



**ALASKA POLLUTANT DISCHARGE ELIMINATION SYSTEM
PERMIT FACT SHEET – FINAL**

Permit Number: AKG315100

Mobile Oil and Gas Exploration Facilities in State Waters in Cook Inlet

**DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Wastewater Discharge Authorization Program
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Issuance of an Alaska Pollutant Discharge Elimination System (APDES) general permit to:

**MOBILE OIL AND GAS EXPLORATION FACILITIES
IN STATE WATERS IN COOK INLET**

The Alaska Department of Environmental Conservation (the Department or DEC) is issuing an APDES general permit AKG315100 – Mobile Oil and Gas Exploration Facilities in State Waters in Cook Inlet (permit). The permit authorizes and sets conditions on the discharge of pollutants from these facilities to state waters. 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 these operations and outlines best management practices to which these operations must adhere.

This fact sheet explains the nature of potential discharges from oil and gas exploration facilities operating in state waters in Cook Inlet and the development of the permit including:

- Information on appeal procedures
- A description of the industry
- A listing of effluent limits, monitoring requirements, and other conditions
- Technical material supporting the conditions in the permit

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 Water at the following address:

Director 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 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 permit, fact sheet, and other information are also 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 410 Willoughby Avenue, Suite 310 Juneau, AK 99801 (907) 465-5180
Alaska Department of Environmental Conservation Division of Water Wastewater Discharge Authorization Program 610 University Avenue Fairbanks, AK 99709-3643 (907) 451-2183	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 GENERAL PERMITS

1.1 Legal Basis

Section 301(a) of the Clean Water Act (CWA) and Alaska Administrative Code (AAC) Chapter 18, Section 83.015 (18 AAC 83.015) provide that the discharge of pollutants is unlawful except in accordance with an Alaska Pollutant Discharge Elimination System (APDES) permit. Often the discharge of pollutants is regulated through an individual APDES permit. However, 18 AAC 83.205 allows the issuance of an APDES general permit to categories of discharges when a number of point sources are:

- Located within the same geographic area and warrant similar pollution control measures;
- Involve the same or substantially similar types of operations;
- Discharge the same types of wastes;
- Require the same effluent limits or operating conditions;
- Require the same or similar monitoring requirements; and
- In the opinion of the Department, are more appropriately controlled under a general permit than under individual permits.

18 AAC 83.210(a) allows a general permit to be administered according to the individual permit regulations found in 18 AAC 83.115 and 18 AAC 83.120. Like an individual permit, a violation of a condition contained in a general permit constitutes a violation of the CWA and subjects the permittee of the facility with the permitted discharge to the penalties specified in Alaska Statute (AS) 46.03.020(13). In accordance with 18 AAC 83.155, general permit AKG315100 – Mobile Oil and Gas Exploration Facilities in State Waters in Cook Inlet (permit) will remain in force and effect via administrative extension should the Alaska Department of Environment Conservation (DEC or the Department) be unable to reissue the permit prior to its expiration date.

1.2 Individual Permit

A permittee authorized to discharge under a general permit may request to be excluded from coverage by applying for an individual permit. This request must be made by submitting APDES permit application Form 1 and Form 2C with supporting documentation to DEC.

The Department may require any person authorized by a general permit to apply for and obtain an individual permit, or any interested person may petition the Department to take this action. Per 18 AAC 83.215. The Department may consider the issuance of an individual permit when: the discharger is not in compliance with conditions of the general permit a change has occurred in technology or practices; effluent limits guidelines (ELGs) are promulgated; a water quality management plan is approved; DEC determines that the discharge is significant; or a Total Maximum Daily Load (TMDL) has been completed.

2.0 INDUSTRY DESCRIPTION

Oil and gas related activities in Cook Inlet began nearly 60 years ago with initial exploration discoveries in the late 1950s. Oil exploration activities peaked around 1967 and the most recent discoveries occurred in the early 1990s. Oil production peaked at approximately 230,000 barrels per day in 1970 but has been in steady decline since. Currently, Cook Inlet oil production is approximately 33,000 barrels per day. As for Cook Inlet gas, reserves in 1970 were approximately 8 trillion cubic

feet. Over time, gas has been consumed at approximately 145 billion cubic feet per year. Based on projections in 2010, these gas reserves could be exhausted by 2013 and this has spurred increase exploration for gas in Cook Inlet. The present supply-demand condition for Cook Inlet gas presents a renewed incentive for exploration and development. New gas exploration and development projects are underway and other projects are anticipated in the near future.

There are 17 fixed production facilities and two new mobile exploratory facilities operating in Cook Inlet. The production facilities are operated by Hilcorp Alaska, LLC (purchased from Unocal), XTO Energy, Inc., and ConocoPhillips Alaska, Inc. The two mobile exploration facilities are used by Furie Operating Alaska, LLC (formerly Escopeda) and Buccaneer Alaska Operations, LLC. Currently, the Spartan 151 used by Furie Operating Alaska, LLC and the Endeavor – Spirit of Independence used by Buccaneer Alaska Operations, LLC are the only mobile facilities that have coverage for exploration in Cook Inlet under an administratively extended general permit issued by the Environmental Protection Agency (EPA) in 2007 (2007 Permit). This EPA-issued general permit expired in July 2012. No new authorizations can be completed under the expired general permit.

The two types of operations associated with drilling for oil and gas are exploration and development for production. Exploratory drilling includes those operations that involve the drilling of wells to determine the nature and extent of hydrocarbon reserves. Development drilling includes those operations that involve the drilling of production wells once a hydrocarbon reserve has been discovered and delineated. The type of facilities used for exploratory and development drilling may be different or the same, but the drilling process is generally the same for both types of drilling operations. However, the discharges from the two activities differ. Exploratory drilling does not typically include discharges of water flood, produce water, or well completion, treatment, and work over fluids. Therefore, the permit for exploration does not include these discharges.

3.0 REGULATORY HISTORY OF OIL AND GAS IN COOK INLET

Prior to 1986, EPA issued individual permits for oil and gas activities in Cook Inlet. In 1986 EPA issued the first general permit AKG-28-5000 - Oil and Gas Exploration, Development, and Production Facilities in Cook Inlet (1986 Permit). However, ELGs had not been developed for oil and gas extraction at that time.

EPA reissued AKG-28-5000 in 1999 (1999 Permit) implementing newly promulgated ELGs for oil and gas extraction per 40 CFR Part 435. The State of Alaska accompanying CWA Section 401 Certificate of Reasonable Assurance (Section 401 Certification) issued by DEC authorized mixing zones for total residual chlorine (TRC) for domestic wastewater discharges based on the type of treatment system and effluent characteristics from existing representative facilities. Fecal coliform bacteria monitoring was required for one year to inform decisions about authorizing mixing zones for this parameter. DEC granted a waiver for minimum treatment under 18 AAC 72.060 for facilities that use biological treatment units (BTUs) and were intermittently staffed or had a regular staff of nine or fewer people (M9IM). EPA also developed technology-based effluent limits (TBEL) for five-day biochemical oxygen demand (BOD₅) and total suspended solids (TSS) using best professional judgment (BPJ) for domestic wastewater discharges. The TBEL limits have been retained in subsequent permit reissuances. The 1986 Permit included a prohibition of discharging within 1,000 meters of an Area Meriting Special Attention (AMSA) per requirements from Alaska Coastal Management Program (ACMP). This prohibition was retained in the 1999 permit with additional monitoring required to reevaluate this prohibition during the next reissuance.

In 2007, EPA again reissued AKG-28-5000 but with a new permit number designation and title, AKG-31-5000 Oil and Gas Extraction Facilities in Federal and State Waters in Cook Inlet (i.e.: 2007 Permit).

While the ACMP) determination was ongoing for the permit reissuance, EPA considered potential impacts to subsistence and near shore habitats from mobile exploration facility discharges. However, there was insufficient information on fate and transport of exploration drilling discharges available to adequately evaluate impacts in the vicinity of the discharges. Therefore, the 2007 Permit included requirements for all new mobile exploration facilities to conduct environmental studies. In addition, to ensure adequate protection to sensitive areas until data was submitted from the studies on potential effects from the discharges, the 1,000 meter prohibition was increased to 4,000 meters.

In the Section 401 Certification for the 2007 Permit, the State of Alaska authorized mixing zones of varying sizes for TRC for domestic wastewater discharges from many fixed platforms. Individual limits for TRC were developed using dilution allowances derived from mixing zones authorized for site-specific conditions on platforms. However, DEC also authorized standard-size 100 meter, cylindrically shaped mixing zones where site-specific conditions were not known beforehand, such as those represented by mobile exploration facilities. In these situations, a maximum monthly TRC limit of 1.0 milligram per liter (mg/L) was developed based on BPJ and included in the 2007 Permit. To control discharges of various chemicals used in miscellaneous discharges, the State of Alaska developed critical dilution factors based on a range of discharge flow rates and a set 100 meter mixing zone to establish triggers for chronic whole effluent toxicity (WET). In addition, the 2007 Permit also established best management practices (BMPs) for chemical usage in conjunction with WET triggers to control pollutants in miscellaneous discharges consisting of chemically treated freshwater and seawater. Lastly, the Section 401 Certification emphasized that construction, installation, or modification of a domestic wastewater system, including graywater, required engineering plan submittal for approval per 18 AAC 72.200. Similarly, alternations to non-domestic wastewater systems required plan submittals per 18 AAC 72.600.

The Section 401 Certification issued by the State of Alaska for the 2007 Permit included an antidegradation analysis per 18 AAC 70.015. The 2007 Permit was subject to a challenge in the United States (US) Court of Appeals for the Ninth Circuit (Ninth Circuit), and the disposition was filed October 21, 2010 [See Cook Inlet keeper et al, petitioners v. US EPA, No. 07-72420]. The Ninth Circuit granted an EPA motion for voluntary partial remand of the permit, subject to certain reporting requirements. Among those requirements, the Ninth Circuit required EPA to report on the Department's progress to develop the guidance document *Interim Antidegradation Implementation Methods*, dated July 14, 2010 (*Interim Methods*) for implementing the antidegradation policy under 18 AAC 70.015. The Department developed and finalized interim methods on July 14, 2010. EPA reviewed the *Interim Methods* and found them to be consistent with Alaska state policy and the CWA.

In 2011, effluent limits from the 2007 Permit for produce water discharges were re-proposed by EPA, which was accompanied by a Section 401 Certification developed by the Department. On November 21, 2011 a Request for Adjudicatory Hearing was submitted to the Commissioner of DEC for judgment as to whether the *Interim Methods* qualified as regulation that required public comment. This request was stayed by the Commissioner because the matter was also concurrently pending litigation in the Alaska Superior Court (Court). On February 23, 2012 a petition for review was submitted to the Ninth Circuit using a similar basis as the hearing request [See Cook Inlet Keeper et al, petitioners v. US EPA, No. 12-70572]. On September 4, 2012 the Court found the *Interim Methods* did not qualify as regulations requiring public notice. After the appeal period for the court's decision expired, the Commissioner lifted the stay and dismissed the request for adjudicatory hearing on January 24, 2013 after a voluntary dismissal of the request had been submitted by the filer. Following these outcomes, a joint motion to dismiss the EPA appeal was granted by the Ninth Circuit on January 29, 2013.

DEC is currently proposing to issue APDES permit AKG315100 – Mobile Oil and Gas Exploration in State Waters in Cook Inlet while EPA is proposing to issue AKG-28-5000 – Oil and Gas Exploration in Federal Waters in Cook Inlet (federal permit). DEC and EPA are collaborating on developing and

issuing these two separate general permits to replace the exploration components of the 2007 Permit. The development and production components of the administratively extended 2007 Permit will remain in force and effect until a new APDES general permit is issued for oil and gas development and production in Cook Inlet.

4.0 PERMIT COVERAGE

4.1 Coverage Area

The three zone classifications of waters within Cook Inlet are coastal, territorial sea, and federal. Coastal waters and the territorial sea are jurisdictionally state waters. Coastal waters are defined as all of Cook Inlet north of the baseline at Kalgin Island. The territorial sea is the first three nautical miles seaward from the Alaska coastline or the baseline at Kalgin Island. The zone seaward of the territorial sea is defined as the contiguous zone, or ocean, and is jurisdictionally considered federal waters.

The 2007 Permit covered both state and federal waters because EPA was the National Pollutant Discharge Elimination System (NPDES) permitting authority for both state and federal waters at that time. In November 2012, the Department assumed permitting authority for oil and gas discharges to state surface waters. Accordingly, as previously mentioned, EPA and the Department are proposing to issue two general permits to cover discharges to the federal (EPA issued) and state (DEC issued) waters of Cook Inlet. The coverage area for the APDES permit is generally described as coastal waters north of Kalgin Island and all of the territorial seas of Cook Inlet, with the exception of several bays and sensitive areas shown on Figure 1.

The permit only covers the wastewater discharges specifically described therein. Coverage also does not apply to wastewater discharged to impaired waterbodies (as listed on the CWA Section 303(d) list) if the wastewater contains the pollutant that causes or contributes to the impairment.

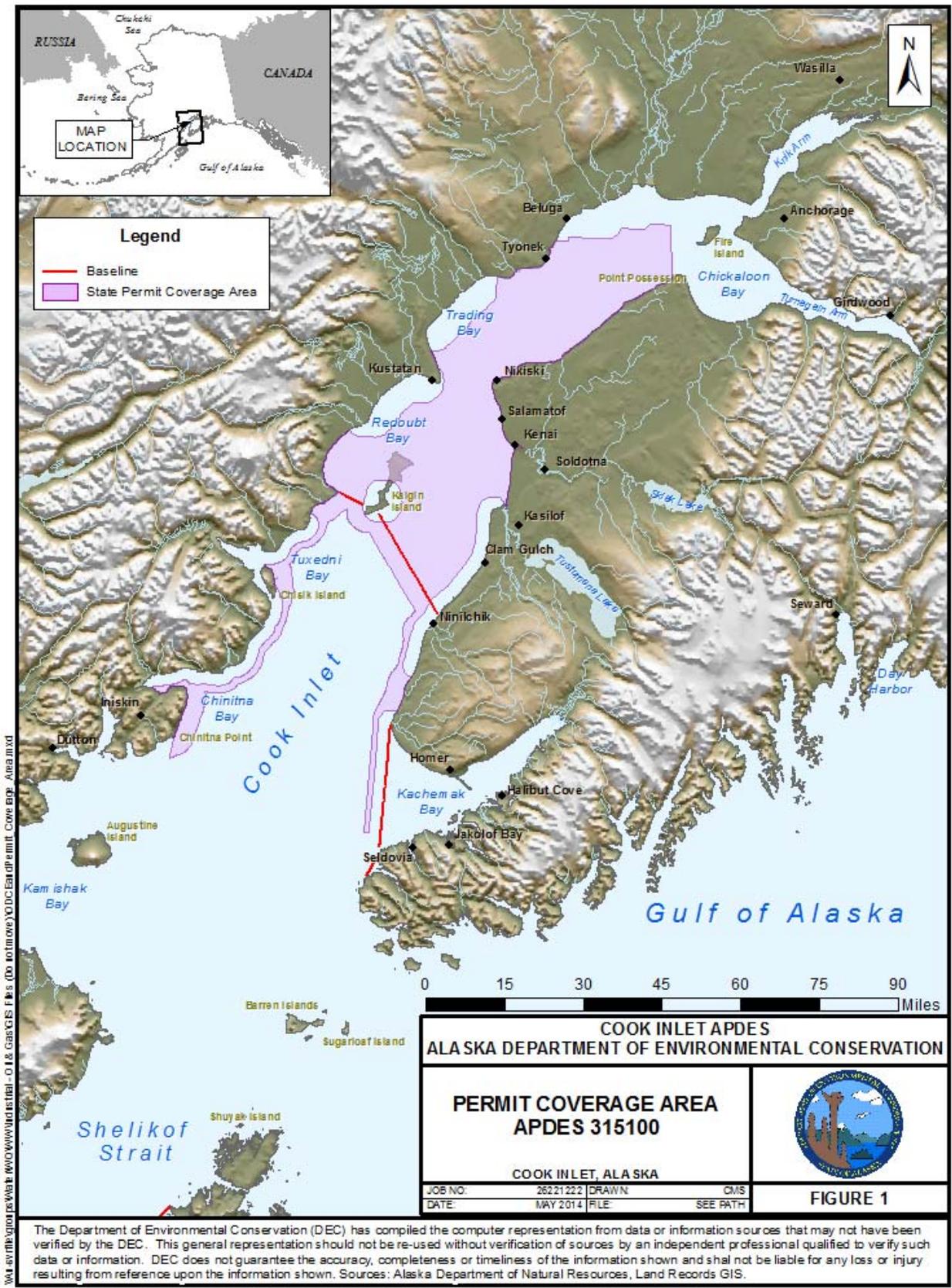
The permit prohibits discharge to certain areas as determined necessary to ensure no unreasonable degradation to the marine environment based on the findings of the 2013 Ocean Discharge Criteria Evaluation (2013 ODCE), which was developed in accordance with 40 CFR Part 125, Subpart M. Area restrictions are also based on coordination with other state or federal agencies. The result is there has been no new coverage areas added to, or existing areas removed from, the 2007 Permit coverage area. However, some areas that remain excluded from permit coverage have not been listed below because they are not immediately contiguous to the coverage area (e.g. Anchorage Coastal Wildlife Refuge). The following areas are prohibited from discharges under the permit.

