Department of Environmental Conservation
Response to Comments

For

Alaska Pollutant Discharge Elimination System

General Permit
AKG315200 – Oil and Gas
Exploration, Development, and Production
in State Waters in Cook Inlet

Public Noticed February 19, 2019 – May 22, 2019

FINAL PERMIT RELEASE DATE: October 19, 2021

Alaska Department of Environmental Conservation
Wastewater Discharge Authorization Program
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Contents

1 Overview

1.1 Summary of Permit

The National Pollutant Discharge Elimination System program regulates the discharge of wastewater to the waters of the United States (U.S.) and is administered by the United States U.S. Environmental Protection Agency (EPA). Between 2008 and 2012 EPA granted the authority to administer, permit, and regulate wastewater discharges to the waters of the U.S. in Alaska to the Alaska Department of Environmental Conservation (DEC or Department) under the Alaska Pollutant Discharge Elimination System (APDES) Program.

EPA issued the original general permit, AKG285000, on October 3, 1986. EPA reissued the general permit on February 28, 1999 as AKG285100, with an effective date of April 1, 1999. EPA again reissued the permit as AKG315000 on May 25, 2007 (2007 GP), with effective dates from July 2, 2007 through July 2, 2012. However the 2012 Permit was challenged in court and the court decision was not issued until the term of the 2012 Permit had lapsed, leaving the 2007 GP under administrative extension until this reissuance. Prior to initiating the development of AKG315200 – Oil and Gas Exploration, Development, and Production in State Waters in Cook Inlet (2015 Exploration GP), DEC held stakeholder outreach. The purpose of this outreach was to become informed about what stakeholders considered paramount for DEC to consider during the reissuance. DEC took to heart these suggestions and spent approximately two years working on mixing zones and pollution reduction strategies as an outgrowth of stakeholder input.

1.2 Opportunities for Public Participation

DEC proactively seeks substantive scientific knowledge, studies, data and traditional knowledge to inform the development of the Permit. To provide notification to the general public, government agencies, nongovernment ogranizations, and native Alaskan tribes of the opportunities for their participation, DEC:

- Identified the permit on the annual Permit Issuance Plan posted online at: http://dec.alaska.gov/water/wastewater/pip/;
- Notified potentially affected tribes that the Department would be working on the Permit via letter, fax and/or email on April 11, 2014;
- Invited tribal government and municipal representatives, recreational and commercial fishing representatives, governmental agencies, nongovernment organizations (NGOs), Cook Inlet Regional Citizens Advisory Councils (RCAC), and active industry participants and potential future general permit applicants to two stakeholder workshops:
  - conducted in Anchorage on May 27, 2014 and
  - conducted in Homer on May 29, 2014,

  where, after providing overviews of the industry and the permitting process, the Department solicited participating stakeholder input regarding the aspects the Department should consider as it moved forward with reissuance;
- Updated potentially affected tribes that the Department was continuing the development of the Permit, albeit delayed from the original timeline, via letter, fax, and/or email on August 10, 2016;

- Notified potentially affected local and tribal governments, as well as the interested participants of the two workshops held in 2014, of the anticipated public notification for a 90-day public comment period to begin in August of 2018, via a postcard and/or email on June 27, 2018;
- Updated potentially affected local and tribal governments, as well as the interested participants of the two workshops held in 2014, of the delayed anticipated public notification for a 90-day public comment period to begin in October of 2018, via a postcard and/or email on September 6, 2018;
- Notified potentially affected local and tribal governments, as well as the interested participants of the two workshops held in 2014, that the preliminary draft Permit and Fact Sheet would be available during the 10-day applicant review period in October of 2018 and provided a brief permit summary, via email on October 5, 2018;
- Distributed a brief summary in half-fold leaflets at the registration table of the 2018 Alaska Tribal Conference on Environmental Management, held November 27-30, 2018 at the Hilton Hotel in Anchorage;
- Met with representatives of:
    - Seldovia Village (January 2, 2019)
    - Native Village of Nanwalek (January 3, 2019)
    - Native Village of Port Graham (January 4, 2019)
    - Ninilchik Natives Association, Incorporated (January 8, 2019)
    - Kenaitze Indian Tribe (January 9, 2019)
    - Native Village of Tyonek (January 9, 2019)
    - Salamatof Tribe(January 10, 2019)
    - Chickaloon Village Traditional Council (January 15, 2019)
    - Native Village of Eklutna (January 15, 2019) and
    - Knik Tribal Council (January 15, 2019)

  where the Department provided paper and electronic copies of the preliminary draft Permit and Fact Sheet along with related informational materials, reviewed five key changes in the permit, discussed topics of tribal concern, and answered questions;
- Posted the preliminary draft Permit on-line for a 10-day applicant review on November 20, 2018 and notified tribes, local governments, and other agencies;
- Published public notice of the 90-day public review period for the draft Permit and Fact Sheet,and of the associated public hearings, in the Peninsula Clarion, Homer News, and Anchorage Daily News;
- Posted the public notice on the Department's public notice web page February 19, 2019 for a 90-day public review of the draft Permit and Fact Sheet;
- Notified local and tribal governments, State and Federal agencies, and others on the Department List Serve of the 90-day public review and comment period for the draft Permit and Fact Sheet, via email on February 19, 2019;
- Held public hearing(s) in:
    - Homer on March 26, 2019,
    - Kenai on March 27, 2019, and
    - Anchorage on March 28, 2019;

- Posted the Proposed Final Permit, Fact Sheet, and this Response to Comments (RTC) document on-line for a five-day applicant review on October 6, 2021; and
- Sent email notifications via the APDES Program List Serve when the Preliminary Draft, Draft, and Proposed Final Permits were available for review.

DEC requested comments on the Preliminary Draft Permit and Fact Sheet from various applicants, EPA, National Marine Fishery Services (NMFS), U.S. Fish and Wildlife Service (FWS), and State agencies including, but not limited to, the Alaska Departments of Fish and Game and Natural Resources, as well as those whom have requested notification through the DEC Listserve. Only the applicants, EPA, and the Knik Tribe provided comments on the Preliminary Draft Permit and Fact Sheet.

This RTC document summarizes the comments submitted to DEC and the justification for any action taken or not taken by DEC in response to the received comments. Rather than addressing each comment individually, a brief summary of the concerns by commenter may be provided first (Section 2), then the comments are addressed in detail in subsections.

1.3 Final Permit

The Final Permit was adopted by DEC on 10/19/2021. Upon obtaining comments, DEC made minor changes to the Draft Permit and Fact Sheet to develop the Proposed Final Permit and Fact Sheet to correct typographical and grammatical errors, and to clarify or update information. In addition, DEC made necessary changes that were outgrowths from the responses to the comments described in this RTC document as a result of comments received during the five-day applicant review (See Section 3).

After the close of the public review and comment period for the Draft Permit, EPA approved the 2006 versions of mixing zone regulations and the 2014 and 2016 Integrated Water Quality Reports that necessitated updates to Fact Sheet Section 4. The changes to mixing zone regulations resulted in restructuring existing citations, such that DEC updated the citations in Fact Sheet Section 4 as necessary to reflect the 2006 mixing zone regulations.

Changes made to the Final Permit in response to substantive comments on the Draft Permit and Draft Fact Sheet are identified in this RTC document and are also reflected in the Final Permit and Fact Sheet.

2 Summary of Public Notice Comments by Commenter

During the public review period of the Draft Permit and Draft Fact Sheet, the Department received comments from EPA, the Chickaloon Village Traditional Council, Susitna River Coalition (SRC), RCAC, and from the Trustees for Alaska (Trustees) on behalf of Cook Inletkeeper, Alaska Community Action on Toxics, Kachemak Bay Conservation Society, Center for Biological Diversity, and Defenders of Wildlife (collectively, “Inletkeeper”), and a list of 84 members of the public via email. Some commenters provided testimony during the public hearings (e.g., Bob Shavelson of Inletkeeper, Becky Long of SRC, and Roberta Highland of Kachemak Bay Society). Some commenters submitted their comments after the close of the public comment period. All on time comments submitted during the public comment period were considered by DEC and responded to in this RTC document.

2.1 Comments Submitted by EPA

EPA originally developed and administered the Cook Inlet General Permit under the National Pollutant Discharge Elimination System (NPDES) Program. In partnership with the State, EPA has delegated the authority to administer the NPDES Program in Alaska to DEC through the APDES Program. As a partner, EPA retains a collaborative consultation and oversight role, which includes reviewing Draft Permits and Fact Sheets to ensure consistency with the Clean Water Act (CWA).

The comments provided by EPA can be organized in to two general categories: comments that present contextual discussion and those that present grammatical, typographic, or spelling errors. Grammatical, typographical and spelling errors are addressed later in this RTC document (See Attachment 1) while this RTC section addresses those comments provided by EPA that are contextual and require a response by DEC.

2.1.1 Comment: Fact Sheet Section 2.2.8 and Permit Section 3.4

The Fact Sheet states, "…Cook Inlet Energy (CIE) has submitted an application to discharge produced water due to infeasibility of continuing to inject produced water into the formation at the Osprey that is not only derived from oil production at the platform but also from onshore wells in the West McArthur River Unit and the Redoubt Unit. Draft Permit. EPA aptly points out that as currently written, produced water processed at the Kustatan Production Facility (KPF) from onshore wells that are applicable to Title 40, Code of Federal Regulations, Part 435, Subpart C – Onshore Subcategory (40 CFR 435 – Subpart C) cannot be discharged under 40 CFR 435 Subpart D – Coastal Subcategory.

Section 3.4 discusses the discharge of produced water from "onshore" facilities when these are actually shore-based "coastal" facilities. EPA indicates there is confusion over what classifies as onshore facilities applicable to Subpart C and coastal facilities (platforms and shore-based coastal treatment facilities) per Subpart D of 40 CFR 435. EPA recommends changing references in the Permit from onshore to onshore coastal facilities to alleviate this confusion.

DEC Concurs with EPA's Interpretation of Onshore and Coastal Limitations

DEC concurs with EPA's interpretation of 40 CFR 435, produced water from onshore wells must not be discharged at the Osprey Platform. The text in the Fact Sheet attempted to describe current conditions for CIE, the combination of injecting onshore and at the Osprey Platform aggregately creates over-pressurization of the formation partly because of interconnectivity in the subsurface formations. Meanwhile, the KPF was not designed to differentiate between produced water from onshore wells and produced water from the Osprey. In order to obtain coverage under the Permit, CIE will need to submit engineering plans for DEC approval that address upgrading treatment for the produced water from the Osprey, installing a diffuser to Cook Inlet, and reconfiguring KPF process flows so onshore does not commingle with coastal produced water. No modification to Fact Sheet Section 2.2.8 was made based on this comment.

DEC agrees with EPA that the misuse of "onshore" versus "shore-based coastal" facilities confuse the application of 40 CFR 435. Therefore, DEC conducted a holistic search for "onshore" in both the Fact Sheet and Permit and replaced findings with "shore-based coastal"

when it was misused. This find and replace accounted for 11 replacements in the Permit and 15 replacements in the Fact Sheet.

2.1.2 Comment: Waterflooding Chronic Toxicity Characterization

EPA quotes Fact Sheet Section 4.5.10 that states, "[a]lthough appropriate for the purpose of characterizing effluent containing unspecified chemical additives, the chronic whole effluent toxicity (WET) monitoring approach has not yielded, with one exception for the Granite Point Platform (GPP), results where toxicity endpoints have been observed in the highest dilution concentrations tested." EPA comments that the highest dilution correlates with the lowest toxicity and the results at the lowest dilution should be considered as these correlate to higher toxicity.

DEC Concurs with Chronic WET Result Interpretations

DEC agrees completely with EPA that the lower dilution series represents higher toxic responses when compared to the endpoint being observed in higher dilutions, but only if endpoints are observed. The point that EPA is not understanding is that there have been no observed endpoints in any of the dilution series tested except for one result, for GPP, where the endpoint was observed in the highest dilution tested. These results suggest that waterflooding discharges, as monitored in the 2007 GP, exhibited no to minimal chronic toxicity.

No changes to the Fact Sheet have been made based on this comment.

2.1.3 Comment: Produced Water Treatment

Fact Sheet Section 4.6.2 states, "[a]fter considering all information available at the time, EPA developed Effluent Limitation Guidelines (ELGs) for produced water based on improved gas flotation being technically and economically achievable for Cook Inlet Facilities and no platform has reportedly discontinued protection as a result of this decision." It is unclear what "discontinued protection" means.

DEC Corrects Typographical Error

In the referenced section, the word "protection" is a typographic error. The correct word should be "production." DEC has modified the Fact Sheet to include **production** rather than ~~protection~~.

2.1.4 Comment: Table 16, Footnote 6 Outlier Designations

The footnote states, "[a]ll 47 data points were non-detectable outliers with the method detection level above the acute water quality criteria." The data points are all below detection so should not have been determined to be outliers.

DEC Disagrees with EPA Interpretation of Data Outliers

DEC disagrees with EPA that the data are not outliers. The data is not appropriate for use because data fails the definition for being "sufficiently sensitive." As stated in Fact Sheet Section 8.12, "[p]er 40 CFR 122.21(a)(3), a method approved under 40 CFR 136 is sufficiently sensitive when: (A) The method minimum level (ML) is at or below the level of the applicable water quality criterion for the measured parameter. So it is not so much that the results are below detection but the reported detection limits are greater than the acute criteria, which makes the analysis unacceptable with respect to sufficiently sensitive methods.

No modifications to the Fact Sheet have been made based on this comment.

2.1.5 Comment: Reference to Fact Sheet Table 18 May Be Incorrect

Fact Sheet Section 4.6.4.3 states, "Table 18 provides a summary' of the GPP produced water effluent characteristics and compares...." The reference in text may not be correct given Table 18 is for Granite Point Tank Farm (GPTF) Shore-based Coastal Facility Produced Water Characterization while the text refers to Table 18 being representative of GPP appears to be for the GPP.

DEC Corrects Typographical Error from GPP to GPTF in Table 18

DEC reviewed the reference and discovered the reference to Table 18 being for GPP is a typographic error. DEC has modified the text to state that "Table 18 provides a summary of the GPTF produced water…"

2.1.6 Comment: Formatting in Tables 20 and 21

EPA questions whether Tables 20 and 21 are formatted correctly to illustrate which parameters had results that exceeded limits citing that the upper reported value for silver should also be italicized in Table 20. In Table 21, although the max for zinc is correctly italicized because it exceeds the AML the same has not been repeated for manganese and silver.

DEC Corrects Typographical Errors for in Fact Sheet Tables 20 and 21

DEC concurs with EPA that the values indicated should be italicized in Tables 20 and 21. DEC has italicized the maximum silver value in Table 20 and the maximum values for manganese and silver in Table 21.

2.1.7 Comment: Osprey Platform Referenced as Tyonek

Fact Sheet Section 4.6.4.8 states. "[a]lthough the Tyonek A plans to continue injection in the near-term, the permittee realizes that injection practices are no longer a practicable long-term disposal alternative." Should the reference to Tyonek A be Osprey?

DEC Corrects Incorrect Reference to Tyonek A

DEC concurs with EPA that the reference to Tyonek A in Fact Sheet Section 4.6.4.8 is a typographic error and has corrected it to the Osprey Platform.

2.1.8 Comment: Drilling Fluids/Cuttings/Cement at the Seafloor

Fact Sheet Section 6.2.3.1 states. "[t]he model predicts that settling of drilling fluid and drill cutting particles will not occur before Water Quality Standards (WQS) are met at the mixing zone boundary." It seems that this is trying to say that the muds and cuttings wi1l settle out and meet WQS at the edge of the mixing zone. If WQS will not be met then it would seem that a larger mixing zone should be considered.

DEC Clarifies Content in Fact Sheet Section 6.2.3.1

DEC understands how this discussion may be confusing, especially when two lead-in sentences are not considered as an introduction to the topic, which is whether or not large particles of drill cuttings would have enough time during the 90th percentile current to settle to seafloor to form a zone of deposit. The first sentence states that water quality criteria for turbidity is met in the

water column prior to the 100 meter mixing zone boundary and the second sentence indicates settling to form a deposition is unlikely. The sentence illustrated in the comment supports this by stating that the mixing zone results do not predict a zone of deposition during the 90th percentile current because the particles move horizontally in the current rather than vertically due to Stoke's Law. Hence, the Cornell Mixing Zone Model (CORMIX) predicts that even the coarser cuttings remain suspended in the 90th percentile current. However, at 10th percentile, a 25-foot radii zone of deposit is predicted but becomes resuspended during the next 90th percentile current. Hence, the zone of deposit at the Sabre Project Site is temporary.

No changes to the Fact Sheet have been made as a result of this comment.

2.1.9 Comment: Domestic Wastewater and Graywater Mixing Zones

EPA points out that all of the mixing zones for domestic wastewater and graywater have the same authorized acute and chronic dilution factors but the size of the mixing zones are not consistent and vary from 127 meters to 35 meters. DEC must explain how site specific conditions may affect dilution.

DEC Explains Facility-specific Mixing Zones for Domestic and Graywater

DEC establishes for the first time in the Permit a maximum technology-based effluent limit (TBEL) developed using case-by-case best professional judgement (BPJ) for total residual chlorine (TRC) of 1.0 milligrams per liter (mg/L). Previously, TRC limits were as high as 13.35 mg/L as there was no dechlorination treatment step that is now imposed by the new TBEL. With the imposition of dechlorination and the TBEL of 1.0 mg/, all dilution factors authorized should be the same and allows DEC to develop standardized mixing zones for many of the discharges. However, there are a handful of discharges where either the flow rate is much higher or the configuration of the outfall is not well known, requiring a sensitivity analysis to determine the appropriate size of the mixing zone needed to ensure meeting water quality criteria prior to the boundary. These methods were discussed in the mixing zone section for domestic wastewater.

Per Fact Sheet Section 6.2.3.4, "The standardized mixing zone was based on a subset of the fixed platforms where site-specific analysis led to a consistent outcome. Standard mixing zones were applied to these fixed facilities as well as mobile offshore drilling units (MODUs) that must demonstrate through the Notice of Intent (NOI) process to have similar characteristics as those modeled. The remaining existing fixed platforms either did not have specific information on discharge port configuration or had flow rates that were outside the standardized flow rate assumptions. For unknown port configurations or port configurations that could not be modeled in CORMIX, the applicant conducted a sensitivity analysis around the missing port configurations to bracket reasonable outcomes. For discharges with higher flow rates, DEC provides a mixing zone appropriately sized for the staffing needs of the existing facility, port configuration, and receiving water conditions at the facility."

Per Fact Sheet Section 6.2.3.4, different flow rates and outfall configurations led to facility-specific mixing zones that could not meet water quality criteria using the standardized mixing zone size.

No modifications to the Fact Sheet have been made based on this comment.

2.1.10 Comment: Three 300 Meter Mixing Zones Rather than Two

EPA points out a potential discrepancy in text in Fact Sheet Section 6.2.3.5 that indicates there are two miscellaneous discharge mixing zones sized to be 300 meters rather than 100 meters. Table 26 shows there are three such 300 meter mixing zones rather than two.

DEC Corrects the Number of 300 Meter Mixing Zones in Text to be Three

DEC reviewed Fact Sheet Section 6.2.3.5 and confirms that Table 26 shows the correct number of 300 meter mixing zones (three) indicating the text is inconsistent. Therefore, DEC has modified the text to indicate **three** 300-meter mixing zones to be consistent with Table 26.

2.1.11 Fact Sheet Section 6.2.5.1 TBEL for Oil and Grease

EPA indicates the following sentence in Fact Sheet Section 6.2.5.1 on page 81 may be incomplete: "The ELGs for deck drainage (Discharge 002) also requires no discharge of free oil as determined." EPA suggests adding "by Static Sheen Test" to the end of the sentence.

DEC Agrees and Adds Clarifying Text to Fact Sheet Section 6.2.5.1

DEC concurs with EPA assessment that the sentence is incomplete. However, the ELGs do not stipulate the use of the Static Sheen Test even though the permit allows for this option. The ELGs require compliance using observation of visual sheen. Therefore, the sentence has been modified to now read "The ELGs for deck drainage (Discharge 002) also requires no discharge of free oil as determined **by the presence of a film or sheen upon or a discoloration of the surface of the receiving water (visual sheen)**." The bold and underlined content is new.

2.1.12 Comment: Metals and Total Aromatic Hydrocarbons (TAH) in Table 29

EPA suggests adding metals under the WQBELs column for produced water discharges in Fact Sheet Section 7.1, Table 29.

DEC Concurs and Adds Metals to the List of WQBELs in Fact Sheet Table 29

DEC concurs with EPA that adding metals to WQBELs would be appropriate as well as TAH. Therefore, DEC has added metals and TAH to the column for WQBELS for produced water.

2.1.13 Comment: Oil and Grease Limits for Well Fluids

Per Fact Sheet Section 8.7.3, "Well completion, workover, treatment, and test fluid discharges must have no more than 42 mg/L of oil and grease in a given day and no more than 29 mg/L for any 30 day average." EPA suggests modifying the language for 30-day average as it could be implied as a 30 day running average.

DEC Concurs and Corrects Limits in Fact Sheet Section 8.7.3

DEC concurs with EPA and believes the appropriate terminology should be maximum daily limit (MDL) and average monthly limit (AML). DEC is deleting the entire text as it does not provide meaningful information. "~~Well completion, workover, treatment, and test fluid discharges must have no more than 42 mg/l of oil and grease in a given day as an MDL and no more than 29 mg/l for any 30 day average an AML~~**.**

2.1.14 Comment: WET Reporting

EPA indicates that Section 8.9.3.7 seems to stand alone and may be intended as an introductory section to subsections. In addition, Section 8.9.3.9 indicates that the Full WET Report must follow the Report Preparation Chapter 10 in the U.S. EPA 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). EPA notes that the West Coast Method should be cited unless these method guidances are the same in their respective Chapter 10.

DEC Corrects Formatting and Explains Reporting Language

DEC concurs with EPA that Fact Sheet Section 8.9.3.7 is an introductory section with the following being subsections to it. DEC has modified the document formatting to correct the misalignment of sections and subsections presented. In addition, EPA is correct in that the report requirements in the referenced method guidance is identical to that in the West Coast Methods and no modification is necessary. Hence, no correction needed for reporting.

2.1.15 Comment: Incomplete Language in Antibacksliding

EPA indicates the following sentence in Fact Sheet Section 9.0 appears to be incomplete as it does not make sense by itself: "Even if the requirements of CWA 303(d)(4) or 18 AAC 83.480(b) only applies to effluent limitations established on the basis of CWA 402(a)(1)(B), and modification of such limitations based on effluent guidelines that were issued under CWA 304(b)."

DEC Corrects Section by Adding Missing Sentences

DEC reviewed the section referenced by EPA and discovered that text has unintendedly deleted standard language during final edits of the Fact Sheet that essentially combined two paragraphs in a manner that compromises the discussion. DEC has modified the last sentence in the fourth paragraph and the first sentence in the fifth paragraph that now reads:

> "Even if the requirements of CWA 303(d)(4) or **18 AAC 83.480(b) are satisfied, 18 AAC 83.480(c) prohibits relaxed limits that would result in violations of WQS or ELGs (if applicable).**
>
> **State regulation** 18 AAC 83.480(b) only applies to effluent limitations established on the basis of CWA 402(a)(1)(B), and modification of such limitations based on effluent guidelines that were issued under CWA 304(b)."

2.1.16 Comment: Appendix B Reasonable Potential Analysis

EPA indicates the following citation may have an incorrect revision date: "*Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances, May 15, 2003*." EPA believes the correct version should be as amended through December 12, 2008.

DEC Corrects Reference to Toxics Manual

DEC concurs with EPA and has corrected the reference to the current version amended through December 12, 2008.

2.1.17 Comment: ELGs for Drilling Fluids and Drill Cuttings

EPA refers to Appendix C, Section C1.1.1 that states: "DEC developed classes of drilling fluids where Class B Fluids are oil and gas applicable to the ELGs and Class C Fluids are non-oil and gas

discharged to marine waters that are not applicable to the ELGs. Non-oil and gas drilling fluids are used in geotechnical surveys and horizontal directional drilling (HDD) projects and are not subject to the oil and gas ELGs." EPA believes it is more appropriate to state whether the ELGs apply to the drilling fluid rather than the drilling fluid is applicable to the ELGs.

DEC Modifies Text to be More Accurate and Concise

DEC concurs with the EPA comment that this discussion should be stated in a manner to address whether the ELGs are applicable, or not, to the type of fluid and their intended use. DEC has modified this text to reverse the emphasis in the following manner:

> "DEC developed classes of drilling fluids where Class B Fluids are oil and gas **fluids** applicable ~~to~~ **under** the ELGs and Class C Fluids are non-oil and gas **fluids** discharged to marine waters that are not applicable ~~to~~ **under** the ELGs. Non-oil and gas drilling fluids are used in geotechnical surveys and horizontal directional drilling (HDD) projects and are not subject to the oil and gas ELGs."

2.1.18 Comment: WQBEL for Copper in Produced Water at Trading Bay

EPA indicates Fact Sheet Appendix C, Section C.2.5 states: "[t]he MDL and AML are based on a maximum expected concentration (MEC) derived from mass balance equal to 23.82 micrograms per liter (ug/L), a calculated coefficient of variation (CV) of 0.21, and an assumed four samples per month." This CV, equal to 0.21, may be incorrect because it is different than the CV listed for copper in the Input Parameters and is the same as that for TAH. Hence, it appears that the CV for TAH was used for copper. Meanwhile, the Input Parameters for copper indicate a CV = 0.502, which is different from both of these other CV values. DEC needs to reconcile these discrepancies.

DEC Corrects Coefficient of Variation for Copper for Trading Bay Limit Derivation

DEC reviewed Fact Sheet Section C.2.5 and discovered two typographic errors associated with the CV values used for copper. The typographic errors were the CV = 0.21 in text and a CV = 0.502 in the Input Parameters list. The correct CV = 0.533 for both cases. DEC checked the resulting values to ensure that these inappropriate values were not used in the calculations. All of the calculations correctly applied the 0.533 CV value. Based on this comment, DEC has modified the text in Section C.2.5 by replacing the incorrect CV value of ~~0.21~~ in the text with **0.533** as well as replacing the incorrect Input Parameter ~~0.502~~ with **0.533**.

2.2 Comments Submitted by RCAC

2.2.1 Preface of RCAC Authority and Comments

RCAC is one of two citizen councils in Alaska established through the Oil Pollution Act of 1990 (OPA 90). Per 33 U.S.C. 2732(d)(6), RCAC duties include the review of permits and regulations governing the activities and actions of oil terminal facilities which affect, or may affect, the environment in the vicinity of the terminal and make appropriate recommendations regarding terminal operations or agency actions. RCAC also has a duty to monitor, through its Terminal and Oil Tanker Operations and Environmental Monitoring Committee, the environmental impacts of the oil terminal operations in Cook Inlet [33 U.S.C. 2732(e)]. Furthermore, RCAC is authorized to conduct their own scientific research and to review the scientific work undertaken by, or on behalf of, the oil terminal operators as a result of a legal requirement (e.g., a permit

condition) to undertake that work [33 U.S.C. 2732(d)(8)]. Accordingly, the RCAC submitted comments on the Draft Permit and Draft Fact Sheet to DEC on May 30, 2019.

The comments submitted by RCAC included policy statements that DEC should impose the most stringent requirements, zero discharge for oil and gas facilities and activities in Cook Inlet. RCAC fails to provide a scientific rationale as to the practicality of such limitations or a demonstration that the discharges from the oil and gas industry over a 50-year period has had an adverse impact on the environment that would support DEC taking that extreme position. Although RCAC has the duty to monitor environmental impacts per 33U.S.C 2732(e), RCAC has not provided peer-reviewed scientific data to support their assertions but rather suggest that zero discharge, and other limitations, be imposed as protective measures until such data becomes available. Yet a substantial list of relevant studies conducted abroad and from Cook Inlet indicate these measure are not necessary based on the observed impacts, or more precisely, the lack thereof. While RCAC seeks due credit for the recent Integrated Cook Inlet Environmental Monitoring and Assessment Program (ICIEMAP) study, which resulted in the peer-reviewed 2010 Cook Inlet Produced Water Study Report (2010 PWS), they failed to cite conclusions from these reports that indicate adverse impacts from oil and gas discharges are occurring. These studies concluded that available data does not support there being adverse impacts due to oil and gas discharges. Meanwhile, EPA who has the responsibility to evaluate whether zero discharge is technically feasible in Cook Inlet also considered existing Cook Inlet environmental impacts when reevaluating zero discharge in 40 CFR 435. EPA found that zero discharge is not consistently attainable for oil and gas facilities in Cook Inlet nor is zero discharge supported based on the evidence in numerous field studies where no adverse impact to Cook Inlet due to discharges from oil and gas facilities has been observed (See Comment Responses 2.2.2.19, 2.4.1, 2.4.1.4, and 2.5.2.3).

Given the scientific and factual nature of RCAC authority granted under OPA 90, RCAC has not provided a definitive, targeted need for imposing environmental studies in APDES permits and has failed to provide adequate justification to support the rigorous environmental studies they desire the industry to conduct on their behalf. Nonetheless, DEC remains open to future studies where an underlying concern has not already been addressed by historic or recent studies that have been adequately peer-reviewed.

2.2.2 Specific RCAC Comments

2.2.2.1 Comment: Drilling Fluids and Drill Cuttings

RCAC strenuously objects to the change in the Permit to allow discharges of drilling fluids and drill cuttings from new sources that was disallowed in the 2007 GP. Allowing these discharges from new sources in the Permit could represent a huge source of new pollutant inputs to Cook Inlet where up to 50 production wells could be drilled at a single production facility. In addition, DEC expanded coverage for drilling fluids and drill cuttings for geotechnical investigations and HDD. This seems to contradict Fact Sheet Section 10.4.1.2 that states “In the context of the Permit, there are no increases in permitted loads or concentrations to existing, previously regulated discharges other than that for produced water per Section 10.4.1.1. All of the limitations have stayed the same or have decreased in the Permit. Although the discharge of drilling fluids and drill cuttings now encompass non-oil and gas activities, there are no increases

in permitted load or concentrations; the geotechnical survey or HDD discharges generally have the same characteristics, or better, as oil and gas discharges and have similar limitations when applicable." RCAC states that allowing new sources in the Permit is problematic for the following five reasons:

1. Is not detailed in the Fact Sheet as a change;
2. Is not clearly delineated in the Draft Permit;
3. Is not addressed by either the Environmental Monitoring Program (EMP) or the Drilling Fluids Plan (DFP) requirements outlined in the Draft Permit;
4. Has not had an antidegradation analysis performed; and
5. Was not discussed as a change at public meetings in Homer and Anchorage.

DEC Provides Adequate Information and Discussion to Support Decisions

RCAC may be conflating two different terms in this comment: new facilities (or new dischargers) and new sources. The difference between these two terms is explained in Comment Response 2.5.2.8.6. Per definitions, only the Furie and Osprey represent new sources in the Permit. DEC assumes that RCAC is correctly referring to new sources instead of new facilities or new dischargers. If RCAC meant to comment on new facilities, DEC refers them to Comment Response 2.5.2.8.1.

RCAC indicates they don't believe that DEC provided enough discussion in the Fact Sheet or the public meetings about the allowance for new source facilities in the Permit. DEC disagrees, Fact Sheet Section 3.4.3 adequately discussed removal of the previous prohibition to new sources introduced by EPA in the 2007 GP. Per the second paragraph, third and fourth sentences "Upon review of the applicable New Source Performance Standards (NSPS) for offshore and coastal waters of Cook Inlet, implementation of the NSPS limitations does not change the proposed limits or the implementation of the Permit. Therefore, this prohibition is being removed from the Permit." Since the removal of this prohibition did not affect any other requirement in the Permit, it was not necessary to provide further details in either the Fact Sheet or the Permit. In addition, the history of the prohibition was discussed in significant detail previously by EPA, which indicated the intent of the prohibition was not to disallow such discharges, but rather it was necessary because of National Environmental Policy Act (NEPA) requirements associated with federally issued NPDES permits. A new source determination requires EPA to conduct a NEPA assessment, which could not be done a priori in a general permit unless the facility is able to be included in the NEPA process and the issuance of the general permit at about the same time. Therefore, similar to the Osprey Platform, EPA understood that a new source facility would need to be issued under an individual permit to allow for a concurrent NEPA process. Furthermore, exploration drilling, HDD, or geotechnical drilling is not applicable under the NSPS; only development and production drilling must apply the NSPS requirements. Per Comment # 1 on the 2007 GP by EPA:

> "However, the final permit selectively authorizes these discharges – the discharge of drilling fluids and drill cuttings are only authorized for exploratory and existing facilities and existing facilities are the only facilities that are authorized to discharge produced water. While the permit does not authorize these discharges for New Sources, it does not preclude future authorization. New Source operators who need to discharge drilling fluids, drill cuttings or produced water must apply for an individual permit."

Because DEC is not required to conduct a NEPA review for a permit under the APDES Program, authorization of these discharges is not precluded as indicated previously by EPA who had to impose this prohibition in order to effectively administer the 2007 GP.

RCAC suggests that the EMP and DFP requirements are applicable to new sources. As just discussed, this is not true. The requirement for the EMP originated in the 2007 GP and applies only to new exploration facilities and exploration facilities are not considered new sources under the ELGs. Per 58 Federal Register (FR) 12454, March 4, 1993 "…exploration facilities would always be existing sources." The requirement for submitting a DFP originated in the spinoff Exploration GP and was intended to be used in conjunction with the EMP for only exploration facilities to provide information on source pollutants that could potentially be tied to EMP observations. Per Comment Response 7.1 from the 2015 Exploration GP:

> "DEC reviews the DFP simultaneously with the EMP Study Plan and can request modifications to ensure these plans are compatible. In addition, the metals concentration and toxicity of the drilling fluid is monitored during the drilling process. These efforts and requirements result in ongoing knowledge regarding the concentration of EMP parameters in the drilling fluids being discharged."

Therefore, the requirements for the EMP and DFP in the Permit are for the purpose of evaluating potential impacts to nearshore environments to inform future decisions concerning whether the 4,000 meter exclusion areas are justifiable. Any other stated objective by RCAC would be based upon RCAC's internal objectives that are not intended in the Permit. New sources associated with new development or production facilities are not applicable to these requirements such that a discussion is not necessary in the Fact Sheet or Permit.

RCAC suggests DEC was required to conduct an antidegradation analysis for the inclusion of non-oil and gas drilling fluids and drill cuttings associated with geotechnical surveys or HDD projects as well as the inclusion of hydrostatic test water. First, hydrostatic test water is not a new discharge as the discharge of hydrostatic test water was included in the 2007 GP per the definition of produced water, which "means fluid extracted from a hydrocarbon reserve during development or production, ***and hydrotest water***. The fluid is generally a mixture of oil, water and natural gas. This may include formation water, injection water, and any chemicals added downstream or during the oil/water separation process." Hydrotest water was limited previously as produced water, whether commingled or not, but DEC requires meeting more stringent requirements when hydrostatic test water is not commingled; hydrostatic test water must meet water quality criteria if discharged independently (See Fact Sheet Section 3.5.2). Hence, because the limitation is now more stringent there is no increase in limited concentrations, nor is there anticipated increase in loading that is also associated with these more stringent limitations (See Fact Sheet Section 10.4.1.2). Hydrostatic test did not trigger the Tier II antidegradation analysis based on the definition per 70 AAC 70.990(75) that reads:

> "new or expanded, with respect to discharges, means discharges that are regulated for the first time or discharges that are expanded such that they could result in an increase in permitted parameter load or concentration or other changes in discharge characteristics that could lower water quality or have other adverse environmental impacts."

Because hydrostatic test water was regulated previously and there is no increase in pollutant loadings or concentrations, nor will the discharge result in adverse impacts, DEC is not required to conduct an antidegradation analysis as stipulated in 18 AAC 70.016(c)(3). Similar conditions exist for the discharge of drilling fluids and drill cuttings.

Although the permit includes discharges of drilling fluids from non-oil and gas entities, the drilling fluids used by these entities are not dissimilar from those used by oil and gas entities (See Fact Sheet Sections 4.1.2 through 4.1.4). There are limited concentration-based limits for drilling fluids and are primarily based on source control for barite metals and chemical toxicity. Drilling fluids for oil and gas require the Sediment Particulate Phase (SPP) toxicity to be greater than 30,000 parts per million (ppm). For non-oil and gas fluids, the SPP toxicity must be greater than 500,000 ppm, which is less toxic. For barite metals, both oil and gas and non-oil and gas drilling fluids must limit mercury to less than 1 milligram per kilogram (mg/kg) and less than 3 mg/kg for cadmium. Hence, the limited concentrations on drilling fluids and drill cuttings in the Permit have not expanded due to inclusion of non-oil and gas discharges. Nor have there been any adverse impacts observed associated with decades of discharges of drilling fluids and drill cuttings in Cook Inlet based on existing studies conducted to date.

While RCAC may speculate the inclusion of non-oil and gas discharges has the potential for increased pollutant loadings, the updated evaluation by DEC on the anticipated volumes that could be discharged during the five-year term of the Permit did not result in this finding. Per Fact Sheet Section 4.1.5, DEC conducted a detailed and critical review of discharged volumes from end of well (EOW) reports that have occurred over approximately 20 years from oil and gas activities as well as recently reported discharge volumes from non-oil and gas activities. These estimates were compared to the estimates previously provided in the Environmental Assessment (EA) prepared for the 2007 GP and the Ocean Discharge Criteria Evaluation (ODCE) developed for the Exploration GP and DEC found that the volumes estimated in the Permit are lower than those previous estimates. In the review, DEC based the volume estimates on real data rather than projected data from applications, which were significantly conservative. Hence, the refined evaluation of actual drilling fluid discharges allowed for the inclusion of non-oil and gas discharges of drilling fluids and drill cuttings such that the total of non-oil and gas with oil and gas volumes are not anticipated to be increased beyond previous estimates. Because the loadings for drilling fluids and drill cuttings is not increasing from the 2007 GP or the Exploration GP, an antidegradation analysis was not required.

Information presented at public hearings is intended to provide an overview of the permit focusing on those elements that are deemed to be the most significant; any omission of information during the public meetings was based on prioritization of the primary discussion points over a limited time allocation. Elements deemed nonessential were not discussed.

No changes to the Draft Permit or Fact Sheet have resulted from this comment.

2.2.2.2 Comment: Permit Table 1 – Table of Submissions

RCAC believes the various submittal requirements described in Permit Table 1 are unclear and do not provide for public review or evaluation. For example, some submittals are to be submitted to just the WDAP and some just to the Compliance and Enforcement Program (CEP) and it is not clear why or whether the internal DEC programs collaborate.

DEC Not Required to Explain Internal DEC Coordination in the Permit

The public review of the Draft Permit fully satisfies the public involvement requirements per 18 AAC 15 and 18 AAC 83. If a future decision associated with issuing an authorization requires additional public comment (e.g., mixing zones for HDD), the additional public review requirement is clearly identified in the Permit. Submittals provided to CEP are needed to demonstrate compliance with the Permit requirements and do not require an action or nonobjection from WDAP. However, some submittal requirements in the Permit require WDAP review and action or nonobjection determinations, but these do not require additional public review. An example of this is the EMP and DFP where WDAP may provide comments back to the permittee before final acceptance. Once the EMP or DFP has reached final acceptance by WDAP, this is communicated to CEP as meeting the submittal requirements. Current internal collaboration and deliberative procedures at DEC are not regulatory requirements and would be unnecessary and inappropriate to be described in the Permit. Furthermore, acceptance of submittals under the Permit, including but not limited to, NOIs, DFPs, EMP Plans, Best Management Practices (BMP) Plans, and Chemical Inventories are also not applicable to public review for approval. However, this information can be obtained by the public upon submitting a request for information to DEC.

No changes to the Draft Permit or Fact Sheet have resulted from this comment.

2.2.2.3 Comment: BMP Plan Submittals

RCAC indicates there are inconsistent or potentially confusing requirements for submitting BMP Plans per Permit Sections 5.2.2 and the specific BMP requirements for Cooling Water Intake Structures (CWIS) in Permit Section 5.2.9.6 and Fact Sheet Section 11.3.1.6. RCAC states that Permit Table 1 – Submissions should include BMP Plan submittals prior to discharge per Permit Section or with the Notice of Intent as required in Permit Section 5.2.9.6.

DEC Removes Typographic Error by Deleting Inappropriate Sentence

DEC disagrees that BMP Plans in their entirety must be submitted per Permit Section 5.2.2 and be included in the Permit Table of Submissions. The requirement to submit BMP Plans in Section 5.2.2 was not intended and contradicts the intended requirement for the permittee to submit a certification that the BMP Plan has been developed and implemented. The sentence requiring submittal prior to discharge has been deleted from Permit Section 5.2.2 as shown below:

> "The permittee shall develop and implement a BMP Plan which achieves the objectives and the specific requirements listed below~~. The Permittee shall submit the initial BMP Plan to the Department prior to initiating a discharge under this Permit.~~ Any existing BMP Plans may be modified for compliance with this Part."

The specific BMP for the CWIS is required to be submitted as part of the NOI procedure as described in Fact Sheet Section 11.3.1.6. However, this submittal requirement was unintentionally left out of Permit Section 5.2.9.6. To be clear and consistent with the intent described in the Fact Sheet, the third sentence in the third paragraph of Permit Section 5.2.9.6 has been modified to read as follows:

> "However, the Department **requires the CWIS BMP be submitted with the NOI, if applicable, and** 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 this Permit."

Note also that the Permit Appendix F - *CWA PART 316(B) COOLING WATER INTAKE STRUCTURE (CWIS) REQUIREMENTS* is included in the Permit. This was done with the intent that the permittee must comply with this requirement as part of obtaining coverage.

No changes to the Draft Permit or Fact Sheet have resulted from this comment.

2.2.2.4 Comment: Detail in Permit Figure 1 – Coverage Area Map

RCAC indicates the coverage area map lacks sufficient detail on areas that are prohibited such as Kamishak Bay and other southern locations in Cook Inlet and the resolution of the map makes it difficult to visualize exclusion areas including shoreward of the five and 10 meter isobaths. Although RCAC appreciates the attempt to redraw, the quality is still significantly lacking.

DEC Provides Appropriate Level of Detail in Coverage Area Map

DEC disagrees that quality of the area coverage map is significantly lacking. The map is not intended to provide that level of detail because 1) exclusion areas are described contextually in the Permit Sections 1.6.2 through 1.6.6, and 2) the applicant is required to submit evidence to the Department in an NOI that reasonably demonstrates compliance with the exclusion areas per Permit Section 1.6.1. Increasing the level of detail in the area coverage map would not absolve the applicant from complying with the restrictions as described in the Permit.

No changes to the Permit or Fact Sheet have resulted from this comment.

2.2.2.5 Comment: Language for Fixed Versus Mobile Facilities

RCAC comments that Permit Sections 1.6.2 and 1.6.3 are confusing with respect to which facilities, fixed or mobile exploration, and which discharges are allowable within the 10 meter to 5 meter isobaths. RCAC believes that the wording in these sections originated from the 2007 GP and, as a result, is unclear. RCAC correctly indicates that drilling fluids and drill cuttings are prohibited shoreward of the 10 meter isobaths but all other discharge could occur between the 10 meter to 5 meter isobaths and points out that whether the discharge is from a mobile or fixed facility is not apparent. RCAC recommends the GP be modified to clarify this concern. In addition, RCAC strongly opposes allowing discharges within the 10 meter to 5 meter isobaths because spring tides could result in there being insufficient water depth and allow deposition of contaminants into down current sensitive intertidal habitat, risking deposit-feeding infauna and higher-level predators.

DEC Provides Clarifying Language for MODUs in Permit Sections 1.6.2, 1.6.3, and 1.6.4

DEC agrees that the wording in Permit sections 1.6.2 and 1.6.3 need clarification for which facilities are applicable. Similar but slightly different wording emerged between the 2007 GP and AKG315100 – Oil and Gas Mobile Exploration in State Waters of Cook Inlet issued in 2015 (2015 Exploration GP). The intent of these sections is to restrict the discharge of drilling fluids and drill cuttings into water less than 10 meters because the vertical distance and currents could result in settling of the drill fluids and drill cuttings rather than dispersal into the water column or

widespread mixing into the littoral drift. Because either mobile exploration or fixed facilities have the potential to discharge drilling fluids and drill cuttings, there is no need to attempt to distinguish between the two facility types. This intent was correctly described in Fact Sheet Section 3.3.1 but was not described in the same context in the Permit. Therefore, Permit Sections 1.6.2 and 1.6.3 have been modified so the requirements are applicable to all oil and gas facilities as follows:

> Permit Section 1.6.2 "**Offshore and coastal** ~~MODUs conducting~~ oil and gas ~~exploration~~ **facilities** are prohibited from discharging Drilling Fluids and Drill Cuttings shoreward of 10 meter mean lower low water (MLLW) isobaths."
>
> Permit Section 1.6.3 "**Offshore and coastal** ~~All fixed platforms or MODUs conducting~~ oil and gas ~~exploration, development, or production~~ **facilities** are prohibited from discharging shoreward of the 5 meter isobaths."
>
> Permit Section 1.6.4 'This Permit prohibits discharges from ~~fixed platforms, onshore production facilities, or MODUs conducting~~ **offshore or coastal** oil and gas ~~exploration, development, and production activities~~ **facilities** at the following locations in the area of coverage, with certain exceptions **as** described in Section 1.6.4.5."

Upon review of other Permit sections affected by simplifying the language, DEC has modified the following sections as an outgrowth of this comment.

