015 and 2016.

- Furie has a gas supply agreement with 1) Homer Electric Association for the delivery of 12.4 million cubic feet per day of gas from Kitchen Lights, starting in April 1, 2016; and 2) Enstar Natural Gas Company for up to 22 million cubic feet of gas per day from the Kitchen Lights Unit, starting April 1, 2018.

- The permittee estimates that the project generated 18 full-time positions indirectly related to natural gas production (e.g., schools, banking, auto, housing, and stores) in 2015 and 2016.

The applicant indicated in their application that anticipated production, to provide needed energy to Alaskan communities and industries, is projected at a maximum rate of 85 MMCF/day in 2016 with the development of two additional wells in the KLU Reservoir Area, and 100 MMCF/day of maximum sustained production in 2017 and beyond.

The Platform is a natural gas production platform located in state waters in Cook Inlet. The development drilling enabled by the use of the MODU is associated with additional natural gas deliveries for local use. The Department has determined that the increase in volume of deck drainage will not cause unreasonable degradation. The Department finds that the lowering of water quality is necessary to accommodate important economic or social development in the area where the water is located and that the finding is met.

2. *18 AAC70.015 (a)(2)(B). Except as allowed under this subsection, reducing water quality will not violate applicable water quality criteria of 18 AAC 70.020 or 18 AAC 70.235, or the WET limit in 18 AAC 70.030.*

   The applicable temperature criterion in 18 AAC 70.020(22) for the discharge of non-contact cooling water must be met at the boundary of the authorized chronic mixing zone, ensuring that the quality of the waterbody as a whole is protected and maintained. All other water quality criteria associated with the discharges applicable to the modified Permit will be met at the point of discharge.

   Note that 18 AAC 70.235 pertains to site-specific criteria and site-specific criteria have not been developed for the subject waterbody. In addition, 18 AAC 70.030 pertains to WET limits and there are no WET limits. However, there are WET monitoring requirements for the additional deck drainage discharge (Outfall 002G). Due to prohibition of oil and chemical additives, toxicity should not occur from discharges of uncontaminated ballast water or non-contact cooling water.

   The Department has determined that this finding is met.

3. *18 AAC 70.015 (a)(2)(C). The resulting water quality will be adequate to fully protect existing uses of the water.*

   As previously mentioned, Cook Inlet is protected for all marine use categories per 18 AAC 70.020(a)(2)(A-D). The permit modification adds another deck drainage discharge (Outfall 002G) and non-contact cooling water and uncontaminated ballast water. The discharge of deck drainage and ballast water will meet water quality criteria at the point of discharge. The appropriately sized chronic mixing zone for non-contact cooling water will ensure that water quality criteria will be met at the boundary. Therefore, the resulting water quality will be adequate to fully protect existing uses established in the WQS for Cook Inlet.

   The Department has determined that this finding is met.

4. *18 AAC 70.015(a)(2)(D). The methods of pollution prevention, control, and treatment found by the Department to be most effective and reasonable will be applied to all wastes and other substances to be discharged.*

The most effective technological and economical pollution prevention, control, and treatment methods are used to disperse, treat, remove, and reduce pollutants in deck drainage, uncontaminated ballast water, and non-contract cooling water. The discharge of commingled deck drainage requires oil removal prior to discharge to ensure compliance with the prohibition to discharge free oil consistent with 40 CFR 435. Ballast water is surrounding sea water used to maintain MODU stability and cross contamination with oily wastes is prohibited. Non-contact cooling water is also prohibited to have oil as well as chemical additives. Since non-contact cooling water is a once through sea water discharge, the amount of temperature increase in the discharge is minimized.

The Department has determined that this finding is met.

5. *18 AAC 70.015(a)(2)(E). All wastes and other substances discharged will be treated and controlled to achieve (i) for new and existing point sources, the highest statutory and regulatory requirements; and (ii) for nonpoint sources, all cost-effective and reasonable best management practices.*

   Applicable "highest statutory and regulatory requirements" are defined in 18 AAC 70.990(30), as amended through June 26, 2003, and *Interim Methods*. Accordingly, there are three parts to the definition, which are:

   - Any federal TBEL identified in 40 CFR 125.3 and 40 CFR 122.29, as amended through August 15, 1997, adopted by reference at 18 AAC 83.010;
   - Minimum treatment standards in 18 AAC 72.040; and
   - Any treatment requirement imposed under another state law that is more stringent than the requirement of this chapter.