- The permit prohibits discharges in water depths less than the 10 meter mean lower low water (MLLW) mark based on recommendations in the 2013 ODCE. Discharges to these shallow waters disperse less than discharges to deeper waters and have greater potential to impact the abundant aquatic life found in these near shore locations.
- The permit prohibits discharges within the boundaries or within 4,000 meters of a coastal marsh, river delta, or river mouth, or a designated AMSA, State Game Refuge (SGR), State Game Sanctuary (SGS), or state Critical Habitat Area (CHA) (the seaward edge of a coastal marsh is defined as the seaward edge of emergent wetland vegetation). The prohibition to discharge within an AMSA was developed through coordination with the now expired Alaska Coastal Management Program (ACMP) during development of the 2007 Permit. The 2007 Permit prohibited discharges within 4,000 meters of a

coastal marsh, river delta, or river mouth, or an AMSA, SGR, SGS or CHA. Applicable prohibited areas include:

- Port Graham/Nanwalek AMSA,
 - Redoubt Bay SGR
 - Susitna Flats SGR,
 - Trading Bay SGR,
 - Kalgin Island CHA,
 - Clam Gulch CHA,
 - Kachemak Bay CHA,
 - Lake Clark National Park
-
- The permit prohibits discharges in parts of Kamishak, Chinitna, and Tuxedni Bays because these are either areas of high resource value or are adjacent to areas of high resource value. In addition, Kamishak Bay is a known net depositional environment for sediment where drilling mud solids and other pollutants may potentially accumulate if discharges are authorized. The following describes these restricted areas in more detail:
 - Kamishak Bay: West of a line from Cape Douglas to Chinitna Point.
 - Chinitna Bay: Inside of the line between the points of the shoreline at latitude 59°52'45" N, longitude 152°48'18" W on the north and latitude 59°46'12" N, longitude 153°00'24" W on the south.
 - Tuxedni Bay: Inside of the lines on either side of Chisik Island from latitude 60°04'06" North, longitude 152°34'12" West on the mainland to the southern tip of Chisik Island (latitude 60°05'45" North, longitude 152°33'30" West) and from the point on the mainland at latitude 60°13'45" North, longitude 152°32'42" West to the point on the north side of Snug Harbor on Chisik Island (latitude 60°06'36" North, longitude 152°32'54" West).
 - The permit prohibits discharges to high-value, high sensitivity beluga habitat areas in the northern reach of Cook Inlet because the beluga is listed as endangered under the Endangered Species Act (ESA). This prohibition is consistent with the Alaska Department of Natural Resources (DNR) mitigation measures for the state's oil and gas leases as described in the *Cook Inlet Areawide Oil and Gas Lease Sale: Final Finding of the Director*, January 20, 2009.

Figure 1: Area of Coverage Map



4.2 Authorized Discharges

During the effective period of the permit, the permittee is authorized to discharge pollutants associated with oil and gas exploration and geotechnical activities located in state waters in Cook Inlet within the limits and subject to the conditions set forth in the permit. The permit authorizes the discharge of only those pollutants resulting from facility processes, waste streams, and operations that have been identified in the Notice of Intent (NOI) and described in the written authorization provided by the Department. Applicants must clearly demonstrate proposed sites are within the coverage area and meet all the requirements for coverage under the permit as part of the NOI process. Based on discharges applicable to exploration and geotechnical activities, the following wastewater discharges are authorized under the permit:

<u>DISCHARGE NUMBER</u>	<u>DISCHARGES DESCRIPTION</u>
001	Drilling Fluids and Drill Cuttings
002	Deck Drainage
003	Domestic Wastewater (as defined in 18 AAC 72.990(23))
004	Graywater (as defined in 18 AAC 72.990(35))
005	Desalination Unit Wastes
006	Blowout Preventer Fluid
007	Boiler Blowdown
008	Fire Control System Test Water
009	Non-Contact Cooling Water
010	Uncontaminated Ballast Water
011	Bilge Water
012	Excess Cement Slurry
013	Mud, Cuttings, and Cement at the Seafloor
019	Test Fluids

4.3 Clarifications for Domestic Wastewater and Graywater Discharges

This section provides definitions and clarifications associated with Discharge 003 – Domestic Wastewater and Discharge 004 – Graywater to assist in understanding distinct differences between the permit developed by DEC and the federal permit developed by EPA. The permit defines graywater per 18 AAC 72.990(35), which is consistent with the definition for domestic wastewater established in the Oil and Gas Extraction Point Source Category, at 40 CFR 435.11(j) and 40 CFR 435.41(l) as adopted by reference at 18 AAC 83.010(g)(3). Graywater (analogous to domestic wastewater in the federal permit) is defined as: “the materials discharged from sinks, showers, laundries, safety showers, eye-wash stations, hand-wash stations, fish cleaning stations, and galleys located within facilities subject to this Subpart” [40 CFR Part 435 – Subpart A Offshore Subcategory for territorial sea and Subpart D Coastal Subcategory for coastal waters].

The greatest point of divergence between the APDES permit and the NPDES permit (and historical EPA Cook Inlet NPDES general permit issuances) is in how the state defines domestic wastewater. The state regulatory definition of domestic wastewater in 18 AAC 72.990(23) includes graywater and black water whereas federal regulations in 40 CFR Part 435 indicate black water is sanitary wastewater and graywater is domestic wastewater. Federal regulation 40 CFR Part 435 requires different pollution control measures for domestic and sanitary wastewater. However, because graywater is considered a component of domestic wastewater under state regulation, graywater by itself is subject to the same regulatory requirements as domestic wastewater that contains black water only, or commingled black and

graywater. The ramifications of this state regulation is that per 18 AAC 72.050, domestic wastewater discharges must meet minimum treatment requirements (i.e., secondary treatment as defined in 18 AAC 72.990(59)) unless a waiver from minimum treatment is granted by the Department under 18 AAC 72.060.

As discussed in Section 6.3.1 of this fact sheet, some effluent limits for domestic wastewater discharges (003) retained from the 2007 Permit are less stringent than secondary treatment as defined in 18 AAC 72.990(59). If the applicant requests coverage that includes limits less stringent than the minimum treatment requirements of 18 AAC 72.050, the applicant must also obtain a waiver for minimum treatment prior to obtaining authorization for domestic wastewater discharges.

4.4 New Permit Requirements

The basis of the permit is 40 CFR Part 435, the 2007 Permit issued by EPA, and other state regulations, including those clarified in Section 4.3. Although the limitations in the permit have not changed from the 2007 Permit, permit modification is necessary to ensure consistency with 18 AAC 72 regulations as discussed in Section 4.3. The permittee must satisfy the following permit requirements.

4.4.1 Plan Reviews and Engineer Reports for Domestic Wastewater Discharges (003)

First time applicants or existing permittees who have not previously received plan approval or are conducting major renovations on their domestic wastewater system (graywater, black water or commingled black and graywater) must submit engineering plans to the Department for approval per 18 AAC 72.200. The plan review is essential to ensure that the treatment system is designed to protect public health and the environment and comply with permit requirements. If applicable limits are less stringent than the minimum treatment requirements found in 18 AAC 72.050, the applicant or permittee must also submit a request for a waiver and a report prepared by a licensed Alaskan engineer per 18 AAC 72.060. This is not a new permit requirement. However, requiring that plans and reports be submitted with the NOI for approval is a new permit requirement.

4.4.2 Plan Reviews and Engineer Reports for Graywater Discharges (004)

First time applicants or permittees who have not previously received plan approval or are conducting major renovations must submit engineering plans of the graywater system to the Department for approval per 18 AAC 72.200. The applicant must also submit a request for waiver and an engineering report prepared by a licensed Alaskan engineer per 18 AAC 72.060. A permittee proposing to discharge graywater must comply with this requirement, which is not a new permit requirement. However, requiring that plans and reports are submitted with the NOI for approval is a new permit requirement.

4.4.3 Influent and Effluent BOD₅ and TSS Monitoring for Graywater Discharges (004)

Permittees authorized to discharge graywater under the permit must monitor influent and effluent BOD₅ and TSS to evaluate compliance with 18 AAC 72.050 and 18 AAC 72.060. Influent and effluent monitoring must be available upon request by the DEC.

4.4.4 NOI Schedule for New Applicants and Existing Permittees

Applicants for new mobile oil and gas exploration facilities (new applicants) must submit an NOI to DEC 45 days prior to discharge. The 45-day notice is an increase from the 30 days previously required in the 2007 Permit to allow for adequate time to

review the NOI and plan approvals. Existing permittees of mobile oil and gas exploration facilities (existing permittees) with administrative extended coverage under the 2007 Permit must submit a new NOI to become authorized under the permit. Coverage under the 2007 Permit remains in force and effect until the new authorization is signed.

4.4.5 Drilling Fluids Plans Submitted with NOI

The permit includes a new requirement for development and implementation of a Drilling Fluids Plan that must be submitted with the NOI. The intent of this new requirement is to ensure these documents are readily available for review and comment by DEC but approval is not required prior to implementing these plans.

4.4.6 Cooling Water Intake Structure Requirements

The permit incorporates 40 CFR Part 125, Subpart N adopted by reference at 18 AAC 83.010(c)(9) that requires new offshore oil and gas facilities to take measures to reduce entrainment and impingement of aquatic life associated with cooling water intake structures (CWIS). This new requirement imposes BMP Plan development to include measures that minimize impacts to aquatic life.

4.4.7 Remove Notice of Termination Requirement

The permit removes the requirement to submit a Notice of Termination within 30 days of ceasing discharges and allows 90 days to submit the End-of-Well (EOW) Report.

4.4.8 Chemical Additives Reporting

The permit includes a new requirement for the permittee to maintain a precise chemical inventory of all constituents used downhole, including drilling fluid additives. The inventory is to be submitted with the EOW Report and retained in records for a minimum of five years.

4.4.9 WET Monitoring for Test Fluids

The 2007 Permit included limits and monitoring requirements for Test Fluids associated with exploration activities. The permit adds WET test monitoring for discharges over 10,000 gallons per day (gpd). Discharges equal to or less than 10,000 gpd will require WET testing also but only for data gathering purposes.

4.4.10 BMP Plan submittal with NOI

The 2007 Permit required certification that a BMP Plan had been developed and implemented prior to discharging. The permit includes a new requirement to submit a copy of the BMP Plan with the NOI. The intent of this new requirement is to ensure these documents are readily available for review and comment by DEC but approval is not required prior to implementing these plans.

4.5 Notice of Intent

An applicant seeking coverage under the permit must submit a NOI per 18 AAC 83.210(b). The regulation requires the following information to be included in the NOI:

1. Applicant Information. The NOI requires the applicant to provide the owner's or permittee's name, mailing address, contact name, and telephone number, as well as the facility's name, mailing address, contact name, and telephone number.
2. Location of discharge. The NOI requires the applicant to provide the name of the lessor (i.e. DNR), the lease and block numbers of operations and discharges, the

latitude and longitude of the facility, the latitude and longitude of each well, the range of water depths below MLLW in the lease block, and the water depths for each discharge. In addition, the permit requires the applicant to provide the type of drilling rig used for exploration (i.e., jackup, drillship, semisubmersible, etc.).

3. Commencement date of discharge. The permit requires the applicant to provide the initial date and expected duration of operations.
4. Environmental Study Plan and Reports. The permit requires the applicant to submit an Environmental Study Plan with the NOI for review and approval by the Department. The Department also requires the applicant to provide copies of any exploration plans, biological surveys, and environmental reports required by DNR or the Corps of Engineers for the identification or protection of biological populations or habitats. If these documents do not exist, the permit requires the applicant to provide notice that such documents do not exist.
5. BMP and Drilling Fluids Plans: A Drilling Fluid Plan and BMP Plan must be submitted with the NOI.
6. Cooling Water Intake Structures: The applicant must verify whether their facility meets the applicability criteria for new offshore oil and gas extraction facilities and, if so, whether it will comply with Track II requirements.
7. Wells. The permit requires the applicant to submit the following for each well: the initial date of drilling; the well name; the well number (i.e., #1, #2, etc.); the well hole diameter; the category of mud(s) used (e.g., water-based, oil-based, synthetic-based, etc.); the type or group of mud used (e.g., lignosulfonate muds, lime muds, etc.); the solids removal process; and the certification of a complete Drilling Fluids Plan.
8. Discharges. The permit requires the applicant to identify the types of discharges from the facility. In addition, the permit requires the applicant to indicate the type of sanitary discharge that will occur, if any (i.e., M10 or M9IM).
9. Line Drawing. The NOI requires the applicant to submit a line drawing showing depicting waste streams from the facility including estimated flow rates and other information necessary to characterize the discharges.
10. Plan Approval and Waivers for First Time Applicants. 18 AAC 72.050 requires the applicant to demonstrate to the Department that a domestic wastewater discharge meets minimum treatment standards prior to discharging to waters of the US. A waiver to minimum treatment may be requested per 18 AAC 72.060. Plan approval is also required before constructing, installing, or modifying any part of a domestic wastewater collection, treatment, or disposal system per 18 AAC 72.200. In addition, a permittee that constructs, alters, installs, modifies, or operates a non-domestic wastewater treatment works or disposal system must obtain written approval of engineering plans per 18 AAC 72.600.

4.5.1 Deadlines for Submitting NOI

A new applicant must submit an NOI to DEC 45 days prior to discharge. The 45-day notice is increased from 30 days in the 2007 Permit to allow for adequate time to review the NOI and plan approvals. Coverage under the 2007 Permit remains in force and effect until a new authorization is signed.

4.5.2 Date of Authorized Discharge

18 AAC 83.210(f) requires a general permit to specify the date(s) when it authorizes a permittee to begin discharging. Commencement of discharges from a facility may occur any time after issuance date of a written authorization from DEC. The written authorization will assign the exploration facility an APDES permit number for the site specified in the NOI. Relocation to another site will require the permittee to submit another NOI to the Department 45 days prior to commencing discharge at the new site.

4.5.3 Transfers

18 AAC 83.150 allows permit coverage for a given exploration facility to be transferred from an existing owner to a new owner. The permit authorizes a transfer only for an existing exploration facility located at the site clearly designated in the original NOI. Discharge authorizations for a particular exploration facility may not be transferred to another facility at the same site, nor will the transfer apply to the same facility at a new location.

4.5.4 Termination Notification

DEC may terminate coverage under an APDES permit for the reasons described in 18 AAC 83.140 using the procedures provided in 18 AAC 83.130. If a permittee desires to terminate coverage, the permit requires the permittee to provide notice of termination to DEC within 30 days following cessation of discharges. The notice must include certification that the exploration facility is not subject to an enforcement action or citizen suit. The notice must also include any final reports required by the permit.

5.0 RECEIVING WATERS

Cook Inlet is unique and noted for large tides, strong currents, extensive mudflats, high turbidity, and fluctuations in salinity due to large glacial and freshwater inputs from surrounding drainages. The inlet is approximately 215 miles long and is constricted to 10 miles wide between the East and West Forelands. The mean diurnal tidal range varies from 13.7 feet at the mouth and 29 feet at the headwaters. The resulting tidal currents create maximum surface currents that are generally 3.5 knots in most of the inlet but over 6.5 knots at the foreland constriction. Rivers from 11 major mountain ranges drain into the inlet and glaciers make up 11 percent of all watershed areas. Input of glacial silts and freshwater causes large fluctuations in sediment and salinity in the inlet. Generally, the inlet is 120 feet deep north of the forelands and increases to 480 feet to the south. The 60-foot contour is approximately two and a half (2.5) to three (3) miles offshore except near fjords along the southeast coast of the Kenai Peninsula.

5.1 Water Quality Standards

Section 301(b)(1)(C) of the CWA requires the development of limits in permits necessary to meet water quality standards (WQS) by July 1, 1977. State regulations at 18 AAC 83.435 require that the conditions in APDES permits ensure compliance with applicable WQS. The WQS are composed of use classifications, numeric and/or narrative water quality criteria, and an anti-degradation policy. The use classification system designates the beneficial uses that each waterbody 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. The receiving waters covered by the permit are marine waters of the US located in the State of Alaska. Marine waters are classified in the WQS at 18 AAC 70.020(a)(2) as Classes (2)(A), (B), (C), and (D) for use in aquaculture, seafood processing, and industrial water supply contact and secondary recreation growth and propagation of fish, shellfish, other aquatic life, and wildlife and harvesting for consumption of raw mollusks or other raw aquatic life. The Department has determined that all of the marine use classes must be protected in state waters in Cook Inlet.

5.2 Ocean Discharge Criteria Evaluation

The Ocean Discharge Criteria (ODC) found in 40 CFR Part 125, which is adopted by reference in 18 AAC 83.010(c), establishes guidelines for permitting discharges into the territorial seas, the contiguous zone, and the ocean. The ODC are intended to "prevent unreasonable degradation of the marine environment and to authorize imposition of effluent limitations, including a prohibition of discharge, if necessary, to ensure this goal (See 49 Fed. Reg. 65942 (Oct. 3, 1980)).

Under the ODC, an APDES permit may be issued if the Department determines that a discharge will not cause unreasonable degradation to the marine environment. If insufficient information exists to make such a determination prior to permit issuance, DEC may only issue the permit if the discharge will not cause irreparable harm to the marine environment while additional monitoring is undertaken, and if there are no reasonable alternatives to on-site disposal. DEC conducted an evaluation using ODC established in accordance with CWA Section 403 and 40 CFR Part 125, as adopted by reference at 18 AAC 83.010(c). Based on the available information, DEC determines whether the discharge will cause unreasonable degradation of the marine environment. 40 CFR 125.121, adopted by reference at 18 AAC 83.010(c)(8), states unreasonable degradation of the marine environment means:

- Significant adverse changes in ecosystem diversity, productivity, and stability of the biological community within the area of discharge and surrounding biological communities;
- Threat to human health through direct exposure to pollutants or through consumption of exposed aquatic organisms; or
- Loss of aesthetic, recreational, scientific or economic values which is unreasonable in relation to the benefit derived from the discharge.

40 CFR 125.122, provides 10 criteria to consider in the determination of whether there is unreasonable degradation or irreparable harm. The 10 ODC include:

1. Quantities, composition, and potential for persistence or bioaccumulation;
2. Transport of the pollutants by biological, physical, or chemical processes;
3. Composition and vulnerability of the biological communities exposed to the discharges including unique, threatened, or endangered species or those that are critical to the structure or function of the ecosystem;
4. Importance of the receiving water area to surrounding biological community;
5. Existence of special aquatic sites (including parks, refuges, etc.);
6. Potential direct or indirect impacts to human health;
7. Existing or potential recreational or commercial fisheries;
8. Any applicable requirements of an approved Coastal Zone Management plan;
9. Potential impacts on marine water quality; and
10. Other factors relating to the effects of the discharge as may be appropriate.