> Permit Section 1.5.1 "This Permit authorizes and places conditions on discharges from ~~mobile~~ oil and gas exploration**, development, and** ~~fixed platforms, and onshore~~ production facilities **(including shore-based coastal facilities)** that ~~are located within~~ discharge to Cook Inlet…."
>
> Permit Section 1.6.4.5.1 "~~Exploration MODUs~~ **Oil and gas exploration facilities** that meet the requirements for permit coverage per Section 1.3 may discharge within 1,000 meters of the boundary of the Trading Bay SGR."
>
> Permit Section 1.6.5 "Discharges from ~~fixed platforms, onshore production facilities, or MODUs~~ **oil and gas** facilities **(including shore-based coastal facilities)** are prohibited within tracts identified as being within Critical Beluga Habit Area 1 in the Alaska Department of Natural Resources (DNR), Division of Oil and Gas (DOG) Mitigation Measure: Cook Inlet Area wide 2017W, revised April 2017."
>
> Permit Section 1.6.6 "For this Permit, discharges from ~~fixed platforms, onshore~~ **oil and gas facilities (including shore-based coastal facilities)** ~~production facilities, or MODUs conducting oil and gas exploration, development, or production~~ are…"

2.2.2.6 Comment: 1,000 or 4,000 Meter Exclusion Areas

RCAC supports the 4,000 meter exclusion near sensitive areas (e.g., mouths of rivers) but DEC does not include other notable rivers (i.e., Swanson River) or other smaller streams and creeks that are anadromous. In addition, RCAC states that a 4,000 meter exclusion is not applicable to the mouth of the McArthur River because of an exception in Permit Section 1.6.4.5.1 that allows exploration between 4,000 meters to 1,000 meters of the Trading Bay State Game Refuge (SGR). The 4,000 meter exclusion to rivers should be adhered to despite the exception granted in Section

1.6.4.5.1 and should also include any other waters listed as anadromous by the DF&G. In addition, RCAC states that there should be a 4,000 meter exclusion from Anchor River to the Southern Boundary of the Clam Gulch CHA. Regardless of whether regulatory authority to exclude these areas is exercised, DEC has authority to require fate and effects studies to ensure these areas are protected from nearshore discharges of drilling fluids and drill cuttings.

DEC Explains the History and Inappropriateness of the 4,000 Meter Buffer

RCAC is incorrect in their interpretation of the exception to excluded locations in Trading Bay SGR. The exclusion from discharging within 4,000 meters of a river is not overridden by the requirements of Permit Section 1.6.4.5.1. The exception described in this section applies to the boundary of the SGR and not the shoreline or the mouth of the river. Hence, it is possible for an exploration facility to both be closer than 4,000 meters to the SGR but still be greater than 4,000 meters from the mouth of the river. For example, the Sabre Project is approximately 3,200 meters from the SGR boundary but over 8,000 meters from the mouth of the Swanson River.

DEC disagrees that the exclusion from 4,000 meters from a river should be applied to any anadromous stream or the shoreline from Anchor River to the Clam Gulch Critical Habitat Area (CHA) as this would be unnecessarily restrictive without a commensurate environmental benefit. However, DEC agrees that EMP Studies should be conducted with a focus on nearshore fate and effects. The shortcoming with the existing 4,000 meter exclusions is that it was established without a scientific basis (See Fact Sheet Sections 2.2.2 and 2.2.3.1). Furthermore, the studies conducted to date were at locations that are inappropriate for evaluating nearshore fate and effect as the locations were in sediment deprived benthic environments scoured by Cook Inlet currents. Requiring an EMP Study to determine whether the 4,000 meter exclusion is necessary to protect nearshore environments while disallowing studies to occur between 4,000 and 1,000 meters is a circular argument.

No changes to the Permit or Fact Sheet have been made as a result of this comment.

2.2.2.7 Comment: EMP and DFP Exemptions to 4,000 Meter Exclusion

RCAC comments that Permit Section 1.6.4 does not require an EMP Study for Class B1 or all Class C drilling fluids. For Class B2 and B3 drilling fluids, an EMP Study is required for locations between the 4,000 meter and 1,000 meters from shore. Whereas, all Class C drilling fluids can be discharged anywhere in state waters or the territorial sea of Cook Inlet without an EMP Study and RCAC opposes these discharges. RCAC states "If permitted, there must be EMP requirements for all discharges, but recommends additional monitoring as detailed below." However, no details on recommended EMP requirements were provided.

DEC Explains Why Certain Classes of Drilling Fluids are Exempted from EMPs and DFPs

DEC developed drilling fluid categories because not all drilling fluids have chemical compositions or volumes discharged that warrant an EMP Study. Class B1 and Class C1 drilling fluids are similar and are comprised of a single drilling fluid typically made of clay and possibly one other additive, excluding barite, and has a SPP 50 % lethal concentration (LC_{50}) greater than 750,000 parts per million (ppm) making them characteristically simple and nontoxic. Accordingly, Class B1 and Class C1 drilling fluids are not required to have an associated EMP Study due to their nontoxic characteristics. For Class C2 and C3 drilling fluids, although there is

no limit to the number of chemical additives each must have an LC_{50} greater than 500,000 ppm and a DFP that helps ensure maintaining this low level of toxicity. Because a DFP is a conservative toxicity estimating tool, the permittee may opt to submit a sample of the worst case fluid identified in the DFP for SPP analysis in order to demonstrate compliance with this toxicity level. Lastly, both Class C2 and C3 drilling fluids are applicable to HDD or geotechnical activities that require drilling fluid recirculation that limit the volumes discharged on an intermittent basis. HDD discharges occur only when the drill exits the seafloor, discharging the drilling fluids in the borehole until the hydrostatic pressure in the borehole equilibrates with the seawater levels. Geotechnical fluids, which may include barite to offset pressure from artesian aquifers known to exist in Cook Inlet, recirculates drilling fluid to the drill deck and the discharge is limited to the volume of drilling fluids that may remain in the riser pipe as it is lifted to the drill deck. Hence, the discharge from HDD occurs once, or twice if a pilot borehole is necessary, and the volume of the discharge is limited by the borehole diameter and length. The discharge from the borehole once it exits the seafloor is high velocity, pointed upward, and creates a plume that disperses rapidly in Cook Inlet. Discharges from a single geotechnical borehole are very small in comparison, but there can be many over a larger area depending on the geotechnical program. Neither HDD nor geotechnical drilling fluid discharges require an EMP to reasonably demonstrate no adverse effects. These drilling fluids are quite different from Class B2 or B3 fluids that may have volumes and chemical additives that warrant a higher level of concern. Whereas, the limited volumes and low toxicity of Class C drilling fluids does not warrant the same level of concern.

No changes have been made to the Permit or Fact Sheet based on this comment.

2.2.2.8 Comment: Coverage Area Limited to Lease Tracts in Cook Inlet

RCAC comments that the limitation for discharges at locations in Permit Section 1.6.4 for west Cook Inlet south of Kalgin Island is appropriately limited to only those locations allowed by the most current lease area boundary of the DNR. RCAC supports these prohibitions due to proximity to nearby sensitive areas.

DEC Appreciates Support for Limits to Coverage Area per Lease Tracts

DEC appreciates RCAC support for this area limitation. DEC points out that if the lease area increases, so does the coverage area to allow for discharges. However, these discharges must still meet other area exclusions (e.g., 4,000 meters from river mouths).

No changes have been made to the Permit or Fact Sheet based on this comment.

2.2.2.9 Comment Recommendations for Diesel Oil Monitoring in Permit

RCAC recommends that along with the specification of the appropriate method for detecting diesel in drilling fluids per Permit Section 2.2.2.1.5 it should also specify reporting diesel range organics (DRO). The concern is that the contracted laboratory, unless directed by the permittee, could run the test with a standard analyte list that does not include diesel oil.

DEC Appreciates but Declines Recommended Changes

DEC appreciates the recommendation. However, compliance with this requirement is not based on DRO concentration, it is based on a comparison of the fingerprint of onboard diesel sources

with that observed in the drilling fluid sample. The comparison to onboard diesel demonstrates whether diesel fuel may have been used as an additive, rather than naturally occurring. Per Permit Section 2.2.2.1.5, "In all cases, the determination of the presence or absence of diesel oil must be based on a comparison of the fingerprint of the sample and of the diesel oil in storage at the facility."

No modifications to the Permit or Fact Sheet have been made based on this comment.

2.2.2.10 Comment: Monitoring of Parameters in Graywater Discharges in Permit

RCAC points out that per Fact Sheet 4.4, the primary pollutants of concern for graywater are biochemical oxygen demand (BOD), total suspended solids (TSS), and floating solids, foam, garbage, and oil. Although identified in the fact sheet, Permit Section 2.5 does not require monitoring that can be used to verify compliance with secondary treatment standards per 18 AAC 72.050 or that the discharge meets 30 percent (%) removal requirements for five-day BOD (BOD_5) and TSS. RCAC recommends including monitoring requirements for graywater, or, in the absence of requiring monitoring all facilities, rather than just the existing facilities, must be required to participate in the graywater characterization study per Permit Section 5.6. Furthermore, Permit Section 5.6 should be revised to include monitoring for BOD_5 and TSS.

DEC Explains Regulatory Framework and Permitting of Graywater

DEC appreciates the recommendations. However, DEC believes in the case of domestic wastewater on existing oil and gas facilities, overly specific requirements cannot be implemented for each facility and each facility is better suited to an individualized approach as described in Permit Section 5.6. As discussed in Fact Sheet Section 3.5.4.1, the varied configuration of existing facilities were often established without consideration for how resulting discharges would comply with 18 AAC 72. The permittee conducting an independent assessment for each individual situation is the appropriate approach in addressing this situation during the next reissuance. RCAC should understand that the domestic wastewater characterization study only applies to existing facilities because any new facilities must comply with 18 AAC 72 as part of obtaining a permit to discharge. Similarly, per Permit Section 2.5, "Graywater is considered domestic wastewater and any new facility must meet the requirements in the most current version of 18 AAC 72 to allow the discharge of graywater separately from domestic wastewater under Discharge 004 of this Permit." In addition, "existing facilities with an existing authorization to discharge graywater may continue to discharge but must conduct a characterization study per Section 5.6 during the term of this Permit." Permittees must submit a Sampling and Analysis Plan (SAP) for each individual discharge of graywater for Department review. Because the purpose of the characterization is to evaluate compliance with 18 AAC 72.050, which specifies meeting limits or removal requirements for BOD_5 and TSS, DEC does not believe it is necessary to be overly specific in the permit when DEC will review the SAP.

The determination that a graywater primary treatment system attains 30 % removal of BOD_5 and TSS is determined through direct application of 18 AAC 72.060. Because a DEC waiver to secondary treatment per 18 AAC 72.050 is a condition that must be satisfied prior to obtaining an authorization to discharge graywater, sampling of the influent and effluent for BOD_5 and TSS is not necessary in the Permit.

No modifications to the Fact Sheet or Permit have resulted from this comment.

2.2.2.11 Comment: Monitoring of Oil and Grease on Water Surface

RCAC appreciates the inclusion of stipulating that water surface observations of graywater discharges for sheen must be conducted during daylight during the maximum estimated discharge.

DEC Appreciates RCAC Support

DEC appreciates RCAC support for this requirement.

No modifications to the Fact Sheet or Permit have resulted from this comment.

2.2.2.12 Comment: Miscellaneous Discharge Requirements are Confusing

RCAC comments that they find Table 9 in Permit Section 2.6.1 confusing because there are multiple discharges that have varying requirements that are difficult to ascertain. As an example, flow and chemical monitoring apply to each of the 10 discharge but chronic toxicity monitoring only applies to three discharges and visible sheen monitoring only applies to five discharges. RCAC recommends adding another column to Table 9 to clarify requirements.

DEC Explains Requirements and Adds Clarifying Language to Fact Sheet

DEC disagrees that an additional column would add significant clarification beyond that already sufficiently addressed in Section 2.6.3 of the Permit and Fact Sheet 8.5.2 for observation of visible sheen, or in appropriate circumstances, using the Static Sheen Test. The discussion for no visible sheen begins in Fact Sheet Section 4.5 and provides both generalized characteristics as well as specific characteristics evaluated for discharges from existing facilities authorized under the Permit. Further discussion on permit requirements is also explained in details of Appendix C Sections C.1.2 and C.1.2.1.3 of the Fact Sheet. For example, only those discharges that have the potential to contain oil and grease require monitoring for visible sheen. Discharges such as Desalination Unit Waste, Boiler Blowdown, Fire Control Test Water, Noncontact Cooling Water, and Waterflooding Wastewater do not have the potential to come into contact with oil or grease. Furthermore, there are certain discharges that do have the potential for oil and grease but are not discharged in a manner that would allow for the option of conducting a Static Sheen Test such as Blowout Preventer Fluid, which is discharged beneath the water surface as a result of a blowout preventer test. Ultimately, the various requirements will be established on each Discharge Monitoring Report (DMR) created so any lingering confusion will not result in failed monitoring.

For conducting WET monitoring, Permit Section 2.6.6 provides the requirements for only three of the miscellaneous discharges based on characterization of all existing miscellaneous discharges discussed in Fact Sheet Section 4.5. Fact Sheet Sections 4.5.1 through 4.5.10 discuss possible general characteristics and, when appropriate, provides specific details on existing discharges evaluated that result in specific permit requirements. The review of chemical dosing practices and volume of discharges for existing facilities by DEC indicates that only three discharges have both chemical addition and possible discharges greater than 10,000 gallons per day (gpd): Desalination Unit Waste, Noncontact Cooling Water, and Waterflooding Wastewater. Note also that if a new facility seeks coverage for miscellaneous discharges, DEC has authority to address this issue via plan reviews under 18 AAC 72 to either disapprove chemical use or restrict the use to a small volume in order to ensure compliance with the GP. However, upon

review of Fact Sheet Section 4.5.4, DEC determined that an additional sentence at the end of the paragraph would provide more clarification with respect to specific fire control test water characteristics for existing facilities. The following sentence has been added to the end of the paragraph in Fact Sheet Section 4.5.4:

> **"Based on evaluation of fire control test water discharges from existing facilities, no chemicals are being used indicating chronic toxicity would not be present in fire control test water under the Permit."**

2.2.2.13 Comment: Miscellaneous Discharges and Oil and Grease Monitoring

The Permit requires monitoring for oil and grease from miscellaneous discharges such as Blowout Preventer Fluid, Uncontaminated Ballast Water, Bilge Water, Excess Cement Slurry, and Mud, Cuttings, and Cement at the Seafloor by visual observation or by Static Sheen Test as an option. These requirements differ from requirements for monitoring oil and grease in discharges of deck drainage and hydrostatic test water where Static Sheen Tests must be used in situations where visual observation of the receiving water is not possible. The 2007 GP limited the discharge of miscellaneous discharges to those times when a visible sheen observation is possible unless the operator uses the Static Sheen Test. RCAC suggests either requiring the Static Sheen Test for all miscellaneous discharges or stipulate when discharges would be unacceptable in poor observational conditions.

DEC Explains Surface Water Monitoring Requirements and Adds Qualifying Language

RCAC misrepresents the requirement for visual observations. Discharges are not predicated on whether conditions allow for visual observations of the water surface. Instead, the observations must be made when conditions allow but the lack of such conditions does not mean discharges must cease.

As discussed in Comment Response 2.2.2.11 the use of the Static Sheen Test is not possible for all miscellaneous discharges so DEC cannot impose such requirement. However, DEC concurs that more qualifying language would be beneficial in Permit Section 2.6.3 and Fact Sheet Section 8.5.2 to indicate visual observations must be conducted during daylight hours when discharging. Therefore, the second sentence of these referenced sections has been revised with the new content bolded and underlined to read as follows:

> "Compliance is based on observation of a visible sheen on the water surface during slack tide while discharging **during daylight** or by Static Sheen Test at the permittees option."

2.2.2.14 Comment: Fire Control Test Water and Chronic WET

RCAC comments that fire control test water should also require chronic WET monitoring because per the Fact Sheet Section 4.5.4 the discharge could contain chemicals, corrosion inhibitors, and biocides, and could be discharged at a volume greater than 10,000 gpd. In addition, the 2007 GP applied this requirement because both the chemical additive and volume criteria were met.

DEC Explains Rationale for Excluding Fire Control Test Water from WET Monitoring

DEC disagrees with RCAC as there currently are no fire control test water discharges authorized for existing facilities under the 2007 GP that use chemicals (See revised language in Fact Sheet

Section 4.5.4 per Comment Response 2.2.2.12). DEC determined through detailed evaluation during permit development that the monitoring requirement in the 2007 GP was unnecessary. For new facilities that must also obtain plan approval per 18 AAC 72 in addition to an authorization under the Permit, DEC has the authority and obligation to disapprove chemical use in fire control test water discharges or stipulate that if chemicals are used that they may not be discharged in volumes greater than 10,000 gpd in order for new facilities to comply with the permit per 18 AAC 72.

No modifications to the Fact Sheet or Permit have resulted from this comment.

2.2.2.15 Comment: Chemical Use Optimization and Reporting

As in the 2007 GP, the Permit requires optimization of chemical use and annual reporting to DEC on the nature and extent of the chemicals used in miscellaneous discharges and drilling fluids. While RCAC supports this requirement, this information should be provided along with DMR data and the information in the annual reports needs to be considered by DEC when reviewing EMP Plans.

DEC Appreciate Support and Clarifies Misinterpretations

DEC appreciates RCAC support for this requirement and points out that reports required under the Permit are available to the public upon request. In addition, the chemical inventory reported for drilling fluids is not ideal information when reviewing EMP Plans. Instead, the DFP that describes the chemicals and their maximum possible concentration is a better source of information to consider during review of EMP Plans as it represents worst-case discharge scenarios. Whereas, the chemical inventory is a record of what actually was discharged, which will always be less than the worst-case scenario. However, DEC does agree that the chemical inventory could be beneficial when reviewing the final results from the EMP Plan, but at DEC discretion.

No modification to the permit for fact sheet have resulted from this comment.

2.2.2.16 Comment: Pollution Reduction BMP Revision Action Levels

The Permit uses Pollution Reduction (PR) BMP Revision Action Levels in lieu of chronic WET triggers that were established in the 2007 GP. Although the PR strategy appears to be beneficial, the new action levels are considerably higher than the previous WET triggers, except for those for the Steelhead Platform. It appears these new action levels are based on the dilution factor associated with standardized 100-meter chronic mixing zones for each affected facility instead of basing the size of the mixing zone on the individual characteristics of the discharge. The result is the mixing zones are likely larger than required when comparing the previous triggers to the current action levels indicating the possible exceedance of the action levels are unlikely and, as a consequence, a corresponding reduction in the frequency of the chronic WET monitoring likely. In addition, RCAC questions whether the authorized mixing zones are “as small as practicable” per 18 AAC 70.240(2). Meanwhile, the Fact Sheet provides chronic WET summaries that indicate very low toxicity, even lower than the triggers, and there is no explanation in the Fact Sheet or Permit for increasing PR action levels by nearly an order of magnitude compared to the triggers in the 2007 GP.

DEC Explains PR BMP Action Levels and References Fact Sheet Sections

DEC agrees that the Pollution Reduction (PR) BMP Revision Action Levels are approximately an order of magnitude greater than the previous triggers in the 2007 GP. This is because in the 2007 GP, some of the established triggers were based on evaluation of acute toxicity rather than chronic, but portrayed those values as a chronic triggers. By design, chronic triggers are established based on the chronic dilution factor authorized with the mixing zone. Once DEC realized this inconsistency, DEC established triggers based on the dilution factor at the boundary of a standardized 100-meter mixing zone and required each permittee to consider chemical dosing practices and discharge conditions during sample collection to result in a better estimate of the maximum potential chronic toxicity to compare it to these triggers (See Permit Section 2.6.6.3). Most PR action levels were only slightly higher than the estimated chronic toxicity for each discharge. However, others were significantly lower (See Comment Response 2.2.2.17).

The chronic toxicity estimates were done similar to those in the 2007 GP using acute toxicity data from Safety Data Sheets (SDSs), but these acute toxicity values were converted to chronic by applying an acute to chronic ration (ACR) as described in the *Technical Support Document for Water Quality-based Toxics Control* (*TSD*). In this situation, the TSD recommends using an ACR of 10. Hence, the PR action levels are appropriately an order of magnitude higher for this reason, which also meant the mixing zone sizes had to be increased. Meanwhile, the existing data obtained under the 2007 GP was inadequate for sizing mixing zones based on characterization of the actual chronic toxicity due to unforeseen consequences in the 2007 GP requirements (See Fact Sheet Section 6.2.3.5). The data quality and resulting situation is explained in detail in Fact Sheet Sections 4.5.5 (Noncontact Cooling Water) and 4.5.10 (Waterflooding Wastewater). Mixing zones can be determined to be as small as practicable though standardized in the manner DEC has in the Permit. The mixing zones do not impart lethality to drifting organisms, do not cause impacts to aquatic life, nor poses unacceptable risk to human health, and do not exceed the linear or aerial size restrictions of 10 % per 18 AAC 70.240(k)(1). Hence, the mixing zones are small as a practicable.

No modifications to the Fact Sheet or Permit have resulted from this comment.

2.2.2.17 Comment: Miscellaneous Discharges and Table 12 and Table 24

RCAC comments that there is a discrepancy for the Steelhead, Middle Ground Shoal (MGS) MGS-A, and MGS-C between Table 12 – PR BMP Revision Action Levels and Table 24 – Facility-specific Mixing Zones for Miscellaneous Discharges 005 through 014. The PR action levels in Table 12 relate to dilution factors for 100 meter mixing zones but Table 24 authorizes dilution factors for a 300-meter mixing zone. RCAC believes the PR action levels in Table 12 are more appropriate and that these three facilities should be limited to the same 100-meter mixing zone since no justification is provided for increasing the mixing zones for these facilities.

DEC Explains Action Levels in Context of Mixing Zones; References Fact Sheet Sections

DEC disagrees that the mixing zones for MGS-A and MGS-C be reduced to match the PR action levels that are based on dilution factors at 100 meters. DEC also disagrees with RCAC statement that there is no justification provided for authorizing 300 meter mixing zones. Justification is provided in Fact Sheet Sections 4.5.5, 4.5.10, 6.2.3.5, and 8.5.4. Mixing zone authorizations are based on characterization of waterflooding (Discharge 014) as this miscellaneous discharge

dictates the mixing zone by volume of the discharge and the degree of chronic toxicity. The degree of chronic toxicity was estimated using mass balance and knowledge of current facility dosing practices and estimates of chronic toxicity using reported acute toxicity in SDSs (See DEC Response 2.2.2.16). All mixing zones except MGS-A, MGS-C, and the Steelhead platforms have estimated toxicities that can achieve water quality criteria for chronic toxicity at the boundary of the 100 meter mixing zone (See Fact Sheet Section 4.5.10). The current discharges from MGS-A, MGS-C, and the Steelhead Platform cannot immediately meet water quality criteria for chronic toxicity at the boundary of a 100-meter mixing zone. DEC cannot issue a permit that does not ensure compliance with WQS. Therefore, DEC has authorized 300-meter mixing zones for MGS-A, MGS-C, and the Steelhead Platforms with an acknowledgement that each of these facilities will likely need to initiate the PR BMP revision process soon after the effective date of the Permit. The goal of the pollution reduction strategy is to reduce chronic toxicity for miscellaneous discharges at these facilities, along with any of the other facilities, such that a 100 meter mixing zone may be authorized during the next reissuance of the Permit. This concept is intentional and inherent in the PR strategy.

No modification to the Permit or Fact Sheet has been made as a result of this comment.

2.2.2.18 Comment: Produced Water Flow Rates are Inconsistent

RCAC comments that the flow rate limits for produced water in the Permit does not match those listed in Fact Sheet Section 4.6.3, Table 15 and appear to be rounded up for the Dillon Platform and GPTF. Table 15 shows the flows at 0.193 million gallons per day (mgd); whereas, the respective flow limits in Permit Tables 15 and 18 show these flow rates as 0.195 mgd. RCAC also calls attention to an inconsistency between flows in Fact Sheet Table 15 for MGS Onshore, 0.84 mgd, and the flow limit in Permit Table 14, 0.365 mgd. RCAC points out although it may seem insignificant the discrepancy between these values are on the same order of magnitude of some of the total discharges from other facilities and seeks clarification. RCAC also seeks clarification as to why the limited flow rates are so much higher than the actual discharge volumes listed in Table 15 and why the limited flow rates are AMLs rather than MDLs. RCAC believes that the AML flow limits allow for additional volumes being discharged when compared to those limits being applied to the MDL.

DEC Acknowledges and Corrects Round-off Errors; Reduces Osprey Flow Rates

The flow limits are lifetime projections based on the necessary produced water flow volumes predicted at the point in time the reservoir has reached the end of production life. Most of these discharge flow volumes were provided by the applicants during development of the 2007 GP and are still valid. Others have been adjusted or added based on requested changes by the permittee. These projected flow volumes establish the maximum flow rates used in sizing the authorized mixing zones in both the 2007 GP and the Permit (See Fact Sheet Section 4.63, second paragraph). In addition, the maximum projected flows are also used to evaluate the mass that can be discharged under the Permit and form the basis of whether the permitted loadings under the Permit have expanded such that a Tier II antidegradation analysis is required per 18 AAC 70.015. Applying these flow limits as an AML is appropriate as it is standard industry practice when calculating mass loadings; the maximum mass loading is determined by multiplying the

average flow rate times the maximum concentration. Alternatively, multiplying the maximum daily flow times the maximum concentration exaggerates the mass in the ecosystem.

The values in Fact Sheet Table 15 were taken from the 2007 Fact Sheet but were truncated resulting in the discrepancies between the 2007 and current Fact Sheets. Meanwhile, the discrepancies in the Permit Tables 14, 15, and 18 were typographic errors. Based on the comment from RCAC, DEC has modified Fact Sheet Table 15 to add back the truncated digits in the following manner:

- The Bruce flow was increased from ~~0.025~~ to **0.252** mgd for both 2007 and current,
- The Dillon flow was increased from ~~0.193~~ to **0.1935** mgd for both 2007 and current,
- The GPTF flow was increased from ~~0.193~~ to **0.1932** mgd for both 2007 and current, and
- The Tyonek flow was increased from ~~0.031~~ to **0.03107** mgd for 2007 but the current remained the same at 0.038.

The typographic errors in the Permit Tables for AML flow limits were corrected to be consistent with Fact Sheet Table 15 as follows:

- Table 14, MGS Onshore increased from ~~0.365~~ to **0.84** mgd,
- Table 15, GPTF increased from ~~0.193~~ to **0.1932** mgd,
- Table 17, Bruce increased from ~~0.25~~ to **0.252** mgd, and
- Table 18, Dillon increased from ~~0.193~~ to **0.1935**.

Note that these revisions did not result in a change to the net increase in flow of 0.966 mgd from the 2007 GP to the Permit. However, as a result of this comment, DEC is reducing the proposed discharge of produced water at the Osprey from ~~1.05 m~~gd to **0.07707 mgd** (1,835 barrels (bbl)), which results in no increase in authorized produced water volumes over the 2007 GP. Because there is no projected increase in authorized volumes of produced water in the Permit, a Tier II Antidegradation Analysis is no longer required. As an outgrowth of this change, DEC is modifying the fourth and fifth sentence in the paragraph below Fact Sheet Table 15 to read:

> "**However, t~~T~~**he net result is ~~an~~ **no** increase in estimated discharges under the Permit ~~of 0.966 mgd~~. **Overall**, HAK has decreased by ~~0.084 mgd~~ **77,070 gpd (Tyonek increased by 6,930 gpd while the Anna decreased by 84,000 gpd)** ~~overall~~ while CIE, a new discharger, ~~has~~ will ~~introduced~~ **offset this decrease by adding** another ~~1.05 mgd~~ **77,070 gpd (1,835 bbl/d)** due to the request to initiate discharges of produced water from Osprey Platform. Hence, the estimated total flows of produced water in the Permit indicate ~~an~~ **no** expansion due to the new addition of the Osprey **that would trigger a Tier II Antidegradation Analysis** (See Section 10.4.1)."

Fact Sheet Section 10.4.1.1 is also being modified from the sixth sentence to the end of the paragraph as follows:

> "…~~However, w~~When comparing the flow limitations between the 2007 GP and the current Permit, there ~~has been an~~ **is no** increase in total permitted flows of produced water; ~~although~~ the Anna Platform is no longer seeking authorization to discharge, **the Tyonek Platform increased by 0.07707 mgd, while** the requested discharge flow rate from the Osprey is ~~greater than~~ **equal to** the flow vacated by discontinuance of the Anna Platform **minus the increase in the Tyonek discharge** (See Section 4.6.3). Hence, the

> permitted flows under the Permit ~~have increased as a result of~~ **remained the same despite** the **addition of the new** Osprey discharge of produced water. Given there is ~~a slight~~ **no** increase in flows being authorized **overall and the concentration limits are essentially remaining the same or have been reduced (except the new but comparable limits for the Osprey, a Tier II** ~~and an~~ antidegradation analysis ~~based on produced water would be required under an individual permit, DEC is conducting an antidegradation analysis for the discharge of produced water from the Osprey Platform for reissuance of the Permit. The evaluation is limited to only the discharge of produced water and the permitted parameters from the Osprey Platform, which include oil and grease, pH, TAH and copper. DEC considers this a unique circumstance and is applying the antidegradation analysis to be transparent and this approach may not be applicable for other general permits or circumstances~~ **is not required for the Permit."**

Lastly, because a Tier II Antidegradation Analysis is no longer required and the Tier I Antidegradation Analysis is always required, DEC is adding the following sentence to the paragraph in Fact Sheet Section 10.4.1.2 that reads:

> "**Therefore, the Tier 1 Antidegradation Analysis satisfies the requirements of 18 AAC 70.015 and 10.016**."

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.2.2.19 Comment: DEC Obligation to Request Revisions to ELGs by EPA

RCAC comments that they have significant concerns over the ability of the oil and gas industry to continue to discharge, or increase discharges, of produced water into Cook Inlet. They state that the long-term projection of these discharges in the General Permit appears to be inconsistent with the projections by EPA during the 2016 Biennial Review of the ELGs. As part of their evaluation, EPA indicates that "efforts are underway to decrease the amount of produced water that needs onshore transfers, such as through injection pilot tests at several extraction platforms. Therefore, even these discharges of produced water are of a declining nature."

RCAC argues that per Fact Sheet Section 4.6.2, the ability to inject produced water into geologic formations beneath Cook Inlet is uncertain and often limited by allowable formation pressures. Meanwhile, there is an understanding that produced water discharges will likely continue to increase as the life stage of the producing formations increases. Given that the ELGs allow for such discharges, RCAC states that it is incumbent upon DEC to request reanalysis of the ELGs based on DEC intentions to allow increases in the General Permit.

DEC Is Not Obligated to Request Revisions to the ELGs by EPA

DEC is not obligated to request a reanalysis of the ELGs based on projected increases in produced water discharges over the lifetime of the facilities. There are several other key points to EPA's decision to retain the allowance of produced water discharges in Cook Inlet that weigh heavily on this decision. First and foremost is that per the *ELG Technical Development Document*:

> "the EPA concluded that evidence of environmental impacts from these discharges is, at best, limited….. produced waters are not being directly discharged to Cook Inlet by the fewer than 20 extraction platforms there but are, instead, managed through either

> injection at the platforms or transfer to onshore facilities for efficient product recovery/treatment, and, then, discharged to the inlet."

DEC is uncertain as to the scientific basis for which RCAC claims zero discharge is necessary to protect Cook Inlet. To date, none of the environmental studies conducted to evaluate impacts from oil and gas discharges have demonstrated adverse impacts are occurring (See Comment Responses 2.3.6 and 2.5.2.3). The most recent Produced Water Study completed in 2010 similarly did not indicate adverse impacts. Given the lack of evidence of adverse impacts thus far from multiple studies, there is no justifiable reason to require zero discharge based on water-quality objectives unless injection is definitively practicable and consistently available over the entire Cook Inlet Region that would justify it on a technological bases (*ELG Technical Development Document*). Per CWA 304(b),EPA is responsible for the technical evaluation in the ELGs. For example, when considering appropriate limitations for NSPS, EPA must assess factors applicable to the best practicable control technology currently available. Per CWA 304(b)(1)(B):

> "Factors relating to the assessment of best practicable control technology currently available to comply with subsection (b)(1) of section 1311 of this title shall include consideration of the total cost of application of technology in relation to the effluent reduction benefits to be achieved from such application, and shall also take into account:
>
> - the age of equipment and facilities involved,
> - the process employed, the engineering aspects of the application of various types of control techniques,
> - process changes,
> - non-water quality environmental impact (including energy requirements), and
> - such other factors as the Administrator deems appropriate

The ELGs in 40 CFR 435 are adopted by reference in 18 AAC 83.010(g)(3) and DEC primarily defers to EPA's expertise and authority, but also independently acknowledges based on local knowledge that conditions allowing for widespread injection do not consistently exist in the Cook Inlet Region.

Available formations include oil producing formations, where injection is limited due to enhanced oil recovery (EOR) objectives, and gas fields that have been depleted and no longer able to produce gas economically. Meanwhile, a pilot test conducted by Hilcorp at the Dolly Varden Platform was successful and helped reduce discharges at that platform; similar projects may be implemented in the future as appropriate. Although these projects are intended to decrease discharge volumes, they are not capable of resulting in zero discharge in Cook Inlet due to the inherent lack of formations in the region capable of receiving significant volumes of injected produced water. Rather than zero discharge, DEC promotes efficiency in product recovery and treatment at onshore coastal facilities prior to discharging produced water. Per Fact Sheet Section 4.6.2, transferring to onshore coastal facilities for oil recovery and efficient produced water treatment is the environmentally appropriate approach to controlling pollution from oil and gas platforms in Cook Inlet.

No change in the Permit was made based on this comment.

2.2.2.20 Comment: Ammonia Monitoring for Produced Water Discharges

RCAC suggests that ammonia should be monitored in all produced water because it is included as a parameter that exceeds criteria at the point of discharge, requiring a mixing zone. RCAC points out that only the Osprey Platform requires monitoring for ammonia, presumably due to the lack of existing data. The incremental cost would be minor. In addition, ammonia is an important parameter that should be monitored in conjunction with WET testing.

DEC Disagrees Monitoring of Ammonia is Necessary

DEC disagrees that ammonia should be monitored for each discharge of produced water. The decision of whether or not to monitor a parameter is not determined based on the likelihood of exceeding water quality criteria at the point of discharges but rather the likelihood that it would exceed the criteria at the boundary of the acute or chronic mixing zones. The produced water characterization in Tables 14 through 22 include ammonia data that indicates exceeding ammonia criteria at the acute or chronic mixing zones is not realistically possible; most maximum observed concentrations are below the acute criteria. Given the relatively low concentrations of ammonia compared to the overall characteristics dominated by other parameters imparting toxicity, DEC does not agree simultaneously monitoring ammonia would support WET test results. Lastly, DEC does not support monitoring when it is not necessary regardless of the cost.

No changes to the Permit or Fact Sheet has resulted from this comment.

2.2.2.21 Comment: Metal Limits Should be Lower in Permit Tables 13 through 20

RCAC points out that the order of parameters presented in Permit Tables 13 through 20 are not consistent, making comparison difficult. RCAC appreciates that DEC evaluated comprehensive data sets of historic monitoring results as this tends to result in lower limits due to increased data sets. However, this trend is not consistent with respect to metal limits as most of the previous limits have been retained but could justifiably be lowered based on the new data. The 2007 GP issued by EPA established MDLs based on the MECs for the non-driving metal parameters as well as the one driving parameter used to size the acute mixing zone. When comparing the retained limits to the corresponding monitoring data present in the characterization tables, it is apparent that many of these limits for the non-driver metals are orders of magnitude higher than the maximum observed results. This approach results in mixing zones that are larger than necessary for certain non-driver metals. And for other non-driver metals, the retained limits are inflated such that the applicable water quality criteria would be exceeded at boundary of the mixing zone (i.e., not based on the wasteload allocation).

DEC Concurs Secondary Metal Limits are Inappropriate and Removes Them in Permit

DEC disagrees that the non-driver metal parameters should have lower limits. Following reasonable potential analysis (RPA) procedures per 18 AAC 83.135(c) and the *Reasonable Potential Analysis and Water Quality Based Effluent Limit Development Guidance* (*RPA&WQBEL Guide*), there should be only one limit established for the one driving metal per discharge of produced water. The limits for non-driver parameters in the 2007 GP did not comply with DEC regulations and current policies and guidance. First, an acute mixing zone may be authorized by the Department based on the single driving metal while acknowledging that the

non-driving parameters that exceed water quality criteria at the point of discharge would be included in the mixing zone and may require monitoring. As discussed in Fact Sheet Appendix C, Section C2.2, the driving parameter for each mixing zone requires a limit because there is reasonable potential at the boundary of the mixing zone for water quality criteria to be exceeded. Only the driving parameter satisfies this condition warranting a limit. Those metal parameters and associated limits are shown in Fact Sheet Section C.2.3, Table 56 for each produced water discharge. If using current policy and guidance, all other non-driver metals would require monitoring if the possible variability of the effluent characteristics could result in that parameter being identified as a future driving parameter. If it is not possible for a parameter to be the driving parameter, monitoring is not necessary even if the parameter exceeds criteria at the point of discharge and is listed in the mixing zone (See Comment Response 2.2.2.20).

As presented in Fact Sheet Appendix C, Section C.3, rather than eliminating all of the non-driver metal limits in lieu of monitoring, DEC decided to retain these limits in the Draft Permit with a staged reduction in frequency in order to definitively demonstrate that removal of these limits is appropriate during the next reissuance. However, RCAC presents a valid argument that some of the inflated non-driving limits would exceed water quality criteria at the boundary of the authorized acute mixing zone; in this case, the wasteload for these limits are not based on the authorized dilution of the mixing zone as required by the *RPA&WQBEL Guide*. Therefore, DEC is eliminating all non-essential limits for non-driver metals for each of the produced water discharges. Instead, DEC will require monitoring at the same frequency while eliminating the potential for a monitoring reduction during the term of the Permit (See Comment Response 2.2.2.23 eliminating frequency reduction). Fact Sheet Tables 40 through 46 and Permit Tables 13 through 19 have been modified to remove the extraneous metal limits and include monitoring for these parameters. This means the metal limits for each facility is consistent with current regulations and guidance. Fact Sheet Appendix C, Section C.3 has been modified by deleting the following sentences:

> ~~**"In addition, the extraneous metal limits imposed by the 2007 GP appear to be attainable and are also being retained at a reduced frequency for the next permit term. Data collected during the next permit term will be use to evaluate the variability of the metals in the effluent to ensure extraneous WQBEL for metals are not necessary to control the effluent before eliminating them in lieu of imposing a single metal limits a surrogate for all metals."**~~

For other Fact Sheet Changes related to this comment, see Comment Response 2.5.2.5.2

2.2.2.22 Comment: Oil and Grease Limits in Permit Table 20 are transposed

RCAC points out that the MDL and AML for oil and grease limits in Permit Table 20 have been transposed.

DEC Appreciates Callout to Typographic Error

DEC appreciates calling out the typographical error and has corrected the entries referenced in Permit Table 20. DEC also corrected similar transposed values in Fact Sheet Table 47 as a result of this comment.

2.2.2.23 Comment: TAH and TAqH Monitoring Simultaneously with WET

RCAC recommends adding TAH and total aqueous hydrocarbons (TAqH) to the list of metals that are required to be monitored simultaneously with Chronic WET monitoring for produced water in Permit Sections 2.7.9 and 2.7.10. TAH and TAqH are the driving parameters for the chronic mixing zone and may provide useful correlations to uncharacteristically high WET results.

DEC Concurs with Simultaneous Monitoring of TAH and TAqH with Chronic WET

The water quality criterion for TAH for which the chronic mixing zones have been based are known to be conservative. Comparing the dilution required to meet the TAH criteria to that required to meet the observed chronic toxicity, TAH is approximately an order of magnitude more (See Fact Sheet Section 6.2.3.6.10). Nonetheless, because TAH and TAqH are dominant pollutants in in the effluent, DEC concurs that TAH and TAqH should be sampled simultaneously with chronic WET and metals in Permit Sections 2.7.9 and 2.7.10.

Based on this comment, DEC makes the following modifications to the Permit:

Permit Section 2.7.9 and Fact Sheet Section 8.6.7.2, first paragraph now reads:

> "Monitoring for **TAH, TAqH, and** metals must be conducted simultaneously at the time of chronic WET sample collection. The minimum required frequency for ~~**the specified metal and**~~ chronic WET can be reduced after ~~**demonstration of compliance with the metal limits after**~~ four consecutive sample events ~~**and**~~ **where** the chronic WET results are below the notification levels in Table 21 (or 48in the Fact Sheet)."

Permit Section 2.7.9 and Fact Sheet Section 8.6.7.2, second paragraph now reads:

> "When ~~**both**~~ the chronic WET results are below notification levels ~~**and metals results have complied with limits**~~ in four consecutive monitoring events, the permittee may submit a written request to reduce the minimum sampling frequency…"

Permit Section 2.7.10 and Fact Sheet Section 8.6.7.3, second sentence now reads:

> "…The **TAH, TAqH, and** metals required to be monitored at various frequencies must be analyzed concurrently when chronic WET samples are collected…"

2.2.2.24 Comment: Turbidity, TAH, and TAqH limits for Hydrostatic Test Water

RCAC comments that they support the requirement for discharges of hydrostatic test water to meet water quality criteria for turbidity, TAH, and TAqH at the point of discharge from platforms.

DEC Appreciates RCAC Support

DEC appreciates RCAC support for the end-of-pipe limits for Hydrostatic Test Water (Discharge 20).

No modifications to the GP have been made based on this comment.

2.2.2.25 Comment: Dilution Series in Chronic WET to Bracket Previous Toxicity

RCAC supports the requirement for permittees to adjust the dilution series for chronic WET testing of produced water to ensure bracketing of the previous test results. However, RCAC suggests that the second sentence of Permit Section 2.10.3.4 be modified to include "shall" rather than "should" to ensure compliance with this requirement.

DEC Disagrees Failure to Bracket Previous Test Results Should be a Violation

DEC appreciates support for this approach but disagrees with elevating the requirement to result in violation if the permittee does not bracket appropriately. Note that this requirement is intended to incentivize chronic WET testing for the purpose of obtaining accurate estimates of chronic toxicity to be used in mid-term decisions by DEC. For example, both miscellaneous discharges and produced water discharges include an incentive whereby the permittee may request approval from DEC to authorize a frequency reduction based on chronic WET tests being below the notification level in four consecutive tests for produced water or below the PR BMP Revision Action Levels in two consecutive tests for miscellaneous discharges. Hence, if one of these qualifying tests did not provide accurate estimates due to failure to bracket toxicity, DEC can disqualify that result and disallow a frequency reduction until the permittee has provided a valid test per Permit Section 2.10.3.4.

No modifications to the GP have been made based on this comment.

2.2.2.26 Comment: eDMR Submittal Requirements in Permit Section 2.11.3

RCAC supports electronic reporting as it allows for easier dissemination of data for examining trends, comparisons, and reevaluation during reissuances. RCAC indicates there is potential confusion in Permit Section 2.11.3 that describes requirements for submitting DMRs and appears to be in conflict with information contained on DEC webpages for NetDMR. The DEC webpage indicates that all DMRs must be submitted electronically and paper copies will no longer be accepted. However, the GP is ambiguous and seems to allow for either electronic submittals or hardcopy submittals. RCAC recommends clarifying language in the GP. In addition, RCAC asserts that "other reports" requiring submittal to DEC should be attached with the electronic DMR submittal as a pdf.

DEC Must Allow for eDMR Waivers per Phase I e-Reporting Rule

DEC appreciates RCAC support for electronic submittals. While electronic submittals of DMRs are required per Phase I of the e-Reporting Rule, "other reports" are not officially required to be submitted through NetDMR until implementation of Phase II; Phase II has been delayed indefinitely but could be implemented during the term of the GP. Therefore, DEC is not obligated to require permittees to attach other reports in NetDMR at this time and submittals can be made by other electronic means (e.g., submitting pdfs to DEC-WQReporting@alaska.gov). For DMRs, Phase I e-Reporting Rule allows for exceptions in situations where electronic submittal is not appropriate or permissible. Therefore, the permit language must allow for alternative submittal methods although the electronic reporting through NetDMR is the norm.

No modifications to the Permit and Fact Sheet have been made based on this comment.

2.2.2.27 Comment: Quality Assurance Project Plan Requirements and Scope

RCAC points out that per Permit Section 5.1 the permittee must submit a certification that a Quality Assurance Project Plan (QAPP) for all monitoring required in the GP has been developed and implemented within 90 days of the effective date. This section also qualifies that the inclusion of a QAPP within other plans (i.e., DFPs or BMP Plans) is acceptable so long as the section containing this information is clearly labeled as QAPP content. RCAC acknowledges that the QAPP is an important internal document to establish guiding procedures for sample collection and analysis and that, in some instances, the QAPP can be effectively included in other related plans submitted to the department. However, RCAC believes that the QAPP should also cover the Quality Assurance and Quality Control (QA/QC) for the laboratories conducting the analytical analysis although laboratories typically comply with their internal QA/QC procedures.

DEC Appropriately Allows Regulations to Dictate QA/QC Requirements per 40 CFR 136

DEC appreciates RCAC acceptance of QAPP inclusions in other related plans required under the GP. However, DEC disagrees that the QAPP should also include QA/QC procedures of the performing laboratories. Applicable QA/QC requirements for analytical methods used by permittees through contracted laboratories under the CWA is provided by 40 CFR 136. Furthermore, requirements under 40 CFR 136 are administered solely by EPA; DEC has no authority over 40 CFR 136. Hence, requiring laboratories to follow the permittees QAPP as well as 40 CFR 136 would result in significant confusion over legal requirements and could result in unwitting noncompliance with EPA regulations.

No modifications to the Permit and Fact Sheet have been made based on this comment.

2.2.2.28 Comment: BMP Plan Submittal Requirements and Scope

Similar to QAPPs, RCAC acknowledges that GP Section 5.2.2 requires submittal of a certification that a BMP Plan has been developed and implemented within 90-days of the effective date and must reviewed, modified if necessary, and recertified annually by January 31 of each year. This is supported by the Table of Submissions in the GP. However, GP Section 5.2.2 also requires submittal of the BMP Plan to DEC and this is not included in the Table of Submissions and does not require that BMP Plan be ready to implement prior to submitting a NOI as was required in the 2007 GP. While RCAC notes that other similar permits only require submittal of a certification rather than the BMP Plan itself, RCAC believes that submitting the BMP Plan for DEC review and approval would ensure it has adequately addressed all the objectives and requirements outlined in the GP.