   The first part of the definition includes all applicable federal technology-based ELGs, in this case, as found in 40 CFR Part 435 Subpart D Coastal Subcategory, adopted by reference at 18 AAC 83.010(g)(3). For deck drainage, the previously established limitations and TBELs based on ELGs prohibiting a sheen or oil and grease have been appropriately maintained.

   As discussed in Section 6.3.2, the reference to minimum treatment standards is in error and this requirement does not pertain to discharges covered in the permit modification. In addition, the prohibition of oil and chemical additives required in the modified permit are consistent with 18 AAC 83 and there are no other requirements posed by state law that the Department is aware of that are more stringent.

   The Department has determined that the treatment of the discharge conforms to the highest statutory and regulatory requirements and the finding is met.

9.0 OTHER PERMIT CONDITIONS

9.1 Best Management Practices

The permittee must update their BMP Plan to reflect the use of the new MODU and additional discharges authorized by the permit modification. The permittee must amend the BMP Plan

whenever there is a change in the facility or in the operation of the facility that materially increases the generation of pollutants or their release or potential release to the receiving waters. The permittee must also amend the BMP Plan, as appropriate, when facility operations covered by the BMP Plan change. The facility engineering staff and manager must review all changes to the BMP Plan. Changes to the BMP Plan shall be consistent with the objectives and specific requirement as described in Section 2.2 of the permit.

9.2 Cooling Water Intake Structure Requirements

Per CWA Section 316(b), APDES permits are required to ensure that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available to minimize adverse environmental impact. Such impacts include death or injury to aquatic organisms by impingement (being pinned against screens or other parts of a cooling water intake structure) or entrainment (being drawn into cooling water systems and subjected to thermal, physical or chemical stresses). The permittee is responsibility to ensure that the facility and related intake structures are compliant with CWA 316(b).

The permit incorporates the 2006 regulation, 40 CFR Part 125, Subpart N adopted by reference at 18 AAC 83.010(c)(9) (CWIS regulations), that requires new offshore oil and gas facilities to take measures to reduce entrainment and impingement of aquatic life associated with the construction and operation of CWIS. The CWIS regulation was promulgated to ensure that the location, design, construction, operation and capacity of CWIS reflect the best technology available to minimize adverse impacts to aquatic organisms.

The CWIS regulations apply to new facilities (facilities that commence construction after July 17, 2006), is a point source discharge, intake 2 MGD of water, and use at least 25 percent of that water for cooling. Per CFR regulations adopted by reference, the owner or operator of a new offshore oil and gas extraction facility must comply with: (i) Track I in 40 CFR Part 125.134(b) or Track II in 40 CFR Part 125.134(c) if it is a fixed facility; or (ii) Track I in 40 CFR Part 125.134(b) if it is not a fixed facility (i.e. non-fixed facility).

Because the MODU will not process greater than 2 MGD, this requirement does not apply. However, per CWIS regulations the Department may impose requirements on a case-by-case basis using BPJ for those new facilities that do not meet the threshold requirements regarding the amount of water withdrawn or percentage of water withdrawn use for cooling water purposes. Per CWIS regulations, DEC can require the implementation of additional technologies and operational measures if there is information indicating the potential for specified aquatic organisms to pass through the hydraulic zone of influence of the facility's cooling water intake structure. The Department has reviewed the facility and these requirements and has determined that there are no additional technologies to be implemented. However, the BMP Plan will need to be updated to reflect for 316(b) requirements.

The permit requires the permittee to select and implement technologies or operational measures to minimize impingement mortality and entrainment of fish and shellfish and include this information in the BMP Plan. The BMP Plan requirement gives the permittee discretion on what methods to select and how to implement those methods. However, the Department retains the authority to impose more stringent conditions on a case-by-case basis, if such conditions are deemed necessary by the Department to comply with any provision of law in accordance with the permit.