The ODCE developed for the 2007 Permit has been updated to include a review of currently available data to inform the decision by the Department for the permit issuance. Based on this updated 2013 ODCE, the limitations developed in the 2007 Permit are considered by the Department to still be protective of the marine environment. Therefore, no significant changes have been made to the permit. The permit retains discharge rate and depth limits for drilling fluid and drill cutting discharges and prohibits discharges in several environmentally sensitive areas in Cook Inlet. The BMPs for chemical treatment and chronic WET monitoring for miscellaneous discharges are also retained from the 2007 Permit. After consideration of the 2013 ODC and retention of limits, prohibitions, and other permit requirements from 2007, DEC determined that discharges authorized by the permit and discharged in accordance with permit requirements will not cause unreasonable degradation of the marine environment, as per 40 CFR 125.122(a).

5.3 Mixing Zone

5.3.1 Mixing Authorization

Mixing zones in the permit are based on applicable state mixing zone regulations and further supported by the technical findings of the 2013 ODCE. The mixing zones in the permit have been developed in compliance with 18 AAC 70.240 – 70.270 as amended June 26, 2003. The Department may authorize a mixing zone under the permit upon receipt of a complete application. The NOI serves as the application for the permit and provides information required to verify compliance with this section and the mixing zone checklist (See Attachment 2 - Mixing Zone Analysis Checklist). A mixing zone may be authorized based on meeting all regulatory criteria, as described in this fact sheet, which include consideration of: the size of the mixing zone, treatment technology, existing uses of the waterbody, human consumption, spawning areas (not applicable to marine waters and by extension the permit), human health, aquatic life, and endangered species. Subsequent Sections 5.3.2 through 5.3.8 describe the

rational used to meet the mixing zone criteria. The following mixing zones may be authorized under the permit:

- The permit authorizes a standard size 100 meter radii, cylindrically shaped mixing zone for Drilling Fluids and Drill Cuttings (001) and Mud, Cuttings, and Cement at the Seafloor (013). The 100 meter radii mixing zone applies to Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Iron, Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc.
- The Department may authorize upon request by an applicant a 100 meter radii, cylindrically shaped chronic mixing zone and a 10 meter radii cylindrically shaped acute mixing zone for TRC for Domestic Wastewater (003) and Graywater (004).
- A 100 meter radii, cylindrically shaped mixing zone is authorized for chronic WET for miscellaneous discharges 005 through as listed in Section 4.2 that are chemically treated to eliminate bacteria, prevent corrosion or scale, and protect equipment.
- A 100 meter radii, cylindrically shaped mixing zone is authorized for TAH, TAqH, metals, ammonia, dissolved inorganic substances, and WET for Test Fluids (019).

5.3.2 Mixing Zone Size

The Department authorizes a standard 100-meter radii, cylindrically shaped chronic mixing zone and a 10-meter radii, cylindrically shaped acute mixing zone based on state regulations. The Department has verified that the mixing zone evaluation conducted for the 2007 permit is applicable to this permit. A drifting organism is expected to pass through the acute mixing zone in less than 3 minutes during low current conditions. As this duration is less than 15 minutes, lethal effects are not expected to occur. The Department also uses the 2013 ODCE as a technical reference in establishing this regulatory mixing zone. ODCE requirements in 40 CFR 125.121(c) for APDES permits discharging to marine waters beyond the baseline of the territorial seas define a mixing zone to be that portion of the waterbody that extends a radial distance of 100 meters from the discharge point and vertically from the seafloor to the sea surface. DEC (and EPA) use this mixing zone when discharges are believed to have reasonable potential to exceed water quality criteria at the point of discharge. Default cylindrically shaped mixing zones with 100-meter radii are proposed for all discharges requiring a mixing zone due to the inherent variation in discharges from mobile exploration facilities that may occur anywhere within the area of coverage. The mixing zone analysis used to develop WET triggers provides dilution factors at the boundary of the 100-meter mixing zone for critical conditions in Cook Inlet for a range of flow rates associated with surface and subsurface discharges and the discharge volumes and concentrations anticipated from mobile exploration facilities. The 100 meter radii, cylindrical mixing zone is large enough to ensure chronic criteria are met at the boundary of the mixing zone but small enough to limit acutely toxic effects and to protect the existing uses of the water body. Based on evaluation of discharges from mobile exploration facilities and mixing zone regulations, the Department authorizes a 100-meter radii, cylindrically shaped mixing zone for all authorized discharges and constituents as discussed in Section 5.3.1.

5.3.3 Technology

18 AAC 70.240(a)(3) requires the Department to 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” prior to authorizing a mixing zone.

The limits for the discharge of Drilling Fluids and Drill Cuttings (001) and Muds, Cuttings, and Cement at the Seafloor (013) include surrogate metals cadmium and mercury. These ELG

limits are based on the best available technology economically achievable (BAT). The ELGs for Domestic Wastewater (003) require TRC concentration to be a minimum of 1.0 mg/L and to be maintained as close to this concentration as possible for facilities continuously manned by 10 or more persons (M10). These ELGs are based on best conventional pollutant control technology (BCT) and the best practicable control technology currently available (BPT). The permit retains maximum daily limit for TRC of 1.0 mg/L established previously through BPJ in the 2007 Permit, citing dechlorination as an effective and technologically and economically feasible treatment to attain this limit. In addition, the minimum treatment requirements of 18 AAC 72.050 must be met unless a waiver is approved by the Department under 18 AAC 72.060. However, a waiver to minimum treatment does not absolve the permittee from meeting the permit limits. These regulatory requirements apply Domestic Wastewater (003) and Graywater (004) discharges.

The Department finds that available evidence reasonably demonstrates that the wastewater 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 (See Section 9.0 for more information).

5.3.4 Existing Use

Per 18 AAC 70.245, the mixing zone has been appropriately sized to prevent lethality to passing organisms, protect human health, and to fully protect the existing uses of receiving waters in the areas approved for coverage under the permit. Therefore, the mixing zone is as small as practicable. When compared to the discharges from the 2007 Permit, the discharges associated with the permit do not include any new discharges that would contribute to lowering water quality more than what was previously considered. In addition, impairments to specific waterbodies as a result of discharges by permittees authorized during previous permit cycles have not been identified by the Department. DEC has verified the previous mixing zone and 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). Furthermore, upon review of the 2013 ODCE, the Department determined that the discharges will not result in unreasonable degradation in waters of the territorial sea as long as the limits, terms, and conditions of the permit are adhered to (See Section 9.0).

5.3.5 Human Health

Per 18 AAC 70.250(a)(1), 18 AAC 70.255(b) and (c), and 18 AAC 70.255(e)(3)(B) the mixing zones 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 Department as reviewed currently available data that reasonably demonstrates bioaccumulation or bioconcentration is not occurring as a result of discharges authorized by the permit. Under the conditions of the permit, in particularly restricting discharges in shallow water or near aquatic resources, the pollutants discharged are regulated to not produce objectionable color, taste, or odor in aquatic resources harvested for human consumption nor will the pollutants discharged preclude or limit established processing activities of commercial, sport, personal-use, or subsistence fish and shellfish harvesting in accordance with 18 AAC 70.250(b)(2) and (b)(3).

5.3.6 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.

5.3.7 Aquatic Life

Per 18 AAC 70.255(b)(1) and (2), 18 AAC 70.250(b)(1), or 18 AAC 70.250(a)(2)(A-C) 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, result in permanent or irreparable displacement of indigenous organisms, or a reduction in fish or shellfish population levels. Mixing zone authorizations result in water quality criteria being met at the boundary of the mixing zone for TRC in domestic wastewater discharges. For miscellaneous discharges involving chemically treated sea water, mixing zone authorizations for chronic WET are also contingent on chronic toxicity criteria being met at the boundary of the mixing zone. Coupled with the requirement for permittees to inventory chemical additives and biocides used to treat seawater, the Department determined WET testing will ensure protection of aquatic life and indigenous organisms outside the mixing zone. The Department concludes that the discharges will meet all water quality criteria outside authorized mixing zone boundaries.

5.3.8 Endangered Species

Per 18 AAC 70.250(a)(2)(D), the mixing zone will not cause an adverse effect on threatened or endangered species. Based on the information regarding endangered species in the areas that are available to lease sales by DNR, as described in the 2013 ODCE and authorized under the permit, authorized mixing zones should not adversely affect threatened or endangered species. The permit coverage area specifically excludes Type 1 Habitat for the beluga whale. Although the coverage area includes Type 2 habitat for the beluga whale, the discharges are not likely to cause adverse affects to beluga whales migrating through these areas per coordination with the National Marine Fisheries Service (NMFS) Permittees must also address mitigation measures associated with exploration activities for endangered species when filing their Plan of Operations with the DNR.

6.0 EFFLUENT LIMIT DEVELOPMENT

6.1 Basis for Permit Effluent Limits

18 AAC 83.015 prohibits the discharge of pollutants to waters of the US unless first obtaining a permit implemented by the APDES point source discharge program that meets the purposes of Alaska Statutes 46.03 and in accordance with CWA Section 402 and the requirements adopted by reference at 18 AAC 83.010. Per these statutory and regulatory provisions, the permit includes effluent limits that require the discharger to (1) meet standards reflecting levels of technological capability, (2) comply with WQS, (3) comply with other state requirements that may be more stringent, and (4) cause no unreasonable degradation to the territorial seas.

In establishing permit limits, DEC first determines which TBELs must be incorporated into the permit. The applicable ELG TBEL requirements for the permit are from 40 CFR Part 435 Subparts A and D. DEC then evaluates the effluent quality expected to result from these technological controls to determine if the discharge could result in exceedences of the water quality criteria in the receiving water. If exceedences could occur, water quality-based effluent limits (WQBELs) must be included in the permit. The limits in the permit reflect whichever

requirements (technology-based or water quality-based) are more stringent. The permit contains TBELs per 40 CFR Part 435, TBELs developed using BPJ, and WQBELs.

6.2 Technology-Based Effluent Limits Based on ELGs

6.2.1 Developing Technology-Based Effluent Limits Using ELGs

The goal in establishing ELGs is to ensure that industrial facilities with similar characteristics will meet similar ELGs or pollution prevention practices regardless of their location. In establishing ELGs, EPA is required by the CWA to consider industry-wide economic factors in complying with the TBELs, as well as the incremental costs in relation to the pollutant-reduction benefits.

In promulgating ELGs, EPA may divide an industrial point source category into groupings of subcategories. Each subcategory may regulate different waste streams and contain limits on different pollutants. This allows EPA to assess variations between products, raw materials, processes, and other factors that result in distinctly different characteristics. Regulation of an industrial category using subcategories allows each subcategory to have a uniform set of requirements that take into account conditions unique to that subcategory. EPA considers a number of different subcategorization factors during an effluent guidelines rulemaking, including the following:

- Manufacturing products and processes
- Raw materials
- Wastewater characteristics
- Facility size
- Geographical location
- Age of facility and equipment
- Wastewater treatability

The national ELGs are developed based on the demonstrated performance of a reasonable level of treatment that is within the economic means of specific categories of industrial facilities. For conventional pollutants (see 40 CFR 401.16), CWA Section 301(b)(1)(E) requires the imposition of effluent limits based on BCT. For nonconventional and toxic pollutants, CWA Section 301(b)(2)(A), (C), and (D) require the imposition of effluent limits based BAT. CWA Section 301(b) requires compliance with BCT and BAT no later than March 31, 1989. The compliance deadline for BPT was July 1, 1977.

EPA has promulgated national ELGs for the Oil and Gas Extraction Point Source Category at 40 CFR Part 435 Subparts A (Offshore Subcategory) and D (Coastal Subcategory). DEC adopted the ELGs by reference at 18 AAC 83.010(g)(3). These subparts specify BCT, BAT, BPT, and new source performance standards (NSPS) for the Offshore and Coastal Subcategories of the Oil and Gas Point Source Category. However, the NSPS do not apply to new exploratory facilities because exploration is conducted at a particular site for a short duration and generally consists of drilling only one to three wells. In general, exploratory facilities differ from development and production new sources in that they do not have high volume discharges, and they do not discharge produced water. Moreover, the volume of drilling fluids and drill cuttings discharged from an exploratory facility is significantly less than from a development facility, where up to 50 wells can be drilled (See 58 FR 12454 March 4, 1993). The following sections discuss the TBELs derived from these ELGs used in the permit

6.2.2 Drilling Fluids and Drill Cuttings (001)

Drilling Fluids: The TBELs for drilling fluid discharges in the permit are based on the ELGs establishing BAT for Cook Inlet and are retained from the 2007 Permit. The permit includes the following limits and prohibitions:

- no discharge of free oil
- no discharge of diesel oil
- toxicity limit of 3% by volume

The permit limits the discharge of organic contaminants by prohibiting the discharge of free oil and diesel oil and by restricting the use of mineral oil in drilling fluids. The Static Sheen Test method is used to determine if free oil is in drilling fluid discharges. To determine the presence of diesel oil, the 2007 Permit used a gas chromatograph (GC) analysis described in “Analysis of Diesel Oil in Drilling Fluids and Drill Cuttings” (CENTEC, 1985). The permit replaces this method with EPA SW846 Method 8015C (Revision 3, February 2007). Permittees must also measure toxicity using a 96-hour LC₅₀ on the suspended particulate phase (SPP) using the *Leptocheirus plumulosus* species.

Stock barite, which is commonly added to drilling fluids, is the main source of heavy metals in drilling fluid discharges. The TBELs for cadmium and mercury, 3 mg/kg and 1 mg/kg respectively, serve as surrogate parameters for other metals contained in the barite. Permittees are required to report cadmium and mercury concentrations measured in the stock barite before it is added to the drilling fluids, using EPA Method 245.5 or 7471 for mercury and EPA Method 200.7 for cadmium.

The permit retains the 2007 Permit prohibitions on discharges of oil-based drilling fluids, inverse emulsion drilling fluids, oil-contaminated drilling fluids, and drilling fluids to which mineral oil has been added. These prohibitions are retained in order to be consistent with the prohibition of free oil and to ensure compliance with the toxicity limit. Exceptions to these prohibitions may be granted for drilling fluids to which a mineral oil pill has been added (See Section 7.2.2). A pill is defined as a discrete amount of mineral oil circulated through a well to free stuck pipe.

The permit also prohibits all discharges of non-aqueous based drilling fluids, also known as synthetic-based drilling fluids, except when non-aqueous based drilling fluids adhere to drill cuttings, pursuant to the Offshore Category ELGs, as amended in 2001. The discharge of non-aqueous drilling fluids and drill cuttings apply to the territorial seas but not the coastal zone in the permit. The limitations that apply to drill cuttings discharges are set forth in Section 7.2.

While drilling is under way, the volume of drill cuttings and drilling fluids discharged depends on the rate at which wells are drilled and the resulting volume of cuttings that are brought to the surface or deposited at the seafloor. When drilling is completed, facilities typically discharge the remaining drilling fluids in bulk. The average discharge volume reported for drilling fluids and drill cuttings combined from production and exploration facilities was 6,160 barrels per well (bbl/well) during the previous permit cycle. That estimated volume bulk discharge of drilling fluids and drill cuttings has been revised based on recent EOW reports to be approximately 24,000 bbls/well and included in the 2013 ODCE.

Drill Cuttings: The main source of pollutants in drill cutting discharges comes from drilling fluids that adhere to the drill cuttings. Therefore, based on the ELGs for BAT, BCT, and BPT the permit requires drill cutting discharges to meet the same limits that apply to drilling fluid discharges. However, discharge of drill cuttings with non-aqueous drilling fluids is prohibited in coastal waters unless a permittee can demonstrate they qualify for exemption per 40 CFR

Part 435, Appendix 1 in Subpart D of the Coastal Subcategory. Otherwise, the limits for synthetic-based fluids discussed in following sections only apply to exploration activities in the territorial sea.

As noted above, the permit allows the discharge of drill cuttings to the territorial sea that were generated using synthetic-based drilling fluids. The use of synthetic-based fluids is considered a type of pollution prevention technology because synthetic-based drilling fluids typically produce slimmer wells, result in less sloughing of the well than when water-based fluids are used during drilling, and result in a decreased volume of material discharged. The permit requires removal of synthetic-based drilling fluids from the drill cuttings prior to discharge, which is not required when water-based fluids are used. This promotes reuse of synthetic-based drilling fluids. Typically, cuttings are shipped back to shore so that fluid can be reclaimed rather than disposed of through bulk discharge at the end of drilling.

The ELGs include limits for sediment toxicity and biodegradation. Rather than specifying types of synthetic-based fluids, permittees must use less toxic fluids that biodegrade quickly in order to meet these limits. The reduced volume of cuttings discharged and limits on toxicity and biodegradation help lessen potential adverse environmental impacts.

The permit contains limits for synthetic-based fluids at three points: 1) the stock synthetic fluids must meet PAHs limits, sediment toxicity (10-day), and biodegradation rate prior to combination with other components of the drilling fluid system, 2) the combined fluid components are limited for formation oil contamination as measured using gas chromatography/mass spectrometry (GC/MS), and 3) drilling fluids that adhere to drill cuttings are limited for sediment toxicity (96-hour) and formation oil contamination as measured by either a reverse phase extraction test or GC/MS.

6.2.3 Deck Drainage (002)

The ELGs for BAT and BCT require a limitation of no discharge of free oil as determined by the presence of film, sheen, or a discoloration of the surface of the receiving water for deck drainage discharges. Deck drainage contaminated with oil and/or grease must be treated using an oil-water separator and subject to a Static Sheen Test prior to discharge. These limitations are retained in the permit from the 2007 Permit.

6.2.4 Domestic Wastewater (003)

For domestic wastewater, excluding graywater, the ELGs for BPT and BCT require TRC to be maintained as close to 1.0 mg/L as possible for M10 facilities. The ELGs also require no discharge of floating solids for M9IM facilities. These limits are retained from the 2007 Permit. However, the permit clarifies minimum state treatment requirements for domestic wastewater discharges (See Section 4.3).