DEC Does Not Require Submittal of BMP Plans for Approval Prior to Implementation

The language requiring submittal of the BMP Plan with the NOI was a remnant from language in a different permit. DEC did not intend for the BMP Plan to be submitted to DEC as discussed in GP Section 5.2.2; this requirement was neither included in the Fact Sheet or the Table of Submissions. Hence, the second sentence in Section 5.2.2 is an error in this case. BMP Plan and QAPP certifications are the norm in APDES permits; requiring submittals for the administrative record has been required is some permits but a review and approval of BMP Plans or QAPPS has never been required. Based on requests from the CEP, WDAP experimented with requiring

submittal of the initial BMP Plan for convenience so CEP staff could review the BMP Plan prior to an inspection without making a request for the document to be made available. Upon further examination of the requirement to submit initial BMP Plans, the APDES Program concluded that this requirement is unnecessarily burdensome given there is no review and approval process and effectively burdens all permittees when the purpose was limited to just those facilities that have impending CEP inspections. Hence, given the review was merely informative for the purpose of preparing for an inspection and the initial BMP Plan may be outdated upon the date of inspection, the APDES Program has reverted to only requiring a certification that the BMP Plan has been developed and implemented initially and then recertified annually after review by the BMP Plan Committee.

As a result of this comment, DEC is deleting the following second sentence in Permit Section 5.2.2:

> "~~The Permittee shall submit the initial BMP Plan to the Department prior to initiating a discharge under this Permit~~."

2.2.2.29 Comment: Cooling Water BMP Plan Submittals and DEC Review

RCAC comments that they support the inclusion of requiring the permittee to develop BMPs to ensure compliance with the CWIS requirements per 40 CFR 125, Subpart N. In addition, RCAC supports the ability for DEC to impose more stringent requirements on a case-by-case basis based on review of the BMP upon submittal with an NOI. However, RCAC believes the GP lacks specificity to determine when DEC may take such action. Furthermore, Fact Sheet Section 11.3.1.6 specifies that the BMP for CWIS be submitted with the NOI, but is not also included in Permit Section 5.2.9.6 as it should be.

DEC Approval of Cooling Water Intake Structure BMP Plans Not Required

DEC does not concur with RCAC that the requirement for submitting the BMP for CWIS with NOI needs to be included in the GP. The legal requirement for CWIS is satisfied by the requirements for the permittee to establish BMPs in compliance with 40 CFR 125, Subpart N in GP Section 5.2.9.6 as verified through the NOI review process to ensure additional conditions are not warranted. This approach has been successfully implemented in other permits (i.e., AKG315100) and additional requirements are not warranted.

No modifications to the Permit or Fact Sheet have resulted from this comment.

2.2.2.30 Comment: EMP Plan Requirements Applicable to Non-aqueous Fluids

RCAC comments that the EMP Plan requirements should also apply to Class B3 Drilling Fluids for non-aqueous/synthetic fluids.

DEC Disagrees Non-Aqueous Drilling Fluids Require EMP Plans

DEC does not concur with RCAC on requiring an EMP Plan for Class B, non-aqueous drilling fluids. Non-aqueous or synthetic drilling fluids cannot be discharged under the GP. However, cuttings separated from the non-aqueous drilling fluids can be discharged; the cuttings must pass a static sheen test to demonstrate adequate separation of the synthetic fluids from cuttings prior to discharge, which adequately protects water quality. DEC will not require studies unless there is adequate justification for the study. In this case, DEC does not agree that one exists.

No changes to the Permit or Fact Sheet has resulted from this comment.

2.2.2.31 Comment: EMP Plan Requirement Suggestions

While generally supporting EMP requirements in the GP, RCAC has concerns on how monitoring is being conducted and suggests these requirements should be more rigorous to support future decisions. RCAC suggests that the COST Well Study and ICIEMAP Study provided a considerable amount of data compared to recent EMP Studies for drilling fluid discharges and should serve as a model for the level of rigor needed. In addition, RCAC believes that DEC should ensure that the EMP Plan is reviewed by scientists (e.g., RCAC) familiar and experienced with the physical, chemical, and biological environment of Cook Inlet to ensure EMP Plans are appropriate.

DEC Disagrees that EMP Plans Should be as Rigorous as ICIEMAP or COST Studies

DEC does not agree that the EMP Plans required by the Permit for evaluating water-based drilling fluid and drill cutting discharges should be as rigorous as the COST Well Study or the ICIEMAP Study. These previous studies were developed and implemented based on a broader, or different, set of objectives. The objectives of the EMP Plans for drilling fluid and drill cutting discharges are intentionally narrow and linked to informing the decision concerning whether the 4,000 meter exclusion to sensitive areas in Cook Inlet is appropriate based on impacts to benthic environment (i.e., sediment and biological resources). To date, there is limited data because the scope of the EMP requirements were overly broad and included locations that are not well suited to conducting such studies for the intended objectives. Fact Sheet Sections 2.2.1, 2.2.2, 2.2.3, and 2.2.5 provides the history of the EMP requirement that explains the narrow scope of these studies that RCAC seeks to expand. Comments by RCAC appear to focus on their stated policy supporting zero discharge from oil and gas facilities and their charter to conduct environmental studies per RCAC regulatory authority discussed in RTC Section 2.2.1. While DEC appreciates and respects RCAC environmental investigation capabilities, DEC not only has similar investigatory expertise in the Water Quality Standards, Assessment, and Restoration and APDES Programs, but has the ultimate legal authority for implementing the CWA through these State Programs. Nonetheless, DEC looks forward to collaborating with RCAC as a stakeholder in this permit issuance process as well as collaborating on environmental studies that target environmental protection rather than policy.

No changes to the Permit or Fact Sheet have resulted from this comment.

2.2.2.32 Comment: EMP Plan Requirement for Sediment Toxicity Testing

RCAC generalizes the lists of objectives presented in Permit Section 5.4 as evaluating the impacts associated with discharges of drilling fluids and drill cuttings through the assessment of 1) sediment pollution concentrations, 2) potential for sediment toxicity, and 3) benthic community monitoring. RCAC points out that sediment toxicity testing is not required and appears to be a relaxation from the 2007 GP. The GP requires evaluation of the “potential” for sediment toxicity. RCAC comments that this relaxation may be acceptable if DEC applies a tiered approach whereby if a sediment concentration warrants further investigation, then toxicity testing should be also investigated.

DEC Disagrees that Sediment Toxicity Testing is Necessary

RCAC is incorrect in stating toxicity testing was required in the 2007 GP. Per the objectives in the 2007 GP, Section 5.c.ii, the environmental monitoring must "determine statistically significant changes in sediment pollutant concentrations and sediment toxicity with time and distance from the discharge." While DEC acknowledges that as previously written, this objective could be met by conducting toxicity testing, it could also be met by comparing sediment concentrations to established sediment criteria. This is supported by omission of toxicity testing in the EMP requirements in Section 5.d. DEC added clarifying verbiage (i.e., potential toxicity) to further clarify that toxicity testing is not an EMP requirement. Hence, there has been no relaxation of requirements. Furthermore, DEC does not agree that sediment toxicity testing is necessary given the availability of peer-reviewed and widely accepted sediment criteria (i.e,.Long et al, 1995) established by the National Oceanographic and Atmospheric Administration (NOAA) as Sediment Quality Guidelines (SQGs). The NOAA SQGs are based on a weight of evidence approach that compiled results from a significant database of existing toxicity tests with varying endpoints to establish Effects Range – Low (ERL) and Effects Range – Median (ERM). Given the widely accepted use of the NOAA SQGs, DEC believes site-specific toxicity testing, which are known to be highly variable, would not satisfy the objective of determining "statistically significant" changes in sediment quality. DEC also points out that the fourth objective is to "assess whether any impacts warrant an adjustment of the EMP." Hence, the ability of DEC to require toxicity testing is available in the GP, although it is not likely to be implemented for the stated reasons.

No changes to the Permit or Fact Sheet has resulted from this comment.

2.2.2.33 Comment: EMP Plan Requirement for Benthic Biological Communities

RCAC claims that GP Section 5.4.4 (Plan of Study) does not include a requirement to monitor impacts to the benthic biological communities but should in order to be consistent with all the objectives of the EMP.

DEC Corrects RCAC and Explains Limitations of Biomonitoring

RCAC is incorrect that monitoring of the benthic biological community is absent in Permit Section 5.4.4. The last sentence of this section reads:

> "The study must consider the specific characteristics of the discharged Class B drilling fluids (e.g., parameters with monitoring requirements or limitations described in Sections 2.2.2 and 2.2.4.2) on the observed effects on sediment, water, and *benthic communities if present.*"

DEC purposefully qualifies that benthic biological community monitoring is only required if a benthic community exists.

No changes to the Permit or Fact Sheet has resulted from this comment.

2.2.2.34 Comment: EMP Plan and Hydrographic and Water Quality Parameters

RCAC states the GP is not clear if hydrographic or water quality parameters are required to be evaluated in the EMP Plans. GP Section 5.4.4 includes "relevant hydrography" but is not included in the objectives. Furthermore, GP Section 5.4.5 indicates that reports must address the

objectives by using appropriate descriptive and analytical results to describe any impacts of the drilling fluid discharges on sediment pollutant concentrations, sediment quality, water quality, and benthic communities. RCAC suggests clarifying these sections of the GP so that EMP objectives are clearly state and subsequent section align to avoid confusion. RCAC also recommends that inclusion of hydrography and water quality parameters, both dissolved and total metals, be include as it has been beneficial in areas where sediment sampling is not possible. Specifically, RCAC states that total suspended solids and turbidity should be monitored so that correlations may be developed and allow for better interpretation of metal monitoring data. These techniques are appropriate to evaluate plume behavior similar to that during the ICIEMAP Study of 2012 and other studies.

DEC Disagrees that the EMP Plan Objectives Should be Expanded

As discussed in Response 2.2.2.31, the primary objective of the EMP is to evaluate impacts of water-based drilling fluids on sediment and benthic communities to ascertain if the 4,000 meter exclusion to sensitive habitats is necessary or adequately protective. Other subsidiary objectives are to collect background information that may be needed to support future permitting decisions (e.g., hydrography and water quality). Hence, unlike ICIEMAP Study and other studies, the objectives of the EMP do not include evaluating plume behavior. Note that life safety considerations, such as safety exclusion zones around an operating MODU, conflict with the access necessary for research vessels to conduct water quality sampling of the discharge plume. Therefore, the EMP is purposefully intended to focus on what is needed (sediment and benthic impacts) rather than needlessly expanding scope to align with RCAC objectives per the chartered authority described in RTC Section 2.2.1.

No changes to the Permit or Fact Sheet have resulted from this comment.

2.2.2.35 Comment: EMP Plan Efforts to Date Appear to Violate the Permit(s)

RCAC states that they feel strongly that the EMP requirements in the GP should be strengthened and clarified to ensure future studies address all permit requirements. Recent EMP Plans submitted by Furie and Buccaneer to DEC for review clearly did not fully address the EMP requirements and appear to be in violation of the permit conditions as they did not address all of the EMP objectives. RCAC claims that because they had to rely on DEC to review these plans and reports it has led to inconsistencies and loss of opportunities for meaningful data.

DEC Previous EMP Plans Have Not Violated the Permit(s)

DEC strongly disagrees with RCAC that opportunities were missed to collect data due to DEC approvals. Each of the EMPs referenced by RCAC were for locations that do not have sediment due to the highly erosional environment at those locations. Hence, the objectives are focused on sediment impacts which cannot be evaluated at these locations due to the lack of available sediment to sample. Even if extraneous sampling techniques are used, the fact remains that the location is not an appropriate candidate for the EMP study objectives. In addition, there have been no occurrences of noncompliance. DEC has full authority and technical capability to render decisions under the APDES Program. Whereas, RCAC has no authority under the APDES Program and has demonstrated bias by supporting a policy of zero discharge without presenting a defensible scientific rationale for their position. Although DEC acknowledges that RCAC has expertise, in no way does DEC consider RCAC to have the authority and professional judgement

to administer the APDES Program. DEC is concerned that RCAC seeks to promote a political agenda by attempting to become involved in DEC decisions that are based on scientific facts, environmental professionalism, and clear regulatory authority.

No changes to the Permit or Fact Sheet have resulted from this comment.

2.2.2.36 Comment: EMP Plan Sampling Techniques

RCAC comments that historical sampling in Cook Inlet indicates deposition of fines occurs in many nearshore environments and other locations may have littoral drift that warrant EMP investigations. Exploration in such nearshore environments allowed under the GP must have an EMP that considers transport along the shoreline as well as areas of ultimate deposition. When the site under investigation is in an erosional environment, the permittee must adjust sampling techniques in order to collect cobbles, large gravel, or very course sediment while correctly indicating that any pollutants would only be associated with fine grained sediment, which would not be present. RCAC continues to explain that based on their experience when conducting the ICIEMAP Study on produced water it was very effective to evaluate water quality for metals (both dissolved and total) and hydrocarbons as both a function of time and distances from the discharge. Modification of sediment sampling procedures and water quality monitoring near the MODU must be conducted at sites where sediment is not significantly present.

DEC Disagrees Sediment Must Always be Collected; DEC Expands EMP Sites

DEC disagrees with RCAC that sampling of sediment must occur regardless of expense and effort. The EMP Study is predicated on the presence of sediment for the evaluation of impacts from drilling fluid discharges, which are fine-grain and have metal concentrations sorbed onto the particles, or as inclusions in the particles. Despite RCAC insistence, the EMP Studies were never intended to be an overly broad research project to assess the general hydrographic or impacts to the water column or ultimate deposition areas of Cook Inlet (e.g., Kamishak Bay). The purpose of the EMP is to evaluate drilling fluid impacts to the benthic environment near the point of discharge only. The EMP is not consistent with the objectives of the ICIEMAP Study and, therefore, the techniques used during ICIEMAP Study data collection may not be appropriate for EMP data collection. The comment from RCAC appears to stem from a lack of acceptance that DEC objectives are different than the objectives of RCAC based on their chartered authority, which is different than DEC authority.

The concentration of metals from drilling fluids and drill cuttings in marine waters are mostly associated with total results because metals are tightly absorbed onto drilling fluid particles. Whereas, the impacts of metals on marine organisms are associated more with dissolved metal concentrations because dissolved metal concentrations are more bioavailable. Hence, marine water quality criteria for metals are based on dissolved rather than total recoverable analytical results. While DEC agrees that monitoring should include both total recoverable and dissolved analytical methods, the impacts of drilling fluids in the water column are based on the dissolved fraction, which is not significantly affected by drilling fluids discharged to the oxygenated environment of Cook Inlet. Furthermore, the metals in/on drilling fluids particles do not become bioavailable unless the particles are in a reducing environment. The water column and littoral drift sand deposits are oxygenated and have a positive reduction-oxidation potentials preventing absorbed metals, or inclusions, from becoming dissolved in the water column or in the pore

spaces of sediment. Bioavailable dissolved concentrations would only occur at depositional locations of Cook Inlet and at depth in the sediment where oxygen depletion could result in a negative redox potential.

Studies conducted in the outer continental shelf (OCS) by the Minerals Management Service (MMS) in 1997 and 1998 (OCS Study MMS 2000 – 24) evaluated core samples at Kamishak Bay where the sediment from major Cook Inlet river systems (e.g., Susitna, Matanuska, Knik, etc.) is known to be deposited. In addition, drilling fluids and drill cuttings from oil and gas exploration and development also are deposited at this location. The core samples were dated with depth to evaluate metal concentrations before oil and gas drilling and after oil and gas drilling. No distinction could be made, indicating impacts from drilling fluids and drill cuttings have occurred. This is easily explained by understanding the total sediment load entering Cook Inlet compared to the amount of drilling fluids discharge; the contribution of drilling fluids containing metals is insignificant compared to the total, natural sediment load from rivers and streams contributing to the total being deposited at Kamishak Bay. Hence, there is insufficient rationale for permittees to conduct a similar sampling effort given the past MMS study and an understanding of the sediment loads of Cook Inlet affecting net depositional locations outside the coverage area of the GP.

Although DEC disagrees with RCAC recommendations for broadening the EMP objectives, their comment also highlighted an unintended limitation of where EMP Plans should be required. As currently written, the Permit suggests that only the nearshore locations near the Redoubt and Trading Bay CHAs would require an EMP Plan. However, there are other exploration lease locations where the sandy substrate, such as sand bedforms or littoral drift, would support EMP Study objectives. DEC will evaluate the applicability of the EMP requirements on a site-by-site basis using knowledge about the substrate conditions. This clarification is addressed by adding a new second sentence to Permit Section.5.4.1 and Fact Sheet Section 11.5.1 that reads:

> **“Sediment studies must also be completed at other exploration sites that have sediment deposits that can be reasonably sampled (e.g., sandy bedforms or littoral drift).”**

In addition, the first sentence in Permit Section 5.4.2 and Fact Sheet Section 11.5.2 now reads:

> “**Based on a site-by-site determination of applicability by DEC, o**~~**O**~~perators of mobile exploratory facilities discharging drilling fluids and/or drill cuttings must submit a plan of study for environmental monitoring to DEC for review and comment with, or prior to, submission of an NOI.”

Lastly, DEC is modifying the first sentence of Fact Sheet Section 3.6.5 to read:

> “The Permit requires the applicant to submit an EMP Study Plan with the NOI for review and approval by the Department if the applicant proposes to discharge Class B2 drilling fluids and the discharge location is within 4,000 meters of the Trading Bay SGR or Redoubt CHA**, or other locations with sediment on a case-by-case basis**.”

No changes to the Permit or Fact Sheet have resulted from this comment.

2.2.2.37 Comment: EMP Plan Exemptions

RCAC comments that the GP allows for exemptions to the EMP requirements in Permit Section 5.4.7 based on having previous EMP Study results or that the site does not have significant sediment "present" due to being in an erosional environment. RCAC believes the use of "present" in this requirement is a typographical error and should refer to the "absence" of sediment. RCAC feels that it is absolutely inappropriate at this time to grant exemptions to the EMP requirements since little information exists on the fate and effect of drilling fluids and drill cuttings discharges in Cook Inlet as it would impossible to predict impacts in advance. RCAC opines that there have been vague or incorrect descriptors leading to many misunderstandings about the abundance, diversity, and potential for unique species to be present in Cook Inlet in past ODCEs. Without peer and public reviews granting of exemptions could be based on misinformation.

DEC Corrects Language for Clarity

DEC concurs with RCAC that Permit Section 5.4.7, and Fact Sheet Section 11.5.7, includes a typographic error. The corrected text now reads:

> "…the discharge will not have significant impacts on the receiving environment in the area of discharge (e.g., sediment is **not** significantly present at the site due to scour)."

However, DEC must again respond to RCAC comments that are misaligned with the clearly stated intent and objectives the EMP requirements (See Comment Responses 2.2.2.30 through 2.2.2.36). RCAC requests excessive requirements that do not reflect the narrow objectives of evaluating impacts to sediment in the vicinity of the discharge of drilling fluids. If there is no sediment due to scour, there is minimal benefit to conducting an EMP Study where no sediment exists because there would be no impacts to sediment or sensitive biota that are predicated on the presence of sediment. DEC is confused by the RCAC comment concerning misinformation in the ODCE that could justify peer or public review of EMP documents as RCAC does not specifically provide an example of such information nor is the ODCE linked to the EMP requirements in that manner.

DEC corrected the typographical error identified by RCAC but no other modifications to the GP or Fact Sheet have been made as a result of this comment.

2.2.2.38 Comment: Drilling Fluids Plan

RCAC comments that they support the suggestion that applicants for Class C1 and Class B1 drilling fluids develop a DFP as a contingency if there is a probability additional chemical additives could be implemented during drilling and trigger the requirement to develop one before continuing the drilling program. Per RCAC, this could help minimize the introduction of additional chemicals to Cook Inlet.

DEC Appreciates Support for DFPs

DEC appreciates RCAC support for this requirement.

No changes to the GP or Fact Sheet have been made based on this comment.

2.2.2.39 Comment: ICIEMAP and EMAP Interrelationships

RCAC claims that DEC misrepresents RCAC's involvement in the ICIEMAP study in Fact Sheet Section 2.2.3.2 as "partnering" and suggests a much greater role. Specifically, RCAC appears to feel slighted based on the following excerpt from Fact Sheet:

> "Partners in the ICIEMAP 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."

RCAC goes on to list all the study plan components attributable to RCAC involvement and exclaims "It was through all of these efforts, organized and led by RCAC, that an integrated sampling program was developed – the ICIEMAP"

DEC Gives Credit When and Where Credit is Due

The discussion in Fact Sheet Section 2.2.3.2 is not an attempt by DEC to discredit RCAC in any of their previous efforts. This section is appropriately broad and attempts to give credit to all those involved and DEC believes the information presented is essentially factual and appropriate fact sheet content; fact sheet content supports permitting decisions and including a compendium of RCAC achievements is not necessary to support any Permit requirement. If the intent of this section was to reflect the various contributions made by RCAC then we would agree that more detailed information would be needed and the content provided by RCAC in their comment would be appropriate. However, the intent of the section is to provide a high-level overview of the ICIEMAP Study data and the multiple partners who had input, or provided review of the study. Hence, because the ICIEMAP Study data was tied to studies required under the 2007 GP, both EPA and DEC are appropriately listed as partners in addition to RCAC and NOAA. Furthermore, RCAC admits in their comment that the EMAP protocol was used for ICIEMAP Study and this too is factual. If the intent of this fact sheet section was to emphasize RCAC contributions then DEC could add that it was an RCAC recommendation supported by both EPA and DEC. However, these additional details are not relevant to DEC objectives or basis for the permit as much as they are relative to the RCAC overarching narrative presented in their comments suggesting they are somehow the rightful authority to determine what is appropriate under the APDES Program. Per RCAC authority, when it comes to APDES permits RCAC is to provide comments rather than attempt to wedge themselves between permittees and the APDES Program. Based on the nature of RCAC comments, DEC believes RCAC desires some degree of authority under the APDES Program by self-proclaiming scientific superiority, which DEC rightly does not acknowledge (or outright rejects). RCAC's inconsistent scientific approach to decision-making is misaligned with APDES Program objectives. See Comment Responses 2.2.2.30 through 2.2.2.37.

While reviewing Fact Sheet Section 2.2.3.2, DEC realized that EPA was not listed as a key partner in the ICIEMAP coordination. Accordingly, DEC has included **EPA** to ensure they are given appropriate credit.

2.2.2.40 Comment: Public Review of Notice of Intents and Treatment Waivers

RCAC comments that it is not clear how public reviews are included for NOIs that may include requests from the permittee for significant changes to mixing zones, effluent modifications, or waivers to minimum treatment. Some of these requests require an understanding of the local hydrography, sediment, and biota and RCAC believes it is important to provide opportunities to evaluate the reason behind any NOI waiver or modification requests.

DEC Not Always Required to Seek Public Input Before Decisions

In many cases, the public process conducted during the issuance of the Draft GP is sufficient to ensure transparency and explain how DEC processes and regulations interplay with implementation of the GP. For example, NOIs for applicants to obtain an authorization under the GP are not typically subjected to a second public process; evaluation of NOIs and issuance of authorizations are internal to DEC authority so long as the processes and implementing regulations are adequately known and explained in the Fact Sheet and Permit. NOIs that include items that were not adequately known or explained in the Draft GP may be required to go through a 30-day public review in order for DEC to issue the authorization. So, RCAC is partly correct that there are limited circumstances where issuances of authorizations do require an additional public process. For example, an authorization of a produced water discharge or horizontal directional drilling discharges that were not originally included, or were missing necessary components, in the Fact Sheet and GP would require a mixing zone evaluation, characterization of the effluent and limit development, and an antidegradation analysis presented in a Statement of Basis issued for a 30-day public comment period (See Permit Sections 1.1.7 and 1.1.8). Such authorizations would also be subject to the informal or formal appeal procedures in 18 AAC 15. However, the authorization process for discharges are adequately described in the Draft Permit and subjected to the public comment period during issuance of the Permit and do not require additional public review. In addition, decisions made under 18 AAC 72, such as waiver to minimum treatment for gray water, plan reviews required to modify existing treatment systems, or other Department decisions supported by regulations in 18 AAC 72 do not require a public notice.

As stated numerous times in preceding comment responses, DEC disagrees that external review is necessary or appropriate when the public process transparently covered those components during issuance of Permit.

No changes to the Fact Sheet or GP has resulted from this comment.

2.2.2.41 Comment: Final Permit and Fact Sheet Must Include Changes

RCAC points out that 18 AAC 83.120 states “When a fact sheet has been prepared under 18 AAC 83.115(b), the Department will issue a revised fact sheet for the Final Permit, which must include all of the requirements of 18 AAC 83.115(c), and be available to the public. The permit, and RTC are available on the Departments’ webpage. DEC must ensure that any changes to the permit between the Draft Permit and the Final Permit are reflected in the fact sheet, especially where numeric limits or calculations are revised.

DEC Updates Final Documents Based on Outgrowth of Comments

RCAC comment appears to state regulatory requirements verbatim followed by RCAC emphasis that this is critical for any changes in numeric limits or calculations revised per the comments. DEC responds that the Fact Sheet, Permit, and the RTC document include these changes and represent the Final Permit as modified per the RTC.

No changes to the Fact Sheet or Permit has been made as a result of this comment.

2.2.2.42 Comment: Removal of Produced Sand not Included in Fact Sheet

RCAC notes that the 2007 GP included produced sands with produced water in the limitations but produced sands is no longer included in the GP. DEC should note this in the Fact Sheet indicating the discharges of produced sand is now prohibited by the ELGs.

DEC Not Required to Discuss Removal of Produced Sand per ELGs

DEC disagrees that it is necessary to note this in the Fact Sheet. The Fact Sheet presents the basis for the requirements in the Permit. If produced sand is not in the Permit, there is limited value in discussing that produced sand is no longer allowed by the ELGs. Removal of produced sand in the ELGs is well known by industry and knowledgeable commenters.

No changes to the Fact Sheet or Permit has been made as a result of this comment.

2.3 Comments Submitted by Susitna River Coalition

SRC (Coalition of Susitna Dam Alternatives) is a 501(c)(3) nonprofit organization focused on protecting the sustainable natural resources of the Susitna River Watershed and advocates for communities it sustains. Although established to protect the Susitna Watershed, SRC also has broader concerns over the entire Cook Inlet region and submits the following comments on the Draft Permit.

2.3.1 Comment: DEC Does Not Impose Substantive Fines to Curb Noncompliance

The state and federal agencies feeble response to ongoing compliance problems with relatively small fines allows industry to absorb fines as a cost of doing business. Meanwhile, Cook Inlet fisheries and endangered beluga are being significantly impacted by climate change and ocean acidification.

DEC Does Not Have Enough Information to Respond to Comment; References Fact Sheet

SRC references ongoing compliance problems but fails to provide any specifics that DEC can respond to. DEC refers SRC to Fact Sheet Section 5.0 Compliance History that lists all compliance, enforcement, and penalties leverage against industry as a result of noncompliance. There are no ongoing enforcement actions associated with the 2007 GP that DEC is aware of that contribute directly to climate change or ocean acidification.

No changes to the Fact Sheet or GP have been made as a result of this comment.

2.3.2 Comment: DEC Allows More Discharges with Less Monitoring

Throughout the decades, discharges up to 2 billion gallons per year has resulted in bioaccumulation of toxins, which are an incredible source of pollution in Cook Inlet affecting critical habitat for beluga whale. The Permit will increase the amount of discharge (i.e., Osprey

Produced Water) while reducing monitoring requirements and open up more areas for discharges (e.g., drilling fluids and drill cuttings near the Redoubt Bay CHA). In addition, legal mixing zones of 1,000 meters exceed water quality standards. The allowance for more discharges in Cook Inlet is unacceptable.

DEC Does Not Have Enough Information to Respond to Comment; References Fact Sheet

SRC claims discharges over decades have resulted in bioaccumulation of pollutants in Cook Inlet but does not provide a reference to any tissue or sediment sampling results that may be used to substantiate that claim. Fact Sheet Section 6.2.8 provides a discussion of various studies conducted since 2000 that indicate bioaccumulation from discharges is not occurring. Specifically, beluga whale tissue samples from Cook Inlet when compared to beluga tissue samples from the North Slope indicate there is less bioaccumulation in Cook Inlet where there is significantly more pollutants being discharged. Hence, DEC disagrees with SRC's assertion of bioaccumulation of pollutants is causing impacts to the beluga through their food chain. While the Draft Permit proposes to allow a slight increase in the discharge of produced water from the Osprey Platform, there is currently no scientific or factual evidence that reasonably demonstrates this will cause significant additional increases in bioaccumulation in Cook Inlet beluga, or other species. Per the 2013 FWS Recovery Plan for the Sea Otters, "heavy metals are unlikely to be a causal factor in the decline" in sea otter populations in and around Cook Inlet.

Although DEC is allowing expanded areas for discharges of drilling fluids and drill cuttings, DEC also requires a detailed EMP Study to evaluate the impacts from these discharges to inform whether the previously established 4,000 meter setback is necessary. Per Fact Sheet Sections 2.2.1, 2.2.2, and 2.2.3.1, the 4,000 meter setback established by EPA was expanded from 1,000 meters without a basis or scientific data. Allowing discharges is necessary in order to conduct these studies and evaluate impacts to sediment and local benthic communities for comparison to other studies (Neff 2011) that demonstrated impacts were not significant at other locations with less tidal energy and mixing to dissipate the fluids and cuttings.

DEC is confused by SRC statement that 1,000 meter mixing zones violate 18 AAC 70 - Alaska Water Quality Standards. 18 AAC 70.240 allows mixing zones based on a long list of evaluation requirements to ensure they will not result in unacceptable impacts to the receiving water. While it is true a mixing zone allows for exceeding "water quality criteria" within the mixing zone, the evaluation required by 18 AAC 70.240 ensures that the waterbody as a whole is protected for the existing and designated uses. Hence, 1,000 meter mixing zones are legal.

DEC is also confused by SRC general statement that there is less monitoring. SRC fails to provide any example in this generalized discussion that DEC would be able to respond to without significant speculation as to the exact reduction they have referred to.

No modifications to the Fact Sheet or Permit have resulted from this comment.

2.3.3 Comment: Insufficient Net Outflow from Cook Inlet to Support Dispersion

SRC comments that there is insufficient understanding of the complex hydrographic conditions in Cook Inlet that affect dispersion of pollutants. The Permit assumes that pollutants will be dispersed in upper Cook Inlet because there is sufficient net current out of Cook Inlet but SRC claims that this does not happen because there is little or no freshwater flow from tributaries

during the winter. Although climate change might change this, it remains unknown because the state has not studied it.

DEC Disagrees There is Insufficient Flushing; Provides Scientific Data

DEC does not agree that there is insufficient understanding of the hydrographic conditions in Cook Inlet needed to support the Permit. There have been several studies that have increased the understanding of the receiving water critical conditions necessary to authorize mixing zones. The more recent information that has increased knowledge and reduced assumptions include the ICIEMAP Study, data from NOAA buoys deployed at different locations in Cook Inlet, and the mixing zone modeling prepared by reputable consultants hired by the applicants that used this new data and performed multiple sensitivity analyses on parameters that may be variable (See Fact Sheet Section 6.2.1 and Appendix A). While DEC acknowledges freshwater inputs are significantly reduced during the winter, many rivers still flow beneath the ice and contribute to the annual outflow. Flushing is not evaluated as an instantaneous occurrence as eluded to by SRC but rather on an annual average basis and considers flushing due to both tidal exchange and river inputs. Because tidal exchange is the dominant mechanism for flushing, the seasonal variations of river flow has a limited impact on the residence time of Cook Inlet. For example, during the winter the residence time is estimated to be 48.75 days. Whereas, during peak river discharge during the summer the residence time is estimated to be 47.11 days and as an annual average the residence time is approximately 48.17. Based on this analysis, the volume of Cook Inlet turns over approximately 7.5 times per year. This level of flushing is adequate to ensure pollutants are not building up over time.

No modifications to the Fact Sheet or Permit have resulted from this comment.

2.3.4 Comment: DEC Needs to Impose Zero Discharge in Cook Inlet

SRC states that the Cook Inlet is the only location in the U.S. that allows the discharge of produced water to coastal areas and this goes against the goal of the CWA to eliminate pollutant discharges. DEC has claimed that only the EPA has authority over imposing zero discharge through implementation of the technology-based ELGs that are reviewed every other year. SRC claims that during the public hearing for the Draft Permit DEC stated that EPA *will* revise Cook Inlet and that DEC does not have the authority to impose zero discharge contrary to the ELGs. The legality of this position is questioned.

Regardless of the ELGs, SRC states that "Overall, the industry has moved towards injection of produced water and drilling waste and recent technological developments to prevent injection well plugging means it is more feasible to inject. In 1999, EPA rejected zero discharge in large part because the technique of grinding and injecting produced water was not demonstrated to be available throughout Cook Inlet. But now there are two grind and inject facilities, seven drilling waste landfills, and 16 Class II wells in Cook Inlet. No proof exists that zero discharge is not economically feasible in Cook Inlet and drilling one or two injections wells onshore near Trading Bay would eliminate 96 % of the produced water. This is supported by an installation of a Class II injection well within three miles from Trading Bay.

DEC Corrects Public Record; Disagrees Injection is Feasible

DEC begins by correcting the record from the public meeting held prior to the public hearing conducted for the Draft Permit. DEC did not say EPA would revise the ELGs for Cook Inlet. DEC indicated that EPA was currently evaluating the ELGs and may, depending on their evaluation, modify Cook Inlet ELGs. Note that ultimately, EPA chose not to modify the ELGs. EPA has conducted a robust evaluation of the technical capabilities for industry to impose zero discharge in Cook Inlet and has revisited the underlying conditions that prevent zero discharge numerous times since promulgation in 1996, which has not resulted in revisions as the initial conditions have not changed significantly to result in overturning the original analysis and determination. Based on an understanding of these conditions, DEC agrees with EPA that zero discharge is not possible in Cook Inlet. See Comment Response 2.2.2.19 for more details.

DEC is confused by statements made by SRC that conflict with DEC understanding of the technical issues that affect zero discharge implantation. First, produced water is not processed in a grind and inject facility; grind and inject (G&I) facilities process drilling fluids and drill cuttings. DEC understands that there are currently three facilities in the Cook Inlet area that accept third party drilling waste: the AER Nikiski Drilling Waste Monofill, Hilcorp Kenai Gas Field G&I Facility, and the Central Peninsula Landfill that can accept the drilling waste as special waste" but prefers not to. Aside from these three that can accept third-party drilling waste, there are four other facilities that operate independently from third-parties: the Beluga Central Drilling Waste and the Swanson River Field G&I Facilities operated by Hilcorp and the West McArthur G&I and the Osprey Platform G&I Facilities both operated by CIE. While it may be correct that there are 16 Class II injection wells in the Cook Inlet Region, it is not appropriate to use Class II injection wells for waste disposal as these wells are installed in producing formations specifically for EOR; using Class II injection wells for disposal of large volumes of produced water would have a pronounced negative effect on EOR and lead to premature closure of the producing formation. The only formations in Cook Inlet available for waste disposal are associated with depleted gas reservoirs; all known and available depleted gas formations are being used to their maximum extent.

SRC claims that two injection wells located near the Trading Bay Production Facility (TBPF) could handle disposal of produced water from the facility and make a major step toward "zero discharge." Unfortunately, SRC is not correct and appears to not understand the limitations of injecting produced water into subsurface formations in Cook Inlet. First, the volume of produced water needing to be injected could not be accomplished in just two injections wells. Unfortunately, the original evaluation by EPA for the 1996 ELGs indicated there are no such formations available near the TBPF. And second, EPA considered the potential to inject produced water at TBPF where the majority of produced water is treated and discharged. Per the *Development Document for Final Effluent Limitations Guidelines and Standards for the Coastal Subcategory of the Oil and Gas Extraction Point Source Category; EPA-821-R-96-023* (*ELG Technical Development Document)*:

> "For the third alternative, the study suggests that the available Tyonek sands injection formations directly beneath the Trading Bay Facility (which discharges 94 % of the Cook Inlet produced waters) are not suitable to accept the large amounts of produced water generated at this facility. Although significant in gross pore volume, these formations are

broken up into numerous smaller reservoirs. Continuous injection into any one reservoir could cause the reservoir to become over-pressurized, threatening to cause fracturing and migration to shallower potable water aquifers and, according to the study, possibly triggering seismic activity. In addition, the Tyonek formations contain significant amounts of water-sensitive clays which, when injected with relatively fresh produced water from the Trading Bay Facility, could result in severely or completely restricted permeability.

Hence, injection of produced water at the TBPF, and in many other locations of Cook Inlet, are limited in the volume of injection that can be accepted. For related discussions, see Comment Responses 2.4.1.4, 2.4.2.3, and 2.5.2.9.4.1,

No modifications to the Fact Sheet or Permit have resulted from this comment.

2.3.5 Comment: Osprey Platform Discharging Produced Water is Inappropriate

SRC states the Osprey has four underground injection control (UIC) wells available throughout Cook Inlet allowing for disposal of produced water and drilling fluids and drill cuttings. CIE claims that they are at maximum capacity for injection of produced water and discharging is necessary to continue, or expand, oil production. SRC speculates that this is because they have been injecting produced water from the McArthur River and Redoubt Units at the Osprey so it is their own fault and should not be allowed to start discharging.

DEC Disagrees that the Osprey Can Continue Zero Discharge of Produced Water

DEC disagrees that the Osprey should not be allowed to start to discharge produced water. The formations able to receive injection of produced water (e.g., depleted gas reservoirs) have reached their accumulative maximum injection pressures and are becoming over-pressurized. In addition, injection for EOR is limited to a one to one (1:1) ratio to maximize oil production. As discussed in Fact Sheet Section 2.2.8 and Comment Responses 2.2.2.19, 2.3.4, and 2.5.2.9.1, the Osprey Platform appropriately injected drilling fluid wastes and produced water as long as they could early in the life of the facility but now at the current life stage of oil production, continued production is reliant on discharging rather than injection. The request to discharge is supported by the ELGs as well as an understanding that there have been no indications of adverse impacts due to oil and gas discharges in studies conducted to date that would warrant a modification of the ELGs or imposition by DEC based on adverse impacts to water quality (See Comment Response 2.3.6).

No modifications to the Fact Sheet or Permit have resulted from this comment.

2.3.6 Comment: DEC Lacks Updated Oil and Gas Studies to Demonstrate Impacts

SRC claims that DEC admits that there is limited data on cumulative impacts to Cook Inlet fisheries and marine life. EPA data showed oil and gas contaminants in subsistence foods and traditional ecological knowledge has shown negative changes to marine life that support native communities in Cook Inlet.

DEC Disagrees That the Available Information is Insufficient

SRC appears to be misrepresenting statements made by DEC. DEC has never stated that there is a lack of scientific studies on the impacts of oil and gas on the Cook Inlet environment. Instead, DEC asserts that the scientific studies conducted to date do not indicate there have been adverse impacts to Cook Inlet from oil and gas discharges. There have been numerous, peer-reviewed studies including Agency for Toxic Substances and Disease Registry (ATSDR) that evaluated hydrocarbons and metals in various subsistence species in Cook Inlet (ATSDR 2009). One conclusion from the study recommends that pre-school and elementary-age children should limit consumption of chiton or bakarki to less than three ounces per week as a precaution to prevent elevated exposure to lead. Note that lead is not parameter of concern for discharges from oil and gas facilities in Cook Inlet. Other chemicals found in subsistence foods from Cook Inlet were not expected to cause health concerns; the estimated exposure was below levels of health concern or the chemicals were found occasionally in just a few samples. For those chemicals with potential cancer risks, the risk of cancer from these chemicals in subsistence foods is very low, and could be zero, and poses similar risks based on other Alaska locations eating the same quantity of fish including that purchased from grocery stores. Furthermore, although the study listed the oil and gas industry as a "potential source" of contaminates studied, the study report did not state that the low level of contaminants in the species studied resulted from discharges from the oil and gas industry. Meanwhile, the 2010 PWS demonstrated there was no indication that oil and gas discharges are resulting in increases of contaminants in nearby sediments and biota above background concentrations. The ATSDR report also evaluated bivalves collected by RCAC targeting contaminants for oil and gas facilities. In most cases, polycyclic aromatic hydrocarbons (PAHs) were either not detected or were found at very low levels; ATSDR could not determine that eating bivalves could harm public health. It is also noteworthy that detected PAHs may not be associated with petrogenic sources, but rather pyrogenic sources (e.g., spent fuels or atmospheric deposition from forest fires or emissions across the globe). Based on current evidence, produced water PAH characterization and sediment and biota data, there are limited petrogenic PAHs being discharged such that concentrations are typically low in the discharges and the environment.

No modifications to the Fact Sheet or Permit have resulted from this comment.

2.4 Section Overview: Comments by LaLiberte' Environmental Associates, Inc. (LEA)

DEC received a Draft Permit Technical Review report from LaLiberte' Environmental Associates, Inc. (LEA) commissioned by Inletkeeper. DEC provided mixing zone applications sealed by an Alaska Professional Engineer (PE) to Inletkeeper upon request for LEA to critique. The Technical Review submitted by LEA that criticizes mixing zones and water-quality based effluent limit (WQBEL) development for the Draft Permit is not equivalently sealed by a PE.

2.4.1 Historical Overview: Previous LEA Comments

LEA provided similar comments when EPA issued a Draft Permit for public comment in 2006. Predominantly, LEA comments indicate significant confusion over the regulations DEC applies when authorizing mixing zones in marine waters and attempts to interject generalized guidance in place of applicable mixing zone regulations per 18 AAC 70.240. This confusion over regulatory authority is exemplified by LEA insistence that DEC use guidance established in

Washington State or the TSD instead of 18 AAC 70.240. Hence, the Washington Guidance and the TSD are not regulatory requirements and DEC appropriately applies current mixing zone regulations while authorizing mixing zones in the Permit. Many of the LEA comments tend to be unprofessional opinions based on misapplication of guidance over regulation and perpetuate several false claims from past comments. These false claims include, but may not be limited to:

1. Several studies have classified Cook Inlet as an estuary; therefore, the appropriate mixing zone modeling technique must treat the receiving water as an estuary.
2. DEC did not accurately evaluate representative tidal conditions including tidal reversal, instantaneous or maximum tidal velocity, or stratification from freshwater sources.
3. DEC first determined how much pollution is desired to be discharged by the applicant and then back-calculated the size of the mixing zone to meet it.
4. The increase in mixing zone sizes have a direct relationship to the increases in pollutant loads, per false claim #3.
5. The physically expanded mixing zones define the boundary at which the revised permit limits are reported.
6. DEC appears to use Washington Mixing Zone Guidance, but yet the mixing zone for Trading Bay is 64 times the size of what would be allowed in Washington.
7. DEC distorts the mixing zones in favor of the discharger while claiming "zero discharge" is unattainable, yet there are hundreds of injection wells in Cook Inlet.: DEC does not provide a sufficient analysis of the technological constraints or the cost of imposing "zero discharge."
8. DEC does not identify the specific input or output files resulting in permit limits.
9. The effluent characterization is not representative because data was determined using grab samples at a frequency that is too low to capture variability.
10. DEC did not base the acute mixing zone on the length scale as described in the TSD.

The following subsections discuss some of these meritless comments in light of significant advancements made by DEC using new receiving water hydrodynamic data.

2.4.1.1 Comment: Mixing Zones Increase Produced Water Pollutant Loads

LEA claims that because the mixing zone sizes have increased, this must be due to increased parameter loads.

DEC Has Not Increased Pollutant Loads

During reissuance of the 2007 GP, permittees submitted mixing zone applications based on discharge flow rates depicting projection of produced water rates near the end of the life of the producing formations. Hence, the flow rates were increased during reissuance of the 2007 GP rather than during this reissuance, although there have been some addition and elimination of produced water discharge sources (e.g., an increase at the Tyonek, elimination at Anna Platform, and addition of Osprey Platform). Neither the ELGs nor WQS are directly applicable to pollutant loads because the limitations are based on concentrations in the effluent rather than the pollutant loadings, for which these flow rates are a factor.

While the areas of the mixing zones have increased, this is not due to increases in pollutant loads. Instead, the increasez are due to DEC conducting a more robust mixing zone evaluation using new receiveing water data at slack tide conditions that was not previously available and has affected mixing zone dimensions. Hence, the mixing zone sizes are increased due to applying new information on critical hydrodynamic receiving water conditions and not because of increased pollutant loadings. The claim by LEA that loadings have increased with mixing zone areas is not correct as the permitted loadings are based on 1) the AML flow rate and 2) the concentration limits, which are either intentionally the same as in the 2007 GP or reduced. Note that although the intention was for limits to be the same or less, LEA identified four typographic errors where the existing limits were unintentionally shown to have increased over those in the 2007 GP. If these typographic errors for metal limits had been corrected rather than deleted in their entirety per Comment Response 2.2.2.21, these corrections would have resulted in no increases to pollutant loadings from the existing facilities listed in the 2007 GP. The only increase was for produced water pollutant loadings results from the proposed new discharge of produced water for the Osprey Platform. Hence, the new discharge of produced water from the Osprey Platform represented the only increased loading to Cook Inlet and this additional loading has reduced to 0.07707 mgd, such that after considering the increase in the Tyonek discharge and elimination of the discharge from the Anna Platform there is no increase in discharges of produced water proposed under the Permit (See Fact Sheet Section 4.6.3). Accordingly, a Tier II Antidegradation Analysis is not required (See Comment Response 2.2.2.18).

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.4.1.2 Comment: Mixing Zone Guidance from Other States

LEA claims that DEC failed to apply Washington State Guidance or the TSD when evaluating mixing zones.

DEC Uses EPA-approved Mixing Zone Regulations Not Guidance from Other States

LEA inappropriately claimed that DEC must restrict chronic marine mixing zones to 300 meters similar to requirements in guidance documents from Washington State. Requirements in guidance from Washington, or other jurisdictions where LEA may have experience, does not apply to the APDES Program. Instead, DEC authorizes mixing zones per regulations where size limitations for chronic mixing zones are based on aerial or cross-section projections where the mixing zones must be 10 % or less of the area or cross-section of Cook Inlet unless DEC finds that evidence is sufficient to reasonably demonstrate that these size restrictions can be safely increased per 18 AAC 70.240(k)(1). When addressing these size limitations, LEA incorrectly applies longitudinal lengths in place of cross section lengths in an attempt to demonstrate noncompliance with actual regulatory mixing zone size constraints. LEA then claimed that the water quality standards are not being met at 300 feet as would be required in Washington State; therefore, dischargers are not in compliance with the Permit and DEC must require an individual permit for each discharger not in compliance. These claims are false and inappropriately links Washington Guidance with Alaska WQS. In addition, LEA provided no regulatory citation for this claim and there are no regulations DEC is aware of that would require issuances of individual permits even if these claims by LEA had merit.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.4.1.3 Comment: Cook Inlet Must be Modeled as an Estuary for Mixing Zone

LEA claims that DEC failed to adequately model mixing zones in Cook Inlet, which must be done as an estuary.