10.0 OTHER LEGAL REQUIREMENTS

10.1 Permit Expiration

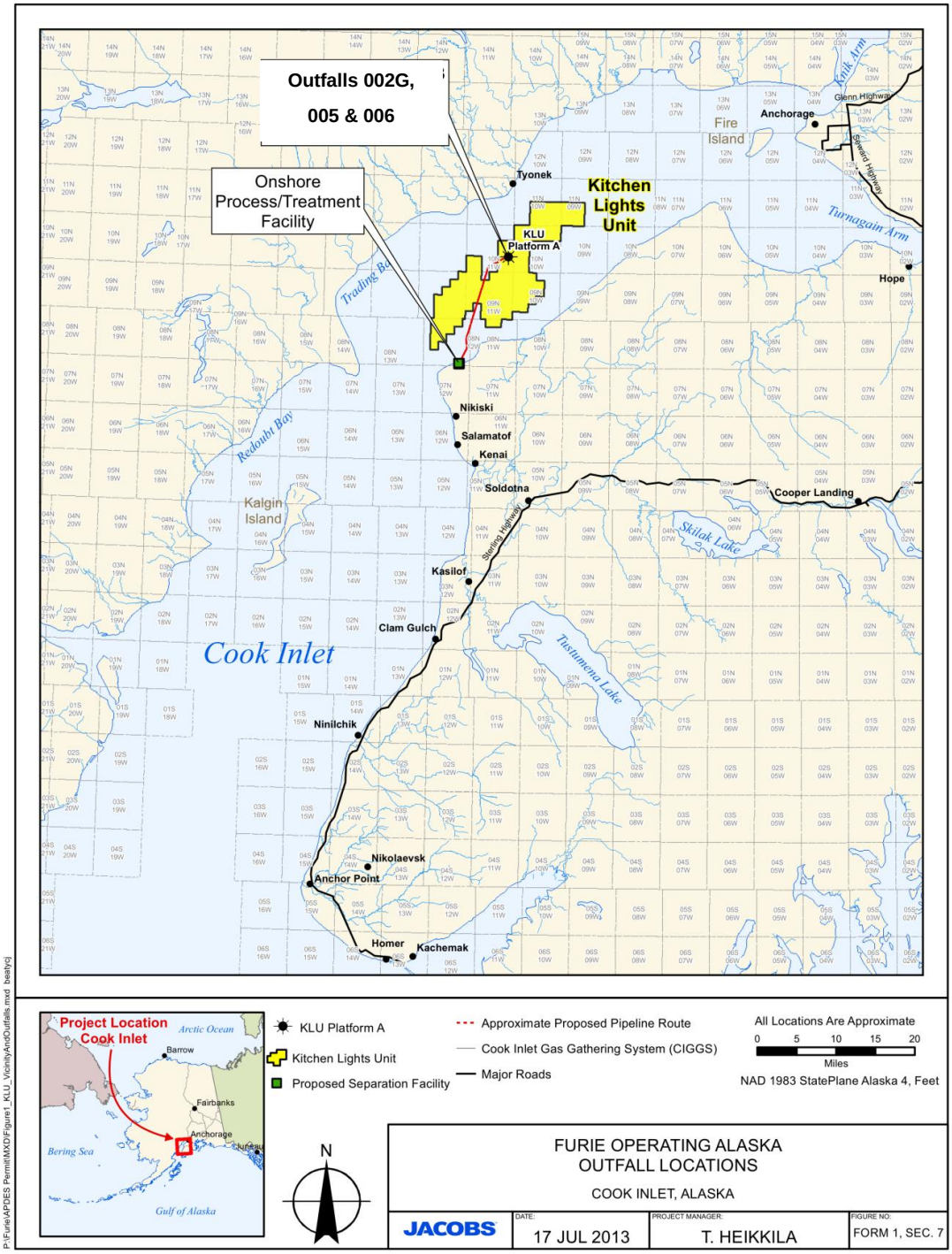
This permit modification will not affect the original permit expiration date of May 17, 2019.