6.2.5 Graywater (004)

For graywater discharges, the ELGs prohibit the discharge of floating solids, garbage or foam. This limit is retained from the 2007 Permit. However, the permit clarifies minimum treatment requirements for domestic wastewater, including graywater discharges (See Section 4.3).

6.3 Technology-Based Effluent Limits based on Case-by-Case Best Professional Judgment

EPA has established ELGs for oil and gas point sources. Therefore, the permit may not impose more stringent TBELs, except for any specific waste stream or pollutant not addressed by the ELGs. Where national ELGs have not been developed, or did not consider specific pollutant parameters in discharges, the same performance-based approach applied to develop national

ELGs is applied to a specific industrial facility using BPJ. The permit contains TBELs developed on case-by-case basis using BPJ derived during development of the 1999 Permit and the 2007 Permit. The Department has reevaluated these BPJ limits to ensure compliance with Section 402 of the CWA.

Per Section 402 of the CWA, developing BPJ permit conditions requires the permitting authority to consider the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, the cost of achieving such effluent reduction, non-water quality environmental impact (including energy requirements), the cost of implementing these conditions relative to the environmental benefits achievable, and such other factors as deemed appropriate. EPA considered these factors when developing TBELs using BPJ during development of the 1999 Permit and subsequently retained the TBELs in the 2007 Permit. The Department has evaluated the original BPJ TBELs developed by EPA in relation to age of equipment and current engineering aspects of control techniques, as well as other pertinent considerations. The Department has determined that the BPJ TBELs established in 1999 and 2007 are directly applicable to the permit.

The permit contains TBELs based on BPJ for domestic wastewater (003); desalination unit wastes (005); blow out preventer fluid (006); boiler blowdown (007); fire control system test water (008); non-contact cooling water (009); uncontaminated ballast water (010); bilge water (011); excess cement slurry (012); and muds, cuttings, and cement at seafloor (013). The following sections describe the BPJ limitations carried over from previous permits developed by and approved by the Department for use in the permit.

6.3.1 Domestic Wastewater (003)

The 1986 Permit required facilities discharging to state waters to meet the minimum secondary treatment standards per 18 AAC 72.050, which are 30 mg/L BOD5 and 30 mg/L TSS, respectfully as monthly averages. Existing M10 and M9IM facilities treated domestic wastewater using various treatment systems including marine sanitation devices (MSDs), BTUs, and combination of MSDs and BTUs during that permit cycle. Nearly all facilities had difficulty meeting secondary treatment standards for TSS, and the M9IM systems using biological treatment had difficulties meeting BOD5 standards even when the systems were operated correctly. In the 1999 Permit, EPA developed TBELs based on case-by-case BPJ using data available from existing oil and gas platforms operating in Cook Inlet. The limits developed were categorized according to M10 versus M9IM and by MSDs versus BTUs. Only the M10 biological systems could meet secondary standards. The M10 and M9IM MSD systems could meet secondary standards for BOD5, but not for TSS. The M9IM BTUs could not meet secondary standards for either BOD5 or TSS. However, BTUs that treated wastewater derived from filtered sea water for flushing could apply an intake allowance per 18 AAC 83.545 to meet the TSS limits.

In the 2007 Permit, EPA reevaluated these limits based on representative data collected during the previous permit cycle. The evaluation resulted in retaining the limits. In a similar manner, DEC reviewed data collected since issuance of the 2007 Permit to evaluate the ability of treatment systems currently used to attain the permit limits. In addition, DEC review other pollution control equipment currently available and engineering aspects to inform the decision of retaining these previously developed TBELs using BPJ (See Section 9.0 and Attachment 1). DEC determined that the existing domestic wastewater limits are attainable using properly operated and maintained treatment systems on exploration facilities operating in Cook Inlet. Because these limits are less stringent than secondary treatment for TSS, an applicant may still

be required to obtain a waiver to minimum treatment requirements. See the BPJ analysis in Attachment 1 for more information.

6.3.2 Miscellaneous Discharges (005 – 013) Limits and Monitoring

The following miscellaneous discharges are controlled via BPJ limitations in Section 6.3.2.1 and monitoring requirements in Section 6.3.2.2.

Desalination unit waste	(005)
Blowout preventer fluid	(006)
Boiler blowdown	(007)
Fire control system test water	(008)
Non-contact cooling water	(009)
Uncontaminated ballast water	(010)
Bilge water	(011)
Excess cement slurry	(012)
Muds, cuttings, and cement at the seafloor	(013)

6.3.2.1 Free Oil BPJ Limitations

Discharges 005 - 013 were not included in the ELGs and have been developed using case-by-case BPJ during the development of previous permits. The discharge of oil is prohibited for contaminated bilge water; uncontaminated ballast water; blowout preventer fluid; excess cement slurry; and muds, cuttings, and excess cement at the seafloor. Compliance with the limitation of no free oil will be determined by the visual sheen test except for bilge water or where ice conditions prevent observation of the water surface. The permit requires bilge and contaminated ballast water to be processed through an oil-water separator and subject to the Static Sheen Test prior to discharge. When discharges occur during broken or unstable ice conditions or during stable ice conditions, the Static Sheen Test will be used to determine compliance with the no free oil limitation.

The permit also limits free oil/sheen for desalination unit wastes, boiler blowdown, fire control system test water, and non-contact cooling water although these waste streams are not expected to contain oil. These waste streams do not contact either the production stream (i.e. oil, water, or gas from the hydrocarbon formation) or machinery surfaces where oily wastes are likely to contaminate them. This limit is included in consideration with the BMPs and monitoring requirements for any miscellaneous discharge that has been chemically treated.

6.3.2.2 Chronic Wet Monitoring

Permittees use a broad range of chemicals to treat seawater and freshwater in offshore operations. The most common types of chemicals include biocides, scale inhibitors and corrosion inhibitors. Due to the large number of chemical additives used, it would be infeasible to develop TBELs for each individual additive. In addition, if the permit were to limit specific chemicals, it could potentially halt the development and use of new and potentially more beneficial (and/or environmentally friendly) treatment chemicals. Rather than attempting to develop chemical-specific numeric limits, the permit uses generic BPJ-based BMPs to regulate chemically treated sea water and fresh water discharges. The permit requires reporting requirements for chemicals used, prohibits discharge of free oil, and establishes chronic WET triggers. Modeled dilution allowances developed for the 2007 Permit are used to establish WET triggers based on meeting the chronic toxicity unit (TUc) of 1.0 at the boundary of a default 100 meter radii, cylindrically shaped mixing zone (See Section 7.6.3.1). This provides permittees flexibility to use new treatment chemicals

or products that are most efficient for their operation so long as the facility can consistently demonstrate there are no toxic effects and ensure protection of the WQS.

The permit requires monitoring for toxicity once per quarter during discharge activities. If the effluent complies with the toxicity limits for 12 consecutive months, the permit allows a reduction in toxicity monitoring to once every six months upon receiving written Department approval. If the effluent exceeds the toxicity triggers, another analysis must be conducted within two weeks. If that test exceeds the trigger, the permittee must conduct accelerated biweekly WET testing over an eight week period. If any accelerated monitoring results exceed a trigger, the permittee must initiate a Toxicity Reduction Evaluation and Toxicity Inventory Evaluation (TRE/TIE). If the accelerated monitoring does not result in exceeding a trigger then WET testing continues at the normal frequency.

During the previous permit cycle, WET monitoring data was collected to inform decisions about limit development for reissuance. Data entered into the EPA Integrated Compliance Information System includes WET data for only two of the miscellaneous discharges with one result for Outfall 007 and six for Outfall 009. Upon evaluation of this small dataset, DEC has concluded that there is insufficient data to inform a decision as to whether additional WET requirements are warranted at this time and is accordingly retaining the WET triggers in the permit. DEC will reevaluate the need for additional WET requirements in the next permit cycle assuming sufficient information is available.

6.3.3 Test Fluid Discharges (019) Limits and Monitoring

Test Fluid Discharges (019) will be controlled via BPJ limitations as described Sections 6.3.3.1 and 6.3.3.2 and by WET monitoring per Section 6.3.2.2 as modified in Section 6.3.3.3.

6.3.3.1 Free Oil BPJ Limitations

Test Fluid Discharges (019) was not considered in the ELG, so the no free oil limit for test fluids was developed using case-by-case BPJ based on BCT during the development of previous permits. The discharge of oil is prohibited and the discharge must be processed through an oil-water separator prior to discharge. The Static Sheen Test will be used to determine compliance with the no free oil limitation.

6.3.3.2 Oil and Grease Limitation

Test fluids are anticipated to have similar characteristics as formation water but may also contain fluids injected downhole. Previous Cook Inlet permits established oil and grease limits based on BPJ/BAT referencing the ELG limits for produce water, monthly average of 29 mg/L and the maximum daily of 42 mg/L. The Department has evaluated these BPJ limits and concurs with the previous determination and retains these limits in the permit.

6.3.3.3 Chronic Wet Monitoring

Because test fluids are comprised of formation water and potential other downhole chemicals, the Department establishes WET testing, WET triggers (See Section 7.6.3.1), chemical inventory (See Section 7.2.3), and TRE/TRI requirements (See Section 6.3.2.2) for this discharge to ensure water quality criteria are met at the boundary of the 100 meter mixing zone. The rationale for BPJ triggers is as described in Section 6.3.2.2. However, unlike miscellaneous discharges, the 10,000 gpd minimum volume exclusion for WET monitoring does not apply to this discharge. WET test results for discharges less than 10,000 gpd are required for data gathering purposes only and will not be subjected to triggers or TRE/TRI requirements.

6.4 Water Quality-Based Effluent Limits

CWA Section 301(b)(1) requires the establishment of limits in permits necessary to meet WQS by July 1, 1977. All discharges to state waters must comply with WQS, including the antidegradation policy. The APDES regulations at 18 AAC 83.435(a)(1) require that permits develop WQBELs that "achieve water quality standards established under CWA Section 303, including State narrative criteria for water quality." The following section discusses limit development for TRC in situations where a mixing zone is not authorized for discharge of Domestic Wastewater (003).

6.4.1 Domestic Wastewater (003)

Total Residual Chlorine: The ELGs require TRC to be a minimum of, and kept as close as practicable to, 1.0 mg/L in order to ensure that adequate disinfection is achieved. This minimum concentration limit is a surrogate limit for fecal coliform and enterococci bacteria. Previous permits did not include fecal coliform bacteria limits due, in part, to this consideration. The marine acute and chronic water quality criteria for TRC are 0.013 mg/L and 0.0075 mg/L, respectively. A permittee authorized a mixing zone for domestic wastewater is required to meet the chronic TRC criteria at the boundary of the 100 meter radii, cylindrically shaped mixing zone. The 2007 Permit included a maximum daily limit (MDL) for chlorine of 1.0 mg/L for facilities with a 100 meter radii mixing zone authorized for the domestic wastewater discharge. This limit was developed as a case-by-case TBEL using BPJ. For facilities without an authorized mixing zone, the chronic criterion, 0.0075 mg/L, was used as MDL.

7.0 EFFLUENT LIMITS AND MONITORING REQUIREMENTS

7.1 Monitoring Requirements

APDES regulations at 18 AAC 83.455 require that permits include monitoring to determine compliance with effluent limits. Monitoring may also be required to gather data for future effluent limits or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting monitoring and reporting the results to DEC.

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor facility performance. A permittee has the option of taking more frequent samples than are required under the permit. These samples must be used for averaging if they are conducted using approved test methods as found in 40 CFR Part 136, adopted by reference at 18 AAC 83.010(f).

The basis for effluent limit derivation is discussed in Section 6.1. The following sections summarize the effluent limits and describe monitoring requirements for each discharge in the permit.

7.2 Drilling Fluids and Drill Cuttings (001)

Table 1: Effluent Limitations and Monitoring Requirements for Drilling Fluids and Drill Cuttings (001)

Discharge	Pollutant Parameter	Effluent Limitations	Monitoring Requirements	
		Average Monthly and Maximum Daily Limits	Measurement Frequency	Sample Type
Water-based fluids and cuttings	Suspended Particulate Phase toxicity ¹	Minimum 96-hour LC ₅₀ of 30,000 parts per million (ppm)	Monthly and End-of-Well ²	Grab
	Free oil	No discharge ³	Daily	Grab
	Diesel oil ⁴	No discharge	Daily	Grab
	Mercury	1 mg/ kilogram (kg) ⁵	Once per well	Grab
	Cadmium	3 mg/kg ⁵	Once per well	Grab
	Volume (million gallons (MG))	Report average and maximum daily and monthly total	Monthly	Estimate
	Depth Dependent Discharge Rate 0 to 5 meters >5 to 20 meters >20 to 40 meters >40 meters	No discharge 500 barrels per hour (bbl/hr) 750 bbl/hr 1,000 bbl/hr	Continuous during discharge	Estimate
Non-aqueous fluids	Drilling fluids	No discharge	Daily	Observation
Non-aqueous stock base fluid (C ₁₆ -C ₁₈ internal olefin, C ₁₂ -C ₁₄ ester or C ₈ ester)	Mercury	1 mg/kg ⁵	Annual	Grab
	Cadmium	3 mg/kg ⁵	Annual	Grab
	Polynuclear Aromatic Hydrocarbons (PAH)	mass ratio ⁶ < 1x10 ⁻⁵	Annual	Grab
	Sediment toxicity	ratio ⁷ < 1.0	Annual	Grab
	Biodegradation rate	ratio ⁸ < 1.0	Annual	Grab
	Volume (MG)	Report average and maximum daily and monthly total	Monthly	Estimate

Discharge	Pollutant Parameter	Effluent Limitations	Monitoring Requirements	
		Average Monthly and Maximum Daily Limits	Measurement Frequency	Sample Type
Non-Aqueous Drilling Fluids which adhere to drill cuttings (Territorial seas Only per 40 CFR Part 435)	Free Oil	No discharge ³	Daily	Grab
	Diesel oil ²	No discharge	Daily	Grab
	SPP toxicity ¹	Minimum 96-hour LC ₅₀ of 30,000 ppm	Monthly and End-of-Well ²	Grab
	Sediment toxicity	Drilling fluid sediment toxicity ratio ⁹ < 1.0	Annual	Grab
	Formation oil	No discharge ¹⁰	Daily	Grab
	Base fluid retained on drill cuttings (C ₁₆ -C ₁₈ internal olefin stock ¹¹)	6.9 gram (g) NAF base fluid/100 g wet drill cuttings ¹²	Daily ¹³	Grab
	Base fluid retained on drill cuttings ¹⁴ (C ₁₂ -C ₁₄ ester or C ₈ ester stock)	9.4 g NAF base Fluid/100 gram wet drill cuttings ¹²	Daily ¹³	Grab
	Volume (MG)	Report average and maximum daily and monthly total	Monthly	Estimate

Footnotes:

- As determined by the 96-hour suspended particulate phase (SPP) toxicity test. See 40 CFR Part 435, Subpart A, Appendix 2.
- At the end-of-well, a sample must be collected for toxicity testing where no mineral oil is used. This sample can also serve as the monthly monitoring sample.
- As determined by the Static Sheen Test. See 40 CFR Part 435, Subpart A, Appendix 1.
- See Section 7.2.5.
- Dry weight in the stock barite. Analysis shall be conducted using EPA Methods 245.5 or 7471b for mercury and 200.7 for cadmium. The permittee shall analyze a representative sample of stock barite once prior to drilling each well and submit the results with the discharge monitoring report (DMR) for the month in which drilling operations commence for the respective well. If the permittee uses the same supply of stock barite to drill subsequent wells, the permittee may submit the same analysis for those subsequent wells (See Section 7.2.8).
- PAH mass ratio = [mass (g) of PAH (as phenanthrene)] ÷ [mass (g) of stock base fluid] as determined by EPA method 1654, Revision A, entitled "PAH Content of Oil by HPLC/UV," December 1992(See Section 2.2.4.2 of the permit).
- Base fluid sediment toxicity ratio = [10-day LC₅₀ of C₁₆-C₁₈ internal olefin, C₁₂-C₁₄ ester or C₈ ester] ÷ [10-day LC₅₀ of stock base fluid] as determined by ASTM E 1367-92 method: "Standard Guide for Conducting 10-day Static Sediment Toxicity Tests with Marine and Estuarine Amphipods," 1992, after preparing the sediment according to the method specified at 40 CFR Part 435, Subpart A, Appendix 3. See Section 2.8 of the permit. Results of up to three tests may be averaged to determine compliance, using two samples from the same lot of stock fluids. Equivalent aliquots of one homogenized sample must be split by laboratory (parts 1A and 1B) and tested separately if averaging is used. Permittees may show compliance based on test results from part 1A or from the rounded arithmetic average of the test results from part 1A and