DEC Appropriately Models Cook Inlet as Oceanic

The 2019 LEA Report generalizes the classification of all mixing zone locations evaluated in the Permit as being applicable to an estuary condition for modeling purposes. The basis of LEAs generalization was through citation to several oceanographic reports that are not tied directly to mixing zone modeling practices. Nor has LEA described a site-specific example that would exemplify this generalization. In this case, the site-specific mixing zone modeling practices conducted by a qualified professional engineer overrides other approaches based on an overgeneralized descriptions of the waterbody. Per the CORMIX Manual Section 2.2.4,

> "It is difficult to generalize the actual practice in implementing the mixing zone regulations, given the large number and diverse types of jurisdictions and permit-granting authorities involved. By and large, however, current procedure falls into one of the following approaches, or may involve a combination thereof.
>
> 1. The mixing zone is defined by some numerical dimension. The applicant then must demonstrate that the existing or proposed discharge meets all applicable standards for conventional pollutants or for the criterion continuous concentration (CCC) for toxic pollutants at the edge of the specified mixing zone.
> 2. No numerical definition for a mixing zone may apply. In this case a mixing zone dimension may be proposed by the applicant. To do so the applicant generally uses actual concentration measurements for existing discharges….The applicant may use further ecological or water use-oriented argument to demonstrate that the size of the predicted region provides reasonable protection. The permitting authority may evaluate that proposal, or sometimes pursue its own independent proposal for a mixing zone."
>
> ….Regarding the acute or criterion maximum concentration (CMC) for toxic pollutants, the spatial restrictions embodied in the TSD call for specific demonstration of how the CMC criterion is met at the edge of the zone of initial dilution. Again, field tests or predictive models may be used."

The comments provided by LEA refer to approach number one, whereby LEA suggests the Washington Guidance overrides APDES mixing zone determinations based on WQS. Whereas, DEC uses approach number two, which is compliant with 18 AAC 70.240.

LaLiberte also claims that because estuary conditions supposedly prevail, DEC must consider site-specific ambient current velocities over the entire period of the tidal cycle, stratification from freshwater inputs, and slack tide conditions including tidal reversal and re-entrainment of the discharge. While estuarine conditions may exist at certain locations in Cook Inlet (e.g., near the mouths of rivers), none of the mixing zone locations evaluated on a site-specific basis by DEC have characteristics that require modeling it as an estuary condition. Furthermore, the mixing zone evaluations conducted by DEC are site-specific and include each of the considerations presented by LEA while also incorporating newly obtained data on current direction and speed

from buoy deployments by NOAA. Although this new information is discussed in Fact Sheet Sections 6.2.1, 6.2.3.6, and Appendix A, LEA seems not to acknowledge this new information in their comments, which suggest LEA comments from the 2007 GP were not updated. In the current Permit, each location was appropriately modeled as oceanic while considering critical conditions over the full tidal cycle using new information and considering potential seasonal stratification. DEC is confused as to why LEA states DEC failed to consider stratification and currents over the full tidal cycle for the current mixing zone evaluation given the Fact Sheet and mixing zone application provided for LEA review provided details on how the DEC evaluation considered those aspects.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.4.1.4 Comment: Authority to Impose Zero Discharge of Produced Water

LEA claims that DEC has authority to impose zero discharge of produced water and that there are hundreds of injection wells operating in the Cook Inlet Basin, suggesting zero discharge could be attained. "The Permit does not provide sufficient analysis of reinjection costs or technical feasibility."

DEC Lacks Authority to Circumvent ELGs and Impose Inappropriate Prohibitions

There are two types of injection wells operating in Cook Inlet: Class II UIC wells and Class I UIC wells. Class II UIC wells are used for EOR within producing oil formations as approved by the Alaska Oil and Gas Conservation Commission (AOGCC). While there are several Class II UIC wells in the Cook Inlet Region as suggested by SRC in Comment 2.3.4, there are not that many available for consideration of injecting produced water from coastal facilities; the vast majority are located onshore too far away from the coastal facilities to be considered logistically or economically feasible in the evaluation of zero discharge (See Comment Response 2.2.2.19). Class I UIC wells are approved by EPA and are typically placed in non-producing formations (e.g., depleted gas formations), which are not consistently available throughout the Cook Inlet Basin per the *ELG Technical Development Document*. And if available, UIC wells are often limited in the amount of injection that can occur without over-pressurizing the formation. As previously presented in Comment Response 2.3.4and per Chapter XI, Section 4.2 of the *ELG Technical Development Document*:

> "In particular, injection of produced water at the onshore treatment facilities is not technically possible because the geology of the underlying formations cannot accept large volumes of produced water."

However, injection of produced water back into oil producing formations (i.e., Class II UIC Wells) for EOR is possible, but this too has logistical and cost issues. EPA determined initially, and in subsequent ELG amendments, that the alternative of piping produced water from onshore treatment facilities back to the platforms where Class II wells capable of accepting treated produced water would not be economically achievable. Per Chapter XIV, Section 3.2.3.2 of the *ELG Technical Development Document*:

> "EPA considered Cook Inlet separately from other areas in the coastal subcategory because Cook Inlet is geographically isolated from other areas in the coastal subcategory, zero discharge of produced water would have a disproportionate adverse economic

> impact in Cook Inlet. Unlike states along the Gulf Coast, only the production formation is generally available for injection of produced water. Because of this, zero discharge would require the additional costs associated with piping produced water from the existing production facility to existing waterflood injection sites."

There are no practicable means for DEC to impose zero discharge of produced water under applicable regulations, 40 CFR 125.3(c) cited in 18 AAC 83.440(c)(2) and adopted by reference in 18 AAC 83.010. EPA has promulgated ELGs for the Oil and Gas Extraction and DEC has adopted these regulations by reference in 18 AAC 83.010. Because the ELGs do not require "zero discharge" for Cook Inlet, DEC does not have authority to impose more stringent TBELs on a case-by-case basis per 40 CFR 125.3(c), which states

> "TBELs may be imposed through one of the following three methods: 1) imposition of the EPA promulgated ELGs, or 2) on a case-by-case basis under Section 402(a)(1) of the Act, to the extent that EPA-promulgated ELGs are inapplicable. The permit writer shall apply the appropriate factors listed in Section 125.3(d), or 3) through a combination of (d)(1) and (2) of this Section. Where promulgated ELGs only apply to certain aspects of the discharger's operation, or to certain pollutants, other aspects or activities are subject to regulation on a case-by-case in order to carry out the provisions of the Act."

Because EPA has promulgated ELGs that are directly applicable to Cook Inlet dischargers, DEC cannot legally impose TBELs contrary to the ELGs. However, it is recognized that DEC could impose WQBELs that are more stringent than the ELGs, but applying zero discharge cannot be accomplished through application of Alaska WQS based on current Cook Inlet conditions within the regulatory framework. The imposition of zero discharge would need to be based on 1) a quantified determination that Cook Inlet is significantly impacted, or impaired, such that it can no longer accept pollutant loads and 2) a clear demonstration that alternative disposal alternatives are practicable to result in zero discharge. First, as determined in the *ELG Technical Development Document* by EPA zero discharge through underground injection is not technically feasible in all facility locations and the alternative of piping from onshore treatment to Class II UIC wells at the platforms is not economically achievable. DEC concurs with this determination. Second, Cook Inlet is not impaired and appears to have adequate assimilative capacity based on recent studies for the proposed discharges that, in the Fact Sheet, have been demonstrated to comply with WQS such that the existing uses of the water are being fully protected. Nor is there scientific information contained in peer-reviewed studies conducted to date that would indicate adverse impacts have occurred from oil and gas discharges; the 2010 PWS concluded that there is currently no indication of adverse impacts resulting from the 50 years of Cook Inlet oil and gas discharges. Hence, imposing zero discharge to a Tier II waterbody is inappropriate under WQS unless there is a definitive demonstration that there are environmental impacts and an alternative disposal method is technically feasible.

A definitive demonstration of alternative disposal via injection is not holistically achievable for coastal Cook Inlet and even those facilities that can use injection for a period of time may not be able to do so for the life of the facility (i.e., Osprey Platform). The impracticability of applying zero discharge is based primarily on inconsistent access to formations technically able to serve as a depository of waste over the entire coverage area and the life of the facility when considering cost and logistics in light of overall permit objectives (e.g., piping to from onshore treatment

facilities back to offshore Class II UIC wells per the *ELG Technical Development Document).* Based on DEC's evaluation in the mixing zone section of the Fact Sheet, the highest statutory and regulatory requirements are being met and lowering water quality is necessary to support important social or economic development in the Cook Inlet Region. DEC need not conduct additional evaluations to demonstrate the inapplicability of injection over discharging, whether for TBELs or WQBELS, as EPA has accomplished this through rulemaking, which DEC has adopted in regulation. Furthermore, despite requests submitted by EPA Region 10 on behalf of non-government organizations, none of the biennial reviews of the Oil and Gas Extraction ELGs conducted by EPA Headquarters have resulted in changes to Cook Inlet ELG coverage indicating the existing determination is still valid in light of existing conditions in Cook Inlet. For related discussions, see Comment Responses 2.3.4, 2.3.4, 2.4.2.3, 2.4.2.3, and 2.5.2.9.4.1.

No modifications to the Permit or Fact Sheet have resulted from this comment.

2.4.2 Specific Comments by LEA

Because Inletkeeper leans heavily on comments provided by LEA under a third-party contract, DEC addresses each LEA comment directly first and then refers back to these comments when responding to Inletkeeper. In addition, the background sections similarly provide supporting information in these responses.

2.4.2.1 LEA Comment #1: Cook Inlet is an Estuary for Modeling Purpose

Per false claims 1 and 2, LaLiberte claims after reviewing Cook Inlet oceanographic reports that all of the mixing zone locations are in estuaries and requires DEC to apply estuary modeling techniques in CORMIX. LEA claims that DEC modeled the receiving water like a river with non-varying flow and either weak or no stratification. DEC must consider realistic critical conditions for temperature, salinity, tidal flow velocities and directions, ambient background concentrations, stratification, outfall configuration, and maximum effluent concentrations. DEC is determining the pollutant loads desired and then back-calculating expanded mixing zones, which is contrary to sizing mixing zones to be as small as practicable. The physically expanded mixing zone defines the boundary at which the revised permit limits are reported.

Background for DEC Response

LEA had a similar comment on the 2007 GP where the robustness of the mixing zone modeling was questioned. Yet the 2007 GP became effective and the mixing zones were authorized. In 2014, DEC conducted stakeholder outreach to discuss the 2007 GP and what concerns the stakeholders had that could be done better under the philosophy of making incremental improvements during the next permit reissuance. One of the most requested incremental improvements was better mixing zone evaluations using site-specific information where it is currently available. The excessively long and narrow mixing zones in the 2007 GP suggested more information surrounding slack tide would be beneficial to evaluate whether reentrainment occurs during the next tidal cycle.

In 2011, applicants (UNOCAL, XTO, and ConocoPhillips) submitted initial mixing zone applications to DEC that were similar to the 2007 mixing zone applications. Heeding the concerns from the workshops, DEC required the current applicant (Hilcorp Alaska, LLC) to

submit revised mixing zone applications as the new owner that took into account the following new information obtained since 2007 GP issuance including:

- the ambient metal concentrations and conductivity from the 2010 PWS,
- conductivity, temperature, and depth (CTD) data from the 2010 PWS, and
- tidal currents and directions from buoys deployed by the NOAA in 2016.

Significant effort went into developing the revised mixing zone evaluation as DEC, Hilcorp, and their consultant Parametrix collaborated over a period of 1.5 years to accomplish the tasks requested during stakeholder outreach. Prior to the site-specific CTD data from the 2010 PWS, seasonal stratification and current speeds were estimated from the oceanography report of Okkonen and Howell, 2003 to the extent practicable; several discharges were outside the region of the study in the report and the accuracy of extrapolation was a concern. The new site-specific data allowed for significant refinement to previous mixing zone studies over the generalized oceanographic reports.

DEC Appropriately Models Cook Inlet Based on Site-specific Receiving Water Information

Per the Supplemental Mixing Zone Study for Cook Inlet Oil and Gas Platforms, March 31, 2017 (Supplemental Mixing Zone Study), "an evaluation of the ambient data that has become available since these discharges were previously modeled (Parametrix 2004) has substantially affected the proposed mixing zones as further described in context throughout this mixing study." Cook Inlet has a unique hydrodynamic environment that must be considered when evaluating mixing zones. However, this unique hydrodynamic environment is not that of an estuary condition at the mixing zone locations covered by the Permit as alluded to by LEA. The critical conditions used in the modeling by Parametrix appropriately considers the critical hydrodynamic conditions present at each mixing zone location. The following subsections address each critical condition separately as appropriate.

Stratification

The 2010 PWS provided 55 CTD casts that were used to evaluate critical stratification conditions for mixing zone modeling. Most of the casts (38) were taken near the TBPF while the remaining 17 casts were at various locations over the remaining coverage area. The CTD profiles were plotted for each cast and identified according to the tidal cycle at the time of data collection to understand whether stratified or unstratified conditions may be associated with ebb, flood, or weak current intervals. Except for TBPF, there were no observed trends for stratification associated with tidal stage. Because stratified and unstratified conditions were associated with all tidal currents (except the ebb tides at TBPF), Parametrix applied a linear stratification using the median deep density of 16 sigma-T (σT) and the median shallow density of 15.3 σT. These critical conditions reflect prevalent summer conditions as well as the shallow and deep densities of the most stratified TBPF flood CTD cast. Given stratification is greatest during the thawed season, the linear stratification represents critical conditions with respect to seasonality. This linear stratification was applied everywhere except TBPF where other critical conditions were prevalent.

For the TBPF, 11 of 15 most stratified profiles occurred during the ebb tides, where the CTD casts indicate a stronger stratification difference between the top and bottom of the water column

with a sharp pycnocline at the 3-meter to 8-meter depth range. Hence, the ebb or flood conditions with a pycnocline were used as the critical condition for stratification at TBPF. Overall, the CTD casts resulted in better definition of the critical conditions for stratification for all mixing zones evaluated. The claim by LEA that critical stratification conditions were not modeled by DEC is not correct.

Current Velocities and Directions

New data from three NOAA tidal stations were used to evaluate appropriate current velocities and directions using tidal averaging techniques. The three NOAA tidal stations each provided current speed and direction at multiple depths recorded in six-minute intervals. While there are nuances associated with tidal averaging techniques, the concept used by Parametrix is consistent with the TSD. Parametrix divided the range of current speeds into 20th-percentile groupings with the midpoint representing the group. Hence, the current speeds used in the mixing zone analysis were the 10th, 30th, 50th, 70th, and 90th percentile currents. The 2006 Mixing Zone Study evaluated just the 10th and 90th percentile currents, 0.3 meters per second (mps) and 2.3 mps, respectively. Evaluating the currents from the three NOAA tidal stations resulted in a range of velocities for each percentile that reflects the spatial variation of current velocities. Hence, the tidal average velocities used at each facility varies slightly with respect to their location comparative to the NOAA tidal stations to achieve the objective of determining site-specific velocities. Hence, contrary to LEA claims DEC evaluated the full range of current speeds and direction in the mixing zone evaluation.

Parametrix prepared scatter plots and current roses at the 10th percentile current (period of minimal dilution) and the 90th percentile (an off-design condition). Of interest in this evaluation is the frequency and range of currents during slack tide represented by the 10th percentile, the ebb and flood centerline projections, and whether or not the slack tide currents or the plume centerline projections promote plume re-entrainment. Bearings for the 10th and 90th percentile current speeds were determined by the scatter plots. The scatter plots demonstrate the narrow range of the 90th percentile current bearings; whereas, the scatter plots of the bearings for the 10th percentile currents demonstrate a wide range of current directions. The plot of current direction with magnitude (i.e., current rose) shows the inverse relationship between current speed and bearing range; the lower the current speed the wider the range of bearings. These indications combined demonstrate that evaluating plume width using the 10th percentile current and the length using the 90th percentile current is appropriate and re-entrainment is not likely to occur given the wide range of current bearings that occur during slack tide. In addition, except for TBPF and MGS Onshore, the plume centerline directions are aligned with the bearings of the tidal station data in proximity with the discharge. The centerline for TBPF was determined using drogue tracks conducted during the 2010 PWS data collection and MGS Onshore was determined using GIS and graphical techniques due to the discharge being close to the shoreline. In many cases, the 90th percentile currents for the ebb and flood tides were not 180 degrees (°) apart. This too supports the conclusion that re-entrainment is not likely a concern.

LEA claim that DEC did not accurately evaluate representative tidal conditions including tidal reversal, instantaneous or maximum tidal velocity, or stratification from freshwater sources is not true. In addition, Parametrix appropriately modeled the mixing zones based on site-specific conditions as oceanic and not estuarine.

Maximum Expected Concentrations and Pollutant Loadings

DEC also required the applicants to update the effluent data submitted with the mixing zone application. The mixing zone applications submitted in 2011 presented much of the same data provided for the 2007 GP except for the onshore treatment facilities TBPF, MGS Onshore, and Granite Point Tank Farm. This was due to lack of recent discharge data from the platforms that send production fluids to onshore coastal treatment facilities and/or did not discharge during the term of the previous permit (See Fact Sheet Figure 2 and Table 15). In some situations, the MEC of a pollutant in the effluent was based on few data points, which resulted in anomalously high MECs due to application of large reasonable potential multipliers (RPMs) that are determined by the underlying distribution of the data and the number of data points (See Fact Sheet Appendix B – Reasonable Potential Analysis). Note that the number of data points also affects the limits much the same way as the MECs, the more representative data available the smaller the limit. For these reasons, DEC required the applicants to research historic records in order to increase the number of representative data points for evaluating the MEC and limits.

When historic data was found to also be lacking, DEC allowed the applicant to use available data from another facility based on the understanding that the produced water originates from the same geologic formation and should have similar characteristics. Hence, the source of the produced water is the same and the data is considered representative and was used in the modeling. Note that this data also had a positive impact on the effluent limits for produced water in the Draft Permit that were developed after authorizing the mixing zones. For produced water, none of the limits increased and most saw a minor reduction. Similarly, the produced water flow rates used in the mixing zone evaluation and the flow limits in the Draft Permit remained unchanged from 2007 GP except for the Anna Platform where the discharge of produced water has been eliminated and the Osprey Platform where the discharge of produced water is proposed.

Pollutant loadings are the product of flow and concentration. The fact that the limit concentrations are the same or lower and the flow rates are mostly the same as that in the 2007 GP means that there are no increases in pollutant loadings for the existing discharges. LEA suggests that the larger mixing zones are based on increases in pollutant loadings and that the mixing zones were increased due to DEC's desire to increase loadings. This is not true. The mixing zone sizes have increased due to having new information about the critical receiving water conditions that resulted in mixing zone widths becoming larger due to new data that indicates highly variable currents observed during slack tide and applying site-specific linear stratification density profiles obtained through the 2010 PWS. Although the overall mixing zone areas have increased, they have not increased unacceptably beyond the aerial size constraint of 10 % of the available receiving water area of the Permit. The mixing zones are sized to ensure aquatic life and human health water quality criteria are met at the boundary of the chronic mixing zone, such that the existing uses beyond the boundary of the mixing zone are being fully protected. The effluent is being treated to remove, reduce, and disperse pollutants in the most effective, technologically, and economically feasible way and is consistent with the highest statutory and regulatory requirements per 18 AAC 70.240(c)(1). Lastly, there is no lethality to organisms passing through the acute mixing zones. Therefore, the mixing zones are sized to be as small as practicable per 18 AAC 70.240(k). Lastly, LEA states that the limits imposed are monitored at the boundary of the mixing zone. This is not correct as the limits are based on the

applicable wasteload allocation as monitored at the end of pipe and not at the boundary of the mixing zones.

No modifications to the Permit or Fact Sheet have resulted from this comment.

2.4.2.2 LEA Comment #2: Failure to Provide Requested Mixing Zone Data

Inletkeeper requested all relevant mixing zone data in a public information request for LEA to review. DEC provided all relevant mixing zone information available to Inletkeeper in February 2019. However, LEA insinuates in LEA Report Table 3 that DEC failed to provide certain information such as the mixing zone applications for the Furie Alaska, LLC, Kitchen Lights Unit Julius R Platform and the AK LNG Geotechnical Program. In addition, although numerous output files are provided they are non-representative and DEC does not identify the specific CORMIX input and output files that result in promulgated permit effluent limits.

DEC Provided Mixing Zone Data and Applications Per Public Information Request

DEC is confused by LEAs comments that information is missing from the information request; all mixing zone information has been provided. DEC believes the LEA comment may be based on there being no actual Form 2M submitted for the two permits. DEC does not require Form 2M submittals so long as the written report has all necessary information from the form. After claiming there is missing information, LEA goes on to critique the missing mixing zone reports later in LEA's report suggesting the administrative record was complete based on the information provided to Inletkeeper in February 2019. If not, LEA should contact Inletkeeper to get the public information DEC has provided to them upon request (See Comment Response 2.5.2.1).

DEC is also confused by LEAs statement that the mixing zone input and output files result in promulgation of effluent limits. The CORMIX model does not determine effluent limits. CORMIX model output is used to determine the appropriate size of a mixing zone based on the applicable dilution authorized by DEC. The authorized dilution factor is then used per the *RPA& WQBEL Guide* to derive appropriate limits. Nonetheless, DEC reviewed the 2017 Supplemental Mixing Zone Application to evaluate whether there are missing input files or output files that may have led to LEA's claim that DEC failed to identify appropriate model runs. The mixing zone application is arranged with Appendices for each category of discharge requiring a mixing zone (i.e., domestic wastewater, noncontact cooling water, waterflooding, produced water, etc.). The organization of the appendices are similar with a summary page(s) for each facility and discharge category followed by the input and output files reflected in that summary. DEC does not understand how LEA could not find the appropriate input and output files in the 2017 Supplemental Mixing Zone Application as it appears well organized and cross-referenced. Missing mixing zone information appears to be yet another false claim levied by LEA.

No modifications to the Permit or Fact Sheet have resulted from this comment.

2.4.2.3 LEA Comment #3: Prohibitions and Highest Statutory/Regulatory Treatment

LEA claims DEC appears to be incapable of enforcing discharge of produced water via underground injection, yet there are apparently hundreds injection wells operating in the Cook

Inlet Basin per the AOGCC website. LEA further states that DEC allows these discharges of produced water by developing large mixing zones and this distorts discharges in favor of the discharger. The Fact Sheet does not provide sufficient analysis of reinjection costs or technical feasibility to demonstrate zero discharge is impracticable.

DEC Appropriately Determines Injection is not Practicable

LEA inappropriately counts onshore in the total count of injection wells. While there are many Class II UIC wells operating in offshore Cook Inlet, these are used exclusively for EOR, which limits the volume injected to the volume extracted (i.e., parity). Furthermore, onshore disposal Class I UIC disposal wells are not technically feasible at the locations of the onshore coastal treatment facilities and the logistics of piping produced water back to platforms where Class II UIC wells exist is cost prohibitive per the *ELG Technical Development Document*. EPA evaluated the potential for injection at the shore-based coastal treatment facilities but there are no formations at these locations that could accept the necessary volumes without exceeding pressure constraints. EPA then considered piping from onshore back to the platforms where produced water could be injected back into producing formations (i.e., Class II UIC wells). However, the costs necessary to transport the produced water back to the platforms was not economically feasible and would pose a disproportionate economic burden on Cook Inlet producers (See Discussion in Comment Overview 2.4.1.4).

DEC appropriately states that the effluent is being treated to remove, reduce, and disperse pollutants in the most effective, technologically, and economically feasible means, consistent with the highest statutory and regulatory requirements per 18 AAC 70.240(c)(1). The highest statutory and regulatory requirement applicable to mixing zone authorizations are the TBELs. Because TBELs have been promulgated by EPA in the ELGs, DEC cannot impose more stringent TBELs through a case-by-case determination. DEC appropriately applies mixing zone regulations per 18 AAC 70.240 in authorizing mixing zones under the Permit. For more discussion on zero discharge see Comment Responses 2.3.4, 2.4.2.3, and 2.5.2.9.4.1.

No modifications to the Permit or Fact Sheet have resulted from this comment.

2.4.2.4 LEA Comment #4: Acute Mixing Zones Sizing for Toxic Substances

LEA claims that DEC did not correctly size the acute mixing zones and because the acute mixing zones were incorrectly sized, the chronic mixing zone are also incorrectly sized because it must be 10 times that of the acute. LEA states that the acute mixing zone must be sized according to the TSD based upon three EPA test criteria: the acute zone must be no further than five times the water depth; no greater than 50 times the discharge length scale (the square root of any cross-sectional area of the discharge outlet; or within 10 % of the distance from the outfall to the boundary of the chronic mixing zone). Because DEC did not size the acute mixing zone according to these three recommendations, the mixing zones cannot be classified as being "small as practicable." LEA goes on to exclaim that it appears that DEC and Parametrix are using the Washington State mixing zone methods because they are using the 10^{th} and 90^{th} percentile velocities but yet neither DEC or Parametrix acknowledge it. Washington State constrains the maximum mixing zone sizes in estuarine waters to be 200 feet plus the water depth at that location and ocean waters are 300 feet plus water depth. LEA assumes that Washington State guidance apply in Alaska and compares the mixing zone authorized by DEC to those that should

have been authorized per Washington guidance for estuaries. Then, by claiming the size of the Alaska mixing zones should be the size dictated by Washington, LEA states that the mixing zones authorized by DEC do not comply with WQS at the boundary of these mixing zones sized according to Washington standards. The claim that mixing zones are not small as practicable due to failure to size the acute mixing zone according to length scales and that the mixing zones fail to meet water quality standards is repeated for four new discharges included in the Permit for the first time: Furie Julius R Platform, the Osprey Platform, the Sabre Exploration Project, and the AK LNG Geotechnical Investigation. Coincidentally, these four discharges are new to the Permit.

DEC Correctly Conducts Mixing Zone Evaluations Per Alaska Regulations

LEA has several misconceptions and incorrect assumptions about DEC mixing zone regulations and approaches. Unlike Washington State, Alaska does not automatically constrain mixing zones in marine water. Instead, such size restrictions may be considered based on the need to protect a sensitive location, (e.g., oyster beds, swimming beaches, kelp beds, etc.) but would not be arbitrarily assigned as suggested by LEA. Once DEC determines that the methods used to remove, reduce, and disperse pollutants are the most effective, as well as technologically and economically feasible consistent with the highest statutory and regulatory requirements and verify the receiving water is not impaired, DEC determines the size of the acute and chronic mixing zones based on meeting the respective water quality criteria at the acute and chronic mixing zone boundaries. Boundaries are determined through modeling the effluent and receiving water at critical conditions. Critical conditions of the effluent are the MEC and the maximum discharge rate. Whereas, the critical receiving water conditions are those that result in ensuring acute and chronic water quality is always met at the respective mixing zone boundaries. In establishing critical conditions in this manner, DEC can ensure the existing uses of the waterbody are protected as a whole because the water quality criteria ensure protection of the uses. Hence, if the treatment is appropriate and assimilative capacity is adequate, the mixing zone sizes are determined through modeling techniques based on meeting water quality criteria. Furthermore, the determination that the mixing zones are small as practicable is based on the size restrictions in the WQS. DEC determined that the mixing zones are small as practicable based on the version (2006) of the mixing zone regulations currently approved by EPA for use in the APDES Program. Per 18 AAC 70.240(k)(1):

> "The Department will approve a mixing zone, as proposed or with conditions, only if it finds that the mixing zone is as small as practicable and will comply with the following size restrictions, unless the Department finds that evidence is sufficient to reasonably demonstrate that these size restrictions can be safely increased."

As described in 18 AAC 70.240(k)(1)(A) and (B) for estuarine and marine waters, the size restrictions are either 10 % of the critical cross-section of the inlet or 10 % of the area. The aerial restrictions were met easily. Although the linear size restrictions based on the critical cross-section was slightly over 10 %, (10.9 %), DEC found there was evidence sufficient to reasonably demonstrate that the size restriction could be safely increased as the aerial comparison of the mixing sizes to that of the coverage area in Cook Inlet was significantly less than 10 % of the overall coverage area (0.31 %). Therefore, DEC determined the chronic mixing zones are as small as practicable based on current Alaskan mixing zone regulations approved by EPA (See

Fact Sheet Appendix A). Neither the mixing zone guidance from Washington State nor the TSD supersede these legal requirements in 18 AAC 70.

For the acute mixing zone, LEA misrepresents the use of 50 times the length scale, five times the water depth, or 10 % of distance to the chronic mixing zone for sizing acute mixing zones. These general rules originated from the EPA Water Quality Handbook and are presented in the TSD and the CORMIX Manual, guidance documents, to help ensure acute mixing zones are sized to avoid lethal exposure to passing organisms for discharges of toxic substances. While the actual regulations in 18 AAC 70.240(d)(7) require no lethality to passing organisms, the regulations to not prescribe how this requirement must be determined. Per 18 AAC 70.240(d)(8):

> "The Department will approve a mixing zone, as proposed or with conditions, only if the Department finds that available evidence reasonably demonstrates that within the mixing zone the pollutants will not…exceed acute aquatic life criteria at and beyond the boundaries of a smaller initial mixing zone surrounding the outfall, the size of which shall be determined using methods approved by the Department."

Accordingly, DEC would not approve the methods presented by LEA as they would not ensure the requirement for acute aquatic life criteria being met at the boundary of the smaller acute mixing zone.

The misused rules presented by LEA represent one of four approved methods to demonstrate non-lethal conditions in mixing zones per EPA Water Quality Handbook (WQH), Chapter Five. The first rule is to require the discharge to meet acute water quality criteria at the point of discharge. For many of Cook Inlet discharges, this level of treatment is not feasible, and an acute mixing zone is necessary. The second rule is to ensure during design of the outfall structure that the discharge velocity maintained is greater than 3 mps as this promotes rapid mixing in the nearfield and reduces the likelihood that the acute zone is too large for a passing organism to traverse without lethality. However, the 3 mps velocity is not always necessary to meet this objective and the TSD does not stipulate this requirement because it is recognized that other design conditions related to the remainder of the rules can accomplish the goal, especially when the ambient velocity is large, like it is in Cook Inlet. The third rule is the one presented by LEA; the dimensions of the acute mixing zone are based on length scales, depth, or linear percentage of the chronic mixing zone. While applying these rules tend to limit the size of the acute mixing zone, they do not have a direct application to meeting acute water quality criteria. Furthermore, the insinuation by LEA that the chronic mixing zone can be sized based on 10 times the acute is also mischaracterized and inappropriate. The actual language allows the acute mixing zone to be sized at 10 % in any spatial direction of the chronic but not vice versa. The WQS require the chronic aquatic life water quality criteria to be met at the boundary of the chronic mixing zone to ensure protection of existing uses. Per the proposed LEA approach, there would be no guarantee that the acute or chronic criteria would be met by applying the 10 % rule and if not, the mixing zone(s) would have to be expanded in order to comply with Alaska WQS.

The fourth and final approach is for the applicant and regulating authority to determine whether a floating organism would be exposed to the concentrations exceeding the CMC of a pollutant in the acute mixing zone necessary to cause lethality, which is taken to be greater than 1 hour averaged. Per TSD Section 2.2.2, if a floating organism can traverse the acute mixing zone within 15 minutes then it is generally accepted that no lethality would occur (i.e., not greater than

1-hour averaged). Per Fact Sheet Section 6.2.4, the largest acute mixing zone was evaluated and the time a floating organism would be exposed to the acute mixing zone is less than 4.5 minutes. Hence, the largest and all other smaller acute mixing zones meet the requirements for no lethality. Lastly, when comparing the lengths and widths of chronic mixing zones to the lengths and widths of acute mixing zones for produced water, on average the acute mixing zone lengths are approximately 4 % of the chronic and the acute widths are approximately 6 % of the chronic. Hence, the 10 % rule is actually being met by the methods used by DEC.

No modifications to the Permit or Fact Sheet have resulted from this comment.

2.4.2.5 LEA Comment #5: Mixing Zones Expanded Due to Increased Loadings

LEA claims that the expanded mixing zones boundaries establish the point of compliance with the revised permit limits. Because the mixing zones have expanded, this correlates to an equivalent expansion of pollutant loads authorized by the permit. “For the same facility flow and concentration limit, pollutant loadings must increase.”

DEC Expanded Mixing Zones Based on New Receiving Water Data Not Loadings

The LEA statement that the point of compliance is the boundary of the mixing zone is incorrect; all permit limits are developed to comply with wasteload allocations applied at the point of discharge determined via the ambient receiving water concentrations, water quality criteria, and the authorized mixing zone dilution factors. For non-impaired waters that do not have a total maximum daily load (TMDL), a wasteload allocation is the concentration of a parameter discharged at the end of pipe that would result in meeting water quality criteria at the boundary of the acute or chronic mixing zones. Accordingly, the wasteload allocation determines limits and the compliance point for those limits are at the point of discharge. Hence, the compliance point for effluent limits is not at the boundary of the mixing zone.

Pollutant loads are calculated by multiplying the average monthly flow in mgd by the limit concentration in mg/L and the unit conversion factor 8.34. As stated previously, because neither the permitted flows nor limits have increased for produced water (after correcting four typos), there are no increases in pollutant loadings for produced water. Furthermore, because pollutant loads have not changed there can be no rational assumption that DEC conducted back-calculated the size of the mixing zones to match as there would be no changes to back-calculate. As stated previously, the increases in mixing zone sizes reflects the impacts of the new data for stratification and slack tide currents rather than creative mathematics as suggested by LEA, that would violate the law of conservation of mass and energy. For more information on this topic, see Comment Responses 2.5.2.5.3, 2.5.2.8.3, and 2.5.2.9.1.

No modifications to the Permit or Fact Sheet have resulted from this comment.

2.4.2.6 LEA Comment #6: Non-representative Effluent Data Used

LEA has concerns that data used to characterize effluent are non-representative as potential spikes in concentrations may go undetected because infrequent grab samples are used. LEA states that 24-composite sampling at a frequency of four times per month would result in greater accuracy and protection from toxic chemicals. Because of the infrequent sample frequency and use of grab samples, the MECs calculated by DEC using methods in the TSD are misleading

because "grab samples are exposed to mismanagement because a momentary alteration of wastewater flow can be used to mischaracterize continuous wastewater flows, typically in most permitting cases, for a month." EPA provides a statistical method in the TSD for assessing MECs from a small data set that is based on the concept that less frequent sampling will result in reduced accuracy in predicting the MEC. In their evaluation, "DEC does not identify basic methodology for determining MECs from limited data sets. For example, from DMR data. Nor does DEC acknowledge adherence to any guidance, such as the EPA's statistical method, for determining MECs in its water quality and mixing zone assessments."

DEC Uses Data Representative of the Produced Water Source that is Discharged

The 1999, 2007, and the proposed Permit require monthly grab samples for produced water for certain parameters, but overall the frequencies for all monitored parameters vary from weekly to twice per year. DEC does not determine sample types or frequencies based on paranoid suspicion of mismanagement as suggested by LEA. DEC determines frequencies based on multiple considerations including regulatory requirements in 40 CFR 122.48(b) and 18 AAC 83.455(a)(2) and (3) as well as guidance such as *EPA Interim Guidance For Performance-Based Reduction of NPDES Permit Monitoring Frequencies* (*Frequency Reduction Gui*de).

When establishing monitoring requirements, DEC considers the nature of the regulated activity and what is necessary to help ensure monitoring data is sufficient for intended purposes and representative of the effluent discharged. For example, DEC may consider the size and design of the facility, location of the discharge, batch versus continuous discharges, nature of pollutants, compliance history, location of discharge, type of treatment, and the number of data points obtained. Given produced water is the only discharge in the Permit that required a robust statistical analysis in the RPA, DEC calls attention to some of the treatment systems that affect the decision to collect grab samples for this effluent type. The TBPF uses a tertiary sedimentation pond with a significant detention time as the final treatment step prior to discharge. When there is a vessel that stores wastewater upstream of the grab sample collection point, the sample represents an average concentration over the detention time of the vessel. Hence, any spike in the effluent would be dampened and a composite sample is not necessary given the level of mixing (days) that occurs in the tertiary pond prior to sampling. Although not tertiary ponds, other produced water treatment systems have process units with detention times that counter the need to collect composite samples. In addition, grab samples are preferred when effluent variability is considered important, such as conducting characterization, RPA, and WQBEL development. Given an understanding of upstream mixing in the treatment system for produced water and the need to quantify variability of the effluent, it is appropriate to use grab samples as has been specified in each of the previous general permits issued for produced water discharges in Cook Inlet. Composite sampling would not result in better data based on treatment system configurations and data needs.

LEA claims that DEC did not provide adequate statistical basis for how the data was processed, especially when the data sets are supposedly limited. This comment by LEA confuses DEC again. In June 2014, DEC established a *RPA&WQBEL Guide* that describes how DEC statistically evaluates data during the RPA and WQBEL development process. DEC referenced this guide in four separate locations in the Fact Sheet: Mixing Zone Section 4.6.4, Antidegradation Section 10.4.3.4, Reasonable Potential Analysis Appendix B, and WQBEL

Derivation Appendix C. Appendix B and Appendix C include detailed discussion on how DEC uses statistics from the TSD, as reflected in the *RPA& WQBEL Guide*, to obtain the best estimate of the MEC, even when data sets are limited. The MEC is determined using a reasonable potential multiplier RPM that is based on statistical projections of the 99th percentile at a 95 % confidence interval for lognormal, normal, and nonparametric distributions. The TSD uses the 95th percentile and assumes all distributions are lognormal. Hence, the *RPA&WQBEL Guide* is based on the TSD but goes further by applying the 99th percentile and evaluates what the appropriate distribution should be instead of assuming everything is lognormal. These modifications to the procedures are discussed in Chapter 5 of the TSD as allowable approaches by permitting authorities.

The amount of data and the type of the distribution of the data affects the value of the RPM applied to the maximum observed concentration. The fewer the data points, the higher the RPM and resulting MEC estimate. Hence, DEC's procedure accounts for small data sets. Also note that DEC did not accept small data sets from the 2011 applicants and required historical research into available and representative data in order to obtain a data set of a reasonable size. For example, originally the applicant submitted one data point for a produced water discharge that resulted an RPM of approximately nine. After DEC requested robust data sets, the applicant reviewed historic records and submitted representative produced water data that ranged from 12 points at the lowest to 67 at the highest with an average of 40.6. This resulted in RPMs ranging from 1.1 to 4.7 with an average of 1.6, (See Fact Sheet Table 53). The degree to which the LEA comment is incorrect suggests the reviewer did not read, or maybe did not understand, Appendix B and Appendix C in the Fact Sheet where the statistical procedures are discussed in detail.

No modifications to the Permit or Fact Sheet have resulted from this comment.

2.4.2.7 LEA Comment #7: Monitoring Frequency Reduced Too Much

LEA claims that monitoring frequency has been reduced substantially from the 2007 GP where limits for metals were monitored monthly and whole effluent toxicity limits were monitored quarterly. The proposed Permit reduces metal limits to once per quarter and the limits for WET have been removed; WET is still monitored once per quarter. LEA is concerned that the reduction in monitoring frequency could allow limit exceedance to go undetected.

DEC Appropriately Reduced Frequency Using Guidance and Statistics

LEA is not correct in the assessment of monitoring frequencies between the two permits. For some of the parameters being monitored in produced water, the frequencies have actually increased initially in the proposed Permit. The 2007 GP included a provision, II.G.6.a, that allowed for frequency reductions for WET and metals during the term of the 2007 GP based on observed performance (i.e., no exceedances over a year). The allowable frequency reductions were from monthly to quarterly for metals and from quarterly to semiannual for WET. At the end of the 2007 GP term, all facilities were monitoring metals on a quarterly basis.

Frequency reductions based on statistics and observed performance is allowable as discussed in Fact Sheet Section 8.11 that references the *Frequency Reduction Guide*. The *Frequency Reduction Guide* applies a statistical evaluation that reduces potential for missing events that exceed limits. Certain metals and chronic WET qualified for additional reduction in monitoring frequency based on how the long-term average (LTA) of the monitoring results compare to the

AML. For example, DEC reviewed the produced water characterization (Fact Sheet Tables 16 through 24) where the observed averages can be compared to the AMLs from the 2007 GP. Using copper for the TBPF in Table 16, the LTA (5.68 µg/L) is compared to the previous AML (47 µg/L) and indicates copper concentrations are approximately 12 % of the AML. Per Table 1 in the *Frequency Reduction Guide*, the baseline frequency is monthly and based on the copper LTA being 12 % of the AML, a frequency reduction to semiannual is permissible without statistical concerns that a value above 47 µg/L would be missed. However, note that DEC did not reduce this frequency; instead, DEC maintained the frequency at the same level that existed at the end of the 2007 GP term. In this example, copper is also the driving parameter for the acute mixing zone and, per the *RPA&WQBEL Guide* requires a limit for that reason. The *RPA&WQBEL Guide* issued in 2014 corrected misapplication of regulations that resulted in multiple metal limits in the 2007 GP when most metals did not have reasonable potential to exceed water quality criteria at the boundary of the acute mixing zone. Rather than eliminate the metal limits immediately in the proposed Permit, DEC proposed to keep these limits in the Permit and allow further reduction in monitoring frequencies during the next permit term similar Section II.G.6.a in the 2007 GP (See Fact Sheet Section 8.6.7.2 and Permit Section 2.7.9). DEC chose this approach to allow for additional time to monitor the effluent to ensure conditions justifying frequency reduction are still valid and to provide fresh effluent data for characterization during the next permit reissuance. Frequency reductions during the term of the Permit are appropriate per "Timing of Decisions" in the *Frequency Reduction Guide* and will result in the appropriate frequencies being attained by the end of the next Permit term. If the LTAs remain relatively low compared to AMLs during the next reissuance, DEC would remove these unnecessary metal limits at that time.

In Comment 2.2.2.X, RCAC pointed out that these unnecessary limits are inconsistent with the wasteload allocation (WLA) based on the authorized acute mixing zone dilution factors. Because these limits are not appropriate based on 18 AAC 83.435(c) or the *RPA&WQBEL Guide*, DEC is removing all extraneous metal limits from the Permit. Only those metals that drive the acute mixing zone will have limits as required by the applicable regulations and permit development procedures. For those non-driving metal parameters, monitoring will continue with the frequencies established. However, monitoring reduction for metals is being removed as a consequence of removing the limits in their entirety.

No modifications to the Permit or Fact Sheet have resulted from this comment.

2.4.2.8 LEA Comment #8 Section Overview: All New Mixing Zones Incorrect

After targeting the mixing zone modeling for existing discharges, LEA dedicates an entire section of review to the proposed four "new" discharges under the Permit. Many of the discrepancies and inappropriate modeling techniques described for existing produced water discharges were repeated for each of the various new discharges with various unique nuances. These common conditions were addressed in response to comments LEA#1 (2.4.2.1), LEA#4 (2.4.2.4), and LEA#6 2.4.2.6). These common conditions covered in the produced water comments include:

- Tidal Conditions Disregarded,
- Critical Period and Seasonality of Stratification Neglected,

- CORMIX Warnings of Unstable Discharge and Effects on Sediment are Neglected,
- Non-representative Effluent Discharge Concentrations are Used as Critical Values,
- The Modeled Discharges Do Not Comply with Water Quality Standards at 300 feet,
- The Three CORMIX Rules for Acute Zones Were Not Followed, and
- DEC Does Not Input Regulatory Mixing Zone Distances into CORMIX.

LEA then continues to add purported new mixing zone deficiencies specific to each of the four new dischargers. The following summarizes these purported deficiencies per new discharger.

2.4.2.8.1 Comment: Mixing Zone for Osprey Incorrectly Modeled

The Osprey Platform is proposing to discharge produced water for the first time and moving away from zero discharge via injection. The produced water parameters TAH, copper, zinc, mercury, nickel, and manganese failed the acute toxicity length scale requirement and oil and grease would have failed if DEC did not fail to include it in the mixing zone evaluation.

LEA claims that the salinity data collected for the Osprey mixing zone is not consistent with the Okkonen and Howell Report (2003) because the range of salinity from bottom to top of the water column was not observed in the 2010 PWS CTD casts. The data indicates very little stratification. LEA questions the accuracy of CTD casts and speculates that the reason there appears to be a lack of variability of salinity with depth is because the CTD instrument was not allowed to acclimate at depth before taking readings. There are no date/time stamps associated with the CTD at depth to allow reviewers to ascertain if the salinity measurement taken is stable. When a CTD logger is dropped too quickly through the water column there may not be enough time for the logger to measure and transmit data and the fact that there is little stratification in the data suggests there was faulty data collection practices. Furthermore, LEA suggests that the CTD cast used to describe the receiving water conditions at the Osprey is approximately 2.5 miles away and is not representative of the platform location.

DEC Correctly Approved the Modeling for the Osprey Platform

The method used by DEC is to conduct mixing zone evaluations in a manner that does not constrain the mixing zone to a predetermined size. Hence, for the acute mixing zone DEC must ensure that acute water quality criteria is met at the boundary. None of the CORMIX rules presented by LEA actually ensures this condition is met. However, the approach by DEC does (See Response to LEA #4 (2.4.2.4) for more details). Interestingly, LEA indicates that DEC failed to model oil and grease in the acute mixing zone and this too would have failed. Unfortunately, the oil and grease limit is not applicable to the mixing zone evaluation. The numeric limits in the Permit are TBELs, not WQBELs that would be applicable to mixing zone evaluations. The water quality equivalent to the numeric oil and grease limits are narrative “free from” criteria (i.e., no observed sheen). This narrative water quality criteria is not based on the two parameter aquatic life criteria. Hence, no acute numeric criteria exists and inclusion of oil and grease in the mixing zone would be nonsensical.