11.0 REFERENCES

1. Alaska Department of Commerce, Community, and Economic Development. Division of Economic Development. 2009 Alaska Economic Performance Report. February 2011.
2. Alaska Department of Environmental Conservation. Alaska Water Quality Criteria Manual for Toxics and Other Deleterious Organic and Inorganic Substances, as amended through December 12, 2008.
3. Alaska Department of Environmental Conservation. Alaska's Final 2010 Integrated Water Quality Monitoring and Assessment Report.
4. Alaska Department of Environmental Conservation. Interim Antidegradation Implementation Methods. Retrieved from http://www.dec.state.ak.us/water/wqsar/Antidegradation/docs/P&P-Interim_Antidegradation_Implemenation_Methods.pdf
5. Alaska Department of Environmental Conservation. 18 ACC 70. Water Quality Standards, as amended through June 26, 2003.
6. Alaska Department of Environmental Conservation. 18 ACC 70. Water Quality Standards, as amended through July 1, 2008.
7. Alaska Department of Environmental Conservation. 18 ACC 70. Water Quality Standards, as amended through April 8, 2012.
8. Alaska Department of Environmental Conservation. 18 AAC 83. Alaska Pollutant Discharge Elimination System Program. As amended Through October 23, 2008.
9. Alaska Department of Environmental Conservation. 18 ACC 72. Wastewater Disposal, as amended through December 23, 2009.
10. Alaska Department of Environmental Conservation. Interim Antidegradation Implementation Methods. Division of Water. Policy and Procedure No. 05.03.103. July 14, 2010.
11. Development Document for Effluent Limitations Guidelines and Standards for the Offshore Subcategory of the Oil and Gas Extraction Point Source Category (Final). Office of Water, EPA #921-R-93-003. U.S. EPA, Washington DC. January 1993.
12. U.S. EPA, 40 CFR PART 435. Oil and Gas Extraction Point Source Category Offshore Subcategory Effluent Guidelines and New Source Performance Standards Final Rule. 48 Federal Register 1254, March 4, 1993.
13. U.S. EPA, Region 10. Final General NPDES Permit AKG285000 for Cook Inlet Oil and Gas Development and Production Facilities. July 2, 2007.
14. U.S. EPA, Technical Support Document for Water Quality-based Toxics Control. Office of Water, EPA/505/2-90-001, PB91-127415. Washington D.C., March 1991.

APPENDIX A. FIGURE

Figure 1: Kitchen Lights Unit Gas Production Julius R. Platform – Map



APPENDIX B. MIXING ZONE ANALYSIS CHECKLIST

Mixing Zone Authorization Checklist

based on Alaska Water Quality Standards (2001B)

The purpose of the Mixing Zone Checklist is to guide the permit writer through the mixing zone regulatory requirements to determine if all the mixing zone criteria at 18 AAC 70.240 through 18 AAC 70.270 are satisfied, as well as provide justification to authorize a mixing zone in an APDES permit. In order to authorize a mixing zone, all criteria must be met. The permit writer must document all conclusions in the permit Fact Sheet; however, if the permit writer determines that one criterion cannot be met, then a mixing zone is prohibited, and the permit writer need not include in the Fact Sheet the conclusions for when other criteria were met.

Criteria	Description	Answer & Resources	Regulation
Size	Is the mixing zone as small as practicable? - Permit writer conducts analysis and documents analysis in Fact Sheet at: ►Section 6.3 Mixing Zone Analysis -.	Answer: Yes, mixing zone as small as practicable. Technical Support Document for Water Quality-Based Toxics Control Fact Sheet, Section 6.3 Fact Sheet, Appendix B DEC's RPA Guidance EPA Permit Writers' Manual	18 AAC 70.240 (a)(2) 18 AAC 70.245 (b)(1) - (b)(7) 18 AAC 70.255(e) (3) 18 AAC 70.255 (d)

Criteria	Description	Answer & Resources	Regulation
Technology	Were the most effective technological and economical methods used to disperse, treat, remove, and reduce pollutants? **If yes**, describe methods used in Fact Sheet at Section 6.3 Mixing Zone Analysis.	Answer: Yes Fact Sheet, Section 6.3.2	18 AAC 70.240 (a)(3)
Low Flow Design	**For river, streams, and other flowing fresh waters.** - Determine low flow calculations or documentation for the applicable parameters. Justify in Fact Sheet	N/A	18 AAC 70.255(f)
Existing use	Does the mixing zone…		
	(1) Partially or completely eliminate an existing use of the water body outside the mixing zone? **If yes, mixing zone prohibited.**	Answer: No Fact Sheet Section 6.3	18 AAC 70.245(a)(1)
	(2) Impair overall biological integrity of the water body? **If yes, mixing zone prohibited.**	Answer: No Fact Sheet Section 6.3	18 AAC 70.245(a)(2)
	(3) Provide for adequate flushing of the water body to ensure full protection of uses of the water body outside the proposed mixing zone? **If no, then mixing zone prohibited.**	Answer: Yes Fact Sheet Section 6.3.1	18 AAC 70.250(a)(3)