Discharge	Pollutant Parameter	Effluent Limitations		Monitoring Requirements		
		Average Monthly and Maximum Daily Limits	Measurement Frequency	Sample Type		
		<p>1B. Permittees may also test the second sample for compliance. Where the second sample is analyzed, permittees will determine compliance using the arithmetic average of the results from all 3 tests. Permittees shall report the appropriate number on the DMR. With the DMR, the permittee must submit documentation showing how the number was calculated and all applicable test reports.</p>				
		<p>8. Biodegradation rate ratio = [cumulative gas production (ml) of C₁₆-C₁₈ internal olefin, C₁₂-C₁₄ ester or C₈ ester] ÷ [cumulative gas production (ml) of stock base fluid], both at 275 days as determined by ISO 11734:1995 method: “Water quality - Evaluation of the ‘ultimate’ anaerobic biodegradability of organic compounds in digested sludge--Method by measurement of the biogas production (1995 edition)” as modified for the marine environment (See Section 2.2.4.1 of the permit). Results of up to 3 tests may be averaged to determine compliance, using two samples from the same lot of stock fluids. Equivalent aliquots of one homogenized sample must be split by laboratory (parts 1A and 1B) and tested separately if averaging is used. Permittees may show compliance based on test results from part 1A or from the rounded arithmetic average of the test results from part 1A and 1B. Permittees may also test the second sample for compliance. Where the second sample is analyzed, permittees will determine compliance using the arithmetic average of the results from all three tests. Permittees shall report the appropriate number on the DMR and submit documentation showing how the number was calculated and all applicable test reports</p>				
		<p>9. Drilling fluid sediment toxicity ratio = [4-day LC₅₀ of C₁₆-C₁₈ internal olefin] ÷ [4-day LC₅₀ of drilling fluid removed from drill cuttings at the solids control equipment] as determined by ASTM E 1367-92 method: “Standard Guide for Conducting 10-day Static Sediment Toxicity Tests with Marine and Estuarine Amphipods,” 1992, after preparing the sediment according to the method specified in Appendix B of the permit. Results of up to three tests may be averaged to determine compliance, using two grab samples collected no more than 15 minutes apart. Equivalent aliquots of the first, homogenized sample must be split by the laboratory (parts 1A and 1B) and tested separately if averaging is used. Permittees may show compliance based on test results from part 1A or from the rounded arithmetic average of the test results from parts 1A and 1B. Permittees may also test the second sample for compliance with this limit. Where the second sample is analyzed, permittees will determine compliance using the arithmetic average of the results from all three tests. Permittees shall report the appropriate number on the DMR. With the DMR, the permittee must submit documentation showing how the number was calculated and all applicable test reports.</p>				
		<p>10. As determined before drilling fluids are shipped offshore by the GC/MS compliance assurance method (See Section 2.2.4.3 of the permit), and as determined prior to discharge by the Reverse Phase Extraction (RPE) method (See Section 2.2.4.4 of the permit) applied to drilling fluid removed from drill cuttings. If the permittee wishes to confirm the results of the RPE method, the permittee may use the GC/MS compliance assurance method (See Section 2.2.4.4 of the permit). Results from the GC/MS compliance assurance method shall supersede the results of the RPE method.</p>				
		<p>11. This limitation is applicable only when the NAF base fluid meets the stock limitations defined in this table.</p>				
		<p>12. As determined by the American Petroleum Institute (API) retort method (See Section 2.2.4.5 of the permit).</p>				
		<p>13. Monitoring shall be performed at least once per day when generating new cuttings. Permittees conducting fast drilling (<i>i.e.</i>, greater than 500 linear feet advancement of the drill bit per day using non-aqueous fluids) shall collect and analyze one set of drill cuttings samples per 500 linear feet drilled, with a maximum of three sets per day. Permittees shall collect a single discrete drill cuttings sample for each point of discharge to the ocean. The weighted average of the results of all discharge points for each sampling interval will be used to determine compliance.</p>				
		<p>14. Averaged over all well sections.</p>				

7.2.1 Number of Wells per Site: The permittee is limited to drilling no more than five wells at a single exploration drilling site. Requests to discharge from more than five wells per site will be considered by the Department on a case-by-case basis. The permittee may only discharge from more than five wells upon approval by DEC. To be considered for approval to discharge from additional wells, the permittee must submit information to DEC that includes:

- Number of additional wells,
- Technical analysis of additional impacts to the receiving waters,
- Drilling fluid category and group for each well, and
- Well information for each additional well, including well name, number, latitude, longitude, beginning drill date, and hole diameter.

7.2.2 Mineral Oil Pills: The discharge of residual amounts of mineral oil pills (mineral oil plus additives) is authorized by the permit provided that the mineral oil pill and at least a 50 bbl buffer of drilling fluid on either side of the pill are removed from the circulating drilling fluid system and not discharged to waters of the US. If more than one pill is applied to a single well, the previous pill and buffer must be removed prior to application of a subsequent pill.

Residual mineral oil concentration in the discharged mud must not exceed 2% volume/volume as determined by the American Petroleum Institute (API) Recommended Practice 13-1, 1990. The permittee must report the following information within 60 days of the discharge if drilling fluid containing residual mineral oil pill (after pill and buffer removal) is discharged:

- dates of pill application, recovery, and discharge;
- results of the Drilling Fluids Toxicity Test on samples of the mud before each pill is added and after removal of each pill and buffer (taken when residual mineral oil pill concentration is expected to be greatest);
- name of spotting compound and mineral oil product used;
- volumes of spotting compound, mineral oil, water, and barite in the pill;
- total volume of mud circulating prior to pill application, volume of pill formulated, and volume of pill circulated;
- volume of pill recovered, volume of mud buffer recovered, and volume of mud circulating after pill and buffer recovery;
- percent recovery of the pill (include calculations);
- estimated concentrations of residual spotting compound and mineral oil in the sample of mud discharged, as determined from amounts added and total mud volume circulating prior to pill application;
- measured oil content of the mud samples, as determined by the API retort method; and
- an itemization of other drilling fluid components and specialty additives contained in the discharged mud with concentrations reported in gal/bbl or lbs/bbl.

7.2.3 Chemical Inventory: For each fluid system discharged, the permittee must maintain a precise chemical inventory of all constituents added downhole, including all drilling fluid additives used to meet specific drilling requirements. The permittee must maintain these records for each mud system for a period of five years, and must make these records available to DEC upon request

7.2.4 End of Well Reports: The permittee is required to submit an EOW report within 90 days of well completion. The permittee shall report the following for each drilling fluid system in the EOW report:

- well name, number, latitude, longitude, beginning drill date, and hole diameter, well completion date;
- a precise chemical inventory of all constituents added downhole, including all drilling fluid additives used to meet specific drilling requirements:
- the base drilling fluid type;
- the name and total amount of each constituent in the discharged drilling fluid;
- the total volumes of drilling fluid created and added downhole;
- the maximum concentration of each constituent in the drilling fluid;
- the total volumes of drilling fluid discharged to surface waters; and
- the estimated amount of each constituent in the drilling fluid discharged, including the analysis results from diesel oil and metals testing.

7.2.5 Diesel Oil: Compliance with no diesel oil prohibition will be demonstrated using GC analysis of drilling fluid collected at the greatest well depth (“end-of-well” sample) and of any drilling fluids or cuttings which fail the Static Sheen Test. Whenever drilling fluids or drill cuttings fail the Static Sheen Test, the permittee is required to analyze an undiluted sample of the material which failed the test to determine the presence or absence of diesel oil in accordance with EPA SW846 Method 8015C (Revision 3, February 2007). GC/MS may be used if an instance should arise where the permittee and DEC determine that greater resolution of the drilling fluid “fingerprint” is needed for a particular drilling fluid sample to compare to diesel oil stored onsite. If the permittee elects to confirm the results of Method 8015C, the GC/MS methods described in EPA 821-R-92-008 may be used. The results and raw data, including the spectra, from the GC analysis must be provided to the DEC by written report (1) within 30 days of a positive result with the Static Sheen Test, or (2) for the end-of-well analysis, within 90 days of well completion.

7.2.6 Static Sheen Test: The permittee must perform the Static Sheen Test on separate samples of drilling fluids and cuttings, as required in 40 CFR Part 435, Subpart A, Appendix 1. Samples must be collected on each day of discharge and prior to bulk discharges and must be tested in accordance with “Approved Methodology: Laboratory Sheen Tests for the Offshore Subcategory, Oil and Gas Extraction Industry.” For discharges below ice or during periods of unstable or broken ice, water temperature for the Static Sheen Test must approximate surface water temperatures at ice breakup.

Whenever fluids or cuttings fail the Static Sheen Test, and a discharge has occurred in the past 24 hours, the permittee is required to analyze an undiluted sample of the material which failed the test to determine the presence or absence of diesel oil. The determination and reporting results must be performed as described in Section 7.2.5.

7.2.7 Metals Analysis: The permittee must analyze each discharged mud system for the following metals: barium, cadmium, chromium, copper, mercury, zinc, and lead. Analyses for total recoverable concentrations shall be conducted and reported for each metal utilizing the methods specified in 40 CFR Part 136. The results shall be reported in “mg/kg of whole mud (dry weight)” and the moisture content (percent by weight) of the original drilling fluid sample must be included in the End-of-Well Report.

Samples must be collected when the residual mineral concentration is at its maximum value. If no mineral oil is used, the analysis must be done on a drilling fluid sample from the mud system used at the greatest well depth. All samples must be collected prior to any pre-dilution.

7.2.8 Mercury and Cadmium Content in Barite: The permittee must analyze a representative sample of stock barite once prior to drilling each well and submit the results for total mercury and total cadmium in the DMR for the month in which drilling of the well was commenced. Analyses must be conducted by absorption spectrophotometry and results expressed as mg/kg (dry weight) of barite.

If more than one well is drilled at a site, new analyses are not required for subsequent wells if no new supplies of barite have been received since the previous analysis. In this case, the DMR should state that no new barite was received since the last reported analysis. The permittee may provide certification, as documented by the supplier(s), that the barite meets the above limits. The concentration of mercury and cadmium in stock barite must be reported on the DMR as documented by the supplier.

7.2.9 Environmental Monitoring Requirements: The 2007 Permit required any permittees operating facilities within 4,000 meters of coastal marsh to conduct baseline monitoring over the five-year permit cycle. However, since issuance of the 2007 Permit no new facilities have operated near marshes so no baseline monitoring has been conducted.

The prohibition of the 4,000-meter restriction to sensitive areas was predicated, in part, on lack of fate and transport data near specific discharge locations. Furthermore, the ODC requires a full understanding of the potential impacts of permitted discharges. To fulfill the requirements of CWA Section 403(c), 33 USC Section 1343(c), and the ODC implementing regulations the permit retains this monitoring requirement. In addition, DEC believes that monitoring performed under this section will assist in understanding potential impacts of discharges authorized under the permit, and that the collection of this information will inform future Department decisions regarding the current 4,000 meter prohibition.

Monitoring Study Plan: Applicants for exploratory facilities discharging drilling fluids and/or drill cuttings must submit an Environmental Monitoring Study Plan to DEC for review with, or prior to, submission of an NOI. The objectives of the environmental monitoring must be to:

- monitor for discharge-related impacts;
- determine statistically significant changes in sediment pollutant concentrations and potential for sediment toxicity with time and distance from the discharge;
- monitor for discharge related impacts to the benthic community;
- assess whether any impacts warrant an adjustment of the monitoring program; and
- provide information for permit reissuance.

The monitoring requirements must include, but not be limited to, relevant hydrographic conditions, sediment hydrocarbon, and heavy metal data from surveys conducted before, during drilling fluid disposal and up to at least one year after drilling operations cease. The monitoring plan must include:

- the monitoring objectives;
- appropriate null and alternate test hypotheses;

- a statistically valid sampling design;
- all monitoring procedures and methods;
- a Quality Assurance Project Plan (QAPP);
- a detailed discussion of how data will be used to meet, test and evaluate the monitoring objectives; and
- a summary of the results of previous environmental monitoring as they apply to the proposed program plan.

Monitoring Reports: The permittee must analyze the data collected and submit a draft report within 180 days following the completion of sample collection. The report must address the environmental monitoring objectives by using appropriate descriptive and analytical methods to test for and to describe any impacts of the effluent on sediment pollutant concentrations, sediment quality, water quality and/or the benthic community. The report must contain all relevant quality assurance/quality control specified in the QAPP including, but not limited to, instrumentation, laboratory procedures, detection limits/precision requirements of the applied analyses, and sample collection methodology.

DEC will review the draft report in accordance with the environmental monitoring objectives and evaluate it for compliance with the requirements of the permit. If revisions to the report are requested, the permittee must complete them and submit the final report to DEC within two months of the Department's request. The permittee will be required to correct, repeat and/or expand environmental monitoring programs until the Department determines the requirements of the permit are fulfilled. Modifications to the monitoring program may be approved if DEC determines that the modification is appropriate. The modified program may include changes in sampling stations, sampling times, and/or parameters. The Department may grant a written exemption to this requirement if the permittee can satisfactorily demonstrate that information on the fate and effects of the discharge are available and/or the discharge will not have significant impacts in the discharge area. An exemption to post-drilling monitoring will be granted if no impact was indicated during drilling. An exemption request must be submitted to DEC for review with, or prior to, submission of an NOI. A site-specific exemption request may be submitted in writing for the DEC review and approval.

7.2.10 Drilling Fluid Plan Requirements:

The permit includes the requirement for the development and implementation of a Drilling Fluids Plan. The basis for the DFP requirement is Sections 308 and 403(c) of the CWA. The DFP requirement is also based upon the Pollution Prevention Act (PPA) and its policy of prevention, reduction, recycling, and treatment of wastes (PPA Section 102(b)) through measures that include process modification, materials substitution, and improvement of management (PPA Section 107(b)(3)).

A goal of the Drilling Fluids Plan is to ensure that personnel on-site are knowledgeable about the information needed and the methods required to formulate the drilling fluids/chemical additive systems to meet the permit's toxicity requirements and minimize addition of toxic substances.

The permittee must develop and implement a written procedural plan for the formulation and control of drilling fluid/chemical additive systems for each well. The applicant must develop and submit a DFP for Department review and comment with, or prior to, submission of an NOI. The applicant must implement the written procedure of

the DFP for the formulation and control of drilling fluid/chemical additive systems for each well. The DFP must specify the drilling fluid/chemical additive systems to be used. The plan must be implemented during drilling operations and a copy of the plan must be available on-site at the exploratory facility at all times.

The plan must be implemented during drilling operations and a copy of the plan must be available on-site at the mobile exploratory facility at all times. The DFP also requires clearly stated procedures for situations where additives not originally planned for or included in the toxicity estimations are proposed for use later, and whether any new additive may be used and discharged. The criteria for making changes to the additive make up of a drilling fluid system must be specified in the DFP.

7.3 Deck Drainage (002)

Table 2: Effluent Limitations and Monitoring Requirements for Deck Drainage (002)

Parameter	Units	Effluent Limitations	Monitoring Requirements	
			Sample Frequency	Sample Type
Free Oil	---	No Discharge	Daily ¹	Visual ²
WET ^{3,4}	TU _c	Report	Once during first year of coverage	See Section 7.6.3.
Flow	mgd	Report	Monthly	Estimated
Footnotes:				
<ol style="list-style-type: none"> 1. When discharging. The monitoring frequency is reduced to monthly if the permittee has complied with this requirement for three consecutive months. 2. If discharge occurs during broken or unstable ice conditions or during stable ice conditions, the Static Sheet Test must be used (see 40 CFR Part 435 Subpart A, Appendix 1) and a grab sample is required. 3. Contaminated deck drainage must be processed through an oil-water separator prior to discharge (See Section 6.2.3) and samples for that portion of the deck drainage collected from the separator effluent must be sampled for WET testing. 4. Sample must be collected during a significant rainfall or snow melt. If discharge of deck drainage is initiated after the first year of the permit, sampling must occur during the year following the initiation of separate deck drainage discharge. 				

The permittee must ensure that deck drainage contaminated with oil and grease is processed through an oil-water separator prior to discharge. Once per discharge event, the permittee must sample deck drainage discharges that are processed through the oil-water separator and test for sheen using the Static Sheet Test in 40 CFR Part 435, Subpart A.

7.4 Domestic Wastewater (003)

Table 3: Effluent Limitations and Monitoring Requirements for Domestic Wastewater (003)

Discharge	Effluent Parameter	Effluent Limitations		Monitoring Requirements	
		Avg. Monthly Limit	Max. Daily Limit	Sample Frequency	Sample Type
Domestic Wastewater, All Discharges ¹	Flow Rate (mgd)	Report		1/Month	Estimate
	TRC	-	1.0 mg/L Minimum ²	1/Month	Grab
	TRC	-	1.0 mg/L ³	1/Month	Grab
	TRC	-	0.0075 mg/L ⁴	1/Month	Grab
	Floating Solids	No Discharge		1/Day	Observation ⁵
M10 MSD and MSD/BTUs	BOD	30 mg/l	60 mg/l	1/Month	Grab
	TSS	51 mg/l	67 mg/l	1/Month	Grab
M9IM MSD and MSD/BTUs	BOD	30 mg/l	60 mg/l	1/Month	Grab
	TSS	51 mg/l	67 mg/l	1/Month	Grab
M10 BTUs	BOD	30 mg/l	60 mg/l	1/Month	Grab
	TSS ⁶	30 mg/l	60 mg/l	1/Month	Grab
M9IM BTUs	BOD	48 mg/l	90 mg/l	1/Month	Grab
	TSS ⁶	56 mg/l	108 mg/l	1/Month	Grab

Footnotes:

1. In cases where domestic wastewater (black water) and graywater are mixed prior to discharge, and sampling of the domestic wastewater stream is infeasible, the discharge may be sampled after mixing. In such cases, the most stringent discharge limits for both discharges shall apply to the mixed stream.
2. Total residual chlorine is a surrogate parameter for fecal coliform and enterococci. For M10 facilities, maintain as close to the minimum limit concentration of 1.0 mg/L as practicable and measure immediately after chlorination. For all other facilities, monitor and report.
3. The 1.0 mg/L limit is measured immediately prior to discharge and applies to facilities authorized a 100-meter mixing zone by DEC.
4. The 0.0075 mg/L limit is measured immediately prior to discharge and applies to facilities not granted a mixing zone by DEC. The analytical detection limit for this parameter is 0.1 mg/L and will be used as the compliance level for this parameter.
5. 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. For domestic wastewater, observations must follow either the morning or midday meal. Observations must be recorded in daily operating logs and made available upon request by DEC.
6. The TSS limit for BTUs is a net value. For those facilities that use filtered seawater for flushing and treat with BTUs, the TSS of the effluent may be reported as the net value by subtracting the TSS value of the intake water from the TSS value of the effluent. Report the TSS value of the intake water on the comment section of the DMR. Samples collected to determine the TSS value of the intake water must be taken on the same day, during the same time period that the effluent sample is taken. Intake water samples must be taken at the point where the water enters the facility prior to mixing with other flows. Influent samples must be taken with the same frequency that effluent samples are taken.