LEA claims that because there was no observed stratification from the CTD cast done 2.5 miles away the equipment was not operated correctly. DEC has another theory, despite operating the CTD equipment correctly there was no observed stratification at that location and time of the cast. DEC reviewed the study plan and report where the author indicated the CTD equipment,

Seabird SBE 19, was allowed to warm up for approximately three minutes prior to the cast and the rate of raising and lowering was approximately 1 mps. These are standard operating protocols for conducting CTD casts using equipment like the Seabird SBE 19. Furthermore, the quality assurance and quality control objectives were attained whereby the data was acceptable and not questioned by qualified reviewers. Lastly, DEC reviewed Okkonen and Howell (2003) to ascertain the spacing between the CTD casts in their report. Okkonen and Howell conducted CTD casts approximately every two miles, except near shore where this was decreased to one every mile. The extrapolation of the CTD cast to the Osprey, 2.5 miles, is similar to that of Okkonen and Howell and is appropriate for conducting the mixing zone analysis at the Osprey Platform.

No modifications to the Permit or Fact Sheet have resulted from this comment.

2.4.2.8.2 Comment: New Mixing Zones for the Furie Platform

In addition to the common comments raised for produced water (e.g., critical receiving water conditions), comments provided for the Furie mixing zones pertain to the discharge of domestic wastewater (i.e., black water commingled with graywater) containing total residual chlorine up to 1.0 mg/L. Per LEA, the Furie mixing zone fails for acute toxicity but does not explain exactly why, but suggests this is related to claiming the acute mixing zone must be 10 % of the chronic mixing zone, also referred to by LEA as a regulatory mixing zone (RMZ). Or, this claim is due to not meeting the length scale rule flagged by CORMIX (See LEA Table 5). In addition, a RMZ was not defined in CORMIX in order to evaluate whether the acute mixing zone aligns with 10 % of the chronic mixing zone (i.e., RMZ) although they were listed in Form 2M. Lastly, the discharge velocity is below the recommended 3 mps to establish jet mixing conditions.

DEC Correctly Approved the Modeling for the Furie Platform

The response to dictating an RMZ, length scale, or low discharge velocity comments are provided in LEA #4. Although the discharge velocity for the discharge of domestic water is lower than recommended, the resulting mixing in the receiving water is not significantly affected. The acute and chronic mixing zone sizes are small, 11 meters and 20 meters radii, respectively (See AK0053686 and AKG315200). Hence, requiring adherence to a recommended 3 mps velocity is not warranted for this discharge. DEC reviewed Form 2M where the applicant listed the size of the mixing zones as they had been modeled; these dimensions were not presented as RMZs in the mixing zone application. As is often the case, DEC adjusted the mixing zone sizes slightly based on the application submitted by Furie to account for the 1.0 mg/L limit for the facility, which is a TBEL that DEC must ensure meets water quality criteria at the respective mixing zone boundaries.

No modifications to the Permit or Fact Sheet have resulted from this comment.

2.4.2.8.3 Comment: AK LNG Jack-up Platform

In addition to the comments discussed previously for produced water, LEA commented that the mixing zone evaluation of drilling fluids and drill cuttings from geotechnical investigations did not appropriately consider the discharge as “toxic” as related to potential for oils or metals sorbed on to drilling fluid particles nor was there an evaluation of benthic impacts. Although the mixing zone lengths were known, DEC did not evaluate chronic toxicity because DEC claimed

the discharge is non-toxic, which is not correct. LEA states similar to the Furie Platform the mixing zone application included In addition, LEA states that DEC should impose the requirement for 3 mps at the point of discharge.

In addition to the mixing zone comments, LEA also comments that it is confusing as to why the individual permit from which the mixing zone evaluations were applied was purposefully terminated in 2016 after the geotechnical investigation project. LEA speculates that DEC is attempting to administratively protect the LNG discharger under the Permit. DEC has not indicated their plan in the Fact Sheet.

DEC Correctly Approved the Modeling Geotechnical Investigations Using AK LNG Data

LEA incorrectly states that DEC did not present the rationale for including geotechnical investigations in the Permit. DEC discussed this in Fact Sheet Section 3.5.1 based on perceived future needs; using data from the geotechnical investigation to inform future permitting requirements does not implicate AK LNG in any way. Per Section 3.5.1, "Construction of new port facilities or pipelines in Cook Inlet may require offshore geotechnical surveys and HDD [horizontal direction drilling]….Geotechnical surveys, as described above, may obtain coverage under the Permit for Discharge 001 – Drilling Fluids and Drill Cuttings by submitting an NOI and any plan requirements based on the type of drilling fluid used. The Permit includes authorization of chronic mixing zones based on location in Cook Inlet: the east side receives one size mixing zone and the west side receives a different size. The mixing zones are based on those in AK0062278 [AK LNG]." The two main drilling fluid mixtures evaluated for AK0062278 included nontoxic ingredients. However, due to artesian ground water conditions at certain Cook Inlet locations, barite was used as a weighting agent to counter the hydrostatic pressure presented by the artesian aquifers.

The characteristics of drilling fluids and their fate and effects in the environment are discussed in multiple sections of the Fact Sheet: the characterization, mixing zone, and zone of deposit sections. In Fact Sheet Section 4.1.2, DEC begins the discussion on metals in drilling fluids with an emphasis on mercury and bioaccumulation and bioconcentration. "In general, heavy metals within drilling fluids have a very limited bioavailability to marine animals due to their insolubility (EPA 1982). However, if mercury is reduced to methyl mercury in deep sediment deposits, it can become bioavailable to marine animals (Neff 2010). Trefry and Smith (2003) have examined the relationship between barite concentrations in sediments near drilling platforms in the Gulf of Mexico and the methyl mercury concentrations in sediments and concluded there was no relationship. Results from Trefry and Smith (2003) suggest that mercury concentrations in barite are not toxic to marine organisms, as transformation to methyl mercury was not observed. The ELGs use cadmium and mercury as surrogates for the other metals in barite and limits barite sources to 3.0 mg/kg cadmium and mercury to 1.0 mg/kg. This source control helps prevent excessive amounts of solid phase metals being discharged into the environment.

The key discussion on metals in drilling fluids is located in Fact Sheet Section 6.2.3.1 and 6.3. Per Section 6.2.3.1, "To account for trace metals attached to barite and clay in the drilling fluid, the authorization includes arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc. These metals are listed in the chronic mixing zone to be consistent with the authorized zone of deposit even though they are not anticipated to be solubilized in the

water column (See discussion for barite in Section 4.1.3).” Per Section 4.1.3, “Because metals in barite typically exist as inclusions of insoluble metal salts, limits based on dissolved water quality criteria are not practicable.” Hence, the use of barite as a weighting agent does not create a toxic discharge due to metals.

Also in Fact Sheet Section 4.1.3, DEC expands the discussion to introduce the concept of SPP toxicity requirements. “Industry practice relies on SPP toxicity estimates or test results to characterize a specific drilling fluid formulation. An SPP toxicity test (EPA Method 1619) determines the LC_{50} of drilling fluids and additives in a 96-hour toxicity test. Per 40 CFR 435, a concentration of 30,000 ppm by volume (3 % solution) or less is considered to be toxic and cannot be authorized to be discharged under any circumstance. An LC_{50} greater than 100 % (1,000,000 ppm) indicates that drilling fluid mixture did not result in 50 % mortality during the SPP test. Note that even these non-toxic drilling fluids require an APDES permit if discharged due to their meeting the definition of a point source under the CWA and other potential water quality concerns (e.g., high turbidity, zones of deposits, etc…).” The SPP tests include sediment because it is partly the sediment that causes toxicity through abrasion. Both of the drilling fluid mixtures that did not include barite from the AK LNG Geotechnical Program had SPP results greater than 100 %. Furthermore, the source control for drilling fluid mixtures using barite establishes a limitation on the SPP of 50 %. In a mixing zone, this would require a dilution factor of two in order to equate to greater than 100 %. Given a dilution factor of two would be met within a few feet of the discharge, even the toxicity associated with the use of barite is minimal. Hence, the primary constituent in drilling fluids with respect to water quality is suspended sediment.

The water quality criteria for suspended sediment in marine water is 25 nephelometric turbidity units (NTUs). However, because turbidity does not include a measurement of mass of a substance, it is not appropriate to use turbidity in the CORMIX model to evaluate the discharge of drilling fluids and drill cuttings. Instead, DEC develops a correlation of Cook Inlet turbidity with TSS, which is a mass-based parameter. Hence, the driving water quality parameter for mixing zones for discharges of drilling fluids is turbidity using TSS as a surrogate. LEA suggests that the drilling fluids and drill cuttings from geotechnical investigations will also have hydrocarbons adhered to suspended solids as a pollutant. Because geotechnical boreholes are shallow, there is little likelihood that they will encounter oil bearing formations and the use of fluids containing oil is prohibited; DEC does not agree with LEA’s assessment. Nonetheless, permittees are required to observe for sheen prior to and during discharging.

DEC also authorizes a 100 meter radii zone of deposit for drilling fluids and drill cuttings. Because drilling fluids may be present in the deposit until currents re-suspend them in the water column, it is also necessary to consider trace concentrations of metals bound tightly to the fluids or present as inclusions inside the barite particles. Hence, even though metals are not anticipated to be desorbed from the barite, metals are nonetheless present in solid form and are included in the chronic mixing zone and zone of deposit as a precautionary measure. However, there is no scenario in marine water where desorbed metal concentrations from barite could exceed acute water quality criteria for metals. Evaluating drilling fluids based on turbidity as the driving chronic water quality parameter in the mixing zone is appropriate for drilling fluids and drill cuttings.

DEC is confused by LEA insistence that the recommended 3 mps discharge be required for discharges of drilling fluids and drill cuttings. Drilling fluids and drill cuttings are typically discharged near the surface using a shunt line or, in the case of geotechnical borings, when the riser pipe is lifted out of the borehole and the remaining contents are exit the pipe at the seafloor. Neither of these discharge scenarios are appropriate for the 3 mps recommendation.

No modifications to the Permit or Fact Sheet have resulted from this comment.

2.4.2.8.4 Comment: Sabre Exploration Project

LEA Comments for the Sabre Exploration Individual Permit (Sabre Permit) are similar to those provided for the Geotechnical GP; DEC incorrectly states the discharge is nontoxic and fails to evaluate chronic toxicity in CORMIX at the RMZ, DEC did not evaluate oil adhered to suspended solids, metals were not evaluated for acute toxicity, and non-representative ambient conditions were used. LEA states that the metals contained in the drilling fluids are persistent and have the potential to bioaccumulate in the Cook Inlet environment, this presents an ongoing threat of water quality degradation as these metals and organics build-up in Cook Inlet and its organisms. LEA also claims that DEC failed to provide the Sabre Permit to Inletkeeper as part of their information request. Form 2M was also omitted from the information requests.

DEC Correctly Approved the Modeling for Sabre Exploration Project

DEC takes exception to LEA's claim that DEC failed to provide information requested by Inletkeeper. Inletkeeper requested all relevant mixing zone applications and model runs, which DEC has provided. There is no Form 2M applicable to the Sabre Permit as the applicant submitted a mixing zone report. In addition, DEC conducted the modeling for the drilling fluids and drill cuttings in the CORMIX GTS Module to verify the adequacy of the 100 meter RMZ issued for discharge. Accordingly, no Form 2M is available to provide to Inletkeeper. However, all the information used in verifying the 100 meter chronic mixing zone has been provided to Inletkeeper for LEA review. The rationale that metals are too tightly bound to barite to become bioavailable or exceed water quality criteria is discussed in the previous response for AK LNG (See Comment Response 2.4.2.8.3). So too is the discussion for acute toxicity, bioaccumulation/bioconcentration, and zone of deposit. The response to inappropriate consideration of ambient critical conditions was addressed in the response for produced water mixing zones (See Comment Responses in 2.4.1.3).

No modifications to the Permit or Fact Sheet have resulted from this comment.

2.5 Comments Submitted by Inletkeeper via Trustees of Alaska

Trustees for Alaska submitted comments on behalf of Cook Inletkeeper, Alaska Community Action on Toxics, Kachemak Bay Conservation Society, Center for Biological Diversity, Natural Resource Defense Council, and Defenders of Wildlife (collectively "Inletkeeper"). Trustees and Cook Inletkeeper have submitted comments on the 2007 GP and the 2015 Exploration GP that are very similar to those submitted herein. In addition, Inletkeeper has submitted comments from their consultant LEA on the 1999 GP and 2007 GP, which also include repetitive content. In situations where comments are being repeated, DEC may discuss the background of these previous comments and DEC responses in order to present historical context and expand upon these past comments as necessary to capture current issues.

2.5.1 General Comments from Inletkeeper

Inletkeeper reminds that the three primary goals of the CWA are 1) eliminate discharge of pollutants by 1985; 2) attain water quality that provides protection of existing uses by July 1, 1983; and 3) prohibit discharges of toxic pollutants in toxic amounts. As the lead authority for implementing the CWA, the DEC APDES Program has the opportunity to implement measures that are more protective of state waters and resources than the previous permits issued by EPA. However, per Inletkeeper, DEC has done the opposite as explained in the following comments.

DEC's General Response to Inletkeeper General Comments

DEC is committed to implementing the goals of the CWA outlined by Inletkeeper. However, reaching these goals also requires taking a practicable approach based on the technology currently available, as outlined in the sixth goal of the CWA per Title 33 – Navigation and Navigable Waters, Part 1251(a):

(6) "it is the national policy that a major research and demonstration effort be made to develop technology necessary to eliminate the discharge of pollutants into the navigable waters, waters of the contiguous zone, and the oceans;"

The inability to obtain the goal of eliminating pollutant discharges is due, in part, to the lack of available technology needed to achieve this goal. In addition, the CWA establishes a policy protective of state rights per 1251(b):

> "It is the policy of the Congress to recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution, to plan the development and use (including restoration, preservation, and enhancement) of land and water resources, and to consult with the Administrator in the exercise of authority under this chapter. It is the policy of Congress that the States …….implement the permit programs under sections 1342 and 1344 of this title. It is further the policy of the Congress to support and aid research relating to the prevention, reduction, and elimination of pollution and to provide Federal technical services and financial aid to State and interstate agencies and municipalities in connection with the prevention, reduction, and elimination of pollution."

The research, development, and implementation of appropriate technology is provided via the ELGs by EPA. The ELGs, developed under EPA authority, are the appropriate regulation provided to states for the purpose of determining the applicable level of technology that is currently available to prevent, reduce, or eliminate the discharge of pollutants. Unfortunately, technology has not advanced, as initially intended by Congress, to meet the CWA goal of eliminating all pollutant discharges at this time. Instead, DEC must apply technology that is currently available per the ELGs while considering the rights of the state to "plan the development and use of land and water resources" per 33 U.S. 1251(b). Proper planning requires consideration of the social and economic benefits to all people of the State of Alaska. Per Alaska Statutes, Title 46 – Environmental Conservation, Chapter 3, Section 10 (AS 46.03.010):

(a) It is the policy of the state to conserve, improve, and protect its natural resources and environment and control water, land and air pollution in order to enhance the health, safety, and welfare of the people of the state and their overall economic and social well-being.

(b) It is the policy of the state to improve and coordinate the environmental plans, functions, powers, and programs of the state, in cooperation with the federal government, regions, local governments, and other public and private organizations, and concerned individuals, and to develop and manage the basic resources of water, land and air to the end that the state may fulfill it is responsibility as trustee of the environment for the present and future generations.

In order to accomplish the goals of the CWA, DEC must comply with 18 AAC 70, 18 AAC 72, and 18 AAC 83, as intended by statute, and evaluate and address a wide range of public concerns, such as those raised by Inletkeeper in the following sections.

2.5.2 Specific Comments by Inletkeeper

2.5.2.1 Comment: Insufficient Time to Review Public Notices

Inletkeeper points out that during the 90-day public notice period for the General Permit, other related individual permits were posted for 30-day public notices. These overlapping comment periods did not allow sufficient time for the public to adequately compare and contrast these interrelated permits. Inletkeeper claims that DEC failed to release all requested data in response to a Public Records Act (PRA) request. DEC released the additional data only a few short weeks prior to the close of the comment period, which did not allow Inletkeeper (and others) enough time to review the thousands of pages contained in the additional information.

The issuance of multiple, overlapping permits during the 90-day public notice period for the Permit resulted in substantial confusion for the public, which negatively impacts the clarity and transparency of the proposed permitting actions. Inletkeeper claims that because the individual permits include more site-specific details than the Permit, these associated discharges should be permitted by solely the individual permits and excluded from the General Permit. Furthermore, Inletkeeper claims DEC should allow the additional opportunity for the public to weigh in on the Draft General Permit with issues clarified.

DEC Response to Overlapping Public Notices for Individual and General Permits

DEC understands there were overlapping permits on public notice and that Draft Individual Permit AK0053309 – CIE, Osprey Platform was also included in the Draft Permit. However, DEC does not agree that this causes substantial confusion or impacts overall clarity and transparency. Comments submitted by Inletkeeper emphasizes their desire to have multiple individual permits (IPs) rather than just one all-encompassing general permit. Whereas, DEC desires to regulate all oil and gas facilities under a single general permit as this provides for efficient administration while ensuring adequate environmental protection for all facilities. This is true because the nature of the Cook Inlet Permit applies site-specific determinations much the same way as IPs do.

DEC included the Osprey Platform in the Permit but also issued a Draft IP so that DEC could evaluate which would be more appropriate based on comments received and critical timelines that affect the industry. This was done, in part, to ensure industry has some level of certainty of obtaining a permit necessary to continue operations. However, because the Permit and IP were developed to include the same permit requirements for the Osprey Platform, reviewing the Permit conditions related to the Osprey Platform are not mutually exclusive as they provided the

same information in both. Hence, comments provided for the Draft Permit related to the Osprey Platform are directly relatable to the Draft IP. Ultimately, Inletkeeper submitted the comments provided for the Draft Permit as comments on the Draft IP for the Osprey Platform. Given the circumstances, DEC accepts this approach except that only those comments from the Draft Permit that are specific to the Osprey Platform will be addressed by DEC when issuing the Final IP of the Osprey. Similar to the Osprey IP, DEC also issued a Draft IP for the GPP that was consistent with the GP in order for Hilcorp to proceed with an important project so the lengthy issuance process for the Draft Permit would not delay it. Inletkeeper opted not to provide comments on the Draft GPP Supplemental IP. Given that the contents in each IP are consistent with that of the Permit, there should be minimal confusion or lack of clarity and transparency.

Inletkeeper makes a false claim that DEC failed to release all data via PRA request. Furthermore, Inletkeeper claims that DEC released this requested information only a few weeks prior to the close of the public notice period. DEC takes issue with this claim because DEC was responsive to the PRA requests but it was actually Inletkeeper that delayed obtaining the information. The following table provides the timeline for communication on the request, which was initiated in 2016.

Date	To	From	Type	Content
7/5/2016	DEC	Trustees	letter	First Request for MZ information pre/post EPA transfer
7/19/2016	Trustees	DEC	letter	Request Scope Clarification & List of Readily Available
7/22/2016	DEC	Trustees	letter	Request Item # 6: MZ Information for AKG315200
7/25/2016	Trustees	DEC	email	Inform New Applications Requested so Current will be Obsolete
8/5/2016	DEC	Trustees	phone	Discuss Waiting Until New Applications with Suzanne Bostrom
8/17/2016	Trustees	DEC	letter	Revised Costs and List of Protected Documents
10/23/2017	Trustees	DEC	email	Emailed Jenny Frost and Suzanne Bostrom Applications Available. Suzanne out of office. No Response.
11/20/2018	Trustees	DEC	email	Inform of 10-day Applicant Review of AKG315200
1/14/2019	Trustees	DEC	email	Re-sent 10/23/2017 email to Suzanne B. Informing Availability of New MZ Applications
1/16/2019	DEC	Trustees	letter	Revised Request for New MZ Applications
1/29/2019	Trustees	DEC	letter	Request Scope Clarification & List of 12 Readily Available
2/5/2016	DEC	Trustees	letter	Approval of List of 12 Readily Available
2/8/2019	Trustees	DEC	letter	Provide Trustees with the 12 Readily Available Documents Electronically on CD
2/19/2019	Trustees	DEC	email	Inform Start of 90-day Public Notice Review
4/24/2019	DEC	Trustees	email	Add-on Request excel files of ICIEMAP CTD Data, CORMIX Runs, & NOAA Buoy Data
4/30/2019	Trustees	DEC	email	Provide (4) CTD Spreadsheets. CORMIX Runs in Application. NOAA data by URL in Application.
5/8/2019	DEC	Trustees	letter	Request to Extend Public Notice of AKG315200, AK0053309, and AK0055883
5/15/2019	Trustees	DEC	email	Courtesy Email Informing of No Extension and Implications of Including Comments in Request

DEC first received an information request in July 2016, which included all existing mixing zone applications that were submitted to support reissuance of AKG315200 at that time. However, given new owners (i.e., Hilcorp) and the recommendations of the public during engagement workshops held in May 2014, DEC requested revised mixing zone applications (See Public Participation in 1.2 and Background for Comment 2.4.2.1). Given the information requested by

Inletkeeper was going to become obsolete, via phone conversation on August 5, 2016 they agreed it would better to wait until the new applications were available. A revised application was signed and sealed by a professional engineer on March 31, 2017. On October 23, 2017 DEC sent an email to Trustees letting them know that the revised application, and other documents, were available to satisfy the outstanding information request but DEC did not get a response. DEC issued a 10-day applicant review on November 20, 2018 but still did not get an email response acknowledging the information is still desired. After a phone call with Trustees, DEC resent the 2017 email to Trustees on January 14, 2019 and they issued a revised request on January 16. After scope clarification and discussion of applicable costs, DEC submitted 12 agreed upon documents to Trustees on February 8, 2019, 11 days prior to the 90-day public notice. A request for additional information was issued to DEC on April 24th, which was satisfied on April 30th. DEC fulfilled the additional request as quickly as possible by providing spreadsheets for CTD casts from the ICIEMAP Program. However, the other requested information was included in the application that DEC had already provided (i.e., CORMIX input/output) or was available through a NOAA's website (i.e., buoy deployment data) with the URL listed in the application for this reason.

Inletkeeper's claim that DEC failed to deliver is inappropriate given the timeline available in DEC's administrative record. DEC proactively reached out to Inletkeeper over one year before the issuance of 10-day to let them know the documents they requested were available for a revised request. If Inletkeeper had been observant/diligent during that period, the mixing zone information would have been in their possession well in advance of the 90-day public notice period.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.2 Section Overview: Range of Discharges and Facilities is Inappropriate

By expanding the Permit to include such a breadth of coverage for permitted activities and facilities is improper because it circumvents individualized assessments that demonstrated a need for an individual permit. DEC fails to meet the minimum standards to identify discharges with similar characteristics that can be encompassed within a general permit and provides inadequate analysis to support it. A general permit issued under the APDES Program is only appropriate if the point sources are within the same geographic area and they all:

(1) involve the same or substantially similar types of operations;
(2) discharge the same types of wastes;
(3) require the same effluent limitations or operating conditions;
(4) require the same or similar monitoring; and
(5) in the opinion of the department, are more appropriately controlled under a general permit than under individual permits.

A general permit must clearly identify conditions (e.g., WQBELs) applicable to each category or subcategory covered and may exclude specific sources or areas from coverage. Inletkeeper asserts that certain facilities should not be covered in the general permit such as the Osprey Platform and that discharges not previously covered by the 2007 GP should be excluded.

DEC Correctly Uses One General Permits Instead of Multiple Individual Permits

DEC is well within their authority to issue an all-inclusive general permit for the discharges from oil and gas facilities and from various activities related to exploration, development, and production of oil and gas in Cook Inlet. DEC includes activities of substantially similar operations such as drilling using similar drilling fluids, whether it is for construction of oil and gas facilities themselves (i.e., geotechnical investigations and HDD) or for the actual exploration, development, and production of oil and gas. DEC correctly combines discharges of the same type of wastes that require the same effluent limitations, operation conditions, and similar monitoring requirements and DEC appropriately applies site-specific concepts when it is necessary and appropriate in the general permit in order to ensure environmental protection and regulatory consistency. The professional regulatory opinion by DEC is that the discharges included in the Permit are more appropriately controlled under the general permit than under multiple individual permits.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.2.1 Comment: The ELGs Do Not Allow Discharges from Onshore Facilities

The Permit includes several onshore facilities that do not qualify for discharges under the ELGs. These facilities include TBPF, GPTF, MGS Onshore, and the KPF. The ELGs require all onshore facilities to meet zero discharge and the mere fact that these onshore facilities process byproducts from an offshore facility(s) does not subject them to offshore ELGs as EPA has allowed in previous Cook Inlet permits. DEC must eliminate all discharges from onshore facilities that originate from offshore production facilities so that the zero discharge for onshore facilities is attained per the ELGs. This specifically applies to the new produced water discharge from the KPF coming from the production at the Osprey Platform. DEC has failed to make this clear in the Permit and is instead proposing to create a much broader loophole for Cook Inlet facilities.

DEC Has Corrected Onshore Versus Coastal ELG Requirements in Fact Sheet

On one hand, Inletkeeper is correct in that onshore oil and gas facilities cannot discharge to Cook Inlet. However, TBPF, GPTF, and MGS Onshore are not considered onshore facilities in the context of the ELGs. Instead, they are considered shore-based coastal facilities because the designation is based on the source of the produced water, which is from platforms in the coastal marine waters of Cook Inlet (See Comment Response 2.1.1). As currently configured, the KPF would not qualify as a shore-based coastal facility because it commingles produced water from onshore wells with produced water from the Osprey Platform, a coastal source. In order for the KPF to discharge produced water from the Osprey Platform, it will have to segregate the onshore produced water from the coastal produced water from the platform for treatment and discharge. This is actually what CIE intends to do so that they can continue operating the Osprey Platform. In order to ensure that onshore and coastal produced water are not commingled, DEC requires a plan review of modifications to KPF to support the discharge of produced water per 18 AAC 72.500 and 72.600. This approach is allowed through implementation of state regulations as well as the ELGs.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.2.2 Comment: TBPF Should Be Covered by Individual Rather Than General Permit

Inletkeeper claims that TBPF should be permitted under an individual permit because, in addition to being an onshore facility, it represents approximately 80 % of discharges of produced water. Per 18 AAC 83.215(a)(1), DEC can require TBPF to have an individual permit based on the discharger not being in compliance with the general permit. In addition, per 18 AAC 83.215(a)(5), the Department may require a facility to obtain coverage under an individual permit if it is determined the discharge is a significant contributor of pollutants when considering the location, size, quantity and nature of the pollutants, and other relevant factors.

Inletkeeper has requested TBPF to be regulated under an individual permit in previous issuances of the general permit and does again for this reissuance. Inletkeeper states the discharge of produced water from TBPF is astronomically larger than the all other produced water discharges authorized by the general permit making it a significant contributor of pollutants. In addition, the location of the produced water discharge is proximal to the Trading Bay SGR that is an environmentally sensitive area providing critical habitat for waterfowl and five rivers that support salmon. Lastly, Inletkeeper claims that TBPF has an extensive history of violations: MDL and AML violations for mercury in 2012; and copper exceedances in 2012 and 2016. After an inspection in 2017, DEC issued a notice of violation for an effluent limit exceedance and failure to accelerate monitoring as a result of the exceedance. Hilcorp incurred a civil penalty based on these occurrences. Therefore, the TBPF should be required to obtain coverage under an individual permit given the discharge is a significant source of pollution, near an environmentally sensitive area, and the extensive history of violations.

DEC Response to TBPF Coverage Under an Individual Permit

DEC disagrees that the TBPF should be segregated from the GP. Although the discharge is proximal to the Trading Bay SGR, the ICIEMAP monitoring for which the 2010 PWS was based on specifically targeted evaluation of potential impacts of the discharges from the TBPF. Per Fact Sheet Appendix A, Section A2 the ICIEMAP Study focused on 38 sample locations near TBPF out of 55 total sample stations. The results of these 38 focal sample locations near TBPF showed no indication of environmental impacts in water, sediment, or biota from decades of discharges of produced water; sample results could not be distinguishable from background conditions. Hence, the claim that the discharge of produced water at TBPF presents a concern to waterfowl or salmon is not valid based on knowledge of the fate and effects provided by the ICIEMAP Study. The fact that the TBPF has had some violations over the years is expected and is an indication that the WQBELs are sufficiently stringent. For two-parameter, statistically-derived WQBELs based on aquatic life criteria, exposure periods, and frequencies, an instream excursion is anticipated to occur once every three years (See TSD Appendix D). Hence, DEC does not consider the exceedances “excessive” because they occurred at frequency less than that anticipated based on the statistical framework of two parameter limit derivation procedures for the protection of aquatic life.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.2.3 Comment: DEC Should Not Allow New Facilities in the General Permit

The 2007 GP does not allow new facilities to obtain coverage under the Permit. The Permit provides no limitations on scale, number, or location of new facilities. By removing this prohibition, it will create significant expansion of discharges under the Permit and DEC has not conducted an appropriate antidegradation analysis for this expansion. New facilities should be evaluated on an individual basis to appropriately address further degradation of Cook Inlet and their ability to meet zero discharge standards. This comment is made in reference to the inclusion of the Osprey Platform, the Sabre Exploration Project, and the Julius R Gas Production Platform. In addition, Inletkeeper opposes the inclusion of "shuttered" facilities.

Osprey Platform

For the Osprey Platform, Inletkeeper has concerns that inclusion of the Osprey in the Permit poses substantial backsliding issues, flawed mixing zone analyses, insufficient antidegradation analysis, and allows an exception or modification to existing critical habitat barriers without adequate justification. The general permit allows certain discharges from the Osprey Platform while the previous Osprey individual permit prohibits those discharges due to the unique operations of the Osprey Platform (e.g., injection of certain wastes) being different from those facilities operating under the 2007 GP and have operated in Cook Inlet over decades. Inletkeeper claims that characteristics of the waste streams at the Osprey Platform are dissimilar than facilities historically authorized under the 2007 GP. The inclusion of the Osprey Platform would results in 10 % of the overall discharges in the Permit and "there have been no historical, authorized discharges from the Osprey Platform such that DEC cannot provide data from the facility because none exists." Inletkeeper claims that the ELGs are based on evaluation of discharging facilities and disputes DEC claims that the ELGs are applicable because the characteristics will be similar to those discharging facilities. The initial characterization of produced water from the Osprey indicates it will not meet the ELG for oil and grease in addition water quality parameters TAH, TAqH, copper, manganese, mercury, and zinc. DEC indicates in the Fact Sheet increased treatment is required to meet the model technology of the ELGs prior to obtaining coverage under the Permit. Inletkeeper asserts that since the characteristics of the untreated produced water exceeds most of the TBELs in the ELGs, it would be unacceptable to include these discharges in the Permit, or even an individual permit. Inletkeeper also indicates including the Osprey Platform is problematic due to the close proximity to the Redoubt State CHA. Inletkeeper asserts that DEC fails to consider the site-specific conditions near the Osprey that has resulted in a 4,000 meter buffer to the Redoubt State CHA; the proposed discharge is within the previous 4,000 meter buffer and the current buffer has been reduced to 1,000 meter without analysis.

The KPF commingles produced water from onshore production wells with that from the Osprey Platform, and the preliminary characterization data from the Osprey produced water includes this commingling. Therefore, this characterization is not representative of the proposed discharge and must be redone. Although the discharge of produced water from coastal facilities is allowed, discharges to the marine waters of Cook Inlet from onshore facilities is prohibited by the ELGs. Inletkeeper asserts DEC does not clarify or describe how the commingling of onshore and offshore produced water will be handled to retain the onshore prohibition. DEC has an independent obligation to ensure onshore produced water is not discharged and Inletkeeper

further asserts it is not clear DEC is addressing the potential for CIE to discharge produced water derived from onshore sources.

DEC Response to Coverage of the Osprey Platform Under the Permit

The fact that CIE has been able to maintain zero discharge of produced water via injection until this point in time does not guarantee they can continue to do so for the life of the facility. Long-term injection for maintaining zero discharge of produced water is not feasible at the Osprey Platform. In order for the facility to maintain production, CIE must initiate discharges. Furthermore, holding CIE to the unrealistic goal of zero discharge of prodiced water over the full life of the facility results in an economic disadvantage that is especially unacceptable when there is no indication that allowing the discharge would result in adverse environmental impacts. Although the raw produced water data indicates additional treatment is necessary, the appropriate treatment was considered in the alternative analysis provided in the Tier II Antidegradation Analysis in Fact Sheet Section 10.4. Although this Tier II Alternative Analysis is no longer necessary given the volume of produced water from the Osprey has been reduced to result in no net increase in loadings over the 2007 GP (See Comment Responses 2.2.2.18, 2.4.1.1, and), the level of treatment constructed is ultimately controlled via plan review required by DEC per 18 AAC 72.600 regardless of the alternative analysis. Hence, if the Osprey Platform cannot attain the TBELs for oil and grease, then a discharge cannot be authorized. The water-quality parameters of interest (TAH, TAqH, and metals) are already at concentrations comparable to other produced water discharges and these concentrations will likely be additionally reduced by treatment requirements imposed through plan review.

Although the Redoubt Bay CHA is in the vicinity of the Osprey Platform, the proposed discharge of produced water is no way proximal to the CHA. The discharge point is approximately 5,000 meters from the boundary of the CHA and this separation distance to the produced water discharge is not impacted by the allowance in the Permit for potential discharges in lease tracks 390,368.00 or 381,203.00 so long as the discharges are at a distance of 1,000 meters or greater from the CHA boundary. These lease areas are not within the Redoubt Bay CHA or have sensitive benthic habitat; these lease areas were established to ensure there is a corridor between the KPF and Osprey Platform as appropriate. Note too that this allowance does not negate other setback requirements such as being 4,000 meters from the mouth of a river or at locations that are shallower than 5 meters for facilities discharges or shallower than 10 meters for drilling fluids and drill cuttings.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

Sabre Exploration Project

Inletkeeper asserts that the Sabre Exploration Project should not be allowed to obtain coverage under the Permit because it was disallowed from coverage under the 2015 Exploration GP. The Sabre Project Site is located within the 4,000 meter buffer to the Trading Bay SGR, which was a restriction in the 2015 Exploration GP that DEC proposes to reduce to 1,000 meters in the Permit. As stated previously, Inletkeeper asserts this reduction of the buffer is done without any rationale stated in the Fact Sheet and represents an illegal backsliding. Inletkeeper further asserts illegal backsliding also occurs due to an increased allowance for a zone of deposition. The individual permit allowed for a 25 meter zone of deposit whereas the proposed Permit increases

this zone to 100 meters and does not consider the site-specific conditions at the Sabre Project Site. Inletkeeper also claims that it would be inappropriate to include the Sabre Project in the Permit because the operations are dissimilar from other operations and allows for an unspecified substitution of MODU. Inletkeeper contends DEC needs to identify and account for the discharge of the particular MODU and the Draft Permit description of the Sabre Project is ambiguous and does not support that it is like others in the Draft Permit. In addition, Inletkeeper claims that DEC did not adequately consider the geographic location and potential for cumulative impacts to the area; TBPF is the largest discharger under the permit and is in proximity to the Sabre Project Site and the Trading Bay SGR. Inletkeeper also claims that in the Draft Fact Sheet DEC failed to account for previous well violations and the potential impacts to this sensitive area. If the Sabre Exploration Project success results in proposed new production facilities, Inletkeeper asserts DEC needs to make it clear that any proposed new production facility will not be allowed to obtain coverage under the Permit, doing so would be improper because it would be inconsistent with previous issuances of this general permit.

DEC Response to Coverage of the Sabre Exploration Project Under the Permit

Despite receiving similar comments from Inletkeeper during issuance of AK0055690 – CIE, Sabre Oil and Gas Exploration in Cook Inlet the location of the Sabre Exploration Project has already been successfully permitted as has the mechanisms for interchanging various MODUs in that permit. In order for a different MODU to be accepted by the Department for discharging under the Permit, the applicant must submit characterization information for each proposed discharge to ensure these characteristics are not significantly dissimilar to the characteristics presented in the Fact Sheet. In many sections of the Permit, DEC makes reference to separate requirements for existing MODUs (e.g., Spartan 151) versus those for new MODUs. In doing so, DEC allows for flexibility while ensuring the limits are applicable and provide for adequate environmental protection. As discussed in Comment Response 2.5.2.2.2, currently available receiving water data indicates existing discharges near the Trading Bay SGR are not resulting in cumulative effects; samples of water, sediment, and biota near the discharges cannot be distinguished from those representing background conditions. As described in Fact Sheet Sections 2.2.5, 2.3.2, and 6.2.3.1 as well as Comment Responses 2.2.2.6 the Sabre Project Site is an ideal location for evaluating discharges of drilling fluids and drill cuttings in sediments of Cook Inlet. The previous 4,000 meter exclusion was not based on evaluation of fate and effects of drilling fluids in sediment and monitoring data from this project would be used to either confirm, or deny, the necessity of this buffer. The determination of whether or not a future production facility at this same location would be appropriate will be based on the scientific data obtained during exploration.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

Julius R Gas Production Platform

Inletkeeper asserts that DEC adds the Julius R. Platform to the Permit without any application or analysis. Because of differences from other facilities operating in Cook Inlet, inclusion of the Julius R Platform must not be allowed. The 2014 Individual Permit (AK0053686) covered an exploratory MODU, construction facilities of the platform and installation of a pipeline to the Central Processing Facility using HDD. Inletkeeper states HDD and geotechnical drilling are inappropriate for inclusion in the Permit. Inletkeeper further indicates DEC does not describe

how geotechnical drilling authorized by AK0053686 will be incorporated such that it is impossible for the public to comment further. Furthermore, due to the discharges of graywater and black water from the Julius R Platform with differing operating conditions, effluent limitations, and monitoring requirements Inletkeeper states it is inappropriate for DEC to include the Julius R Platform in the Permit. As pertinent at the time, only the discharges and mixing zones at the Julius R Platform are associated with graywater and/or domestic wastewater. Both the Julius R Platform and the MODU Randolph Yost domestic wastewater systems had violations associated with the startup of newly installed treatment systems. Inletkeeper claims the data associated with these violations are not included in the Fact Sheet and DEC does not address this omission. Given these violations, Inletkeeper asserts these discharges should continue to be monitored under an individual permit. Furthermore, Inletkeeper claims DEC also fails to explain how the discharge of two platforms at a single location affect pollutant loads. For these reasons, Inlekteeper comments that the Julius R Platform discharges should be permitted under an individual permit.

DEC Approrpriately Includes the Julius R Gas Production Platform Under the Permit

Inletkeeper incorrectly concluded that the Julius R Gas Production Platform is currently included in the Permit. Recently, the Julius R. Gas Production Platform was issued a new individual permit that includes the new discharge of produced water as well as deck drainage, fire test water, domestic wastewater from the platform, and graywater from a MODU based on using the Spartan 151. The various other discharges previously authorized such as HDD and deck drainage from construction vessels are no longer authorized in the most recent issuance of the individual permit (AK0053686). Although an individual permit was recently issued, the ability to include coverage of the Julius R. Platform is provided in the Permit. However, any authorization under the Permit for the Julius R. Platform to discharge produced water would require Furie to submit an application to DEC presenting current data, a mixing zone analysis, and a Tier II Alternative Analysis and other information needed for an antidegradation analysis. Because produced water limits, mixing zone authorizations, and antidegradation analysis were not included in the permit, DEC would have to issue a Statement of Basis for these elements for a 30-day public notice period in order to authorize the facility and discharges. The requirements for issuing public notice of a Statement of Basis for new discharges or facilities is discussed in Fact Sheet Sections 3.4.3, 6.2.1, 6.2.3.3 and 3.6.2.2.2. In the Permit, see Sections 1.1.7, 1.1.8, 1.3.4.2, 3.1.3, 3.2.1.8, and 3.4.9.

Inletkeeper falsely claims that DEC did not address the violations that occurred at the Julius R. Platform during startup of their domestic wastewater treatment system, as well as tampering by a disgruntled employee that led to an upset condition. These unfortunate permits exceedances are discussed in Fact Sheet Section 5.2.1.3. Note that the Randolph Yost was not successful at attaining minimum treatment per 18 AAC 72.050 and is not able to receive discharge authorization of domestic wastewater unless the treatment system is upgraded. Although the Spartan 151 also has not been able to obtain DEC approval for domestic wastewater, it has been granted approval to discharge graywater. Therefore, the Spartan 151 only has to haul blackwater to shore for disposal rather than both graywater and blackwater like the Yost. Although Furie no longer needs coverage for HDD, the Permit allows for these discharges through public notice of a Statement of Basis for a mixing zone and antidegradation analysis.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

Facilities in Lighthouse Status

Currently, the Bruce, Baker, Dillon, Spurr, and Spark Platforms are inactive, placed in lighthouse status per the 2007 GP. Inletkeeper states that since the Baker, Dillon, and Bruce Platforms have not discharged recently, it is not appropriate for DEC to include them in the Permit. Because there is insufficient data for these facilities, DEC applies data from other facilities as a surrogate to these lighthouse facilities to calculate limits. Inletkeeper asserts, however, DEC does not explain exactly how these calculations were made and that using data from a different facility is not an adequate substitute for missing information. Inletkeeper further states DEC does not account for the potential future discharges from these lighthoused facilities in their projection of future totals during the term of the Permit. Inletkeeper asserts this surrogate approach is inappropriate and leads to numerous deficiencies in the Permit when evaluating impacts due to mixing zones. If these lighthoused facilities seek to discharge in the future, Inletkeeper asserts that DEC should conduct an appropriate analysis at that time rather than attempt to keep these facilities in the Permit at this time.

DEC Appropriately Includes Facilities in Lighthoused Status Under the Permit

While the Bruce, Baker, Dillon, Spark, and Spurr are in "lighthouse status," they still have discharges of deck drainage that cannot be avoided and require APDES coverage. Therefore, it is appropriate to keep these facilities authorized until such time Hilcorp decides to restart them, if appropriate. Although these facilities are unmanned such that contaminated deck drainage discharges are highly unlikely (i.e., No Exposure Certification), the permittee conducts periodic visits for maintenance to ensure the facility is not in disrepair or in violation with permit requirements. DEC requires the maintenance crew to observe the deck drainage system while on the unmanned platforms to ensure there is no pollution being discharged, although submittal of DMRs are no longer applicable.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.2.4 Comment: Inappropriate to Include Construction and Ancillary Activities

Inletkeeper comments that they believe it is inappropriate to include discharges of drilling fluids and drill cuttings from HDD and geotechnical activities in the Permit. Specifically, Inletkeeper claims it is inappropriate because these discharges:

- must be independently considered under the ELGs;
- do not involve the same or substantially similar operations;
- involve the discharge of a different class of waste; and
- require different effluent discharge limitation, operating conditions, and monitoring than the oil and gas exploration and development drilling.

Inletkeeper further states there are significant differences between discharges from HDD and geotechnical drilling activities compared to exploration and development drilling and DEC provides no justification for including HDD and geotechnical drilling in the Permit. Inletkeeper asserts that DEC claims that the Class C drilling fluids for HDD and geotechnical investigations are outside the ELGs, but Inletkeeper points out that DEC cannot authorize non-aqueous drilling

fluids, dewatering effluent, and drill cuttings without ensuring compliance with the ELGs. All Class C drilling fluid and drill cutting discharges must comply with 40 CFR 435. However, Inletkeeper also states that exploration and production activities covered under the Permit are substantially different than HDD and geotechnical drilling and should not be included in the Permit. HDD uses horizontal rather than vertical drilling and the volume and velocity of discharge is influenced by the hydrostatic head, diameter, and length of borehole. Inletkeeper claims that there is too great of a difference between the characteristics of HDD/geotechnical drilling fluids versus drilling fluids for oil and gas exploration, development, and production to warrant inclusion in the Permit. Inletkeeper also claims with reference to Fact Sheet page 28 that geotechnical drilling utilizes deep test holes with no recirculation using lignosulfate muds and lime muds.

DEC Approrpriately Covers of HDD and Geotechnical Drilling Fluids and Drill Cuttings

The comment from Inletkeeper confuses DEC. On one hand, Inletkeeper claims that discharges of drilling fluids and drill cuttings for HDD and geotechnical investigations must comply with 40 CFR 435 – Oil and Gas Extraction Point Source Category. This statement can only be true if the drilling fluids and drill cuttings from HDD and geotechnical investigations are in fact directly comparable to drilling fluids and drill cuttings from oil and gas exploration, development, and production drilling activities. But later in their argument, Inletkeeper does an about face indicating that these discharges are too dissimilar to be included in the Permit together. Meanwhile, per Fact Sheet Section 4.1.4 DEC distinguishes Class B Drilling Fluids as being regulated by 40 CFR 435 because these fluids tend to have a highly complex mixture of chemicals in order to successfully drill thousands of feet below surface through complex geologic formations often intersecting oil and gas deposits. DEC does not consider Class C Drilling Fluids applicable under the ELGs because the drilling depth is in hundreds of feet and does not typically require the same complexity of fluid mixtures as those used in oil and gas drilling and do not typically intersect an oil and gas deposit due to this shallow depth. Nonetheless, DEC establishes limitations based on toxicity and concentrations of mercury and cadmium must be considered for each fluid system to ensure adequate and equivalent environmental protection. Hence, the characteristics are the same except that hydrocarbons are a parameter of concern for Class B Drilling Fluids but not Class C. Furthermore, it would be in appropriate to consider Class C Drilling Fluids subject to 40 CFR 435 due to the definitions and stated applicability per 40 CFR 435.40, which states:

> "The provisions of this subpart are applicable to those facilities engaged in field exploration, drilling, well production, and well treatment in the oil and gas industry in areas defined as "coastal."

Hence, the emphasis of the applicability of 40 CFR 435 is the relation to exploration, development, and production of oil and gas formations. Niether HDD nor geotechnical drilling meet these definitions as determined by 40 CFR 435.41:

> "(i) Development facility means any fixed or mobile structure subject to this subpart that is engaged in the drilling of productive wells."