Criteria	Description	Answer & Resources	Regulation
	(4) Cause an environmental effect or damage to the ecosystem that the department considers to be so adverse that a mixing zone is not appropriate? **If yes, then mixing zone prohibited.**	Answer: No Fact Sheet Section 6.3	18 AAC 70.250(a)(4)
Human consumption	Does the mixing zone…		
	(1) Produce objectionable color, taste, or odor in aquatic resources harvested for human consumption? **If yes, mixing zone may be reduced in size or prohibited.**	Answer: No Fact Sheet Section 6.3.4	18 AAC 70.250(b)(2)
	(2) Preclude or limit established processing activities of commercial, sport, personal use, or subsistence shellfish harvesting? **If yes, mixing zone may be reduced in size or prohibited.**	Answer: No Fact Sheet Section 6.3.4	18 AAC 70.250(b)(3)
Spawning Areas	Does the mixing zone…		
	(1) discharge in a spawning area for anadromous fish or Arctic grayling, northern pike, rainbow trout, lake trout, brook trout, cutthroat trout, whitefish, sheefish, Arctic char (Dolly Varden), burbot, and landlocked coho, king, and sockeye salmon? **If yes, mixing zone prohibited.**	Answer: No Fact Sheet Section 6.3.5	18 AAC 70.255 (h)

Criteria	Description	Answer & Resources	Regulation
Human Health	Does the mixing zone…		
	(1) Contain bioaccumulating, bioconcentrating, or persistent chemical above natural or significantly adverse levels? **If yes, mixing zone prohibited.**	Answer: No Fact Sheet Section 6.3.6	18 AAC 70.250 (a)(1)
	(2) Contain chemicals expected to cause carcinogenic, mutagenic, tetragenic, or otherwise harmful effects to human health? **If yes, mixing zone prohibited.**	Answer: No Fact Sheet Section 6.3.6	
	(3) Create a public health hazard through encroachment on water supply or through contact recreation? **If yes, mixing zone prohibited.**	Answer: No Fact Sheet Section 6.3.6	18 AAC 70.250(a)(1)(C)
	(4) Meet human health and aquatic life quality criteria at the boundary of the mixing zone? **If no, mixing zone prohibited.**	Answer: Yes Fact Sheet Section 6.3	18 AAC 70.255 (b),(c)
	(5) Occur in a location where the department determines that a public health hazard reasonably could be expected? **If yes, mixing zone prohibited.**	Answer: No Fact Sheet Section 6.3.6	18 AAC 70.255(e)(3)(B)

Criteria	Description	Answer & Resources	Regulation
Aquatic Life	Does the mixing zone…		
	(1) Create a significant adverse effect to anadromous, resident, or shellfish spawning or rearing? **If yes, mixing zone prohibited.**	Answer: No Fact Sheet Section 6.3.7	18 AAC 70.250(a)(2)(A-C)
	(2) Form a barrier to migratory species? **If yes, mixing zone prohibited.**	Answer: No Fact Sheet Section 6.3.7	
	(3) Fail to provide a zone of passage? **If yes, mixing zone prohibited.**	Answer: No Fact Sheet Section 6.3.7	
	(4) Result in undesirable or nuisance aquatic life? **If yes, mixing zone prohibited.**	Answer: No Fact Sheet Section 6.3.7	18 AAC 70.250(b)(1)
	(5) Result in permanent or irreparable displacement of indigenous organisms? **If yes, mixing zone prohibited.**	Answer: No Fact Sheet Section 6.3.7	18 AAC 70.255(g)(1)
	(6) Result in a reduction in fish or shellfish population levels? **If yes, mixing zone prohibited.**	Answer: No Fact Sheet Section 6.3.7	18 AAC 70.255(g)(2)
	(7) Prevent lethality to passing organisms by reducing the size of the acute zone? **If yes, mixing zone prohibited.**	Answer: No Fact Sheet Section 6.3 and Fact Sheet Section 6.3.7	18 AAC 70.255(b)(1)
	(8) cause a toxic effect in the water column, sediments, or biota outside the boundaries of the mixing zone? **If yes, mixing zone prohibited.**	Answer: No Fact Sheet Section 6.3.7	18 AAC 70.255(b)(2)

Criteria	Description	Answer & Resources	Regulation
Endangered Species	Are there threatened or endangered species (T/E spp) at the location of the mixing zone?If yes, are there likely to be adverse effects to T/E spp based on comments received from USFWS or NOAA. If yes, will conservation measures be included in the permit to avoid adverse effects? **If yes, explain conservation measures in Fact Sheet. If no, mixing zone prohibited.**	Answer: Yes Fact Sheet Section 8.1 for existing permit	Program Description, 6.4.1 #5 18 AAC 70.250(a)(2)(D)