7.5 Graywater (004)

Table 4: Monitoring Requirements for Graywater (004)

Effluent Characteristic	Units	Sample Location	Sampling Frequency ¹	Sample Type
Total Flow	Gallons per Day (gpd)	Effluent	Daily	Estimate or Measured
BOD ₅	mg/L	Influent and Effluent ²	Monthly	Grab or Composite
TSS	mg/L	Influent and Effluent ²	Monthly	Grab or Composite
Floating Solids	Visual	Effluent	Daily	Observation
Foam	Visual	Effluent	Daily	Observation
Garbage	Visual	Effluent	Daily	Observation
Oily Sheen	Visual	Effluent	Daily	Observation
Footnotes:				
<ol style="list-style-type: none"> 1. Samples are required during periods of operation. 2. Influent and effluent samples must be taken over approximately the same time period. Results are used to confirm that graywater meets primary treatment standards prior to discharge. See 18 AAC 72.990(50)(B) for primary treatment standards. 				

7.5.1 Flow: The permit includes flow monitoring requirements to measure or estimate the effluent discharge flow for each discharge. DEC will use the flow data to determine the amount of contaminants entering the environment and inform future Department decisions during the permit reissuance.

7.5.2 BOD₅: The permit requires monthly influent and effluent monitoring during periods of operation. Monitoring for BOD₅ percent removal is a new permit requirement to calculate BOD₅ percent removal. The rationale for monitoring is to ensure 18 AAC 72.060 is satisfied per discussion in Section 4.4.2 and Attachment 1.

7.5.3 TSS: The permit requires monthly influent and effluent monitoring during periods of operation. Monitoring for TSS percent removal is a new permit requirement to calculate TSS percent removal. The rationale for the effluent limit is to ensure 18 AAC 72.060 is satisfied per discussion in Section 4.4.2 and Attachment 1.

7.5.4 Floating Solids, Foam, Garbage, and Oily Sheen: The permit prohibits floating solids, foam, garbage, and oily sheen and requires a visual observation of the receiving water surface at a minimum frequency of once per day. Monitoring of the effluent for floating solids, foam, garbage, and oily sheen is to determine compliance with narrative effluent limits. Observations must be recorded in daily operating logs and made available upon request by DEC.

7.6 Miscellaneous Discharges (005 to 013)

Miscellaneous discharges include desalination unit wastes (005), blowout preventer fluid (006), boiler blowdown (007), fire control system test water (008), non-contact cooling water (009), uncontaminated ballast water (010), bilge water (011), excess cement slurry (012), and mud, cuttings, and cement at the seafloor (013). These discharges must comply with the following effluent limitations and monitoring requirements:

Table 5: Effluent Limitations and Monitoring Requirements for Miscellaneous Discharges (005 to 013)

Parameter	Effluent Limitations		Monitoring Requirements	
	Average Monthly Limit	Maximum Daily Limit	Sample Frequency	Sample Type
Flow (mgd)	Report		Monthly	Estimate
Free Oil	No discharge ¹	No discharge ¹	Once/Week ¹	Visual
Chemical Inventory	See Section 7.6.2		Monthly	Calculation
WET ²	See Section 7.6.3		Once/Quarter See 6.3.2.2	Grab

Footnotes:

1. Miscellaneous 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.
2. Applicable to all discharges to which chemical additives have been added, except Excess Cement Slurry (012) and Mud, Cuttings, and Cement at the Seafloor (013).

7.6.1 No free oil: Although the Department has determined that no free oil shall be discharged in any waste streams, additional attention is warranted for those discharges that are most likely to be oil-contaminated. That is, a no free oil limitation is critical for bilge water, uncontaminated ballast water, blowout preventer fluid, excess cement slurry, and muds, cuttings and excess cement at the seafloor. The proposed permit also requires deck drainage, bilge, and contaminated ballast water to be processed through an oil-water separator prior to discharge. When bilge or contaminated ballast water are discharged or when any miscellaneous discharge occurs during broken or unstable ice conditions, or during stable ice conditions, the Static Sheen Test will be used to determine compliance with the no free oil limitation. The no free oil limit was included in the 2007 Permit and is retained in the permit

As with the other miscellaneous discharges described above, the permit contains BCT limits prohibiting the discharge of free oil for chemically-treated seawater and freshwater discharges. Free oil is a direct measurement of oil contamination and, based

on BPJ, the permit uses it as a surrogate parameter for conventional pollutants in these discharges.

7.6.2 Chemically-Treated Sea Water and Fresh Water Discharges: Many of the chemicals used to treat seawater or freshwater, especially biocides, have manufacturer's recommended maximum concentrations or EPA product registration labeling. In addition, information obtained from offshore permittees demonstrates that it is unnecessary to use any of the chemical additives or biocides in concentrations greater than 500 mg/L. Therefore, the permit establishes BMPs to control chemicals in seawater or freshwater to the most stringent of the following:

- the maximum concentrations and any other conditions specified in the EPA product registration labeling if the chemical additive is an EPA registered product;
- the maximum manufacturer's recommended concentration ;or
- 500 mg/L.

Compliance with this requirement is calculated based on the amount of treatment chemicals added to the volume of water discharged.

7.6.3 Chronic WET Monitoring: The permittee must conduct chronic WET monitoring on the following miscellaneous discharges:

Deck Drainage	(002)
Desalination unit waste	(005)
Blowout preventer fluid	(006)
Boiler blowdown	(007)
Fire control system test water	(008)
Non-contact cooling water	(009)
Uncontaminated ballast water	(010)
Bilge water	(011)

WET must also be completed for discharges that are treated with chemicals and are over 10,000 gpd individually or accumulatively if commingled with other discharges. When discharges are commingled, the most stringent limits will apply. The permittee must conduct WET tests on effluent grab samples using one vertebrate and two invertebrate species, as follows:

- Vertebrate (survival and growth): *Atherinops affinis* (Topsmelt). In the event that topsmelt is not available, *Menidia beryllina* (inland silverside) may be used as a substitute. The permittee shall document the substitute species in the DMR following the testing.
- Invertebrate: For larval development tests, the permittee must use bivalve species *Crassostrea gigas* (Pacific Oyster) or *Mytilus* sp. (mussel). For fertilization tests the permittee must use echinoderms *Strongylocentrotus purpuratus* (purple sea urchin) or *Dendraster excentricus* (sand dollar). Due to seasonal variability, testing may be performed during reliable spawning periods (e.g. December through February for mussels and June through August for oysters).

Each year, the permittee must rescreen with the three species listed above and continue to monitor with the most sensitive species. Rescreening must consist of one test

conducted at a different time of year from the previous year's test. After screening is completed, monitoring shall be continued at the frequency required in Section 6.3.2.2.

The presence of chronic toxicity must be estimated as specified in USEPA *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms*, Third Edition (EPA-821-R-02-014). For the bivalve species, chronic toxicity must be estimated as specified in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to West Coast Marine and Estuarine Organisms* (EPA/600/R-95/136).

Results must be reported in TU_c, where TU_c = 100/IC₂₅. The reported IC₂₅ must be the lowest IC₂₅ calculated for the applicable survival, growth or fertilization endpoints.

A series of at least five dilutions and a control must be tested. The dilution series must be designed to provide useful toxicity information for evaluation during permit reissuance. The series must include the critical dilution and two dilutions both above and two below the critical dilution. The test series should also be designed to bracket toxicity end points from previous tests to provide meaningful toxicity information for review during the next permit reissuance.

In addition to those quality assurance measures specified in the methodology, the following quality assurance procedures must be followed:

- If organisms are not cultured by the testing laboratory, concurrent testing with reference toxicants must be conducted, unless the test organism supplier provides control chart data from at least the last 5 months of reference toxicant testing. Where organisms are cultured by the testing laboratory, monthly reference toxicant testing is sufficient.
- If either of the reference toxicant tests or the effluent tests does not meet all test acceptability criteria as specified in the test methods manual, then the permittee must re-sample and re-test as soon as possible.
- Control and dilution water should be receiving water or salinity adjusted lab water. If the dilution water used is different from the culture water a second control using culture water must also be used.

7.6.3.1 WET Triggers and Accelerated Testing: If chronic toxicity is detected above the permit trigger values set in Tables 6 or 7, additional WET monitoring is required.

Table 6: WET Trigger Levels for Surface Discharge

Discharge Rate (gpd)	Critical Dilution	Trigger Values (TU _c)
10,000 – 17,000	0.24 %	417
17,001 – 22,000	0.27 %	370
22,001 – 27,000	0.29 %	345
27,001 – 55,000	0.36 %	278
55,001 – 150,000	0.46 %	217
Greater than 150,000	0.62 %	161

Table 7: WET Trigger Levels for Submerged Pipe Discharges

Discharge Rate (gpd)	Critical Dilution	Trigger Values in TUc
10,000 – 17,000	0.33%	303
17,001 – 22,000	0.36%	278
22,001 – 27,000	0.37%	270
27,001 – 55,000	0.49%	204
55,001 – 150,000	0.62%	161
Greater than 150,000	0.99%	101

Upon exceeding a trigger, the permittee must collect and analyze one additional sample within two weeks of receipt of the second test results. If chronic toxicity is not detected in the sample, the permittee must notify DEC in writing of the results within fifteen (15) days and must discuss the cause of the original exceedance and the corrective actions that were taken. If chronic toxicity is detected in the second sample, then the permittee must conduct accelerated testing, which is four bi-weekly tests over an eight week period that must be initiated within fifteen (15) days of receiving the second sample results.

7.6.3.2 Toxicity Reduction Evaluation (TRE) and Toxicity Identification

Evaluation (TIE): If chronic toxicity triggers are exceeded during accelerated testing, the permittee must initiate a toxicity reduction evaluation (TRE) in accordance with *Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations* (EPA/600/2-88/070) within two weeks of the receipt of the test results showing an exceedance. At a minimum, the TRE must include:

- Further actions to investigate and identify the cause of toxicity;
- Actions the permittee will take to mitigate the impact of the discharge and to prevent the recurrence of toxicity; and
- A schedule for these actions.

If a TRE is initiated prior to completion of the accelerated testing, the accelerated testing schedule may be terminated, or used as necessary in performing the TRE. The permittee may initiate a Toxicity Identification Evaluation (TIE) as part of the TRE process. Any TIE must be performed in accordance with EPA guidance manuals:

- *Toxicity Identification Evaluation Characterization of Chronically Toxic Effluents, Phase I* (EPA/600/6-91/005F);
 - *Methods for Aquatic Toxicity Identification Evaluations, Phase II: Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity* (EPA/600/R-92/080); and
 - *Methods for Aquatic Toxicity Identification Evaluations, Phase III: Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity* (EPA-600/R-92/081)
- If chronic toxicity limits or triggers are not exceeded during accelerated testing, WET testing resumes at the normal frequency.

7.6.3.3 WET Monitoring Reporting: Results of toxicity testing must be reported on the DMR for the month in which the tests are conducted. The full report shall be submitted by the end of the month following the month in which the DMR is submitted. Test results for chronic tests shall be reported according to the procedures described in EPA’s *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms*, most recent edition. In addition, the full report shall consist of:

- the toxicity test results,
- the dates of sample collection and initiation of each toxicity test,
- the flow rate at the time of sample collection, and
- the results of the effluent sampling for chemical parameters required for the outfalls.

7.7 Test Fluid Discharges (019) Limits and Monitoring Requirements

Test fluids may contain a combination of formation water and injected freshwater or sea water with chemical additives. The following limits and monitoring requirements are based on these anticipated constituents.

Table 8: Effluent Limitations and Monitoring Requirements for Test Fluids (019)

Parameter	Effluent Limitations		Monitoring Requirements	
	Average Monthly Limit	Maximum Daily Limit	Sample Frequency	Sample Type
Flow (mgd)	Report		Once/Day	Estimate
Oil and Grease	29 mg/L	42 mg/L	Once/Discharge	Grab ¹
Free Oil ²	No discharge		Once/Discharge	Grab ¹
Oil-based Fluids	No discharge		-	-
pH	6.5 – 8.5		Once/Discharge	Grab
Chemical Inventory ³	See Section 7.6.2		Monthly	Calculation
WET ⁴	See Section 6.3.3.3 ⁵		Once/Quarter	Grab

Footnotes:

1. Samples for free oil and oil and grease must be collected after the final step of treatment.
2. Monitoring for compliance with the free oil prohibition shall be accomplished using the Static Sheen Test method. The number of days sheen is observed must be reported.
3. The permittee must maintain an inventory of the type and quantity of chemicals (other than fresh or sea water) added to test fluids.
4. Conduct WET testing per Section 7.6.3 except testing must also be done for Test Fluid discharges equal to, or less than, 10,000 gpd.
5. WET triggers and TRE/TRI requirements only apply to discharge of Test Fluids greater than 10,000 gpd. WET testing for discharges equal to or less than 10,000 gpd are reported for information purposes only.

8.0 ANTIBACKSLIDING

18 AAC 83.480 requires that “effluent limits, standards, or conditions must be at least as stringent as the final effluent limits, standards, or conditions in the previous permit.” 18 AAC 83.480(c) also states that 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 the permit is renewed or reissued.” The effluent limits in the permit issuance are consistent with 18 AAC 83.430. The permit effluent limits, standards, and conditions are at least as stringent as in the previous 2007 Permit.

9.0 ANTIDEGRADATION

The antidegradation policy of 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 analyzes and provides rationale for Department decisions in the permit issuance with respect to the antidegradation policy.

The approach used by the Department to implement the antidegradation policy is based on the requirements in 18 AAC 70 and the Interim Methods. Using these requirements and policies, the Department determines whether a waterbody or portion of a waterbody is classified as Tier 1, Tier 2, or Tier 3. A higher numbered tier indicates a greater level of water quality protection. At this time, no Tier 3 waters have been designated in Alaska. Accordingly, this antidegradation analysis conservatively assumes that all discharges under the permit will be to Tier 2 waters, which is the next highest level of protection and is more rigorous than a Tier 1 analysis. As a result, any discharges to Tier 1 waterbodies are not eligible for coverage under the permit and would require individual permit coverage.

Wastewater discharged under the permit is subject to a Tier 2 antidegradation analysis, as detailed in the Interim Methods and outlined in 18 AAC 70.015(a)(2). 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, 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 findings are as follows:

- *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), the Department has determined that the most reasonable and effective pollution prevention, control, and treatment methods are being used.

The 2009 Alaska Economic Performance Report written by the Department of Commerce, Community and Economic Development (DCCED) indicates that the Alaskan 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 total contribution from the oil and gas industry was \$6.1 billion during fiscal year 2009. The oil and gas extraction industry also supports local economies by purchasing significant amounts of equipment, parts, fuel, food, freight, and other services.

In addition, 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 Alaska state-wide economy depends heavily on revenues related to petroleum development, which totaled \$4.57 billion in fiscal year 2007. The petroleum industry is Alaska's largest industry, annually spending \$2.1 billion, including \$422 million on payroll and \$1.7 billion on goods and services.
- Overall, this spending generates 33,600 jobs, \$1.4 billion in payroll, and value added to the Alaska economy of \$1.8 billion for total output of \$3.1 billion. Oil and gas accounts for 12 percent of private sector jobs and 20 percent of private sector payroll. The oil and gas industry has the highest monthly wage in Alaska, averaging \$7,754, which is 2.8 times higher than the statewide average of \$2,798.
- In the Matanuska-Susitna Borough, it is estimated that over 350 residents are employed by the oil and gas industry with an average monthly wage of \$8,382. The economic impact of the oil and gas industry in the Matanuska-Susitna Borough was an additional 2,105 jobs for Matanuska-Susitna residents, with a payroll of \$84 million. The induced impacts were 1,558 jobs and \$38 million in payroll. Total economic impact was estimated to be 4,016 jobs and \$158 million for the Matanuska- Susitna Borough.
- In Anchorage, it is estimated that about 2,400 workers are employed by the oil and gas industry. Estimated total payroll is over \$239 million with an additional \$845 million in goods and services in the Anchorage economy. Indirect impact of the oil and gas industry is estimated to be 11,600 jobs and \$431 million in payroll, with an induced impact of 2,320 jobs and \$69 million in payroll.
- 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.
- Demand for natural gas in the Cook Inlet area is 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 LNG plant may be jeopardized without long-term proven supplies of natural gas. The LNG plant is still in a state of limbo waiting for proven gas resources to be developed. 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.

- Oil and gas is an important component of revenues to support government services to Alaskans. At the end of the state's 2007 fiscal year, oil and gas revenues represented 88 percent of the total revenue to the state.
- Recent oil and gas exploration has led to projects have added direct jobs and indirect jobs to the local economy and eventually gas production. A production platform at the Kitchen Lights Unit is projected to provide up to 92 full time positions and 42 part time positions by 2014. Indirectly, 12 jobs are estimated to be due to this development. Gas production from the gas platform is anticipated to be approximately 42 million cubic feet (MMCF) in 2014, 85 MMCF in 2015, and 100 MMCF in 2016 and future years.

Exploration and development of oil and gas in good inlet supports important economic and social aspects in the Cook Inlet Region. The Department finds that the requirements of this part of the antidegradation analysis have been met.

- *18 AAC 70.015 (a)(2)(B) except as allowed under this subsection, reducing water quality will not violate the applicable criteria of 18 AAC 70.020 or 18 AAC 70.235 or the whole effluent toxicity limit in 18 AAC 70.030.*

A default 100-meter radii, cylindrically shaped chronic mixing zone is authorized for Discharge 001 – Drilling Fluids and Drill Cuttings and Discharge 013 – Muds, Cuttings, and Cement at the Seafloor. Upon request, DEC may authorize a standard-sized 100-meter radii, cylindrical chronic mixing zone and 10-meter radii, cylindrically shaped acute mixing zone for Discharge 003 – Domestic Wastewater and Discharge 004 – Graywater. Where DEC has authorized a mixing zone (in accordance with 18 AAC 70.240 – 18 AAC 70.270), all applicable criteria found in 18 AAC 70.020 must be met at the boundary of that authorized mixing zone to ensure that the quality of the waterbody as a whole is protected and maintained. Site-specific criteria as allowed by 18 AAC 70.235 has not been established for Cook Inlet and is therefore not applicable. A robust toxicity monitoring program is being implemented in the permit to evaluate the aggregate effects of discharges. Chronic WET monitoring is required for miscellaneous discharges that are chemically treated. Triggers are established based on discharge volumes and dispersion modeling to evaluate potential for chronic toxicity at the boundary of the 100-meter radii, cylindrically shaped chronic mixing zone. Exceeding triggers will require accelerated WET testing and ultimately a TRE/TIE if toxicity persists. In addition, the BMP Plan and Environmental Monitoring Studies direct the permittee to implement practices to control toxicity and report on environmental impacts from drilling activities, respectively. Accordingly, if the terms of the permit are followed, violations of marine water quality criteria in 18 AAC 70.020 and the WET limit in 18 AAC 70.030 should not occur.