> "(p) Exploratory facility means any fixed or mobile structure subject to this subpart that is engaged in the drilling of wells to determine the nature of potential hydrocarbon reservoirs."
>
> "(cc) Production facility means any fixed or mobile structure subject to this subpart that is either engaged in well completion or used for active recovery of hydrocarbons from producing formations. It includes facilities that are engaged in hydrocarbon fluids separation even if located separately from wellheads."

Based on these definitions in contrast to the activity and the nature of the drilling fluids, DEC is correctly applying the ELGs as well as appropriately including HDD and geotechnical drilling fluids and drill cutting discharges in the Permit. The fact that HDD discharges occur under hydrostatic pressure from the borehole or that geotechnical investigation discharges occur at the seafloor when the drill pipe is raised above the seafloor are nuances of minor importance when compared to the objective of ensuring these similar discharges are properly regulated to control the discharge of pollutants.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.2.5 Comment: Inappropriate to Include Hydrostatic Testing in Permit

Inletkeeper also claims that DEC should not include Hydrostatic Test Water in the Permit because it is dissimilar from other permitted activities; permitted activities include operations but hydrostatic testing is related to equipment testing as well as flushing potable water systems and tanks that require different treatment and operating conditions. Inletkeeper says DEC should not expand the definition of hydrostatic test water to include flushing of potable water systems even though the 2007 GP allowed hydrostatic test water to be commingled with produced water, treated and discharged. DEC proposes to allow direct discharge of hydrostatic test water and Inletkeeper asserts that DEC does not provide adequate justification or explain how the water quality standards continue to be met for hydrostatic test water. Inletkeeper further states "DEC should not allow facilities to discharge hydrostatic test water under standards that are any less stringent than the previous permit."

DEC Coverage of Hydrostatic Test Water is Apprproriate

Inletkeeper's argument that hydrostatic test water should not be included in the Permit because it is dissimilar to permitted activities is not compelling. Testing of equipment is paramount to oil and gas operations. So much so, that hydrostatic testing was considered in the 2007 GP by including it in the definition of produced water. Rather than perpetuate inclusion via definition, DEC seeks to make hydrostatic test water discharges more transparent given how often this activity occurs during facility operations. DEC also believes it is appropriate to allow discharges of hydrostatic test water to be separate from produced water so long as these separate discharges are held to higher stringency standards (i.e., complying with water quality criteria). Permit Section 8.8 describes the permit requirements for situations where hydrostatic test water is discharged separately. If hydrocarbons are expected to be in the hydrostatic test water from existing infrastructure, the permit limits are appropriately established at the respective water quality criteria for TAH or TAqH. Hence, the limits for separate discharges are significantly more stringent than when hydrostatic test water is commingled with produced water. Given Inletkeeper's position that "DEC should not allow facilities to discharge hydrostatic test water

under standards that are any less stringent than the previous permit" and the fact that DEC does require more stringent requirements, the inclusion of separate discharges of hydrostatic test water in the Permit is appropriate.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.2.6 Comment: Discharge of Synthetic Drilling Fluids Not Allowed by ELGs

Inletkeeeper states that DEC cannot authorize the discharge of synthetic drilling fluids because it is not allowed by the ELGs. Although it may permissible to discharge drill cuttings coated with synthetic fluids to the territorial sea, direct discharges anywhere in Cook Inlet are prohibited by 40 CFR 435. However, DEC cannot broadly allow companies to discharge cuttings coated with synthetic fluids as site-specific conditions must be considered.

DEC Response to Coverage of Synthetic Fluids

DEC is confused again by Inletkeeper's comments that do not match requirements presented in the Draft Permit or the ELGs. The Permit does not allow discharges of synthetic drilling fluids per Permit Table 4 and Fact Sheet Table 31. However, like in the 2007 GP, cuttings with formation oil adhered to the surface can be discharged in the territorial sea, but not in coastal waters as Inletkeeper falsely claims is allowed under the Permit. The first sentence in Permit Section 8.1 clearly states:

> "The discharge of non-aqueous fluids (NAF) is prohibited except for situations where such fluids adhere to drill cuttings at facilities within the Territorial Seas, as defined 40 CFR 435 (See Table 31 and noted Sections)."

Because the volume of cuttings discharged when using synthetic fluids is less than that for water-based fluids and removal of oil from the cuttings, as demonstrated through numerous limitations in Fact Sheet Sections 8.1.1.8 through 8.1.1.15, significantly reduces potential deleterious effects the discharge of cuttings after removal of synthetic fluids is environmentally appropriate in the Territorial Sea in Cook Inlet. In contrast, water-based drilling fluids pose more environmental concern due to the discharge of both the drilling fluids, containing metals and other chemical additives, and the drill cuttings. Hence, the EMP and DFP requirements for water based drilling fluids are appropriate but the same is not appropriate for synthetic fluids that have been successfully separated from the cuttings prior to discharge. For more information on this topic, see Comment Response 2.5.2.5.5.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.2.7 Comment: DEC Should Permit Exploration and Production Facilities Separately

Inletkeeper comments that DEC should not recombine the 2015 Exploration GP with the Permit because it would involve inherently different operations, discharge requirements, operating procedures, and monitoring requirements. Production is defined as the "active recovery of hydrocarbons from producing formations" occurring on established platforms. Exploration activities involve exploratory drilling and may be undertaken by MODUs including drill ships, jack-up rigs, and semisubmersible rigs. Produced water discharges from stationary production facilities require site-specific evaluations for mixing zones. Although the Permit claims many

non-produced water discharges for either exploration or production are authorized a standard sized mixing zones of 100 meter radii, claims that DEC does not impose standard sized mixing zones for exploration facilities because they are mobile and an independent mixing evaluations using site-specific conditions. Production facilities require different sized mixing zones.

Inletkeeper also points out that the 2007 GP and the Permit each include 20 discharge categories; whereas, the 2015 Exploration GP only has 13 categories. The additional discharges for production facilities include such as Produced Water, Waterflooding, Completion Fluids, Well Treatment Fluids, and Workover Fluids. Inletkeeper's position is that these long-term discharges require radically different monitoring requirements than the short-term discharges associated with exploration. Inletkeeper claims that, by authorizing production activities and exploration activities using separate permits, DEC will account for the inherently different activities. Inletkeeper asserts that instead, DEC should regulate these facilities through a separate general permit or multiple individual permits.

DEC Correctly Combines Exploration and Production into Single Permit

DEC disagrees with Inletkeeper that two general permits or multiple (20 or more) individual permits is the most appropriate means to regulate oil and gas facilities in Cook Inlet. First, there is precedence indicating the use of general permits for oil and gas extraction per 40 CFR 435 is appropriate. This history is not only established in Cook Inlet but also in Gulf Coast states. DEC's ability to affect environmental protection is partly based on the amount of time and effort afforded to provide compliance assistance or support for compliance and enforcement programs. The development and implementation of efficient and effective general permits liberates staff resources to provide compliance assistance that would otherwise be exhausted by attempting to develop and manage up to 20 or more individual permits. Therefore, the development and management of multiple individual permits would result in less compliance assistance and consequently provides for less environmental protection, not more as claimed by Inletkeeper. The exploration portion was separated from the 2007 GP due to litigation of EPA's 2011 reissuance attempt where the courts stayed only the development and production components of the permit. This court decision prompted EPA and DEC to develop two exploration general permits, one for state waters and one for federal waters of Cook Inlet. Now that DEC has fully assumed full authority for the APDES Program, DEC is seeking to reissue the 2007 GP to include exploration, development, and production as originally intended, supported by 40 CFR 435, and consistent with other NPDES Programs. DEC argues there are far more similarities than dissimilarities between exploration, development, and production that supports their inclusion into one general permit. The environmental benefits associated with Inletkeeper's desire to micromanage multiple individual permits is in direct conflict with environmental benefits lost when staff resources become overwhelmed. Per DEC discretion granted by 18 AAC 83.205(b)(2)(E), it is the Department's opinion that the discharges from oil and gas oil and gas facilities in the Cook Inlet Region are more appropriately controlled under a single general permit than by multiple individual permits.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.3 Comment: DEC Authority to Impose Zero Discharge

Inletkeeper questions DEC statements that they lack the authority to require zero discharge (i.e., prohibit the discharge of drilling fluids and drill cuttings as well as produced water contrary to the ELGs). Inletkeeper contends that DEC has authority under WQS to ensure there is no degradation of Cook Inlet and that existing uses are fully protected. This authority in turn provides DEC with the ability to impose more stringent requirements (e.g., require subsurface injection) than those imposed by the ELGs. Inletkeeper claims that EPA recognizes that it is economically and technologically feasible, especially for new facilities, to inject produced water and to the point of zero discharge. DEC should adopt the most stringent standards possible to protect Cook Inlet from further degradation.

DEC Lacks Clear Authority to Impose Zero Discharge Under Water Quality Standards

Inletkeeper mischaracterizes requirements in WQS and suggests that EPA is in agreement with imposing zero discharge. Although EPA R10 encouraged an updated review by EPA Headquarters to consider changes in economic conditions, the subsequent evaluation by EPA Headquarters did not result in prohibiting the discharge of produced water in the ELGs based on current information. EPA R10 is not the ultimate authority for ELGs as this resides with EPA Headquarters. Inletkeeper incorrectly states that DEC's authority under WQS must result in "no degradation" of Cook Inlet. This statement is in direct conflict with the State's Antidegradation Policy that allows for lowering of water quality to support important economic or social development in the vicinity of the discharge. In the context of regulatory authority, DEC does not have unbounded authority to impose zero discharge as Inletkeeper suggests.

DEC addressed their authority, or lack thereof, to impose zero discharge in Cook Inlet for produced water, and other discharges in previous Comment Responses 2.2.2.19, 2.3.4, and 2.4.1.4,. DEC stands behind their original position that there is no legal pathway within DEC authority to impose zero discharge for produced water because doing so would go against established law (i.e., CWA and 40 CFR 435). An imposition of zero discharge would represent a policy decision that is not based on any technical evaluation or sound science related to existing water quality of Cook Inlet.

No modifications to the Fact Sheet or Permit have resulted from this comment.

2.5.2.4 Section Overview: Analysis of Zones of Deposits are Deficient

Inletkeeper claims the zone of deposit analysis is deficient. To determine whether to allow a zone of deposit, the Department is required to consider, to the extent appropriate, the following six factors:

- Alternatives that would eliminate, or reduce, any adverse effects of the deposit;
- The potential direct and indirect impacts on human health;
- The potential impacts on aquatic life and other wildlife, including the potential for bioaccumulation and persistence;
- The potential impacts on other uses of the waterbody;
- The expected duration of the deposit and any adverse effects, and
- The potential transport of pollutants by biological, physical, and chemical processes.

The 2007 GP did not include zones of deposits because DEC indicated that there was limited potential for zones of deposits to form, and if one did, the zone would last for only a short duration. However, the Permit authorizes 100-meter radii zones of deposit for drilling fluids and drill cuttings, excess cement slurry, and muds, cuttings, and cement at the seafloor. Although DEC now acknowledges zones of deposit can form, Inletkeeper contends their analysis is inadequate because it 1) fails to consider zones of deposit on a facility-by-facility basis; 2) lacks transparency; and 3) insufficiently assesses impacts to human health, aquatic life, and wildlife as detailed in the following comments.

2.5.2.4.1 Comment: Zone of Deposit Descriptions Too Vague and Lack Transparency

Similar to previous comments, Inletkeeper claims that zones of deposit require site-specific evaluations and cannot readily be captured adequately in a general permit. Per 18 AAC 205(b), each category or subcategory of discharges must be clearly defined (i.e., a facility-by-facility evaluation). Under the Draft Permit, there is no way to discern how long a deposit may last or whether bioaccumulation or persistence will occur. Currently, there is not enough information to support the DEC assertion that WQS will be met.

DEC Response to Vague Zone of Deposits Descriptions and Lack of Transparency

The characterization, fate and effects, and environmental impacts associated with zones of deposit of drilling fluids and drill cuttings is discussed in multiple sections of the Fact Sheet and summarized in Fact Sheet Section 6.3. Hence, the details Inletkeeper claims are missing are actually included in various sections of the Fact Sheet. The description of mixing zones and interrelated zone of deposits for drilling fluids and drill cuttings are provided in Fact Sheet Sections 6.2.3.1, 6.2.3.2, 6.2.3.3, 6.2.8, and summarized in Section 6.3. Zones of deposits are a combination of formation cuttings and the drilling fluid used in the drilling process. Even during temporary slack tide conditions at nearshore locations, the settling of the coarse-grained cuttings from the geologic formation dominates the zone of deposit because the fine-grained drilling fluids typically remain suspended and transported by ocean currents to quiescent areas of Cook Inlet (i.e., Kamachak Bay). The characteristics of the drilling fluids are described in Fact Sheet Sections 4.1.2 and 4.1.3. The characteristics of the coarse-grained cuttings resemble background geology of Cook Inlet and become indistinguishable amongst the littoral drift of the benthic environment once redistributed by ocean currents.

DEC disagrees that the Fact Sheet does not provide transparency when covering the six factors for zones of deposits. These factors were covered in various related sections of the Fact Sheet that ultimately informed the decision to authorize zones of deposit. For each of the factors listed above, DEC provides the following discussion and cross-reference to applicable Fact Sheet sections.

1. Factors number one and five are interrelated and were appropriately summarized in Fact Sheet Section 6.3. The zone of deposit is anticipated to have a short-term duration due to the strong tidal currents in Cook Inlet. At most Cook Inlet locations within the coverage area, the fast tidal currents prevent deposits for forming except during slack tide conditions. Once the current increases post slack tide, whatever deposition that occurred is quickly resuspended such that the deposit lasts mere minutes. At locations closer to shore (e.g., Sabre Project Site), the maximum currents are not as swift such that a small deposit of cuttings may form but the fine-

grain components in the discharge (i.e., drilling fluids) remain suspended and do not result in deposition. However, the coarser-grained components (drill cuttings) settle to the seafloor and become mixed with the shifting bedforms of the seafloor over a tidal cycle or two such that no adverse effects are expected to occur. Accordingly, the deposit is not expected to have a duration that results in adverse effects. Due to the short-term nature of the deposit, evaluation of long-term impacts is not necessary except at those nearshore locations where cuttings are projected to mix into the shifting bedforms. For this reason, DEC appropriately requires permittees to conduct EMP studies to demonstrate the accuracy and appropriateness of the models (i.e., CORMIX) used to determine there would be no adverse affects. Given the conservativeness of the modeling DEC has used, DEC does not anticipate EMP results would invalidate the modeling. However, DEC may reconsider this decision once EMP data is available to support previous permit requirements (i.e., 4,000 meter exclusion areas) imposed without supporting data (See Comment Response 2.2.2.6).

2. As discussed in Fact Sheet Section 6.2.8 and again in Section 6.3, the discharge of drilling fluids and drill cuttings is not expected to result in impacts on human health.

3. Per Fact Sheet Sections 6.2.8 and 6.3, the discharge of drilling fluids is not expected to bioaccumulate or persist in the environment. Furthermore, based on a current understanding of proposed drilling project locations, there are no known shellfish beds in the vicinity nor other benthic communities that are anticipated to be impacted by the short-term zone of deposit at currently proposed exploration or production drilling locations in Cook Inlet. This includes the Sabre Project Site that is currently authorized under individual permit AK0053690. By virtue of not previously commenting on, or appealing to, the discharge of drilling fluids and drill cuttings at the Sabre Project Site, Inletkeeper appears to be concentrating on unfounded concerns related to the Permit than the Sabre Project Site specifically, which represents the current worst-case project that will be used to inform future decisions. Hence, Inletkeeper's objection overall to zones of deposit appears to be inconsistent.

4. Per Fact Sheet Sections 6.2.6 and 6.3, DEC has evaluated the discharge of drilling fluids and drill cuttings assuming all uses are applicable and have applied the most stringent water quality criteria for all uses per 18 AAC 70.040(1). Therefore, all uses of the waterbody are protected.

5. See factor one above.

6. The ultimate fate and transport of drilling fluids and drill cuttings discharged to the zone of deposit is discussed in Fact Sheet Sections 6.2.3.1, 6.2.3.2, 6.2.3.3, and 6.3. Section 6.2.3.1 describes areas where there are known net depositional marine environments in Cook Inlet where drilling fluids may be transported and deposited. Sediment samples collected from these areas do not indicate potential for adverse impacts. Sections 6.2.3.1 and 6.3 specifically discusses the initial short-term deposit, resuspension of the drilling fluids, and mixing of drill cuttings with native seabed material.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.4.2 Comment: Zones of Deposit Require Facility-specific Authorizations

Inletkeeper states DEC should not authorize zones of deposit in the Permit but rather impose individual limitations so that zones of deposit will not form, which would be more appropriate for individual permits. Inletkeeper further asserts the analysis provided in the Fact Sheet does not account for any site-specific conditions that are likely to impact the formation of a deposit such as water depth, distribution and dispersion, receiving water and benthic conditions, seasonal variations, and other factors. Inletkeeper further contends the conclusion by DEC that uses of the waterbody beyond the boundary of the 100 meter zone of deposit and chronic mixing zone does not account for site-specific conditions. Therefore, Inletkeeper insists that the DEC should not authorize zones of deposit in the general permit but rather authorize them under individual permits for each facility.

DEC Response to Facility-specific Zones of Deposits

This comment appears to be partially based on the comment that all facilities must have limitations based on specific facility-by-facility determinations. DEC disagrees because DEC has authority to regulate similar discharges for oil and gas exploration, development, and construction in Cook Inlet using a general permit developed per 18 AAC 205(b)(2), which states.

> "The Department may use a general permit to regulate one or more categories or subcategories of discharges within an area described in (a) when the sources within a covered category or subcategory of discharges are either point sources other than storm water point sources if the sources within each category or subcategory all:
>
> (A) involve the same or substantially similar types of operations;
> (B) discharge the same types of wastes;
> (C) require the same effluent limitations or operating conditions; and
> (D) require the same or similar monitoring; and
> (E) in the opinion of the Department, are more appropriately controlled under a general permit than individual permits."

As detailed in Comment Responses 2.2.2.1, 2.2.2.7, and 2.5.2.2.1 through 2.5.2.2.7, the technical and regulatory opinion of DEC is that discharges covered by the Permit result from substantially similar operations with consistent effluent characteristics that require similar limitations and monitoring requirements. Lastly, in DEC's opinion these discharges are more appropriately regulated by the Permit than under individual permits. As required by 18 AAC 83.205(d), the Department has clearly identified the conditions applicable to each category or subcategory of discharges covered by the Permit. To ensure adequate protection for all categories and subcategories, limitation must be protective for a full range of facility conditions. Hence, by imposing limitations that protect the environment from the worst-case scenarios, or facility discharge, then DEC is protecting the waterbody as a whole for all facilities. Note that DEC applies facility-specific limitations, standards, and conditions in the Permit when it is necessary for protection of aquatic life, wildlife, and human health. However, issuing facility-specific zones of deposit is not necessary for this Permit.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.4.3 Comment: Zones Fail to Protect Human Health, Aquatic Life, and Wildlife

Inletkeeper claims that the DEC analysis is insufficient to explain how authorized zones of deposit will protect human health, aquatic life, and wildlife. The Fact Sheet states that zones of deposit will have no direct or indirect impact on human health and will not bioaccumulate or persist in the environment because the deposits will exist only for a short period. Inletkeeper contends, however, that DEC does not define "short period" and how dispersion is guaranteed at all locations and discharges. Furthermore, the Fact Sheet does not cite passed studies or explain how accumulation of heavy metals will not harm aquatic life, wildlife, or human health. Inletkeeper claims that DEC cannot support this conclusion by using outdated studies without further analysis. In addition, Inletkeeper points out that impacts from smothering of aquatic life was not considered for aquatic life. Nor did DEC consider bioaccumulation of heavy metals. DEC should provide a detailed analysis for all discharge locations where zone of deposits could be proposed so their potential impacts to human health, aquatic life, and wildlife can be considered on a facility-by-facility basis.

DEC Response to Zones of Deposit Protectiveness

DEC disagrees that protection of wildlife, aquatic life, and human health was not adequately explained in the Fact Sheet. First, adequate dispersion is provided by the depth-volume limitations for discharge drilling fluids and drill cuttings per Permit Table 3. The depth-volume limitation ensures there is adequate water column available to separate fine-grained from coarse-grained particles and to support transportation of the fines containing metals away from the deposit. Per Fact Sheet Section 4.1.2 and previous Comment Response 2.5.2.4.1, even if drilling fluids adhered to cuttings is in the deposit, the bioavailability for those metals to bioconcentrate or bioaccumulate is impeded by the oxygen-rich marine environment, which will not allow desorption of the metals from their particulate form. Given human health, aquatic life, or wildlife protection is significantly predicated on bioavailability pollutants and bioavailability is significantly impeded in marine water, there is no path for these metals to affect aquatic life, wildlife, or human receptors.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.5 Foreword: Antibackslinding Analysis

Inletkeeper claims there are serious flaws in the antibacksliding evaluation for the Permit because DEC only acknowledges the reduction in requirements for Chronic WET limits and ignores numerous other backsliding conditions. Inletkeeper cites the following backsliding conditions:

- Mixing zones are allowed to be larger than in the 2007 GP;
- Allowing facilities that were previously zero discharge to discharge (e.g., Osprey Platform produced water);
- Removing the prohibition of new sources (i.e., allowing new facilities);
- Introducing new discharges under the Permit, and
- Reducing the 4,000-meter buffer to 1,000 meters near environmentally sensitive areas.

Inletkeeper expands these comments on potential deficiencies in the antibackslding section of the fact sheet and DEC provides specific comments in the following subsections.

2.5.2.5.1 Comment: Mixing Zones Require Antibacksliding Analysis

Inletkeeper states that DEC impermissibly expands the dimensions of all mixing zones with less rigorous permit conditions compared to the 2007 GP. Inletkeeper claims that backsliding provisions prevent the expansion of mixing zones and new information can only justify backsliding if there is a decrease in pollutants discharged and that by expanding size of the mixing zone. Because the mixing zone areas have increased for many of the produced water discharges, DEC is allowing more pollutant loads to be discharged and fails to acknowledge that backsliding prohibits such increases.

DEC Increased Mixing Zone Sizes Do Not Required anAntibacksliding Analysis

First, mixing zones are not TBELs, which can be subject to antibacksliding under 40 CFR 122.44(L). Second, mixing zones are also not applicable to antibacksliding under the CWA Section 402(o). Mixing zones are strictly under the authority of state WQS, which have to be approved by EPA for use in APDES Permits. At the time of issuing the Draft Permit for public review, the applicable version of the mixing zone regulations approved by EPA was the 2003 version of regulations. Since then, EPA approved the 2006 version as discussed in RTC Section 1.3 and Comment Response 2.4.2.4. The application of the 2006 version had no effect on the mixing zone evaluation. However, because the regulations had been restructured, DEC had to update the citations in the Fact Sheet.

By definition, a mixing zone is an area in the receiving water where water standards are suspended or limited and the WQS determine where compliance with the WQS must be met (i.e., at boundary of the mixing zone). Per 33 U.S.C 1362(11) Effluent limitation is defined as:

> "any restriction established by a State or the Administrator on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources into navigable waters, the waters of the contiguous zone, or the ocean, including schedules of compliance."

As such, a mixing zone is not a water quality-based effluent limitation, condition, or standard subject to CWA 402(o) subject to an Antidegradation. Instead, mixing zones are evaluated using much of the same considerations required in the Antidegradation Analysis for ensuring protection of existing uses and protection of sensitive aquatic resources and human health. Thus, an appropriately sized mixing zone complies with the Tier I Antidegradation Analysis because all water quality criteria are met at the boundary of the chronic mixing zone and this ensures protection of existing uses of the waterbody as a whole beyond the boundary of the mixing zone (See Fact Sheet Section 10.3). In addition, the evaluation DEC conducts to ensure sensitive aquatic resources and human health is protected outside the boundary of the mixing zones results in similar protections as the Antidegradation Analysis. Hence, even though a mixing zone is not subject to antibacksliding provisions, it still complies with the Antidegradation Policy due to the evaluation criteria DECuses to authorize them.

No changes to the Permit or Fact Sheet have been made based on this comment.

2.5.2.5.2 Comment: Osprey Produced Water Discharge and Antibacksliding

Inletkeeper states that because the Osprey Platform was previously required to meet a zero discharge provision in their individual permit that allowing the discharge in the Permit is

backsliding. The inclusion of produced water discharges from the Osprey Platoform in the Permit will increase the total amount of produced water that facilities will discharge to Cook Inlet. Inletkeeper claims that DEC downplays this new discharge by suggesting it does not represent a new or expanded discharge because the limited parameters in the Permit are consistent with the 2007 GP. Inletkeeper contends that because the Osprey individual permit disallowed discharges of produced water from the facility, DEC cannot now allow such a discharge under the Permit without triggering antibacksliding; DEC does not provide a backsliding analysis for the Osprey Platform discharge of produced water. Inletkeeper further states that this is particularly concerning given the Osprey Platform cannot meet the current ELGs for the proposed produced water discharge and must install additional treatment in order to comply with the ELGs. Inletkeeper contends that instead of explaining how the operators of the Osprey Plstform plan to treat their produced water, DEC exempts the Osprey Platform from meeting the ELGs in a deficient antibacksliding analysis. Inletkeeper further asserts that DEC must not authorize the discharge of produced water from Osprey because it cannot meet the ELGs and violates the antibacksliding provisions.

DEC Did Not Violate Antibacksliding of Osprey Produced Water Discharge

Per 18 AAC 83.480(a),

> "Except as provided in (b) of this section, when a permit is renewed or reissued, interim effluent limitations, standards, or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit, unless the circumstances on which the previous permit was based have materially and substantially changed since the permit was issued, and the change in circumstances would constitute cause for permit modification or revocation and reissuance under 18 AAC 83.135."

The inclusion of the discharge of produced water from the Osprey Platform, and other Osprey discharges, constitutes coverage of a new facility into an existing general permit, which previously included the produced water and other discharges for many facilities. Because the limitations for the discharge of produced water from the Osprey Platform in the Permit are also new, there is no direct comparison available between the previous general permits and the Permit with respect to the new discharges being allowed from the Osprey Platform. The general permit(s) being reissued in this case are the 2007 GP (AKG315000) and the 2015 Exploration GP (AKG315100) that was issued during the appeal period of the attempted reissuance of AKG315000 in 2011. The 2015 Exploration GP was issued because the exploration portion of the 2011 GP was not stayed by the courts through the appeal. Antibacksliding for the Permit only pertains to preexisting requirements in either the 2007 GP or the 2015 Exploration GP, which are being recombined. The previous IP for Osprey is not subject to antibacksliding under the general permit. Therefore, preexisting requirements in individual permit AK0053309 for the Osprey Platform is not subject to the antibacksliding provisions for the reissuance of the 2007 GP or the 2015 Exploration GP because Osprey was not previously included in either of these general permits. Hence, there are no interim effluent limitations, standards, or conditions in the previous general permits directly applicable to the Osprey Platform discharge of produced water that could be construed as basis for backsliding. Note that because all existing WQBELs, standards, and conditions for produced water originally proposed in the Permit remained the same, or became more stringent, antibacksliding was not triggered for any of the produced water

discharges until DEC removed limitations in lieu of monitoring for certain metals per Comment Response 2.2.2.21.

The claim that DEC cannot include the discharge of produced water from the Osprey Platform in the Permit because they cannot currently meet the ELGs is not correct. DEC can include coverage for the Osprey Platformdischarge of produced water given that before CIE can obtain an authorization they must satisfy plan review requirements per 18 AAC 72.500 and 72.600. The purpose of the plan review is to ensure that the treatment facility can meet the limits of the Permit prior to receiving an authorization. This is standard DEC practice that ensures consistency between treatment and limit compliance. In the case of the Osprey Platform, this includes ensuring there is adequate segregation of onshore produced water from that derived from coastal facilities as discussed on Comment Responses 2.1.1 and 2.5.2.2.1. Given DEC did not impose in the Permit TBELs less stringent than the ELGs, antibacksliding is not triggered.

The imposition of monitoring instead of the invalid metal limits triggered an antibacksliding analysis because the secondary metal limits were removed. During development of the WQBELs in the 2007 GP, DEC made a technical mistake in the Certification of Reasonable Assurance for the discharges of produced water, that became apparent upon promulgation of 18 AAC 83.435(b) at a later time. Although 18 AAC 83 may not have been promulgated during issuance of the 2007 GP, 40 CFR 122.44(d)(ii) was applicable and is essentially equivalent to 18 AAC 83.435(b), which states:

> To determine whether a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative or numeric criteria within a state water quality standard, the department will use procedures that account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing when evaluating whole effluent toxicity, and, if applicable, the dilution of the effluent in the receiving water."

And per 18 AAC 83.435(d):

> "When the department determines, using the procedures in (c) of this section, that a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the allowable ambient concentration of a state numeric criteria within a state water quality standard for an individual pollutant, the permit must contain effluent limits for that pollutant."

These regulations established requirements for determining if there is a reasonable potential and whether a limit is required by law. The mistake made by DEC was ignoring dilution in the RPA for secondary metals such that any metal that exceeded criteria at the point discharge was claimed to trigger reasonable potential. However, when a mixing zone is authorized, the boundary of the mixing zone determines where water quality criteria must be met. None of the secondary metals had maximum effluent concentrations that could result in an instream excursion above their respective acute criteria at the boundary of the acute mixing zone. Hence, the establishment of effluent limits for these secondary metals was not consistent with regulations and the resulting wasteload allocations. In this case, the wasteload allocation is a function of the authorized dilution factor for the acute mixing zone, the ambient concentration of

the metal in the receiving water, and the respective acute water quality criterion (See Fact Sheet Appendix C). Therefore, DEC is justified in removing the secondary metals limits as a technical mistake (misapplication of regulations) so long as it is consistent with the Antidegradation Analysis.

DEC discussed elimination of secondary metals in limit tables for produced water and deletion of a paragraph in Appendix C recommending retention of the secondary metal limits in Comment Response 2.2.2.21. Because the secondary metal limits from the 2007 GP have been eliminated, DEC is adding Fact Sheet Section 9.2 and modifying Fact Sheet Section 10.3 to account for antibacksliding and antidegradation, respectively. DEC adds the following Section 9.2 to the Fact Sheet:

> **"9.2 Antibacksliding for Secondary Metal Limits for Produced Water**
>
> **The 2007 GP included secondary metal limits which was a technical mistake, similar to the mistake made for chronic WET. These metal limits were inconsistent with the wasteload allocation derived from the authorized dilution factors of the acute mixing zones. Per 18 AAC 83.435(c), limits are only required for the pollutants that have reasonable potential to cause, or contribute to, an instream excursion of their respective acute water quality criterion at the boundary of the authorized acute mixing zone. For produced water in the Permit, reasonable potential can only exist for the dominant metal for which the mixing zone has been sized based on the maximum required dilution. All other "secondary" metals, metals that require less dilution, do not result in reasonable potential and; therefore, do not require limits. All inappropriate secondary metal limits have been removed from the limits for produced water. However, the permittee must still monitor each secondary metal so to support future RPAs. Because these limits were developed contrary to regulations, their removal represents an allowable backsliding condition per 18 AAC 83.480(b)(2).**"

2.5.2.5.3 Comment: Tyonek Produced Water and Antidegradation

Similar to the Osprey Platform, the Tyonek A Platform (Tyonek) previously injected produced water but now seeks an authorization to discharge it instead. Similar to the Osprey Platform, this discharge requires an antidegradation analysis. Furthermore, Inletkeeper claims that replacing the chronic WET limits with chronic WET triggers for the Tyonek, and other facilities, as well as the elimination of accelerated testing and Toxicity Reduction Evaluation and Toxicity Identification Evaluations (TRE/TIE) were inappropriate given the lack of data and was not adequately addressed in the antibacksliding analysis.

DEC Did Not Violate Antibacksliding of Tyonek Produced Water Discharge

The discharge of produced water was authorized under the 2007 GP; therefore, adding new discharges does not trigger antibacksliding. Inletkeeper is not correct in their statement that the Tyonek previously only injected produced water and is now seeking a discharge of produced water for the first time. Instead, the Tyonek Platform had authorization to discharge up to 0.03107 mgd under the 2007 GP. After acquiring the facility, Hilcorp reevaluated the anticipated maximum flow at the end of life of the Tyonek Platform to be 0.038 mgd and requested an increase of approximately 6,930 gpd in the Permit. Although an increase has been requested for

the Tyonek Platform, this increase is offset by the elimination of 84,000 gpd of produced water from the Anna Platform of by Hilcorp. In addition, with the reduction of proposed discharge volumes from the Osprey Platform, overall there now is no increase in permitted loadings or concentrations of produced water in the Permit as explained in Comment Response 2.4.1.1 and illustrated in Fact Sheet Section 4.6.3. Because there is now no net increase in permitted loadings or concentrations of produced water over that in the 2007 GP, no Tier II antidegradation analysis based on volume increases at the Osprey or Tyonek Platforms is required.

DEC does not agree there was insufficient data to render a decision to impose more stringent chronic WET triggers and the resulting elimination of the less stringent limits/triggers, TRE/TIE requirements, and accelerated testing requirements in the 2007 GP. The chronic WET data collected for produced water as illustrated in Fact Sheet Table 24, Section 4.6.5 clearly demonstrates that the reduction of chronic WET triggers is warranted. For the Tyonek Platform, the highest possible chronic toxicity as determined through testing, 64 chronic toxicity units (TU_c), represents 12 % of the previous limit/trigger of 537 TU_c. Overall, the maximum observed chronic WET results were no more than 41 % of the previous limit/trigger values for all facilities. Hence, the limits were too high to serve as a control on the discharge of produced water. DEC is confused as to why Inletkeeper would comment on a more stringent trigger when the eliminated of the limits in the 2007 GP were significantly less stringent. Furthermore, similar to the discussion for metals in Comment Responses 2.2.2.21 and 2.5.2.5.2, the creation of chronic WET limits in the Permit would not be required per 18 AAC 83.435(c) and (f). Hence, the imposition of chronic WET limits/triggers in the 2007 GP were not per regulation and appear to be a technical mistake because they are inconsistent with wasteload allocation derived from the authorized dilution in the chronic mixing zone (See Comment Response 2.5.2.5.7).

TAH is the driving parameter for the chronic mixing zone because the criteria for TAH is very stringent, which results in a high authorized dilution in the chronic mixing zone for which the previous chronic WET limits/triggers appear to reflect. Hence, the imposition of WET limits is not required per 18 AAC 83.435(d) because DEC cannot demonstrate there is reasonable potential for chronic WET to result, or contribute to, an instream excursion of 1 TU_c at the boundary of the chronic mixing zone per 18 AAC 83.435(c). Instead of imposing inappropriate WET limits, DEC imposes more stringent triggers based on statistics of the data. Given the chronic WET results are much lower than the limits/triggers in the 2007 GP, the imposition of accelerated testing and TRE/TRI requirements are also unnecessary because it is very unlikely to be triggered given how low the toxicity is compared to the limits/triggers. Nonetheless, DEC still requires an evaluation of chronic WET exceedances followed by retesting even though the onerous accelerated testing and TRE/TIE requirements in the 2007 GP have been reduced to a level commensurate with the potential environmental implications. Note that although unlikely to be needed to evaluate elevated toxicity in produced water, DEC retains the authority to require accelerated testing or TRE/TIE on a case-by-case basis per Permit Section 2.11.2.3. The backsliding of the chronic WET limits/triggers are adequately discussed in Fact Sheet Section 9 as being based on new information as well as being a technical mistake. Nonetheless, an assertion that the backsliding conditions are consistent with the Antidegradation Policy has been included in Fact Sheet Section 10.3 to further support these allowable backsliding conditions.

Changes to Draft Fact Sheet Section 10.3 is provided in Comment Response 2.5.2.5.7.

2.5.2.5.4 Comment: Removal of the Prohibition to New Sources in the Permit

The 2007 GP obligated new sources to obtain coverage under an individual permit, which DEC has removed from the Permit. In doing so, DEC broadens the permit scope and changes permit conditions without conducting the required antibacksliding analysis and claims that NSPS limitations per the ELGs cannot be altered and the removal merely changes how new facilities with new sources obtain their permit authorizations. Inletkeeper claims this constitutes illegal backsliding,which has not addressed in through an antibackslding analysis.

DEC Did Not Violate Antibacksliding by Removing New Sources in the Permit

DEC does not consider the reinstatement of new sources under the Permit as a backsliding condition; the inclusion of new sources represents a new facility and new discharges that provides cause to modify and reissue the Permit per 18 AAC 83.135. The requirement for new discharges of produced water, or drilling fluids and drill cuttings, for development and production facilities to obtain an individual permit is not a prohibition against these discharges. This requirement in the 2007 GP merely reflects EPA's previous decision to require applicants these applicants to obtain an individual permit rather than an authorization under the 2007 GP. Even if the inclusion of new facilities (i.e., new sources) in the Permit were to be considered a backsliding condition, it would be justified backsliding condition per 18 AAC 83.480(a) because the circumstances on which the 2007 GP were based have materially and substantially changed and this change in circumstances would constitute a permit modification per 18 AAC 83.135. The substantial change is the transfer of authority from EPA to DEC during primacy such that the previous restriction of new facilities in the EPA-issued 2007 GP is based on the federal regulations that DEC is not required to uphold. For EPA, any new source must be evaluated under the NEPA process, which may require environmental reviews that are inconsistent with the process of issuing an authorization under an effective general permit. Per 40 CFR 122.29(c)(1):

> "The issuance of an NPDES permit to a new source
>
> (i) By EPA may be a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969 (NEPA), 33 U.S.C. 4321 *et seq.* and is subject to the environmental review provisions of NEPA as set out in 40 CFR Part 6, subpart F. EPA will determine whether an Environmental Impact Statement (EIS) is required under 40 CFR 122.21(1) (special provisions for applications from new sources) and 40 CFR Part 6, subpart F;
>
> (ii) By an NPDES approved State is not a Federal action and therefore does not require EPA to conduct an environmental review.

Although EPA provided minimal justification in the Fact Sheet and RTC for the 2007 GP, the federally required NEPA process would appear to significantly complicate issuances of authorizations for new sources under the 2007 GP. DEC believes EPA's authority to require an individual permit for new sources is per 40 CFR 122.28(b)(3)(G)((4): "Other Relevant Factors." In the RTC for the 2007 GP, EPA acknowledges in comment response #84 that new sources seeking coverage under an individual permit instead of the 2007 GP must comply with additional NEPA requirements. Given NEPA is not triggered for issuing a new source authorization under a general permit for state NPDES authorities, this previous restriction is no longer applicable. In

the 2007 GP RTC comment response #1, EPA acknowledged that the restriction for new sources in the 2007 GP did not preclude them from future authorizations. Hence, DEC has authority to issue authorizations under a general permit to new sources so long as the receiving water has available wasteload allocation and the discharges will ultimately meet the ELGs and water quality standards (See 18 AAC 83.360). In addition, per 18 AAC 83.205(b)(2):

> "The Department may use a general permit to regulate one or more categories or subcategories of discharges within an area described in (a) when the sources within a covered category or subcategory of discharges are either point sources other than storm water point sources if the sources within each category or subcategory all (A) involve the same or substantially similar types of operations; (B) discharge the same types of waste; (C) require the same effluent limitations or operating conditions; (D) require the same or similar monitoring; and (E) in the opinion of the Department, are more appropriately controlled under a general permit than under individual permit(s)."

Per Comment Responses 2.5.2.2.3 through 2.5.2.2.5, DEC has authority to issue a general permit to new sources so long as requirements for similarity are generally upheld and, in the opinion of the Department, an authorization is more appropriate over an individual permit.

Based on this discussion of new sources represented by new facilities obtaining authorizations for the first time under the Permit, no changes to the Draft Permit and Fact Sheet have been made based on this comment (See Comment Response 2.5.2.5.5 for more discussion on new discharges and antibacksliding provisions).

2.5.2.5.5 Comment: Antibacksliding Analysis for Geotechnical or HDD Discharges

Inletkeeper states that geotechnical and HDD discharges associated with infrastructure construction and inclusion of synthetic drilling fluids for oil and gas drilling under the Permit require an antibacksliding analysis because the 2007 GP did not include them. Inletkeeper states that because the drilling fluids for geotechnical investigations or HDD are unlike other discharges under the permit that it must be evaluated under antibacksliding. The discharge of HDD is too varied for a standard size mixing zone authorization and requires a mixing zone application prior to authorization. In addition, DEC states that the ELGs are not to be applicable to the geotechnical and HDD drilling fluids (Class C Drilling Fluids) but fails to describe what additives are allowed for Class C fluids. In addition, DEC adds the ability to discharge synthetic drilling fluids, which also was not allowed in the 2007 GP and constitutes a significant and prohibited expansion of the permit.

DEC Not Required to Conduct Antibacksliding Analysis for Geotechnical or HDD

Drilling fluids and drill cuttings requirements imposed on Geotechnical and HDD discharges were included in the 2007 GP and; therefore, are not applicable to antibacksliding. The incorrect assertion by Inletkeeper that DEC is authorizing the discharge of synthetic drilling fluids is addressed in Comment Response 2.2.2.30. Per Permit Section 2.2.1.3 and Table 2, the only allowable use of synthetic fluids per ELGs is for Class B3 drilling where the direct discharge of synthetic is prohibited per Permit Section 2.2.1.1 but fluids adhered to cuttings is allowed per Section 2.2.1.2. Class C Drilling Fluids must use a water based fluid, synthetic fluids are not allowed. Rather than stipulate what additives can be included, DEC placed conditions on the SPP toxicity of the drilling fluid, which in turn limits the amount and type of additives that can be

used. The addition of new discharge categories for Class C Drilling Fluids and Drill Cuttings does not constitute backsliding. Instead, these are new discharges allowed per 18 AAC 135.

The inclusion of the Class C Drilling Fluids and Drill Cuttings is merely a new discharge allowed by 18 AAC 135 so long as it is consistent with the Antidegradation Policy and Implementation Methods in 18 AAC 70.015 and 18 AAC 70.016, respectively. The ability to modify the Permit to include Class C Drilling Fluids and Drill Cuttings as a new discharge in the reissued Permit is allowed under 18 AAC 83.135. Per 18 AAC 83.135(a)(1):

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

Part (1), addresses the material and substantial alteration to the facility, or activity, that occurred after the 2007 GP. Based on activities that have occurred since the issuance of the 2007 GP, inclusion of the Class C Drilling Fluids and Drill Cuttings is necessary to support oil and gas development and production in the Cook Inlet Region. Hence, the fact that there were additional permitted activities (i.e., geotechnical evaluations and HDD projects) that required APDES discharge coverage since the last issuance allows inclusion of Class C Drilling Fluids and Drill Cuttings in the reissued permit by satisfying 18 AAC 135.135(b)(1). Fact Sheet Section 3.5.1 describes these recent, new activities that require APDES coverage. In addition, Fact Sheet Section 4.1.4 describes how DEC establishes source control over Class C Drilling Fluids and Fact Sheet Section 8.1.2 and Permit Section 2.2.3 provides limitations and monitoring requirements for the new discharge of Class C Drilling Fluids and Drill Cuttings, which were developed based on past projects using Class C Drilling Fluids.

No changes to the Permit or Fact Sheet have been made based on this comment.

2.5.2.5.6 Comment: Reduced Buffer Zones and Antibacksliding

Inletkeeper comments that the reduction of the buffer zone from 4,000 meters to 1,000 meters for drilling fluids and drill cuttings also represents backsliding conditions. Inletkeeper asserts that DEC fails to offer any rationale or analysis for reducing these protections for discharges from the KPF and Osprey Platform near the Redoubt Bay CHA. DEC also does not provide protections for the Goose Bay SGR, Potter Point SGR, McNeil River SGR, and the Anchorage Coastal Wilderness Refuge. The Permit also removes the prohibition for discharges in the 5.5 meter isobaths adjacent to the Clam Gulch CHA and from Crescent River Northward to the point ½ mile north of Redoubt Point. In addition, discharges would also be allowed in the previously restricted Mineral Management Service Lower Kenai Peninsula Deferral Area and the Barren Island Deferral Area including the area between the deferral areas and the shore. Inletkeeper contends that these buffer removals constituted improper backsliding.

DEC Not Required to Conduct Antibacksliding for Reduced Buffer Areas

DEC did not fail to offer a rationale or analysis for reducing the buffer zones to the Redoubt Bay CHA or Trading Bay SGR. The justification for reduction from 4,000 to 1,000 meters presented in Fact Sheet Sections 2.2.2, 2.2.3.1, 2.2.5, and 2.3.2 and was based on the development and

findings from the successful issuance of AK0053690. The allowance to conduct exploration drilling approximately 3,200 meters from the Trading Bay SGR was originally provided by individual permit AK0053690 – CIE, Sabre Oil and Gas Exploration in Cook Inlet. The reduction for the KPF and Osprey Platform to the Redoubt CHA was based on an understanding that CIE has an active lease near the KPF where drilling for an injection well or infrastructure may be beneficial and is allowable by virtue of the state lease. Hence, the exclusion appears to conflict with an existing oil and gas lease area that does not include a sensitive receiving water environment. Specific to the Trading Bay SGR, the following Fact Sheet Sections provided historical perspectives about the EPA decision to exclude coverage at a location without supporting data. Furthermore, the implementation of EPA's decision weakens the ability of industry to collect the data needed to support 2007 GP area exclusion.

> Per Fact Sheet Section 2.2.3.1: "Because no EMP Studies had been conducted during the term of the 1999 GP, the 2007 GP required that all new exploration MODUs conduct EMP studies regardless of location. In addition, although no EMP data was available to support the decision, the 1,000 meter prohibition was increased to 4,000 meters. Justification for this decision included better protection of critical habitat for Steller sea lions, the possibility that extended-reach directional drilling could be used to explore nearshore locations, alternative disposal methods could be used in lieu of discharging, or an individual permit could be issued."
>
> Per Fact Sheet Section 2.3.2: "The standard-sized 100-meter mixing zone for discharge of drilling fluids and drill cuttings that have been based on empirical data has been verified using a new module in CORMIX. This validation was included in the Sabre IP where the 4,000 meter restriction to Trading Bay SGR disallowed coverage under the Exploration GP. When this drilling is conducted, the EMP Study may provide the first meaningful information on the fate and effects given the Sabre Project site conditions, characterized as having transitional (littoral drift) sediment transport. DEC is proposing to allow additional drilling within this vicinity under the Permit based on the information presented for the Sabre IP."

The allowance for drilling within 4,000 meters of the Trading Bay SGR was originally permitted for the Sabre IP (AK0053690) and included in the Permit. For additional information, the following history and justification is provided from the Section 2.2 of the Sabre Fact Sheet:

> "In 2007, EPA reissued the Cook Inlet general permit under a new permit number designation and title, AKG-31-5000 – Oil and Gas Extraction Facilities in Federal and State Waters in Cook Inlet (2007 GP). The 2007 GP included requirements for all new mobile exploration facilities to conduct environmental studies at any location because there was insufficient data collected during the term of the 1999 GP on the fate and transport of the discharges of drilling fluids and drill cuttings to adequately evaluate impacts in the vicinity of the discharges. Although no EMP data was available to support the decision, the 1,000 meter prohibition was increased to 4,000 meters. Support for this decision included protection of critical habitat for Steller sea lions and a belief that extended-reach directional drilling could be used to explore these nearshore locations or alternative disposal methods could be used in lieu of discharging. DEC understands this prohibition was based on limited and generalized information available at the time and

> was influenced by outreach conducted for a general permit that encompassed a greater area of coverage in federal waters that have more areas deserving of protection when compared to the specific location covered by the Permit. Unfortunately, the geology at the Sabre project site does not support extended reach drilling and alternative disposal practices would significantly increase vessel traffic during the Sabre project. Furthermore, the 2007 GP indicated that applicants could seek individual permit coverage in situations where coverage under the 2007 GP was not possible. In this regard, the issuance of an individual permit is consistent with the 2007 GP. Lastly, the Sabre project site is located in a nearshore area where existing oil and gas facilities are already operating and baseline data is currently available. The EMP Study at the Sabre project site appears to be an ideal location to evaluate the impacts from drilling fluid discharges, which was the original objective of the EMP requirement in the previous general permits in Cook Inlet."

Lastly, per Response to Comments Section 2.3 from the Sabre IP, DEC responded to similar concerns that supports the justification in the Permit:

> "As discussed in Fact Sheet Section 2.2 [AK0053690], fourth paragraph, the Draft of the 2007 GP that was issued for public comment established a 4,000 meter setback to sensitive areas, including the Trading Bay SGR, even though there was no data available to support it. When the 2007 GP was issued, EPA responded to an industry comment that the 4,000 meter buffer did not prevent access to subsurface hydrocarbon reservoirs within the 4,000 meter buffer zone because EPA believed extended reach drilling was possible. Unfortunately, extended reach drilling was determined by the applicant and other authorizing agencies to not be possible for the Sabre Project Site. EPA also responded to the comment that the 4,000 meter buffer supported NMFS determination that the AKG315100 would not result in adverse impacts to Stellar sea lions critical habitat that exists in lower Cook Inlet. There is no critical habitat for Stellar sea lions at the Sabre Project Site that would similarly affect authorization of discharges at this location. Although the area is listed as Type II critical habitat for beluga, all of the coverage area for AKG315100 is in Type II beluga habitat and NFMS previously determined discharges under AKG315100 would not likely result in adverse impacts. DEC acknowledges that NMFS is the appropriate authority for this determination and, to date, has not received subsequent information contrary to their previous determination."

While DEC may not have provided the same level of justification in the Permit as in the Sabre IP, the rationale between the Permit and Sabre IP are the same. EPA expanded the buffer zones for all sensitive locations for both federal and state waters, including the one near the Trading Bay SGR. However, once DEC obtained primacy this permitting action was no longer appropriately justified for Sabre Project Site. The separation between state and federal jurisdictions, and the reissuing of AKG315200 for state waters only, are substantial changes justifying reconsideration. Hence, backsliding is justified because the discharges meet water quality standards, including the Antidegradation Policy.

Lastly, Inletkeeper is correct in that DEC removed the prohibition shoreward of the 5.5 meter isobaths near Clam Gulch and the Crescent River as DEC considered the requirements per Permit Section 1.6.3 for no oil and gas discharges shoreward of the 5 meter isobaths as being

essentially equivalent. However, DEC does support protection of these high value aquatic resources and is adding this restriction back into the Permit. The following two new sections are being added to the Permit:

> **"Permit Section 1.6.3.1 – Oil and Gas Facilities are prohibited from discharging shoreward of the 5.5 meter isobaths in the following locations:**
>
> **1.6.3.1.1 Clam Gulch CHA adjacent to Sales 32. 40, 46A, and 49.**
>
> **1.6.3.1.2 Crescent River northward to a point one half mile north of Redoubt Point adjacent to Sales 35 and 49**."

Similar to above, Fact Sheet Section 3.3.1 is being modified by adding the following third sentence in the paragraph for "Water Depth Prohibitions" that reads:

> "…All oil and gas facilities are prohibited discharging shoreward of the 5 meter isobaths. **In addition, all oil and gas facilities are prohibited from discharging shoreward of the 5.5 meter isobaths certain locations near the Clam Gulch CHA and Crescent River.** Discharges to these shallow waters disperse less than discharges to deeper waters…."

Although DEC does not consider adjusting the coverage area as being subject to antibacksliding provision, these buffer zones are considered area prohibitions in both the 2007 GP and the Permit. Therefore, DEC includes the reduction of the buffer zones near Trading Bay SGR and the Redoubt CHA as a less stringent condition as a conservative permitting approach. Therefore, DEC adds the following Section 9.3 to the Fact Sheet.

> **9.3 Antibacksliding for Reducing Buffers from 4,000 meters to 1,000 meters**
>
> **Although it expands the coverage area for the Permit to a minor degree, the reduction of the buffer zone for exploration drilling from 4,000 meters to 1,000 meters near the Trading Bay SGR and the Redoubt CHA could also represent a less stringent condition in the reissued Permit. This less stringent condition, if considered such, is based on the 2007 GP as well as the 2015 Exploration GP. As discussed in Fact Sheet Sections 2.2.1 through 2.2.5, the expansion from 1,000 meters to 4,000 meters was not based on data indicating the expansion was necessary to protect any nearshore sensitive environments, it was imposed to provide preemptive protection of critical habitat for known seal haulout locations in federal waters until data becomes available. First, the expansion from 1,000 to 4,000 meters essentially disqualifies many nearshore environments from the EMP Plan requirements that could provide meaningful data to support this critical decision. Second, since primacy the Permit no longer covers federal waters where preemptive protections under the ESA for Stellar sea lion haulouts could be applicable. In order to collect meaningful data to support scientific decisions which is a primary objective of the EMP Plan requirements, the Department has rescinded the previous expansion at two locations where oil and gas exploration (Sabre Project) or infrastructure projects (Osprey lease area) could occur during the next permit term. Note that the Sabre Project location is already permitted by AK0053690 and the permitting action being taken is to bring this IP under the authority of the GP.**

The segregation of federal waters from state waters of Cook Inlet represents a material and substantial change that supports antibacksliding, which is an allowable backsliding condition per 18 AAC 83.480(b)(1). Because the discharges will either meet water quality criteria at the point of discharge, or at the boundary of an authorized chronic mixing zone, the existing uses of the waterbody as a whole will be protected as presented in the Tier 1 Antidegradation Analysis in Fact Sheet Section 10.3.

To address whether the antibacksliding conditions discussed in this comment as well as in Comment Response 2.5.2.5.4 and 2.5.2.5.7 are consistent with the Antidegradation Policy, see Comment Response 2.5.2.5.7.

2.5.2.5.7 Comment: Reduced WET Monitoring and Antibacksliding Analysis

Per Inletkeeper, DEC claims that all effluent limitations, standards, and conditions in the reissued Permit are as stringent, or more stringent, than those in the 2007 GP except for the removal of chronic WET limits for produced water and removing the associated TRE/TIE requirements. The basis for this reduction is new information, new toxicity data that provides more accurate characterization of the effluent but Inletkeeper laments that no other factors were considered. Although new data can be used in some situations, , Inletkeeper asserts that DEC uses new data inappropriately to lower requirements for inoperative facilities that do not have significant new data. For example, DEC lessens requirements for chronic WET in produced water from the Baker and Dillon where no data has been collected and includes the Bruce and Tyonek Platform in reduced requirements although these facilities do not currently discharge produced water. Inletkeeper further contends that DEC relies on outdated data for these facilities that may not reflect an accurate assessment of chronic toxicity. In summary, Inletkeeper asserts that it is inappropriate for DEC to reduce limits, standards, and conditions based on insufficient data that results in an inadequate analysis to support these decisions.

DEC Antibacksliding of Chronic WET Monitoring of Produced Water is Adequate

The removal of the 2007 limits/triggers for chronic WET is not only allowable with respect to backsliding, but also one that ultimately results in more stringent and realistic permit conditions. As discussed in Comment Response 2.5.2.5.3, although DEC eliminates the excessively high WET limits/triggers, the new triggers based on statistical analysis of the data are even more stringent; the likelihood that the extraneously high limits/triggers in the 2007 GP would actually be exceeded in the 2007 GP is highly unlikely. The use of data from other facilities that are representative of the same formation water that the Baker and Dillon would process, if they were discharging produced water, is not only appropriate but results in more stringent triggers. Given the source of produced water is from the same geologic formation, Inletkeeper's claim that the dataset is not representative is patently false. Furthermore, the use of the representative data resulted in lower triggers than there would have been by using the limited data from the Baker or Dillon; the more data, the less the maximum expected concentration becomes because of the statistical nature of the procedure (See Comment Response 2.4.2.6). Lastly, Inletkeeper correctly concludes that the backsliding is due to availability of new information but it is also due to a technical mistake; the produced water limits/triggers in the 2007 GP were not developed according to requirements in 18 AAC 83.435 or 40 CFR 122.44(d)(ii). These chronic WET

limits/triggers were inappropriate because there was no reasonable potential for an instream excursion of the chronic WET criteria of 1 TUc at the boundary of the chronic mixing zone that would result in development of WQBELs (i.e., limit/triggers). The chronic mixing zone was determined based on TAH, which has chronic criteria approximately 10 times more stringent than the criteria for chronic WET. Hence, chronic WET criteria will be met well before the boundary of the chronic mixing zone sized based on TAH.

The removal of these inappropriate limits is allowable due to the technical mistake of imposing the limits without a clear determination of reasonable potential (See Comment Response 2.5.2.5.3). The Draft Fact Sheet correctly characterized this response so no modifications are necessary. However, given there are other backsliding conditions needing further discussion in the Fact Sheet, DEC added three sections to Fact Sheet Section 9.0 beginning with existing, unchanged text categorized with the following heading:

> **"9.1 Chronic WET Limits/Triggers for Produced Water and Antibacksliding"**

New Fact Sheet Sections 9.2 and 9.3 are provided in Comment Responses 2.5.2.5.2 and 2.5.2.5.6, respectively. In addition, DEC modifies the first sentence of Fact Sheet Section 10.3 to holistically address whether these allowable Antibacksliding conditions satisfy the *Antidegradation Policy* as follows:

> **"To support the *Antidegradation Policy* and imposition of less stringent limitations, standards, or conditions described in Fact Sheet Sections 9.1 through 9.3,** the summary below presents the Department's analyses and findings for the Tier 1 analysis of existing use protections per 18 AAC 70.016(b)(5) finding that:"

DEC also adds the following sentence to the last paragraph of this section:

> **"Furthermore, the Department finds that through the Tier 1 Antidegradation Analysis, the allowable backsliding conditions in Sections 9.1 through 9.3 comply with the *Antidegradation Policy*."**

2.5.2.6 Compliance with Water Quality Standards

The following sections provide specific comments and DEC responses related to compliance with state WQS.

2.5.2.6.1 Comment: Mixing Zones Addressed in LEA Comments

Inletkeeper hired LEA to provide a third-party evaluation of the mixing zones authorized by the Permit. DEC has reviewed the mixing zone comments provided by Inletkeeper and compared them to those provided by LEA and has concluded that Inletkeeper comments do not include new or different comments on this subject matter. Therefore, DEC references various responses in LEA Comment Section 2.4.2 for the appropriate responses to the mixing zone comments submitted by Inletkeeper.

DEC Already Responded to Mixing Zone Comments by LEA

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.7 Comment: Tier I Antidegradation Analysis is Incomplete and Improper

Inletkeeper claims that the Tier I analysis is inadequate because DEC failed to identify the current uses of the waterbody. DEC states "The Department reviewed water quality data, environmental monitoring studies, and information on existing uses within the coverage area. The Department finds the information reviewed as sufficient and credible to identify existing uses and the water quality necessary for Tier I protection." Inletkeeper contends that this conclusory statement is too vague in light of Inletkeeper concerns for potential bioaccumulation in subsistence food sources and the wide range of uses that are essential for sustaining traditional native lifestyles. Inletkeeper states that DEC must identify all affected existing uses for a complete analysis. Inletkeeper states that the perfunctory statements by DEC that all existing uses are protected are insufficient. Inletkeeper states that adding new discharges and increasing mixing zones for existing discharges will likely result in discharges exceeding allowed pollutant levels such that protection of uses may be threatened. Finally, Inletkeeper states that DEC also reduces buffers to CHAs but does not evaluate how these changed protections may affect the local uses of the waterbody.

DEC Completed a Proper and Complete Tier I Antidegradation Analysis

DEC adequately addresses protection of existing uses of the waterbody whether during the Tier I Antidegradation Analysis (Fact Sheet Section 10.3), mixing zone determinations (Fact Sheet Section 6.2.6), or zone of deposits (Fact Sheet Section 6.3). Compliance with Alaska WQS ensures existing uses of the waterbody remain protected. This is accomplished by listing which uses are to be protected and imposing water quality criteria developed to protect those uses. By establishing permit conditions that protect the most vulnerable uses of the waterbody from each individual discharge representing the worst-case effluent characteristics, the general permit is protective of existing uses. First, when following procedures for applying water quality criteria per 18 AAC 70.040 and 70.050, all applicable existing use classes are protected. Per 18 AAC 70.050(3) for marine waters:

> "Except as specified in 18 AAC 70.230(e), state water is protected for the following use classes: marine water – Classes (2)(A), (2)(B), (2)(C), and (2)(D)."

Per 18 AAC 70.020 – *Protected water use classes and subclasses; water quality criteria; water quality standards table*, Classes (2)(A) through (2)(D) represent all applicable use classifications of marine water (there are no other uses that could apply) that must be protected by applying the most stringent criteria among all uses per 18 AAC 70.040. Per 18 AAC 70.040(1):

> "In applying the appropriate water quality criteria for any waterbody or portion of a waterbody, the Department will use the following procedures:
>
> (1) If a waterbody is protected for more than one use class under 18 AAC 70.050 or 18 AAC 70.230(e), the water quality criteria for the more stringent use class will apply."

Since none of the uses of the waterbody have been removed per 18 AAC 70.230(e), DEC correctly applied the most stringent criteria among the use classes when developing limitations, standards, or conditions in the Permit. Because the most stringent criteria was applied and the

criteria is developed to protect the uses, DEC can state that the Permit is protective of all uses of the waterbody beyond the boundary of authorized chronic mixing zones.

Inletkeeper conflates the requirements for Tier I Antidegradation Analysis with other regulatory requirements associated with mixing zones when injecting the discussion concerning bioaccumulation, reduction of buffer zones, and fish consumption. These discussion points are not necessary to conclude Tier I protection per 18 AAC 70.016(b)(5)(A), which requires that "existing uses and the water quality necessary for protection of existing uses have been identified based on available evidence." The information that DEC must rely on during this determination includes water quality and use related data (e.g., 2010 PWS), information submitted by the applicant (e.g., Mixing Zone Applications), and information received during public comment. Although Inletkeeper claims that DEC must consider additional information and provides generalized topics, Inletkeeper failed to provide specific information that DEC should consider in the Tier 1 determination. Also note that although not required in the Tier I Antidegradation Analysis, the topics presented by Inletkeeper on fish consumption, bioaccumulation, etc. are discussed in Comment Response 2.5.2.12.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.8 Preface: Tier II Antidegradation Analysis Comments

Per 18 AAC 70.015(a)(2), "if the quality of water exceeds the levels necessary to support the propagation of fish, shellfish, and wildlife and recreation in and on the water, the quality must be maintained and protected." Inletkeeper asserts that DEC fails to acknowledge or analyze new or expanded discharges under the Permit that necessitates a Tier II antidegradation analysis, especially for the Osprey Platform.

Per 18 AAC 70.016(c)(2)(A), DEC must perform a Tier II antidegradation analysis for new or expanded discharges. Per 18 AAC 70.990(75), new or expanded discharges are those that are regulated for the first time or discharges that are expanded such that they could result in an increase in permitted parameter loads or concentration or other changes in discharge characteristics that could lower water quality or have other adverse environmental impacts. The antidegradation analysis for expanded or new discharges apply to both general and individual permits but Inletkeeper contends that DEC has neglected them in the reissuance of the Permit. Specifically, DEC has failed to conduct a Tier II antidegradation analysis for the following new or expanded discharges:

- Including Furie, Sabre**,** AK LNG and other facilities for first time;
- Inclusion of Class C Drilling Fluids and Drill Cuttings from Non-Oil and Gas Facilities;
- Increases in Mixing Zone Sizes;
- Including Zones of Deposits for the First Time in the Permit;
- Allowing Discharges Near CHAs;
- New Discharge of Hydrostatic Test Water; and
- Excavation Dewatering from Contaminated Sites.

DEC Interim Response: In Comment Response 2.2.2.18, DEC determined that an Antidegradation Analysis is no longer required to do lowering the limited flow rate of produced water from the Osprey Platform. Although comments applicable to the Tier II Antidegradation

Analysis in the Draft Fact Sheet (Draft Antidegradation Analysis) are essentially moot, DEC provides responses for completeness and to counter many misinterpretation of the recently promulgated *Antidegradation Policy* and *Implementation Methods*. The following subsections provides more detail about Inletkeeper misinterpretations and DEC responses.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.8.1 Comment: Addressing New Facilities Furie, Sabre, Alaska LNG, and Others in Tier II Antidegradation Analysis

Inletkeeper states that, although DEC acknowledges in other sections of the Fact Sheet that Julius R Platform, Sabre Exploration Project, AK LNG, and potentially other currently unidentified facilities may obtain coverage for the first time under the Permit, DEC completely fails to address any of these dischargers in the Tier II antidegradation analysis.

DEC Appropriately Addressed New Facilities in Tier II Antidegradation Analysis

DEC appropriately conducted a Draft Tier II Antidegradation Analysis in the Draft Fact Sheet for those discharges that were required based on the definition of new and expanded in 18 AAC 70.990(75) and the requirements in 70.016(c)(2) and 70.016(c)(3). However, DEC has since reduced the discharge of produced water from the Osprey as an outgrowth of Comment Response 2.2.2.18 such that an Antidegradation Analysis is not required. Nonetheless, DEC provides the following response for completeness.

Although a project similar to the previous AK LNG project may need coverage under the Permit, another geotechnical investigation specifically by AK LNG is not currently planned: AK LNG already conducted their investigation and is not seeking coverage under the Permit. However, the basis for the discharges of Class C Drilling Fluids and Drill Cuttings from geotechnical investigations relied on information provided during the AK LNG Geotechnical Program that was previously permitted under an individual permit. This information is included in the Permit to allow for coverage of similar discharges in the Permit in the future.

For Julius R Platform and other potential facilities currently unidentified, Inletkeeper is correct that DEC did not address these facilities in the antidegradation analysis. DEC did not address these facilities because Julius R Platform, or other unidentified facilities, had not provided data to DEC to characterize the produced water effluent and allow for a mixing zone determination, limit derivation in the Permit, or a Tier II Antidegradation Analysis. Instead of waiting to obtain coverage under the Permit once effective, Julius R Platform has obtained coverage for produced water in their reissued individual permit AK0053686. Hence, both Julius R Platform and the past AK LNG permits are not applicable to the Tier II Antidegradation Analysis for the Permit. However, nothing would prevent Furie from seeking coverage under the Permit in the future. In order for Furie and other currently unidentified facilities to obtain coverage under the Permit in the future, this information would need to be submitted to DEC so that a Statement of Basis incorporating the characterization data, mixing zone analysis, applicable limits and, possibly, a Tier II Antidegradation Analysis could be developed and issued for a 30-day public notice period per Permit Section 1.1.7. Because they have adequately provided information for inclusion in the Permit, Osprey and Sabre can obtain coverage under the Permit upon the effective date because these elements have already been included in the Draft Permit issued for a 90-day public comment period and had comments responded to in this RTC. For example, DEC reduced the

discharge volume of produced water for the Osprey in the Permit to a level that no longer triggers a Tier II Antidegradation Analysis per Comment Response 2.2.2.18. The Sabre Project drilling fluids and drill cuttings are addressed in the next response, 2.5.2.8.2, but the Osprey Platform produced water response is expanded upon in the remainder of this response.

The addition of newly authorized facilities does not necessarily constitute a new or expanded discharge that would trigger a Tier II Antidegradation Analysis for a general permit. New discharges under a general permit would be represented by any new category of discharges that was not previously regulated by the preceding 2007 GP. All of the proposed discharges for Osprey are preexisting categories of discharges under the 2007 GP. Hence, inclusion of the Osprey Platform does not present new discharges under the Permit. Furthermore, all of the concentration limits imposed on the Osprey Platform represent parameters limited by existing facilities in the 2007 GP and all totaled, there are no increases in limited parameter loadings. To demonstrate that an expansion due to overall increases in parameter loadings has not occurred, DEC evaluates whether or not increases in permitted parameter loadings resulted from new facilities on a parameter-by-parameter basis. For example in Comment Response 2.2.2.18, DEC stated that it reduced the originally proposed volume of the Osprey discharge of produced water to the point that it no longer represents an increase in the total produced water flow rates authorized by the Permit when compared to the 2007 GP.

In order to determine if the total projected permitted loadings from the 2007 GP have increased in the Permit, DEC compared the Fact Sheet to the 2007 GP developed by EPA to the updated projected total loadings provided in Fact Sheet Section 4.0 – Wastewater Characterization. The 2007 GP Fact Sheet established flow rates based on a projection of the end of field life for the various oil and gas facilities that were used for developing mixing zones. Hence, these flow rates, along with concentrations limits, form the basis to evaluate previous loadings for the 2007 GP. Upon review and comparison to the past loading projections, there is no increase in parameter loadings due to the added volume of produced water presented by the Osprey Platform. In addition, based on the comparison of parameter loadings there appears to be even more produced water capacity remaining before a Tier II Antidegradation Analysis would be triggered due to more stringent concentration limits (See Attachment 2). Elimination of the Tier II Antidegradation Analysis is justified per 18 AAC 70.016(c) and additional discharges of produced water could be added to the Permit before one is required. Per 18 AAC 70.016(c)(3):

> "The Department will not conduct a Tier II antidegradation analysis for
>
> (A) reissuance of a license or general or individual permit for an existing discharge that the applicant is not proposing to expand;
> (B) issuance of a license or general or individual permit for a discharge that did not previously require authorization and that the applicant is not proposing to expand; or
> (C) reissuance of an administratively extended license or permit, if the applicant is not proposing an expanded discharge."

A new facility or discharge does not automatically trigger a Tier II Antidegradation Analysis in a general permit unless there is an accompanying expansion based on limited concentrations or resulting loadings. Per 18 AAC 70.990(75):

> "new or expanded," with respect to discharges, means discharges that are regulated for the first time or discharges that are expanded such that they could result in an increase in permitted parameter load or concentration or other changes in discharge characteristics that could lower water quality or have other adverse environmental impacts.

When the governing regulations defining new and expanded in the context of the Permit are correctly interpreted, it is appropriate that DEC did not conduct the Tier II Antidegradation Analysis. The interpretation by Inletkeeper is incorrect. For a general permit, a new discharge would be a completely new category of discharge rather than a new facility seeking authorization to discharge for the first time under an existing category. In all cases under the Permit, none of the new facilities are proposing to discharge under a new category. Hence, either they have pre-existing categories under the Permit or were previously covered under existing categories (i.e., Hydrostatic Test, Excavation Dewatering, Class C Drilling Fluids, etc.). Even if these were considered new discharges, the fact that they don't represent an expansion in permitted concentrations or loadings would prevent triggering a Tier II Antidegradation Analysis.

For a general permit, an expanded discharge would be an overall increase in permitted pollutant loadings over the projected five-year term. Although the new concentration limits for TAH and metals in the Permit are either the same or more stringent than those in the 2007 GP, these limits need to also be evaluated with respect to their representative loadings (i.e., total mass discharged). The fact that the product of limited flow and concentrations results in less overall loadings from the 2007 GP demonstrates there is no permitted loading expansion. The Osprey limited concentrations and flow of 0.07077 mgd would not result in exceeding the previous permitted loadings as determined from the 2007 Fact Sheet Table 2 and the limits in Fact Sheet Tables .7-B1 through 7-B8. Hence, per the attached TAH and metal loading summaries, a Tier II Antidegradation Analysis is not required per 18 AAC 70.016(c)(3).

Given a Tier II Antidegradation Analysis is not required for the Permit, no changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.8.2 Comment: Class C and Synthetic Drilling Fluids in Tier II Antidegradation Analysis

Inletkeeper argues that synthetic drilling fluids discharge is a "new" discharge. Inletkeeper also comments that the inclusion of Class C drilling fluids for HDD or geotechnical investigations represents a new or expanded discharge. Inletkeeper also claims that DEC msut add an entirely new category of drilling fluids to the Permit, which are covered by the ELGs. Inletkeeper states that on one hand, DEC appears to be treating these new discharges as unrelated to oil and gas but on the other hand is also trying to include them in the Permit that is focused on oil and gas activities. Inletkeeper states that despite the addition of this new category of discharge, Class C Drilling Fluids and Drill Cuttings, DEC claims in the Fact Sheet that "DEC finds that there are no increases in permitted load or concentrations; the geotechnical survey or HDD discharges generally have the same characteristics, or better, as oil and gas discharges and have similar limitations when applicable." Inletkeeper states that having similar limitations does not exempt DEC from conducting an antidegradation analysis and DEC is required to conduct a Tier II Antidegradation Analysis to ensure there is no lowering of water quality.

DEC Appropriately Excluded Class C and Synthetic Drilling Fluids in the Draft Tier II Antidegradation Analysis

The states Antidegradation Policy does not require there to be no lowering of water quality as Inletkeeper claims. Instead, the Antidegradation Policy allows for a certain amount of lowering of water quality if it is necessary and supports economic or social development in the vicinity of the discharge. Whether or not a Tier II Antidegradation Analysis is necessary, depends on if the discharges represent a new or expanded discharge as discussed in Comment Response 2.5.2.8.1. DEC correctly added Class C Drilling Fluids and Drill Cuttings to the Permit without conducting a Tier II Antidegradation Analysis.

Inletkeeper incorrectly interprets the Permit to include the discharge of synthetic fluids, which was addressed by Comment Responses 2.2.2.30, 2.5.2.2.6, and 2.5.2.5.5. Direct discharge of synthetic drilling fluids is not allowed under the ELGs although cuttings coated with synthetic fluids are allowed by the ELGs (See Permit Table 4 and Section 2.2.2.1.13). Furthermore, synthetic drilling fluids are not allowed in Class C Drilling Fluids per Permit Section 2.2.1.3 and Table 2. Only water-based fluids are allowed for Class C.

DEC clearly and extensively explained the similar characteristics of Class B and Class C drilling fluids in Fact Sheet Sections 4.1.2 through 4.1.5 that discuss why the oil and gas ELGs do not apply to Class C drilling fluids contrary to Inletkeeper claims. These Fact Sheet Sections also include the anticipated volumes of those drilling fluids over the five-year term of the Permit. Approximately 30 years of End-of-Drilling (EOD) Reports from the oil and gas industry were reviewed, a recent HDD Project, and a Geotechnical Investigation Project in order to project per well volumes over the five-year term of the Permit. DEC found that past estimates of drilling fluid and drill cutting were often inconsistent and conservatively estimated volumes on a per well basis. These conservative volumes of drilling fluids and drill cuttings were presented in the EA and referenced in the ODCEs for the 2007 GP and the 2015 Exploration GP. These previously developed, conservative estimates form the basis for determining whether the addition of Class C Drilling Fluids and Drill Cuttings represents an expansion of loadings being discharged in the overall category of Drilling Fluid and Drill Cuttings. Because the characteristics of the Class B and Class C drilling fluids are similar, as are their limitations, DEC only needs to compare the volume estimates of discharges over a five year permit term to determine no expansion in loadings has occurred. The resulting comparison between the volume estimates from the 2007 GP, as shown in the table below, with the updated volumes for the Permit per Draft Fact Sheet Table 5 (661,750 bbl) indicate no increases in volume is anticipated.

Discharge Description	Well Type	Average (bbls/well)	Number of Wells Assumed	Total Volume Five-year Term (bbls)
Oil and Gas Cuttings	Exploration	3,250	20	65,000
	Production	2,689	60	161,340
Oil and Gas Fluids	Exploration	7,903	20	158,060
	Production	8,721	60	523,260
Estimated Drill Fluids and Drill Cuttings for 2007 GP				**907,660**

Hence, similar to produced water, a Tier II Antidegradation Analysis for Class C Drilling Fluids and Drill Cuttings is not required per 18 AAC 70.016(c)(2) and 70.016(c)(3) because the addition of the Class C Drilling Fluids and Drill Cuttings Subcategory does not result in an expanded discharge under the Permit.

Given a Tier II Antidegradation Analysis is not required for the Permit, no changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.8.3 Comment: Mixing Zone Sizes and Tier II Antidegradation Analysis

Inletkeeper claims that DEC must include expanding mixing zones in the Tier II antidegradation analysis because these increased mixing zone sizes expand permitted loadings and concentrations in a manner that lowers water quality. Inletkeeper states that although DEC maintains that it is merely altering the geometric dimensions without changing the concentrations and loadings, DEC is in fact expanding the size of these mixing zones and exceeding mass daily loadings as a result. Inletkeeper states that an operator may apply to increase discharges of produced water for facilities already discharging under the Permit. Inletkeeper states that a Tier II antidegradation analysis is required for the expansion of the mixing zones proposed in the Permit.

DEC Correctly Excludes Mixing Zones in Tier II Antidegradation Analysis

A Tier II Antidegradation is not required because 1) mixing zones are not subject to Tier II Antidegradation Analysis, and 2) the increased sizes of mixing zones do not represent new or expanded discharges in the Permit. DEC, therefore, correctly authorizes mixing zones and appropriately determines that the water quality within mixing zones is not subject to the *Antidegradation Policy*.

Inletkeeper is mistaken about the presumed expansion of loadings due to increased mixing zone sizes because the limited concentrations are the same, or more stringent, and the flow rates have not changed to the point that loadings have increased (Comment Response 2.5.2.9.1). This comment is also partially refuted in Comment Responses 2.4.2.5; the increases in the mixing zone sizes did not result because of increased loadings but instead, were due to a better understanding of critical receiving water conditions that affected model results. Specifically, the mixing zone sizes increased due to better hydrodynamic data around slack tide conditions that affected the CORMIX modeling results. Furthermore, mixing zones are not subject to Antibacksliding or Tier II Antidegradation Analysis; mixing zones are delegated to state authority only except that DEC mixing zone regulations must be approved by EPA for use in APDES Permits. So long as a mixing zone determination is conducted per EPA-approved regulations (i.e., the 2006 version of 18 AAC 70.240), the mixing zones are considered protective of the existing uses of the waterbody as required under the Tier I Antidegradation Analysis. See Comment Response 2.5.2.5.1 for more information.

Given a Tier II Antidegradation Analysis is not required for the Permit, no changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.8.4 Comment: Zones of Deposits in Tier II Antidegradation Analysis

Inletkeeper states that DEC also includes zones of deposit for the first time in the Permit without conducting a Tier II antidegradation analysis. Inletkeeper states that DEC previously did not authorize zones of deposits in the 2015 Exploration GP based on the perception there would be little chance for a zone of deposit to form over the long-term. Inletkeeper states that allowing for settlement of drilling fluids and drill cuttings, excess cement slurry, and fluids, cement, and cuttings at the seafloor constitutes an expansion of Permit parameters such that a Tier II antidegradation analysis is required.

DEC Correctly Excludes Zones of Deposit in Tier II Antidegradation Analysis

A zone of deposit is similar to a mixing zones except that it represents a short-term variance from water quality criteria and the Antidegradation Policy in 18 AAC 70.015.
Per 18 AAC 70.210(a):

> The department will, in its discretion, issue or certify a permit that allows deposit of substances on the bottom of marine waters within limits set by the department. The water quality criteria of 18 AAC 70.020(b) and the antidegradation requirement of 18 AAC 70.015 may be exceeded in a zone of deposit. However, the standards must be met at every point outside the zone of deposit. In no case may the water quality standards be violated in the water column outside the zone of deposit by any action, including leaching from, or suspension of, deposited materials. Limits of deposit will be defined in a short-term variance issued under 18 AAC 70.200 or a permit issued or certified under 18 AAC 15.

The Permit establishes both a 100-meter zone of deposit and a 100-meter mixing zone directly above the zone of deposit. This combination ensures that water quality criteria is met within the water column at the boundary of the mixing zone so that the zone of deposit will not result in violation of water quality standards outside the zone of deposit. Similar to mixing zones, by regulation the water quality above the zone of deposit is not subject to the *Antidegradation Policy*.

Given a Tier II Antidegradation Analysis is not required for the Permit, no changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.8.5 Tier II Antidegradation Analysis for Reduced Area Exclusions

Inletkeeper states that by altering prohibitions to environmentally sensitive areas, DEC expands where discharges are permitted under the Draft Permit but fails to perform a Tier II antidegradation analysis. Inletkeeper states that DEC reduced the protective buffer to the Trading Bay SGR and the Redoubt CHA from 4,000 meters to 1,000 meters. Inletkeeper states that DEC allows the proposed produced water discharge from the Osprey Platform within the 4,000 meter buffer without further analysis and it is unclear what type of discharges are allowed. In addition, Inletkeeper states that DEC omits the following four environmentally sensitive areas as being applicable to the 4,000 meter protective buffer as they were in the 2007 GP: Goose Bay SGR, Potter Point SGR, McNeil River SGR, and Anchorage Coastal Game Refuge. Inletkeeper states that expanding discharges into SGRs and Refuges will not only potentially lower water quality in

these areas but may have other adverse environmental impacts on fish and wildlife such that a Tier II antidegradation analysis is required.

DEC Correctly Excludes Reduced Area Exclusions in Tier II Antidegradation Analysis

DEC correctly interprets the state Antidegradation Policy to not require a Tier II Antidegradation Analysis for when the area of coverage is expanded, albeit toward a potentially sensitive area. Reducing the buffer from 4,000 meters to 1,000 meters at the Trading Bay SGR and Redoubt CHA is not a condition that warrants a Tier II Antidegradation Analysis because a reduction in the exclusion area does not contribute to an expansion of limited concentrations or loadings. Furthermore, Inletkeeper is not correct in asserting that the proposed discharge of produced water from the Osprey will be within the previous 4,000 meter exclusion area to the Redoubt CHA. The currently proposed point of discharge for produced water at the Osprey Platform is 4,950 meters from the Redoubt CHA boundary with the closest boundary to the chronic mixing zone being 4,455 meters away. Hence, the discharge of produced water does not impact the Redoubt CHA. Furthermore, this reduction in the area exclusion to Redoubt CHA does not in itself result in a new or expanded discharge that would require a Tier II Antidegradation Analysis.

Although other sensitive areas were listed in the 2007 GP, presumably for completeness, DEC decided that none of those previously listed sensitive areas require listing in the Permit because they are far enough outside the area of the coverage area boundary such that their listing would be moot. There is currently no means for an applicant to obtain coverages under the Permit that could affect those sensitive environments and excluding these sensitive areas has no effect on implementation of the Permit. Nor would their removal constitute a cause to conduct a Tier II Antidegradation Analysis.

Given a Tier II Antidegradation Analysis is not required for the Permit, no changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.8.6 Comment: Tier II Antidegradation Analysis for All New Sources

Inletkeeper states that new facilities (i.e., new sources) were not allowed under the 1999 GP or the 2007 GP yet DEC allows new facilities to be covered under the Permit, which expands the scope of potential dischargers and discharges that could be allowed over the Permit Term. Inletkeeper states that DEC does not limit the number, scale, or location of the new facilities and asserts that the NSPS in the ELGs does not result in changes to limits or implementation of the Permit. Inletkeeper condends this is an error; NSPS establishes the performance standards applicable to new sources but places no limits on the scale or number of facilities authorized under the Permit. Inletkeeper states that given the Permit does not limit the number or scale of new facilities, there is potential for significant expansion of permitted facilities under the Permit including reauthorization of shuttered facilities and authorizing facilities currently under individual permits. Inletkeeper states that DEC's finding that the proposed limits of the Permit would not be changed is in error and does not consider the assimilative capacity of the entire waterbody. Inletkeeper states that DEC must conduct a Tier II antidegradation analysis for allowing new facilities.

DEC Correctly Excludes All New Facilities in Tier II Antidegradation Analysis

Distinguishing between a new source and a new facility (i.e., new discharger) is important because Inletkeeper tends to use these terms interchangeably. Per 40 CFR 122.2, a new discharger (facility) is:

> "any building, structure, facility, or installation from which there is or may be a discharge of pollutants; that did not commence the discharge of pollutants at a particular site prior to August 13, 1979; which is not a new source; and which has never received a finally effective NPDES permit for discharges at that site."

Per this definition, a new discharge is not a new source under an ELG. DEC has provided responses regarding new facilities in Comment Responses 2.3.2, 2.5.2.2.3, and 2.5.2.8.1. The 2007 GP specifically prohibited new sources but not new discharges. Per 40 CFR 435.41, a new source is:

> "any building, structure, facility, or installation from which there is or may be a discharge of pollutants, the construction of which commenced: (a) after promulgation of standards of performance under section 306 of CWA which are applicable to such source, or (b) after proposal of standards of performance in accordance with section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with section 306 within 120 days of their proposal."

The ELGs for coastal facilities were promulgated December 16, 1996. Osprey and Julius R Platform were constructed after this date and represent the only two new sources discharging currently in Cook Inlet. Although the restriction of new sources in the 2007 GP appears to limit coverage to avoid NEPA per 40 CFR 122.29(c)(1)(i), when reissuing the permit it could be construed to represent a previous permit condition that has been relaxed (i.e., backsliding). Therefore, DEC considers for this permitting action the removal of the prohibition to new sources as a less stringent condition subject to 18 AAC 83.480. Removing the previous prohibition of new sources in the 2007 GP is an allowable backsliding condition that is adequately addressed in Fact Sheet Sections 9.1 and 10.3.

Those new facilities or new sources (e.g., Osprey Platform and Julius R Platform) identified in the Fact Sheet and Permit or and expanded discharges per 18 AAC 70.016(c)(2) and 70.016(c)(3). If other unidentified new facilities or new sources request coverage under the Permit at a later time, DEC must evaluate whether there would be an expansion requiring a Tier II Antidegradation Analysis. If so, then a Statement of Basis containing the Tier II Antidegradation Analysis must be issued for a 30-day public notice period prior to receiving an authorization per Permit Sections 1.1.7 and 1.1.8.

Given there is no Tier II Antidegradation Analysis required for the Permit, no changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.8.7 Comment: Tier II Antidegradation Analysis for Hydrostatic Test Water

Inletkeeper states that in the 2007 GP, hydrostatic test water was allowed to be commingled with produced water, treated, and discharged. Inletkeeper states that although hydrostatic test water is still allowed to be commingled, treated, and discharged with produced water it has also been listed as an individual discharge under the Permit. Inletkeeper states that per the definition provided in Permit Appendix C, hydrostatic test water also includes potable water discharges

from flushing potable tanks or water lines. Inletkeeper concludes that DEC is introducing a new and expanded discharge category that requires a Tier II antidegradation analysis.

DEC Correctly Excludes Hydrostatic Test Water from Tier II Antidegradation Analysis

The discharge of hydrostatic test water was included under the definition of produced water in the 2007 GP such that there is no expansion that could trigger a Tier II Antidegradation Analysis. Hence, there is no increase in pollutant loads given the wastewater was already authorized and direct discharges of hydrostatic test water (i.e., not commingled with produced water) must meet water quality criteria. The discharge has not been expanded and therefore does not require a Tier II Antidegradation Analysis. For more information see Comment Response 2.5.2.2.5.

Given a Tier II Antidegradation Analysis is not required for the Permit, no changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.8.8 Comment: Tier II Antidegradation Analysis for Excavation Dewatering

Inletkeeper claims that the inclusion of excavation dewatering from contaminated sites in the Permit necessitates a Tier II antidegradation analysis. Inletkeeper states that in the 2007 GP, such sources were allowed to be commingled with produced water, treated, and discharged only at the TBPF. Inletkeeper states that the Permit expands this allowance to all shore-based coastal facilities including MGS Onshore, Granite Point Tank Farm, and a new onshore facilities. Inletkeeper states that although the 2007 GP allowed commingling of contaminated groundwater at the TBPF, the Permit now allows similar discharges at other shore-based facilities. Inletkeeper states that DEC indicates that because commingling at TBPF was previously allowed, no Tier II antidegradation analysis is necessary. Inletkeeper states that commingling of contaminated groundwater should not be allowed as it is not considered in the ELGs and, if it were appropriate, DEC would need to include this discharge in a Tier II antidegradation analysis. Inletkeeper states that otherwise, the Permit be inconsistent with antibacksliding provisions since these new locations were not previously authorized by the 2007 GP.

DEC Correctly Excludes Excavation Dewatering in Tier II Antidegradation Analysis

The 2007 GP included the ability to commingle hydrocarbon-contaminated groundwater at the TBPF with produced water; commingling of contaminated groundwater with produced water is not prohibited by the ELGs. The characteristics of contaminated groundwater is consistent with the characteristics of produced water such that there is not distinction between the two sources after treatment at TBPF. Therefore, DEC appropriately allows excavation dewatering from hydrocarbon-contaminated sites to be commingled with produced water at other shore-based coastal facilities and discharged under the Permit. Given that the volume of contaminated groundwater that could be commingled with produced water is very small compared to the volume of produced water, the commingling does not result in expanded limit concentrations or loadings from the 2007 GP. Given the 2007 GP allowed excavation dewatering to be commingled with produced water and discharged and there is no expanded discharge, no Tier II Antidegradation Analysis is required. For more information see Comment Response 2.5.2.2.4.

Given no Tier II Antidegradation Analysis is required for the Permit, no changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.9 Preface: Tier II Antidegradation Analysis of the Osprey Platform

Inletkeeper claims the antidegradation analysis conducted by DEC for the Osprey produced water discharge is inadequate. Inletkeeper states that in order DEC to authorize a reduction of water quality DEC must make five determinations:

1. the reduction in water quality will not violate the water quality standards, limitations on carcinogenic substances, or whole effluent toxicity limits;
2. the resulting water quality will be adequate to fully protect existing uses of the water;
3. all wastes and discharges will be treated and controlled to achieve the highest statutory and regulatory requirements;
4. DEC will require cost effective and reasonable methods of pollution prevention, control, and treatment; and
5. authorizing the reduction in water quality is necessary for important economic or social development.

In addition to these requirements, Inletkeeper claims that DEC must also ensure all other protective measures are not reduced. Inletkeeper states that DEC's Tier II antidegradation determinations are unsupported and fail to protect and maintain water quality. Inletkeeper states that there is no indication the Osprey is capable of complying with the ELGs or water quality standards and that DEC cannot authorize a discharge that cannot meet the ELGs. Inletkeeper states that the analysis is based on an incomplete and deficient application, fails to fully consider environmental harms, and improperly weighs a range of practicable alternatives and includes insufficient information that does not contain the level of detail necessary relative to the size of the facility, the characteristics of the proposed discharge, and the characteristics of the receiving water and the potential risk to it. Inletkeeper states that the information needed for DEC analysis includes facility information; baseline water quality of the receiving water; a description and analysis of a range of practicable alternatives that could lessen the degradation in the receiving water from the discharge; a cost evaluation for each of the practicable alternatives; and identification of all proposed practicable alternatives that prevent or lessen water quality degradation. Inletkeeper states that if the selected alternative will degrade the receiving water then the applicant must also submit information on important social or economic development in the vicinity of the discharge.

Inletkeeper states that because the Antidegradation Analysis Report submitted by CIE is based on inadequate information, it is insufficient for DEC review and Tier II Antidegradation determinations. Inletkeeper notes that CIE presented the following five alternatives: 1) injection, 2) single port diffuser, 3) multi-port diffuser, 4) tertiary treatment consisting of nutshell filtration, and 5) secondary treatment consisting of induced gas flotation. The identified alternatives are lacking, not all costs of alternatives are provided, compulsory information is omitted (e.g., baseline water quality), and DEC does not properly consider regulatory requirements.

DEC Preliminary Responses: In Comment Response 2.2.2.18, DEC determined that a Tier II Antidegradation Analysis is no longer required due to a reduction of the limited flow rate of produced water from the Osprey Platform. Although comments applicable to the Tier II Antidegradation Analysis in the Draft Fact Sheet (Draft Antidegradation Analysis) are essentially moot, DEC provides responses for completeness and to counter many misinterpretation of the recently promulgated *Antidegradation Policy* and *Implementation*

Methods. The following subsections provides further details regarding Inletkeeper misinterpretations and DEC responses.

2.5.2.9.1 Comment: New or Expanded Discharges from the Osprey

Inletkeeper states that the analysis by DEC as to whether there are new or expanded discharges on the Osprey Platform is not clear. Inletkeeper claims that the entire produced water discharge at the Osprey represents a new discharge (i.e., a new source) requiring a Tier II antidegradation Analysis. Inletkeeper states that instead, DEC appears to conduct a Tier II analysis of only a slight increase in flows under the Permit. Inletkeeper states that DEC rationalizes that since other facilities discharged produced water under the 2007 GP the discharge of produced water from the Osprey is not new. Inletkeeper states that the Fact Sheet indicates that it is complicated and unclear whether the discharge of produced water meets the definition of new and expanded given there is only a slight increase in produced water overall due to the discontinuance of the produced water discharge from the Anna Platform. Inletkeeper states that this assumption incorrectly considers discharges of produced water are broadly regulated under the Permit (e.g., a general permit) rather than individually regulated and that each produced water discharge authorized under the Permit, including the Osprey Platform, requires a site-specific mixing zone and limit derivation based on the ELGs and existing water quality characteristics of the effluent. Inletkeeper states that DEC cannot use the fact that EPA previously allowed another facility to discharge produced water to avoid conducting a Tier II Antidegradation Analysis for the Osprey produced water discharge. Inletkeeper states that DEC cannot simply allow for an unlimited number of facilities and discharges to obtain coverage under the Permit without first conducting an appropriate antidegradation analysis that considers the full scope of the discharge and their associated impacts.