The Department finds that the requirements of this part of the antidegradation analysis have been met.

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

Waters covered under the permit are protected for all marine use categories per 18 AAC 70.020(a)(2)(A-D). Effluent limits and monitoring in the permit have been developed to ensure that water quality criteria are not exceeded at the point of discharge, or if applicable, at or beyond the boundary of an authorized mixing zone.

Under Section 403 of the CWA, an ODCE was conducted in 2013 for the discharges in the permit. The Department concluded that if certain discharge restrictions and conditions in the 2013 ODCE are included in the permit, unreasonable degradation was not expected to occur in the marine environment as a result of the discharges. The discharge prohibitions adopted in the permit include no discharge to waters shallower than 10 meters or within 4,000 meters from sensitive areas.

To support the 2007 Permit reissuance, industry was required to submit a report that expands upon research efforts by other stakeholders evaluating environmental effects of oil and gas activities in Cook Inlet. This other research effort was called the Integrated Cook Inlet Environmental Monitoring and Assessment Program (ICIEMAP). Partners in this study included the National Oceanic and Atmospheric Administration (NOAA), the Cook Inlet Regional Citizens Advisory Council (CIRCAC), and DEC. DEC administers the EPA Environmental Monitoring and Assessment Program (EMAP) in Alaska, and CIRCAC provided scientific support for data collection and reporting for Cook Inlet studies. The overall statistical design of the ICIEMAP study followed EMAP protocol. The program has provided more site-specific information on water quality, sediment quality, and physical and biological parameters for Cook Inlet than was available prior to the 2007 Permit reissuance. The ICIEMAP data was posted in the industry Produced Water Study report and the ICIEMAP studies have provided a large database for water and sediment parameters in Cook Inlet. Major conclusions derived from these works include, but are not limited to:

- Concentrations of barium, cadmium, chromium, copper, nickel, lead, and zinc for bottom sediments in Cook Inlet were at background values at all 55 sampling stations.
- Concentrations of arsenic, manganese and selenium for bottom sediments in Cook Inlet were above background values at a few locations but could be caused by natural changes of rock and sediments.
- Concentrations of many metals in bottom sediments were below sediment quality guidelines that evaluate effects to bottom dwelling test organisms. (Note: Although Alaska WQS do not include specific sediment quality standards, these types of tests help to evaluate whether metals in the water column are concentrating at levels in sediments that can impact aquatic organisms directly or through the food web.)
- Mercury concentrations for bottom sediments in Cook Inlet were above background at 10 of 55 locations, including five in Kachemak Bay. (Note: Global sources of mercury discharges, including aerial deposition from combustion sources, impact waterbodies world-wide. The 2007 Permit and the permit prohibit any discharge into Kachemak Bay.)
- Concentrations of dissolved metals in marine waters were comparable to background and no elevations of dissolved metals from produced water could be identified.
- Concentrations of dissolved metals in Cook Inlet rivers were variable and probably a function of both natural and man-induced sources.

Information in the Produced Water Study support the Department's findings that discharges from existing production platforms have not adversely impacted existing uses in Cook Inlet. Given that

exploration facilities are expected to discharge much lower concentrations and volumes of pollutants than production platforms, discharges associated with the permit are not expected to affect existing uses so long as limitations and discharge prohibitions in the permit are followed.

The Department finds that requirements of this part of the antidegradation analysis have been met.

- *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.*

For the purpose of discussing pollution prevention, control, and treatment the discharges covered by the permit will be grouped according to the following five categories:

1. Drilling Fluids and Drill Cuttings
2. Domestic Wastewater
 - Black Water
 - Graywater
3. Discharges potentially contaminated with oil
 - Deck Drainage
 - Blowout Preventer Fluid
 - Bilge Water
 - Uncontaminated Ballast Water
 - Excess Cement Slurry
 - Muds, Cuttings, and Cement at the Seafloor
4. Seawater or Freshwater Typically Treated with Chemicals
 - Desalination Unit Wastes
 - Non-contact Cooling Water
5. Miscellaneous Intermittent Discharges
 - Boiler Blowdown
 - Fire Control Test Water

1. **Drilling Fluids and Drill Cuttings:** The limitations imposed on drilling fluids and cuttings in the permit rely on effective and reasonable pollution prevention strategies that promote reducing volumes of potentially toxic discharges, recycling and reusing fluids, and replacing toxic fluids with less toxic substitutions.

The ELGs establish pollution control by prohibiting the use of oil-based fluids, diesel oil, inverse emulsion fluids, oil contaminated fluids, and mineral oil except in situations where mineral oil pills are necessary to free stuck drill shafts. The prohibition of discharge of free oil for all discharges protects aquatic life as well as public health and welfare. 40 CFR 110.3 defines the quantity of oil that may be harmful to public health or welfare as a discharge that causes a sheen or discoloration on the receiving water. Prohibition of free oil in discharges is a reasonable and effective pollution control strategy.

The limitations in the permit promote using the least toxic water-based drilling fluids or minimizing the discharge of more toxic fluids. Although water-based fluids may be discharged,

typical industry practice is to reclaim the cuttings for reuse until the end of the well drilling. When discharged, water-based fluids must meet limits for surrogate metals cadmium and mercury, as well as SPP toxicity limits.

Discharge of synthetic-based drilling fluids is prohibited in all of Cook Inlet. However, the discharge of drill cuttings coated with synthetic drilling fluids is allowed in the territorial sea if the discharge is free from oil as determined by the static sheen method. As discussed previously, cuttings coated with synthetic drilling fluids are typically shipped to shore so the fluid can be reclaimed and recycled back to drilling operations. Because the use of synthetics typically results in fewer cuttings, there is a reduced volume of cuttings discharged and these cuttings meet the no oil discharge limitations.

- 2. Domestic Wastewater:** As discussed in Section 6.3.2, exploration facilities use MSDs, BTUs, or MSD/BTU combinations to treat domestic wastewater (black water or commingled black and graywater). The history of domestic wastewater treatment performance authorized in previous permits has been evaluated by DEC. MSDs and MSD/BTUs at M10 or M9IM facilities have not demonstrated reliable performance for meeting the limits in the permit or minimum treatment standards per 18 AAC 72.050. BTUs at M9IM facilities have also demonstrated difficulties. Only BTUs at M10 facilities have demonstrated reliable performance. In the MSD cases, low influent salinity presumably affected generation of chlorine needed for oxidation and destruction of the waste. Low salinity may result from commingling graywater or variations in seawater that is commonly used for flush water in black water systems. Low or variable salinity can reduce MSD treatment performance greater than 50 percent. Recent data from existing exploration discharges support this assumption. For low performance of BTUs, variable organic loading is assumed to be the reason for poor performance. Some types of BTUs are not able to treat highly variable organic loadings such as those at intermittently operated facilities.

As a result of the difficulties for some domestic wastewater systems to meet the state regulatory minimum treatment requirements, TBELs based on BPJ have been adopted for various systems operating at M10 and M9IM facilities (See Section 6.3.2 and Attachment 1). Only the BTUs operating at M10 facilities have limits set at secondary standards. Based on the nature of exploration activities and review of facility information, DEC assumes exploration facilities will typically be M10. While BTUs appear to be the most effective treatment available, the Department acknowledges that there is insufficient information available to make this determination at this time. For this reason, the permit clarifies and emphasizes adherence to existing requirements in 18 AAC 72 in order to evaluate treatment systems before obtaining authorization under the permit. In addition, the permit provides a systematic approach for operators to implement corrective actions should operational problems arise.

- 3. Discharges potentially contaminated with oil:** The permit prohibits the discharge of free oil as determined by the visual sheen test, or the Static Sheen Test, and requires treatment of deck drainage, bilge water, uncontaminated ballast water, and test fluids using an oil water separator. When discharging these waste streams during broken, unstable, or stable ice conditions the

effluent must pass the Static Sheen Test prior to discharge. As stated previously, the Department considers prohibiting the discharge of free oil to be the most effective and reasonable treatment and pollution control techniques for these discharges.

4. **Seawater or Freshwater Typically Treated with Chemicals:** Non-contact cooling water and desalination unit wastes commonly include chemical additives necessary to prevent biofouling, scaling, or corrosion. Because of the multitude of products available, as well as those that may become available during the permit cycle, the Department determined that developing limits is infeasible. The Department also considered that inhibiting the use of more effective or less toxic chemicals would be inappropriate. Therefore, the permit requires a strict inventory of chemical use along with implementing BMPs and chronic WET monitoring. Chronic toxicity triggers are provided to ensure water quality criteria are met at the boundary of the 100 meter mixing zone. Exceeding these triggers values requires accelerated testing and ultimately implementation of TRE/TIE if toxicity persists. These requirements promote effective pollution control while allowing for flexibility to use the most effective, low toxicity chemicals including new and potentially more beneficial treatment chemicals.

5. **Miscellaneous Intermittent Discharges:** Boiler blow down is a low volume discharge of freshwater from a closed boiler system. The discharge of blow down is replenished with makeup fresh water to help maintain water quality characteristics in the closed system. Fire control system test water is typically sea water discharged during training events and the testing and maintenance of the fire protection equipment. These intermittent discharges represent point source discharges but pose little environmental concern. These discharges are control by water quality narrative limits of no floating solids, foam, and oily waste and implementation of BMPs. In the event these discharges are chemically treated, the WET monitoring and triggers discussed previously also apply.

Each waste stream is either treated using the most effective and reasonable methods or controlled by implementing practicable and effective pollution prevention and control strategies. The Department finds that requirements of this part of the antidegradation analysis have been met.

- *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.*

The “highest statutory and regulatory requirements” as defined in 18 AAC 70.990(30) include the following three parts:

- 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 a requirement of this chapter.

The first part of the definition predominantly includes all applicable federal ELGs, as found in 40 CFR Part 435 Subpart A – Offshore Subcategory and Subpart D – Coastal Subcategory, adopted by

reference at 18 AAC 83.010(g)(3). The permit implements the more stringent ELGs among the BPT, the BAT, and the BCT for the oil and gas extraction coastal subcategory. Note that the NSPS category does not apply to new exploratory facilities as previously discussed. The limits for Drilling Fluid and Drill Cuttings (001) and Muds, Cuttings, and Cement at the Seafloor (013) are based on BAT at 40 CFR 435.12. As required by BCT ELGs at 40 CFR 435.14 and 435.44 and BPT ELGs at 40 CFR 435.12 and 435.42, the permit limits TRC for Domestic Wastewater (003) discharged from M10 facilities. As a surrogate for bacteria, TRC must be 1 mg/L minimum and maintained as close to this concentration as practicable immediately following chlorination. Deck Drainage (002) has a no free oil prohibition based on BAT, BCT, and BPT requirements.

In the absence of specific ELGs for waste streams, limitations and related requirements are established using BPJ. When developing numeric BPJ limits is infeasible, narrative and BMP limitations are established based on BPJ to limit the discharge of pollutants. Numeric effluent limits for TSS for Domestic Wastewater (003) are established for certain M9IM and M10 facilities using BPJ. In addition, BPJ maximum daily limits of 1 mg/L TRC is established prior to discharge to an authorized mixing zone. For facilities that do not have an authorized mixing zone, a WQBEL of 0.0075 mg/L is established for TRC based on the acute water quality criterion. Miscellaneous discharges that have the potential to contain oil are prohibited to discharge free oil. Miscellaneous discharges that are chemically treated must adhere to BMPs and monitor for chronic toxicity based on narrative BPJ procedures (See Section 6). Lastly, the discharge of test fluids is limited using BPJ based on the ELGs for produce water, no free oil BPJ, and similar BMPs and monitoring for toxicity used for miscellaneous discharges authorized under the permit.

The second part of the definition 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, which deals with domestic wastewater. The permit requires domestic wastewater discharges to surface water to meet minimum treatment requirements (i.e., secondary treatment), unless a waiver request is approved by the Department under 18 AAC 72.060. This requirement applies to both domestic wastewater discharges (003) and graywater discharges (004) (See Section 4.3). The waiver request must satisfactorily address the waiver requirements in 18 AAC 72.050(d)(1) – (5) and 18 AAC 72.060(b); facilities must achieve, at a minimum, primary treatment. The permit only authorizes discharges of domestic wastewater and graywater from exploration facilities after the applicant submits plans and a report with the completed NOI, and the Department determines that the plans, report, and NOI satisfactorily address the requirements of 18 AAC 72.050(d) and 18 AAC 72.060(b) and that the minimum treatment standards will be met. By virtue of requiring a case-by-case evaluation as necessary for first time dischargers and facilities conducting major renovations, the permit will protect public health, public and private water systems, and the environment.

The third part of the regulation includes any more stringent treatment required by State law that is more stringent than 18 AAC 70. Other regulations beyond 18 AAC 70 that directly apply to the permitting action include 18 AAC 72 and 18 AAC 15. The paragraph above speaks directly to the more stringent treatment requirements contained in 18 AAC 72 for domestic wastewater discharges. Besides those in 18 AAC 72, neither the regulations in 18 AAC 15 nor another State law that the Department is aware of impose more stringent treatment requirements than 18 AAC 70.

The Department finds that requirements of this part of the antidegradation analysis have been met.

10.0 OTHER PERMIT CONDITIONS

10.1 Authorization to Discharge

10.2 Standard Permit Provisions

Attachment 1 of the permit contains standard regulatory language that must be included in all APDES permits. These requirements are based on the regulations and cannot be challenged in the context of an individual APDES permit action. The standard regulatory language covers requirements such as monitoring, recording, reporting requirements, compliance responsibilities, signatory authority, and other general requirements.

10.3 Best Management Practices

BMPs are measures that are intended to prevent or minimize the generation and potential for the release of pollutants from industrial facilities to the waters of the US through normal operations and ancillary activities. Pursuant to CWA Section 402(a)(1), development and implementation of BMP Plans may be included as a condition in APDES permits. CWA Section 402(a)(1) authorizes DEC to include miscellaneous requirements that are deemed necessary to carry out the provision of the CWA in permits on a case-by-case basis. BMPs are required to control or abate the discharge of pollutants in accordance with 18 AAC 83.475.

The permittee must develop a BMP Plan which achieves the objectives and the specific requirements to prevent or minimize the generation and release of pollutants during exploration activities. 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. All changes to the BMP Plan must be reviewed by the facility engineering staff and manager. Changes to the BMP Plan shall be consistent with the objectives and specific requirement as described in Section 2.11 of the permit.

10.4 Cooling Water Intake Structure Requirements.

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 million gallons per day 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 this permit applies only to mobile exploration facilities (e.g., drill ships, temporarily moored semi-submersibles, jack-ups, submersibles, tender-assisted rigs and drill barges), facilities authorized under the permit must comply with Track I requirements (See Appendix H of the Permit)

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.

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.

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. Note that the BMP Plan is required to be submitted with the NOI to allow for this opportunity at the discretion of the Department.

10.5 Recording and Reporting Requirements

The reporting provisions in 18 AAC 83.455(b) allow flexibility in determining the frequency of reporting. The permittee shall submit monthly DMRs summarizing the monitoring required in Permit Section 2.

11.0 OTHER LEGAL REQUIREMENTS

11.1 Endangered Species Act

The ESA requires federal agencies to consult with NMFS and the U.S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species. As a state agency, DEC is not required to consult with these federal agencies regarding permitting actions. However, the Department has verbally discussed the permit with the Services and is in the process of verifying listings of threatened and endangered species in the subject coverage area. There are four listed species and three species have critical habitat in Cook Inlet.

The following threatened and endangered species occur in Cook Inlet¹ and are potentially affected by discharges covered under the permit:

- Steller sea lion (*Eumetopias jubatus*): Endangered
- Beluga whale (*Delphinapterus leucas*): Endangered
- Northern sea otter (*Enhydra lutris kenyoni*): Threatened
- Steller's eider (*Polysticta stelleri*): Threatened

11.1.1 Steller sea lion: The NMFS listed the Steller sea lion as threatened on November 6, 1990 (55 FR 12645). On May 5, 1997, the NMFS issued a final rule that reclassified Steller sea lions into two distinct population segments (62 FR 24355). There is critical habitat for Steller sea lion within Cook Inlet at Cape Douglas, the Barren Islands, Port Chatham, and at the extreme southern end of Cook Inlet. There is additional critical habitat including rookeries, haulouts, and marine foraging areas for the western population stock in areas near Shelikof Strait, and areas along the southern side of the Alaska Peninsula (MMS 2003).

¹ Species were listed as threatened or endangered on the USFWS's Alaska Region Web site (Alaska's http://alaska.fws.gov/fisheries/endangered/pdf/consultation_guide/4_Species_List.pdf) accessed on January 14, 2013.

11.1.2 Beluga whale: Beluga whales are divided into five stocks: Cook Inlet, Bristol Bay, eastern Bearing Sea, eastern Chukchi Sea, and Beaufort Sea (NMFS 2003). The Cook Inlet stock is classified as the most vulnerable, which led to listing the population as endangered under the ESA (73 FR 62919) on October 22, 2008 and followed by designating critical habitat in Cook Inlet on April 11, 2011 (76 FR 20180). The Cook Inlet population is the most isolated stock, spending the entire year in Cook Inlet and the majority of the time in the northern portion of Cook Inlet. The critical habitat areas are prioritized according to levels of sensitivity. The permit coverage area excludes the highly sensitive habitat of the beluga whale.

11.1.3 Northern sea otter: The USFWS issued a final rule listing the southwest Alaska distinct population segment of the northern sea otter as threatened under the ESA on August 9, 2005 (70 FR 46366). Designated habitat areas in Cook Inlet range along the west side from Shelikof Strait to Tuxedni Bay. These areas contains all the elements necessary for the conservation of the southwest Alaska northern sea otter population and thus is subject to special management considerations and protections to minimize the risk of oil and other hazardous-material spills from commercial shipping (74 FR 51988). The permit coverage area overlaps with habitat areas from Chinitna Point to Tuxedni Bay.

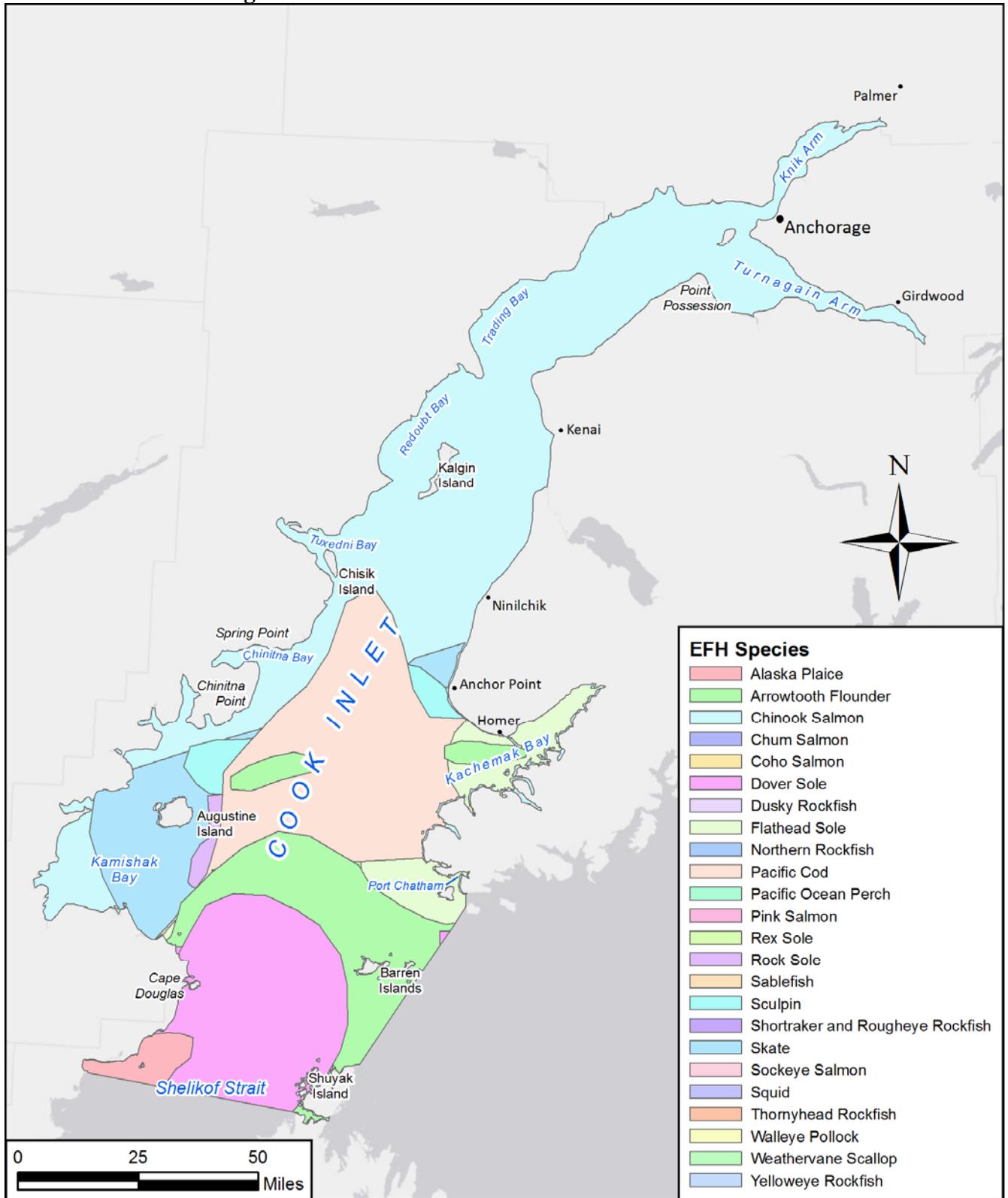
11.1.4 Steller's eider: The Alaskan breeding populations of Steller's eider were listed as threatened under the ESA on June 11, 1997 (62 FR 31748). Designated critical habitat for the Steller's eider includes five units located along the Bering Sea and north side of the Alaskan Peninsula. There is no critical habitat in Cook Inlet.

11.2 Essential Fish Habitat

Essential fish habitat (EFH) includes the waters and substrate (sediments, etc.) necessary for fish from commercially-fished species to spawn, breed, feed, or grow to maturity. The 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act set forth a number of new mandates for NMFS, regional fishery management councils, and other federal agencies to identify and protect important marine and anadromous fish habitat.

Most marine waters surrounding the State of Alaska have been designated as essential fish habitat. Figure 2 provides a summary of the EFH species within the permit coverage area.

Figure 2: Essential Fish Habitat in Cook Inlet



As can be surmised from Figure 2, EFH is prevalent in Cook Inlet much like most of Alaskan marine waters. The habitats of potential concern are typically the estuarine and near shore habitat of the Pacific salmon and herring spawning grounds. It is difficult to determine where facilities might locate during the life of a general permit. However, the prohibition of discharge within 4,000 meters of sensitive areas and in waters shallower than 10 meter serves to protect these near shore habitats. Because the discharges disperse rapidly within the deeper waters, activities associated with the permit will not adversely affect EFH.

11.3 Permit Expiration

The permit will expire five years from the effective date.

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ATTACHMENT 1. EFFLUENT LIMIT CALCULATIONS

. The Department determined that case-by-case technology-based effluent limits (TBEL) using best professional judgment (BPJ) are appropriate for 5-Day Biochemical Oxygen Demand (BOD₅), Total Suspended Solids (TSS), and total residual chlorine (TRC) for Discharge 003 – Domestic Wastewater. These BPJ limits were first developed by the US Environmental Protection Agency (EPA) during issuance of AKG31-5000 – Oil and Gas Exploration, Development, and Production facilities Located in State and Federal Waters in Cook Inlet (2007 Permit). Based on the reevaluation of these limits, the Department concludes these BPJ limits are appropriate and are retained in the permit. Similarly, a water quality-based effluent limit (WQBEL) was previously developed for TRC on Discharge 003 for discharges without an authorized mixing zone. This WQBEL is also still appropriate and is retained in the permit.

1.1 Permit Limit Derivation

The Department evaluated current discharge data from existing oil and gas facilities operating in Cook Inlet. All but one facility treated domestic wastewater using a biological treatment unit (BTU). These facilities are either manned by 10 people continuously (M10) or are manned by nine or fewer people or intermittently manned by any number of people (M9IM). The remaining facility is an M10 that uses a marine sanitation system (MSD) without biological treatment.

Discharge monitoring data representing domestic wastewater discharges (Discharge 003) in the 2007 Permit were statistically evaluated and compared to the average monthly limits (AML) and maximum daily limit (MDL) developed by BPJ in the 2007 Permit. Based on this evaluation, the Department determined that these effluent limits are attainable using existing, available, and affordable treatment systems and no new technology advancements have rendered these systems obsolete. Comparisons of discharge data statistics with permit limits for both BOD₅ and TSS are summarized in Table A-1 and A-2, respectively.

Table 1- 1: Comparison of BOD₅ Discharge Data Statistics with 2007 Permit Limits

Treatment	Average (mg/L)	95th Percentile (mg/L)	Standard Deviation (mg/L)	AML (mg/L)	MDL (mg/L)
M9IM BTUs	10.5	24.3	10.3	48	90
M10 BTUs	10.2	24.7	8.5	30	60
M10 & M9IM MSDs or MSD/BTU	273.6	628.8	262.9	30	60

Table 1- 2: Comparison of TSS Discharge Data Statistics with 2007 Permit Limits

Treatment	Average (mg/L)	95th Percentile (mg/L)	Standard Deviation (mg/L)	AML (mg/L)	MDL (mg/L)
M9IM BTUs	6.3	16	8.5	56	108
M10 BTUs	9.8	21.1	13.4	30	60
M10 & M9IM MSDs or MSD/BTU	1249.8	5144	2692.6	51	67

The statistics presented in Tables A-1 and A-2 were created using limited data sets. The M9IM BTUs statistics used 33 reported maximum daily discharge values, M10 BTUs used 21, and the M10 MSD used six. The M10 MSD facility operated prior to conducting a plan review per 18 AAC 72 and had difficulty establishing treatment performance due to the variable salinity conditions encountered in Cook Inlet and lack of a brine injection system. The MSD did not perform in accordance with the permit until near the end of the discharge season and the facility is in the process of evaluating major renovations prior to recommencing discharges.. Although DEC does not consider this data to be representative of a properly functioning MSD, this knowledge is presented as it ultimately informed the Department decision to clarify the requirements of 18 AAC 72 in relation to satisfy 18 AAC 83.

Although M9IM BTUs have demonstrated that meeting secondary treatment standards as defined in 18 AAC 72 may be attainable, the Department is retaining the existing BPJ limits in the permit to allow for adequate data collection to support this preliminary assessment. Similarly, the Department is retaining the BPJ limits for M10 and M9IM MSD systems until such time sufficient representative data is available to reevaluate these limits. During the next reissuance, DEC will evaluate both the graywater and domestic wastewater discharges based on information collected from new and existing exploration facilities, as well as information from existing fixed platforms.

In the 2007 Permit, DEC provided a CWA 401 Certification of Reasonable Assurance that established limits for TRC based on case-by-case BPJ to cover mobile platforms and drill rigs that are able to discharge to either state or federal waters. Consistent with the 2013 Ocean Discharge Criteria Evaluation, such a facility could request a standard-sized 100 meter radii, cylindrically shaped chronic mixing zone, a 10 meter radii, cylindrically shaped acute mixing zone, and discharge TRC at a maximum daily limit of 1.0 mg/L. This value was established based on the ELG of 1.0 mg/L TRC minimum and an understanding that de-chlorination downstream is an effective, available, and affordable treatment option that was observed to be commonly used at facilities. For facilities that do not request mixing zones, the chronic water quality criteria was adopted as the MDL. This limit represents a WQBEL. Based on evaluation of this BPJ limit and WQBEL for TRC, the Department proposes to retain these limits in the permit.

ATTACHMENT 2. MIXING ZONE ANALYSIS CHECKLIST

Mixing Zone Authorization Checklist based on Alaska Water Quality Standards (2003)

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	<p>Is the mixing zone as small as practicable?</p> <p>- Permit writer conducts analysis and documents analysis in Fact Sheet at:</p> <p>▶ Section 5.3 Mixing Zone Authorization.</p>	<p>Answer: Yes</p> <p>Technical Support Document for Water Quality Based Toxics Control Fact Sheet, Section 5.3</p> <p>Fact Sheet, Section 5.3.4</p> <p>DEC's RPA Guidance, based on narrative criteria</p> <p>EPA Permit Writers' Manual</p>	<p>18 AAC 70.240 (a)(2)</p> <p>18 AAC 70.245 (b)(1) - (b)(7)</p> <p>18 AAC 70.255(e) (3)</p> <p>18 AAC 70.255 (d)</p>
Technology	<p>Were the most effective technological and economical methods used to disperse, treat, remove, and reduce pollutants?</p> <p>If yes, describe methods used in Fact Sheet at Section 5.3 Mixing Zone Analysis.</p>	<p>Answer: Yes</p> <p>Fact Sheet, Section 5.3.3</p>	<p>18 AAC 70.240 (a)(3)</p>
Low Flow Design	<p>For river, streams, and other flowing fresh waters.</p> <p>- Determine low flow calculations or documentation for the applicable parameters. Justify in Fact Sheet</p>	N/A	<p>18 AAC 70.255(f)</p>

Criteria	Description	Answer & Resources	Regulation
Existing use	Does the mixing zone...		
	(1) partially or completely eliminate an existing use of the waterbody outside the mixing zone? If yes, mixing zone prohibited.	Answer: No Fact Sheet Section 5.3.1 Fact Sheet Section 5.3.2 Fact Sheet Section 5.3.4 Fact Sheet Section 9.0	18 AAC 70.245(a)(1)
	(2) impair overall biological integrity of the waterbody? If yes, mixing zone prohibited.	Answer: No Fact Sheet Section 5.3.4	18 AAC 70.245(a)(2)
	(3) provide for adequate flushing of the waterbody to ensure full protection of uses of the waterbody outside the proposed mixing zone? If no, then mixing zone prohibited.	Answer: Yes Fact Sheet Section 3.0 Fact Sheet Section 5.3.2 Response to Comments	18 AAC 70.250(a)(3)
	(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 5.3 Fact Sheet Section 9.0	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 5.3.5	18 AAC 70.250(b)(2)

Criteria	Description	Answer & Resources	Regulation
	<p>(2) preclude or limit established processing activities of commercial, sport, personal use, or subsistence shellfish harvesting?</p> <p>If yes, mixing zone may be reduced in size or prohibited.</p>	<p>Answer: No</p> <p>Fact Sheet Section 5.1</p> <p>Fact Sheet Section 5.3.5</p> <p>Response to Comments</p>	<p>18 AAC 70.250(b)(3)</p>
Spawning Areas	Does the mixing zone...		
	<p>(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?</p> <p>If yes, mixing zone prohibited.</p>	<p>Answer: No</p> <p>Fact Sheet Section 5.3.6</p>	<p>18 AAC 70.255 (h)</p>
Human Health	Does the mixing zone...		
	<p>(1) contain bioaccumulating, bioconcentrating, or persistent chemical above natural or significantly adverse levels?</p> <p>If yes, mixing zone prohibited.</p>	<p>Answer: No</p> <p>Fact Sheet Section 5.2</p> <p>Fact Sheet Section 5.3.5</p>	<p>18 AAC 70.250 (a)(1)</p>
	<p>(2) contain chemicals expected to cause carcinogenic, mutagenic, tetragenic, or otherwise harmful effects to human health?</p> <p>If yes, mixing zone prohibited.</p>	<p>Answer: No</p> <p>Fact Sheet Section 5.2</p> <p>Fact Sheet Section 5.3.5</p> <p>Response to Comments</p>	
<p>(3) Create a public health hazard through encroachment on water supply or through contact recreation?</p> <p>If yes, mixing zone prohibited.</p>	<p>Answer: No</p> <p>Fact Sheet Section 5.1</p> <p>Fact Sheet Section 5.2</p> <p>Fact Sheet Section 5.3.5</p> <p>Fact Sheet Section 9.0</p>	<p>18 AAC 70.250(a)(1)(C)</p>	

Criteria	Description	Answer & Resources	Regulation
	<p>(4) meet human health and aquatic life quality criteria at the boundary of the mixing zone? If no, mixing zone prohibited.</p>	<p>Answer: Yes Fact Sheet Section 5.3.2 Fact Sheet Section 5.3.7 Fact Sheet Section 6.3.2 Fact Sheet Section 6.3.3 Fact Sheet Section 6.4.1 Fact Sheet Section 9.0</p>	<p>18 AAC 70.255 (b),(c)</p>
	<p>(5) occur in a location where the department determines that a public health hazard reasonably could be expected? If yes, mixing zone prohibited.</p>	<p>Answer: No Fact Sheet Section 5.3.5</p>	<p>18 AAC 70.255(e)(3)(B)</p>
Aquatic Life	Does the mixing zone...		
	<p>(1) create a significant adverse effect to anadromous, resident, or shellfish spawning or rearing? If yes, mixing zone prohibited.</p>	<p>Answer: No Fact Sheet Section 5.3.6 Fact Sheet Section 5.3.7 Response to Comments</p>	<p>18 AAC 70.250(a)(2)(A-C)</p>
	<p>(2) form a barrier to migratory species? If yes, mixing zone prohibited.</p>	<p>Answer: No Fact Sheet Section 5.3.6 Response to Comments</p>	
	<p>(3) fail to provide a zone of passage? If yes, mixing zone prohibited.</p>	<p>Answer: No Fact Sheet Section 5.3.6 Response to Comments</p>	
	<p>(4) result in undesirable or nuisance aquatic life? If yes, mixing zone prohibited.</p>	<p>Answer: No Fact Sheet Section 5.3.7</p>	<p>18 AAC 70.250(b)(1)</p>

Criteria	Description	Answer & Resources	Regulation
	<p>(5) result in permanent or irreparable displacement of indigenous organisms? If yes, mixing zone prohibited.</p>	<p>Answer: No Fact Sheet Section 5.3.7</p>	<p>18 AAC 70.255(g)(1)</p>
	<p>(6) result in a reduction in fish or shellfish population levels? If yes, mixing zone prohibited.</p>	<p>Answer: No Fact Sheet Section 5.3.7</p>	<p>18 AAC 70.255(g)(2)</p>
	<p>(7) prevent lethality to passing organisms by reducing the size of the acute zone? If yes, mixing zone prohibited.</p>	<p>Answer: No Fact Sheet Section 5.3.2 Fact Sheet Section 5.3.4</p>	<p>18 AAC 70.255(b)(1)</p>
	<p>(8) cause a toxic effect in the water column, sediments, or biota outside the boundaries of the mixing zone? If yes, mixing zone prohibited.</p>	<p>Answer: No Fact Sheet Section 5.3.2</p>	<p>18 AAC 70.255(b)(2)</p>
<p>Endangered Species</p>	<p>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.</p>	<p>Answer: Yes Fact Sheet Section 4.1 Fact Sheet Section 5.2 Fact Sheet Section 5.3.1 Fact Sheet Section 5.3.8 Fact Sheet Section 11.1</p>	<p>Program Description, 6.4.1 #5 18 AAC 70.250(a)(2)(D)</p>