DEC Correctly Interprets New or Expanded Osprey Discharges Under Tier II

DEC correctly interprets the recently promulgated *Antidegradation Policy* and *Implementation Methods*; the previous *Interim Implementation Methods* are no longer in effect and applicable to the Permit. Inletkeeper misinterprets the Antidegradation Analysis requirements per 18 AAC 70.015(a)(2), 70.016(c)(2) and 70.016(c)(3). Upon promulgation of the current Antidegradation Policy in 2018, there are now four, not five, findings to the Antidegradation Policy. Furthermore, a Tier II Antidegradation Analysis of the discharges for Osprey Platform under the Permit is not required by 18 AAC 70.016(c)(2) and 70.016(c)(3). Per Comment Response 2.5.2.5.2, a Tier II antidegradation analysis is not triggered because there is no increase in limit concentrations or loadings in the Permit resulting from addition of produced water from the Osprey Platform (a new source) now that the flow has been reduced per Comment Response 2.2.2.18 and verified in Comment Response 2.5.2.5.2. The Tier I Antidegradation Analysis per Fact Sheet Section 10.3 satisfies all necessary antidegradation regulatory requirements. For more information on this response, also see Comment Responses 2.5.2.7, 2.5.2.8.1, and 2.5.2.8.4.

Given there is no Tier II Antidegradation Analysis required for the Permit, no changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.9.2 Comment: Information in CIE Application Inconsistent with Fact Sheet

Inletkeeper's Comments: Inletkeeper states that the rate and characteristics of the proposed discharge of produced water is not clear in the 2018 Antidegradation Report submitted by the applicant that DEC relies on to evaluate Tier II antidegradation. It claims that there appears to be a discrepancy between information contained in the 2018 Antidegradation Report compared to information presented in the Osprey IP Fact Sheet. Inletkeeper states that the report indicates that there are three injection wells capable of injecting up to 7,000 barrels per day (bpd); whereas, the Osprey IP Fact Sheet describes four wells capable of 7,500 bpd. Inletkeeper states that this is important because the Permit Fact Sheet provides a range of potential discharges from 5,000 to 25,000 bpd based on mixing zones from other facilities, the Bruce Platform and TBPF. Inletkeeper says that neither the Bruce nor TBPF are comparable as the Bruce is currently in lighthouse status and TBPF is the largest discharger of produced water in Cook Inlet with a significantly larger mixing zone. Inletkeeper states that CIE provides no analysis for why a range of discharge options were selected and CIE assumes that higher volumes will be discharged in only two of the five alternatives. Inletkeeper states that DEC must consider the discharge rate of all alternatives in order to have sufficient information to evaluate the merits of the alternatives. In addition, Inletkeeper states that DEC appears to include the produced water from onshore facilities that are disallowed by the ELGs. Inletkeeper states that the inclusion of these wastewater sources skews DEC's ability to evaluate alternatives for treatment and disposal, including the ability to continue reinjection and DEC needs to correct these omissions in the Permit.

Discharge Information in Osprey Application is Reasonably Sufficient

In the Draft Antidegradation Analysis, DEC considered the information provided by the applicant to be reasonably sufficient for conducting the Tier II Antidegradation Analysis per 18 AAC 70.015(b). The insinuation that onshore produced water would be commingled with produced water from coastal facilities was addressed in Comment Response 2.1.1. The application (e.g., Form 2G Report) indicates an approximate current produced water production rate of approximately 7,500 bpd, which is injected into four wells at the Osprey Platform. Only one of these four wells, well RU-D1 authorized by EPA, is a Class I UIC disposal well appropriate for the injection of non-oil and gas derived waste. The remaining three wells are Class II UIC wells authorized by AOGCC for EOR. EOR wells are limited in injection volumes so that formation maintains a quasi-constant pressure. However, injection into RU-D1 can continue until formation pressures approach the maximum safe pressure. Ultimately, RU-D1 is limited to 7,426 bpd. Hence, CIE is near the maximum injection volume at the Osprey Platform when considering all sources of injectable wastewater from all CIE Cook Inlet facilities. Although only produced water from coastal facilities can discharge to Cook Inlet per Comment Response 2.1.1, even discharging lesser amounts at the Osprey Platform is expected to extend the life of the producing formations, the Western McArthur River and Redoubt Units, from 10 to 15 years. Given the ultimate flow rate approved under the Permit will be based on an engineering plan submittal, DEC need not know the exact flow rates at this time as the presented range of mixing zone sizes with flow rates provides an acceptable means for DEC to extrapolate, or interpolate, mixing zone sizes based on varying flow rates. This mixing zone authorization has nothing to do with the mixing zones at either the TBPF or Bruce Platforms. Furthermore, the engineering plan review will be used to ensure adequate treatment of produced water to meet

TBELs based on NSPS in the ELGs as well as WQBELs based on final effluent characterization as determined by the pilot study. Lastly, the plan review will also ensure that any onshore source of produced water is not discharged with coastal sources of produced water. This is common practice when integrating plan review requirements in 18 AAC 72.500 and 72.600 with requirements for general permit authorizations per 18 AAC 83.

Given there is no Tier II Antidegradation Analysis required for the Permit, no changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.9.3 Comment: Baseline Receiving Water Quality Data

Inletkeeper claims that DEC has not adequately considered the baseline water quality of the receiving water in the vicinity of the produced water discharge at the Osprey Platform. It states that per 18 AAC 70.016(a)(6)(A)-(B), the necessary baseline water quality provisions include 1) sufficient and credible information about the receiving water, including tier protection, assimilative capacity for future development and multiple discharges, and 2) data necessary for Department review includes project size, discharge characteristics, and receiving water characteristics, including special management or habitat designations. Furthermore, Inletkeeper states that per 18 AAC 70.016(a)(6)(C)(i) – (vii) DEC is required to consider the following when reviewing baseline water quality:

i. the sensitivity of the receiving water to degradation of existing or designated uses;
ii. the types of parameters of concern in the proposed discharge;
iii. the available dilution or assimilative capacity of the receiving water for the proposed discharge, including impacts of the authorized discharges;
iv. representativeness of any surrogate water information proposed for baseline water quality relative to the receiving water under review, including geographic, hydrologic, geologic, water use, and water quality characteristics;
v. the validity of any baseline concentrations assumed to be below detection levels;
vi. the quantity, date of analysis, analytical methods, detection level, and spatial and temporal scope of any submitted data; and
vii. whether the data considers applicable seasonal or natural variability.

Inletkeeper claims that DEC failed to consider the sensitivity of the receiving water where the discharge would occur within the 4,000-meter buffer of the Redoubt Bay Critical Habitat Area that was vacated by the Permit. Inletkeeper claims the buffer was created to protect the special wildlife qualities of this area and DEC removed the buffer without explanation. Inletkeeper states that in addition, DEC does not consider the assimilative capacity of the receiving water in relation to other discharges that are already impacting the Cook Inlet. Inletkeeper states that DEC did not present any analysis of baseline water quality until after determining that lowering of water quality was appropriate for the Osprey Platform, and, even then, the analysis was limited to oil and grease, TAH, pH and copper and the most prolific discharge of produced water from TBPF was not even considered. Inletkeeper claims that DEC also failed to adequately assess ammonia, that it stated is likely present in concentrations requiring dilution but not to the extent of triggering reasonable potential. Inletkeeper repeats the claims from the LEA Mixing Zone Report that DEC failed to analyze critical receiving water conditions needed for a proper mixing zone evaluation such as current velocity, temperature, and salinity at various depths and tidal

stages. Per Inletkeeper, the pollutant load of the entire receiving water is at issue and DEC presents an incomplete baseline of receiving water quality.

DEC States Baseline Receiving Water Data from Osprey Application is Reasonably Sufficient

DEC appropriately did not require additional information for the Osprey application because significant baseline data was already available. Hence, DEC determined additional information was unnecessary per 18 AAC 70.016(a)(6). DEC references the 2010 PWS and the ICIEMAP study results as peer-reviewed sources that represent existing baseline conditions of Cook Inlet in Fact Sheet Section 10.4.3.4(*D*)(*4*). Inletkeeper is incorrect that the discharge of produced water could impact the Redoubt CHA because the proposed discharge is within 4,000 meters (See Comment Response 2.5.2.8.5 for Buffers). Even the largest possible mixing zone for the Osprey produced water discharge is outside the 4,000-meter buffer zone so it is not possible for there to be impacts given the requirement that all water quality criteria will be met at the boundary of the chronic mixing zone.

Cook Inlet is a Tier II waterbody. This means the assimilative capacity is first determined on a parameter-by-parameter basis through the review of baseline data in mixing zone analysis for the Osprey Platform. Next, the produced water effluent concentrations must comply with the applicable water quality criteria at the boundary of the mixing zone when mixed with the baseline water quality of the receiving water. Only those parameters that have limits need to be considered in the discussion of assimilative capacity by virtue of understanding development of wasteload allocations for WQBELs applicable to the antidegradation analysis. The wasteloads derived for the WQBELs ensures adequate assimilative capacity. Furthermore, only those discharges, and limited parameters, that represent an expanded discharge need be considered in the Tier II Antidegradation Analysis. In addition, DEC listed discharges from other facilities that represent point sources as required under 18 AAC 70.016(c)(7)(C) for considering any outstanding compliance issues that could affect the Draft Tier II Antidegradation Analysis. Again, only those parameters that are expanded need to be considered in this action; DEC determined there are no concerns related to violations for oil and grease, pH, TAH, and copper from these other point sources that could affect the Draft Tier II Antidegradation Analysis. Finally, the incorrect claims by LEA with respect to critical receiving water conditions in DEC's mixing zone evaluation is covered in Comment Responses 2.4.1.3 and 2.4.2.1.

Given a Tier II Antidegradation Analysisis not required for the Permit, no changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.9.4 Preface: Evaluation of Treatment Alternatives in Tier II Antidegradation

DEC considered four alternatives in the Tier II Antidegradation Analysis: injection, multiport diffusers, nutshell filtration, and induced gas flotation. Inletkeeper claims that DEC improperly evaluated all four of these alternatives.

2.5.2.9.4.1 Comment: Injection Alternative Practicability

Inletkeeper states that DEC's dismissal of injection as an alternative is contrary to the ELGs, antibacksliding requirements, and water quality standards. DEC states in the Fact Sheet that injection is not technically feasible and cost prohibitive such that it significantly affects the

Osprey's ability to operate competitively in Cook Inlet. Inletkeeper claims that DEC fails to provide any basis for the assertion that injection is infeasible. DEC states that CIE is currently injecting at maximum capacity of the reservoirs such that they are becoming over-pressurized, however, CIE has more than just the four wells at the Osprey but also other injection wells onshore at the West McArthur and Redoubt Units that could be used. Inletkeeper states that DEC fails to consider whether injection in these other wells is technically viable in order to continue zero discharge. Inletkeeper also claims that because the Osprey Platform has been able to meet zero discharge in the past, it proves that it can continue. Inletkeeper states that even if the discharges are allowed under the ELGs, DEC still has authority and obligation under antidegradation regulations to ensure there is no degradation of Cook Inlet. Inletkeeper claims that this authority in turn provides DEC the ability to require discharges to meet more stringent standards than those in the ELGs, such as zero discharge. Inletkeeper states that CIE acknowledges the production fluids from the West McArthur and Redoubt Units is over 90 % produced water, which makes injection impracticable and that DEC should not base the decision to discharge produced water on whether it is affordable to inject on a distorted ratio that differs among facilities. Furthermore, Inletkeeper claims that DEC states that injecting produced water into oil producing formations would negate EOR and does not consider this alternative further, but that DEC should consider this alternative further instead of jumping to the conclusion to authorize the discharge to Cook Inlet. Lastly, Inletkeeper states that DEC also assumes without any basis, that similar subsurface conditions exist at the KPF as at the nearby TBPF and elsewhere in Cook Inlet, yet onshore Cook Inlet facilities are all required to meet zero discharge requirements; therefore, DEC should not make assumptions without any basis and needs to fully assess the viability of the injection alternative.

DEC Appropriately Dismisses Injection of Produced Water as Impracticable

DEC appropriately determines the injection alternative is impracticable. DEC has responded to most of this comment previously in Comment Responses 2.2.2.19, 2.3.4, and 2.4.2.3. In short, the ability to discharge produced water is granted by law via the ELGs; DEC has adopted this law in 18 AAC 83.010(g)(3). In all cases where Inletkeeper lobbies DEC for zero discharge, their supporting claims that zero discharge can be attained through continued injection is based on significant conjecture and speculation. For example, Inletkeeper suggests the mere presence of existing injection wells confirms there is a continued capacity to inject increasing volumes of produced water. Inletkeeper does not, however, discuss the flowrate and pressure limitations of the formation. EPA understands, and DEC concurs, that the Cook Inlet Region does not consistently have non-oil-and-gas producing formations available to support a zero discharge limitation in the ELGs per the *ELG Technical Support Document*. Hence, the ability of Osprey Platform to meet zero discharge up to this point in time has been an exception rather than the rule. Because the ELGs are based on technical aspects and other current conditions in the Cook Inlet Region during EPA's biannual review of the ELGs, it is not necessary for DEC to repeat this review in order to verify the accuracy of EPA's ELG determinations or to circumvent scientific evaluations in favor of speculation and conjecture as presented by Inletkeeper.

The application submitted by CIE also explains in technical terms why further injection at the Osprey Platform into the Redoubt Unit is no longer practicable. There are three Class 2 UIC wells used for EOR that tap into the oil producing formations and inject produced water. The amount of produced water needing to be injected exceeds the capacity of the formation to accept

additional produced water beyond the 1:1 oil:water ratio. Installation of additional EOR wells into the Redoubt Unit will not eliminate the fact that the formation is becoming over pressurized and there is the lack of other formations available at the location that can accept additional volumes of produced water. CIE provided compelling technical data and analysis to support their antidegradation application that Inletkeeper has not refuted. DEC agrees with CIE's technical assessment, which matches those assessments presented by EPA in the *ELG Technical Development Document* (See Comment Response 2.3.4).

Given there is no Tier II Antidegradation Analysis required for the Permit, no changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.9.4.2 Comment: Nutshell Filtration and the Multi-port Diffuser Alternatives

The initial antidegradation application submitted by CIE expressed a preference for the multiport diffuser, which would reduce the mixing zone size up to 75.6 %. Inletkeeper states that DEC selects induced gas flotation (IGF) as a secondary treatment option without explaining the change in position; IGF was not proposed or analyzed as an alternative in the initial application and therefore DEC must explain this change in position and fully analyze the multiport diffuser alternative.

Inletkeeper states that a cost estimate for the nutshell filtration alternative was not provided yet DEC determined that the additional cost of the nutshell tertiary filtration was not necessary because IGF is sufficient to meet the treatment performance requirements of the ELGs. Inletkeeper claims that given the discharge of produced water from the Osprey Platform represents 10 % of the total produced water discharges authorized by the Permit, tertiary treatment using nutshell filtration is appropriate to provide the best practicable technology for water quality protection of Cook Inlet. Inletkeeper states that there is no indication that the Osprey will be able to meet the ELGs but yet DEC does not adopt more rigorous treatment of offset this issue. Inletkeeper says that DEC cannot impose the bare minimum treatment technologies and must impose treatment requirements that meet the ELGs and should require more stringent technologies beyond that to protect water quality, especially given the discharge will be to the Redoubt Bay CHA

DEC Alternative Analysis of a Multiport Diffuser and Nutshell Filtration is Appropriate

DEC is confused by Inletkeeper's claim that DEC chose the single port diffuser over the multiport diffuser. Per the Draft Tier II Antidegradation Alternative Analysis in Fact Sheet Section 10.4.2.1 first sentence of the last paragraph:

> "The proposed alternative is to install up to four parallel IGF Units downstream of the existing primary treatment system and discharge through a multiport diffuser."

DEC appropriately determined the IGF treatment to be the most practicable alternative and represents the model technology used in the development of the ELGs. Model technology in the ELGs do not represent the bare minimum treatment technology; it represents an appropriate level of treatment for which the ELGs have been based. DEC correctly determined that the tertiary treatment using nutshell filtration was not practicable or necessary downstream of the IGF system. While the applicant was not able to obtain a certified quote for the nutshell filtration alternative based on just a conceptual design, it is understood that the nutshell filtration

alternative, tertiary treatment, would have additional costs ($1.2 M) beyond the IGF costs and would also result in cross-media environmental impacts due to disposal of spent nutshell media. Per 18 AAC 70.016(c)(4)(F):

> "for a discharge specified in (a)(1) of this section, the applicant shall submit sufficient information in support of the application; the amount of information and level of detail necessary must be relative to the size of the project or facility, the characteristics of the proposed discharge, and the characteristics of and potential risk to the receiving water; information required for department review includes identification of proposed practicable alternative that prevents or lessens water quality degradation while also considering accompanying cross-media environmental impacts; if the applicant has selected a non-degrading alternative, the social or economic importance in (G) of this paragraph is not required;"

Given the higher costs of the nutshell filtration coupled with cross-media waste generation associated with disposing of nutshells containing metals and hydrocarbon contaminants, rejecting the nutshell alternative was a justifiable outcome in the Alternative Analysis. However, DEC agrees that the regulatory intent is for there to be a cost for each practicable alternative relative to the degree of water quality degradation. DEC's perspective is that nutshell filtration was not practicable to consider. If the Draft Tier II Antidegradation Analysis had not been eliminated per Comment Response 2.2.2.18, DEC would have provided a range of magnitude cost for nutshell filtration in the Final Fact Sheet. However, since a Tier II Alternative Analysis is not necessary, such additional information may be provided in the Osprey IP as a separate permit action.

Although the Tier II Alternative Analysis establishes the appropriate level of treatment necessary for an acceptable the level of protection over water quality, the engineering plan review required by 18 AAC 72.500 and 72.600 ensures the treatment will be able to attain the permit limits. DEC does not agree with Inletkeeper that DEC "should require more stringent technologies beyond that to protect water quality, especially given the discharge will be to the Redoubt CHA." Per Comment Response 2.5.2.8.5, "…Inletkeeper is not correct in asserting the proposed discharge of produced water is within the previous 4,000 meter exclusion area to the Redoubt CHA. The currently proposed point of discharge for produced water at the Osprey Platform is 4,950 meters from the Redoubt CHA boundary with the closest boundary to the chronic mixing zone being 4,455 meters away." Hence, proximity to the Redoubt CHA is not adequate justification for selecting tertiary treatment, nutshell filtration, over a more practicable alternative, IGF.

Given there is no Tier II Antidegradation Analysis required for the Permit, no changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.9.5 Comment: Social or Economic Benefits Versus Environmental Degradation

Inletkeeper claims that the economic benefits analysis performed by DEC is flawed; allowing the Osprey to discharge produced water do not outweigh the harm to the environment in the vicinity of the discharge per 18 AAC 70.016(c)(5)(B). CIE projects that there would be an increase of six full-time positions, 50 seasonal exploration positions, and 67 other seasonal positions. Inletkeeper claims that the Permit must provide more information about these positions such as the duration and salaries. In addition, Inletkeeper states that the increase in employment is based

on questionable assumptions such as whether CIE will actually reinvest in further exploration projects and whether the new employment will be located in the affected community. Inletkeeper states that DEC does not specify who the positions will benefit or whether the 40 CIE employees are located in the Kenai Peninsula Borough (KPB). Inletkeeper further states that DEC's analysis considers statewide economic impacts from the oil and gas sector but this does not meet the requirement for these increases to affect the local communities. In addition, it states that DEC does not explain if the seasonal employees will be a singular or annual occurrence. Lastly, Inletkeeper states that DEC assumes that the oil and gas markets will remain viable over the next 10 to 15 years despite the tenuous nature of this assumption due to climate change concerns. Inletkeeper claims that the economic benefits associated with the discharge are inflated and do not counter significant and serious environmental impacts from discharge of non-compliant produced water into the Redoubt CHA. Inletkeeper also states that DEC fails to consider the economic harm to other industries due to these discharges such as commercial and subsistence fishing and that there are significant costs associated with reducing water quality that DEC has not assessed in the Tier II Antidegradation Analysis that would demonstrated the social and economic benefits do not outweigh the costs in the vicinity of the discharge.

Social or Economic Evaluation in the Tier II Antidegradation Analysis is Not Cost/Benefit Analysis

DEC appropriately demonstrates that the discharge of produced water is tied to social or economic development in the vicinity of the discharge per 18 AAC 70.015(a)(2)(A). Inletkeeper misinterprets the finding of social or economic benefits in the vicinity of the discharge as a cost/benefit analysis whereby the environmental impacts are compared to the social or economic benefits. This is not what the Antidegradation Analysis regulations require. Instead, there are two parts to the determination. The first part is determining that lowering of water quality is necessary by conducting an evaluation of treatment alternatives. This finding is met by the determination that injection of all produced water is not attainable and the lowering of water quality is necessary (i.e., authorizing the discharge) after using IGF as the most practicable and effective treatment, which satisfies the highest statutory and regulatory requirements. Hence, ELGs were developed based on the IGF as the model technology so the selection of IGF meets the technology-based treatment requirements. The second part is determining that the lowering of water quality also supports a social or economic development. Hence, DEC need only provide information that reasonably demonstrates that allowing lower water quality is necessary to accommodate important economic or social development in the area where the water is located. A cost/benefit analysis as suggested by Inletkeeper is not supported by governing regulations. Nor is it necessary for DEC to go to great lengths to qualify those benefits based on demographics or speculations of the market prices over any period of time. The fact that CIE demonstrates there are economic or social benefits tied to their need to discharge satisfies 18 AAC 70.015(a)(2)(A).

Given there is no Tier II Antidegradation Analysis required for the Permit, no changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.9.6 Comment: Analysis of Water Quality Violations

Inletkeeper claims that DEC fails to show that water quality will be maintained for the discharge of produced water from the Osprey Platform. Inletkeeper claims that DEC must establish: 1) the reduction of water quality will not violate WQS, limitations on carcinogenic substances, or whole effluent; 2) the resulting water quality will be adequate to fully protect existing uses of the water; and 3) all waste and discharges will be treated and controlled to achieve the highest statutory and regulatory requirements.

Inletkeeper states that DEC does not provide enough specificity to support their Tier I determination that all water quality criteria will be met and relies on a flawed mixing zone analysis in an attempt to substantiate this claim. Inletkeeper states that the Osprey Platform mixing zone is as large as practicable and does not guarantee that the ELGs or water criteria will be met, including limitations on carcinogens or WET and that DEC provides no analysis showing this requirement will be met. Inletkeeper states that DEC merely points out previous analysis in the Tier I Antidegradation, which is deficient because DEC provides no analysis showing that the discharge can comply. Inletkeeper also claims that there is no indication that the highest statutory and regulatory requirements will be attained for other wastes as DEC indicates CIE will be required to submit plans in the future rather than as part of this analysis. Inletkeeper claims that DEC does not consider all other discharges in the waterbody that may affect water quality.

Water Quality Data and Evaluation for Tier I and Tier II Antidegradation is Sufficient

DEC appropriately considered the information submitted by the applicant to be sufficient per 18 AAC 70.016(a)(5) making a request for additional information unnecessary per 18 AAC 70.016(a)(6). Inletkeeper mischaracterizes the requirements for Tier I Antidegradation Analysis as a very broad scientific study rather than providing an assurance that the Permit will protect existing uses, which rests with ensuring water quality criteria is not exceeded except where allowed due to variances to WQS (i.e., mixing zones and zones of deposits). By following permit development procedures for WQBELs for a Tier II waterbody that has adequate assimilative capacity for the wasteload allocations, the existing uses are being protected (See Comment Responses 2.5.2.7 and 2.5.2.8.3). An Alternative Analysis for the Draft Tier II Antidegradation Analysis does not require a plan review. Similarly, an engineering plan approval does not require an antidegradation analysis. However, these separate regulatory requirements do have dependent considerations. For example, alternative analysis in the antidegradation analysis serves as a preliminary engineering analysis that identifies the level of treatment that will be able to attain the limits in the Permit. The final design drawings reviewed during plan reviews is tied to the preliminary design considered by the permit because the DEC engineer must consider whether the engineering plans submitted will result in meeting the permit limitations. Hence, the permittee is obligated by the permit to treat to the described level prior to obtaining DEC approval to construct and operate under the Permit. This is common DEC and industry practice (See Comment Responses 2.5.2.5.2). DEC is confused by Inletkeeper's statement that there is indication that other wastes will be treated to highest statutory and regulatory requirements. Only those discharges and those parameters that are new or expanded require the Draft Tier II Antidegradation Analysis. Inletkeeper does not indicate what other wastes could be included. Lastly, Inletkeeper suggests that DEC did not properly consider all other discharges in the

waterbody that may affect water quality. Inletkeeper claims that DEC only lists permits outside the Permit and then claims that DEC must consider the TBPF. This statement confuses DEC because the TBPF is under the Permit and is excluded in the list of "other" discharges. DEC lists all other discharges appropriately for the Permit.

No changes to the Permit or Fact Sheet have resulted from this comment.

2.5.2.9.7 Comment: Other Concerns for the Osprey Platform

Inletkeeper asserts that since 2002, the Osprey Platform has complied with the zero discharge requirement in the Redoubt CHA. Inletkeeper states that the proposed individual permit and the Permit removes the zero discharge limitations and reduces the 4,000-meter buffer to the CHA to just 1,000 meters. Inletkeeper states that the Redoubt CHA comprises 268 square miles of wetlands with riparian habitat for Tule white-fronted goose nesting areas and other waterfowl and that the area is also known to be feeding grounds for the beluga whale and harbor seals. Inletkeeper states that DEC allows these backsliding conditions based on claims that continued injection is not technically feasible because of formation pressures that cause safety concerns and reduce potential production and profit. Inletkeeper states that instead of retaining zero discharge, DEC proposes to allow a discharge when there is no indication that the effluent will comply with the ELGs and the minimum level of technological standards (treatment). Inletkeeper states that DEC cannot permit a facility that it acknowledges is incapable of meeting these baseline requirements. It states that DEC ignores the fact that the Osprey and all of the onshore facilities currently inject produced water and that the onshore facilities cannot discharge to the Cook Inlet as stipulated in the ELGs. Inletkeeper states that it appears from what little information DEC has provided that DEC is just assuming that the Osprey is not capable of modifying the overall quantities to exclude the onshore produced water, or, modify overall practices to continue meeting an established zero discharge limitation. Inletkeeper states that DEC does not explain how CIE will deal with the future wastes from the onshore facilities at the West MacArthur River and Redoubt Units. Inletkeeper claims that DEC needs to clarify what sources are proposed to be discharged and substantiate why the Osprey is not capable of continuing to meet the existing zero discharge requirement. Inletkeeper states further that DEC does not account for how other wastes attribute to the over-pressurization of the formation or how the profits of the onshore facilities factor into this injection ratio.

Inletkeeper states that even if the discharges are allowed, DEC has failed to impose the correct standards for facilities built after establishment of NSPS adopted by the 1996 ELGs. Inletkeeper specifically claims that the NSPS require limits for oil and grease, water-based drilling fluids, and sanitary and domestic wastes but DEC does not address how these limits will be met while acknowledging that the current treatment of produced water will not be able attain the oil and grease limits until increased treatment is implemented. Inletkeeper states that DEC must detail how CIE plans to meet the NSPS oil and grease limits and cannot just permit the discharge without further explanation.

Inletkeeper states that DEC is simultaneously issuing both a draft individual permit and a general permit for the Osprey Platform and that this approach leads to confusion and creates a dichotomy of permit conditions that the public cannot reconcile during review given there are at least some terms that appear to differ in each permit. Inletkeeper claims that the Osprey Platform is not

properly permitted under a general permit so DEC should issue an individual permit for the Osprey and deleted the Osprey from the Permit. Inletkeeper claims that allowing the Osprey Platform to obtain coverage for the first time under the Permit represents backsliding because the 2007 GP prohibited new facilities from getting coverage. Permit is for longstanding oil and gas facilities in Cook Inlet and the unique technology and other aspects of newer facilities should be considered on a permit-by-permit basis to ensure there is no degradation of Cook Inlet.

DEC Response to Other Concerns Related to the Osprey Platform

DEC adequately mitigates concerns raised by Inletkeeper by following regulations, standards, and permit development procedures. Most of the concerns raised by Inletkeeper have been addressed in many preceding comments; 2.1.1, 2.2.2.19, 2.3.5, 2.4.2.3, 2.5.2.2.1, 2.5.2.2.2, and 2.5.2.3. The new concerns raised by Inletkeeper indicating there is confusion between the Draft IP for the Osprey and the elements included for the Osprey in the Permit is not supported by examples. DEC is confident that the Osprey IP and the Permit were purposefully developed to require identical limitations for the respective draft documents. Without specific examples, DEC cannot refute Inletkeepers claims.

Inletkeeper claims that DEC cannot authorize the discharge of produced water from the Osprey because a fully operable treatment system that complies with the NSPS requirements has not been constructed nor have the influent sources been segregated to ensure only produced water from coastal facilities is discharged. Per Comment Responses 2.5.2.2.1, and 2.5.2.5.2, it is standard engineering practice to select the appropriate treatment system through an alternative analysis (i.e., Tier II Alternative Analysis) and then submit full-scale engineering drawings to approve the details prior to construction. Inletkeeper perspectives are not consistent with engineering practices and standards.

DEC provides sufficient justification to allow for discharges of produced water based on law, geophysics, scientific data, and the uniqueness of the Cook Inlet Region that results in the allowance for such in the ELGs. Selecting zero discharge is inappropriate based on the available information and would pose an economic disadvantage to Cook Inlet operators (See Comment Responses 2.1.1, 2.2.2.19 and 2.3.4). The discharge of produced water to Cook Inlet is environmental protective and is supported by science and law.

The decision of whether to regulate discharges using IPs or GPs is at DEC discretion. Per 18 AAC 83.205(b)(2)(F):

> "The Department may use a general permit to regulate one or more categories or subcategories of discharges within an area when the sources within a covered category or subcategory of discharges are either storm water or point sources other than storm water point sources if the sources within each category or subcategory all, in the opinion of the Department, are more appropriately controlled under a general permit than under individual permits."

DEC's opinion is that the Osprey Platform, Sabre Project, Julius R Platform, and any other Cook Inlet oil and gas facilities are more appropriately controlled using the Permit than their existing IPs. While there may be some overlap between the Permit and existing or proposed IPs, Julius R Platform and Osprey, respectively the overall goal for DEC is to use a single general permit for all oil and gas discharges in Cook Inlet as this is the most effective and efficient means to control

industry pollution. See Comment Responses 2.5.2.2.2, 2.5.2.2.2, and 2.5.2.8.1 for more information on this discussion.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.10 Preface: Threatened and Endangered Species

Per Inletkeeper's perspectives, DEC's consideration of threatened and endangered species is inadequate because the Permit provides only a cursory analysis and does not rely on current data, accurately identify affected species, or establish baseline mitigation. In the following sections, DEC provides responses to address detailed Inletkeeper commetns with respect to the ESA and other regulatory requirements.

2.5.2.10.1 Comment: Ocean Discharge Criteria Evaluations

Inletkeeper continues to claim that DEC must conduct an ODCE for discharges to the territorial seas stating the basis as 33 U.S.C. 1343 – Ocean Discharge Criteria. Per 33 U.S.C. 1343(a):

> "No permit under section 1342 of this title for a discharge into the territorial sea, the waters of the contiguous zone, or the oceans shall be issued, after promulgation of guidelines established under subsection (c) of this section, except in compliance with such guidelines. Prior to the promulgation of such guidelines, a permit may be issued under such section 1342 of this title if the Administrator determines it to be in the public interest."

Inletkeeper claims that DEC relies on the 2007 ODCE for the 2015 Exploration GP, other more recent information, and compliance with Alaska WQS to validate their decision not to complete a new ODCE. Per Inletkeeper, DEC justifications are unavailing and do not relieve DEC of this CWA statutory requirement. DEC cannot rely on the outdated ODCE for exploration because it does not cover discharges related to development or production (i.e., produced water). In addition, DEC does not specify what "other more recent information" is used, rendering this argument ineffective as the public has no indication of what information DEC has relied on to ensure a meaningful analysis has been conducted on concerns that would be adequately addressed in an ODCE. Lastly, DEC asserts that by WQS result in a presumption that discharges will not cause unreasonable degradation of the marine environment. DEC cannot assume compliance with ODCE requirements because of compliance with regulations requiring similar standards. Hence, the Permit is not exempt from ODCE requirements, according to Inletkeeper.

In a related comment discussing endangered and threatened species, Inletkeeper highlights several purported short-comings of previous ODCEs: the 2006 ODCE for the 2007 GP and the 2013 ODCE for the 2015 Exploration GP. Specifically, Inletkeeper claims that the ODCE must be completed to supplant previous ODCEs that they claim are deficient with respect to considering the full range of discharges that have since expanded, insufficient evaluation of risk of toxicity or bioaccumulation, and incomplete listing of affected species such as blue whale, fin whale, humpback whale, north pacific right whale, sei whale, sperm whale, Snake River spring, summer and fall chinook salmon, and the Snake River sockeye salmon.

DEC Is Not Required to Conduct an ODCE

Although DEC completed an ODCE for the 2015 Exploration GP, it is not necessary for DEC to complete an ODCE so long as the Permit complies with WQS. Inletkeeper has provided similar comments on other permits issued in the Cook Inlet Region. The exemption for conducting an ODCE is adequately covered in Draft Fact Sheet Section 12.3 as repeated below:

> "During the issuance of the 2015 Exploration GP, DEC completed an ODCE specific to state waters (territorial sea) to support permit issuance. The ODCE was completed as part of a parallel permitting action with EPA that was issuing a similar general permit for federal waters concurrently and also developing an ODCE for federal waters. The ODCE also provided a good technical resource for the first reissuance of a Cook Inlet oil and gas general permit. However, DEC is not developing an ODCE for the Permit but is relying on this previous work supplemented with other more recent information and Alaska WQS.
>
> CWA 403(a), Ocean Discharge Criteria, prohibits the issuance of a permit under CWA 402 for a discharge into the territorial sea, the water of the contiguous zone, or the oceans except in compliance with Section 403. Permits for discharges seaward of the baseline on the territorial seas must comply with the requirements of CWA 403, which include development of an ODCE.
>
> The Permit requires compliance with Alaska WQS. Consistent with 40 CFR 125.122(b), adopted by reference at 18 AAC 83.010(C)(8), discharges in compliance with Alaska WQS shall be presumed not to cause unreasonable degradation of the marine environment. EPA made the connection between the similar protections provided by ODCE requirements and WQS when promulgating ocean discharge criteria rules in 1980, as stated, "the similarity between the objectives and requirements of [state WQS] and those of CWA 403 warrants a presumption that discharges in compliance with these [standards] also satisfy CWA 403." (Ocean Discharge Criteria, 45 Federal Register 65943.). As such, given the Permit requires compliance with Alaska WQS, unreasonable degradation to the marine environment is not expected and further analysis under 40 CFR 125.122 is not warranted for this permitting action."

Given the Permit complies with current WQS, DEC is not required to conduct an ODCE as Inletkeeper claims. No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.10.2 Comment: Consultation on Mitigation Measures for Beluga Whale

Inletkeeper provides the history behind the listing of beluga whale in Cook Inlet as an endangered species and claims that DEC is not establishing appropriate mitigation measures in the Permit. Inletkeeper sates that although the Permit prohibits discharges to Type I Beluga Critical Habitat, there are no similar prohibitions or mitigation measures established for Type II Beluga Critical Habitat where most of all the oil and gas discharges occur. Inletkeeper references the mitigation measures established by the DNR, Oil and Gas Division for the 2017 Areawide Cook Inlet Oil and Gas Lease Sales (Section 2.q) that states DEC will make case-by-case determinations for discharges to Type II Critical Habitat. Inletkeeper complains that DEC merely states that discharges are not likely to cause adverse effects to beluga whales and impacts will be

mitigated by coordination with NMFS; nor does the Permit describe if coordination will include a biological opinion or what mitigation measures apply. Inletkeeper further contends DEC also fails to account for cumulative impacts from ongoing activities in Cook Inlet that add stressors to the beluga's recovery efforts. These activities include Hilcorp's Lower Cook Inlet 3D Seismic Survey and potential exploration or development based on survey results. Inletkeeper asserts that DEC needs to take into account cumulative impacts from all other activities in Cook Inlet that have the potential to cause further harm to the beluga whale.

DEC Is Not Required to Consult on Mitigation Measures for Beluga Whale

As a state agency, DEC is not required to formally consult with the NOAA National Marine Fisheries Service (NMFS) on cumulative impacts to beluga whale per Section 7 of the ESA. Instead, DEC voluntarily contacts NFMS to get input related to the ESA. DEC conducted this action as described in Draft Fact Sheet 12.1. When NFMS does not respond to DEC requests for current input, DEC relies on past coordination and information provided in other resources (e.g., Cook Inlet Beluga Whale Recovery Plans). In Fact Sheet Section 6.2.11, DEC indicates the discharges from oil and gas are not likely to cause adverse effects per past coordination with NFMS. This acknowledgement from previous coordination is supported by information in the current Recovery Plan. When specifically focused on discharges from all sources including oil and gas, rather than activities, NFMS states in the 2016 Cook Inlet Beluga Whale Recovery Plan:

> "Even though the existing studies are not comprehensive of all possible contaminants to which belugas may be exposed, the comparative low levels of contaminants document in CI belugas themselves as well as in the Cook Inlet water and sediment samples analyzed suggests that the relative concern of these known and tested contaminants to belugas is most likely low."

In addition to contacting NFMS during permit development, DEC also provides NFMS with the opportunity to comment during the 10-day applicant review, the public comment period, and the five-day applicant review. So far, NFMS has not provided comments indicating concern or information contrary to that presented in the Fact Sheet.

Cumulative impacts is a concept akin to the NEPA process but not to an APDES permitting action. An APDES permit regulates the discharges from activities rather than the activities themselves. Whereas, NEPA considers all actions and their impacts associated with a federal action; issuing an APDES general permit is not considered a federal action subject to the NEPA process and evaluation of cumulative impacts. However, DEC acknowledges that some activities related to the oil and gas exploration, development and production may require the applicant to consult with NFMS to obtain an Incident Harassment Agreement. However, APDES Standard Conditions, Section 1.17 states:

> "This permit does not relieve the permittee from the duty to obtain any other necessary permits from the Department or from other local, state, or federal agencies and to comply with the requirements contained in any such permits. All activities conducted and all plan approvals implemented by the permittee pursuant to the terms of this permit shall comply with all applicable local, state, and federal laws and regulations."

Hence, exclusive of discharges the applicant is responsible for coordinating with NFMS on any activities that could result in adverse impacts. Through the APDES public process and due diligence in coordinating with NFMS during permit development, the Permit is appropriate with respect to ESA.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.11 Preface: Human Health Protection

Inletkeeper believes DEC has not completed an appropriate analysis of the potential human health impacts associated with various discharges authorized by the Permit as described in the following subsections.

In the following sections, Inletkeeper provides detailed comments with respect to the protection of human health. DEC provides responses to address the appropriate scientific and regulatory requirements that were used to evaluate human health protection.

2.5.2.11.1 Comment: Human Health Impacts and Fish Consumption

Inletkeeper provides a lengthy background of the importance of Cook Inlet for commercial, subsistence, and recreational harvest of fish and other aquatic resources for all residents in the Cook Inlet watershed. Inletkeeper especially calls attention to the Alaska Native population that relies on these resources to sustain their traditional and nutritional values. Per Inletkeeper, DEC fails to adequately account for and address these varying interests or the potential health ramifications associated with rates of fish consumption and potential exposure to toxic and/or bioaccumulative chemicals. Alaskans consume a significantly higher amount of fish than the rest of the U.S. and subsistence users consume even greater amounts including portions of fish that may have elevated chemicals due to bioaccumulation. Although a 2016 grassroots campaign encouraged DEC to adjust their regulations to address these higher consumption rates, DEC has not acknowledged or reflected this concern in the Permit. It is important that DEC adopt a precautionary approach in how it evaluates human health risk in light of local consumption rates in the current Permit.

DEC Appropriately Excludes Adopting Fish Consumption Rates in a Permit Action

DEC cannot adopt fish consumption rates as part of a permitting action; this action is part of water quality criteria development and approval by EPA for use in the APDES Program. Until such changes to the WQS is made and approved by EPA, DEC cannot use criteria modified based on modification to rates of fish consumption. Hence, DEC lacks the authority to impose unapproved water quality criteria in an APDES Permit.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.11.2 Comment: Human Health and Bioaccumulation

Inletkeeper claims that DEC has insufficient information to base the determination of no unreasonable degradation or authorization of mixing zones because there is insufficient information about the potential for bioaccumulation or persistence of pollutants. Per 18 AAC 70.240(d)(1), DEC will authorize a mixing zone, as proposed or with conditions, only if the Department finds that available evidence reasonably demonstrates that within the mixing

zone that the pollutants discharged will not bioaccumulate, bioconcentrate, or persist above natural levels in sediments, water, or biota to significantly adverse levels, based on consideration of bioaccumulation or bioconcentration factors, toxicity, and exposure. Per Inletkeeper, DEC only provides a conclusory statement that review of currently available data reasonably demonstrates bioaccumulation or bioconcentration is not occurring as a result of discharges authorized by the Permit but does not cite recent studies to or data to support this claim. Instead, DEC relies primarily on the 2010 PWS, which is over ten years old, and even older studies from 1993 and 2005. Inletkeeper claims that technical findings are stale, which is unacceptable given the long history of dumping in Cook Inlet and the need to understand current bioaccumulation conditions.

DEC Appropriately Analyzed Human Health Impacts from Bioaccumulation

DEC used appropriate information to determine impacts to human health related to bioaccumulation or bioconcentration. Human health criteria is based on long exposure periods, often over a human lifetime (i.e., 70 years). Meanwhile, there have been discharges from oil and gas facilities in Cook Inlet since the 1960s (e.g., about 60 years). Hence, bioconcentration is a condition that is based on average concentrations over a long period of time such that studies conducted in the recent past are representative of current conditions; the 2010 PWS is still applicable because average baseline conditions do not change rapidly. Hence, the data used by DEC is not stale in the context of the life-time exposure to humans through the food chain. The results of the 2010 PWS sediment samples, a reasonable precursor to bioaccumulation rates in organisms, indicate there is no significant difference in metal and hydrocarbon sediment concentrations and background samples near produced water discharges. Furthermore, tissue sample results also indicate limited concern for bioaccumulation or biomagnification up the food chain. As a result of the tissue studies, the Department of Human and Social Services (DHSS) issued an advisory for consumption of aquatic resources by Alaskans. Except for certain at risk people, the DHSS recommends no restrictions to traditional aquatic resources.

DHSS, Division of Public Health recommends that the majority of Alaskans continue unrestricted consumption of all fish from Alaskan waters, including those from Cook Inlet (DHSS 2007 and 2014). The fish species that were included in the DHSS 2014 report include Dolly Varden and halibut, among other species. The report advises most species of fish, including Dolly Varden and halibut (under 40 lbs), and salmon can be consumed in unrestricted amounts as part of a balanced diet. In addition, the studies summarized in the 2014 report include sampling of tissue, whole fish, eggs, and other part of fish from throughout Alaska.

Contaminant levels in marine mammals have been reviewed, focusing on Sea Otters, Stellar Sea Lions, and Beluga Whales. The 2013 USFWS Recovery Plan for Sea Otters notes that “heavy metals are unlikely to be a casual factor in the decline” in sea otter populations in and around the Cook Inlet. Similarly, the 2008 Stellar Sea Lion recovery plan does not include oil and gas activities or related discharges as a threat to the population. The concentration of contaminants found in Cook Inlet Beluga Whales were lower than in other surveyed Alaskan beluga stocks, and the Cook Inlet population was actually healthier than most other national and international populations (Becker, 2000). The study also suggested that low recruitment rates may be the primary stressor rather than toxics.

There have been several surveys of the concentrations of metals in tissues of marine animals from the vicinity of offshore water based muds and cuttings discharges in temperate and cold-water marine environments near drilling operations (Neff 2010). In nearly all cases, these surveys have shown that metals and hydrocarbon concentrations in tissues of marine animals near drilling operations are similar to concentrations in tissues of the same or similar species well away from and out of the influence of the drilling operations.

The 2003 EPA report, Survey of Chemical Contaminants in Fish, Invertebrates and Plants Collected in the Vicinity of Tyonek, Seldovia, Port Graham, and Nanwalek – Cook Inlet, AK, clearly states that the contaminant concentrations presented in the report are based on analyses of uncooked whole-body, unscaled fish samples. For the purposes of a contaminant survey, whole-body samples are representative of exposures to the fish or predators that consume the whole fish. However, chemical concentrations derived from a whole-body measurement may not be representative of exposures resulting from consumption of individual body parts by humans. For many contaminants, whole-body levels would be expected to exceed those in edible fillets. Species (potentially consumed by humans) other than fish were not overlooked in the 2003 report. The report includes data for mussels, clams, chiton, octopus, snails, and three plants.

The numerous studies consulted for the permit reissuance, in addition to conclusions in the additional reports mentioned above, inform the position that sufficient data is available and has been reviewed to make the determination that bioconcentration, bioaccumulation, or biomagnification is not occurring due to discharges to Cook Inlet. The decisions made by DEC are based on appropriately current and factual information.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.11.3 Comment: Human Health and Carcinogens

In the mixing zone evaluation, Inletkeeper claims DEC failed to provide an adequate basis or analysis of whether discharges could present unacceptable risks for carcinogenic, mutagenic, or teratogenic effects on human health. Because chemicals used in oil and gas are known, or suspected, to be linked to carcinogenic effects, it is crucial that DEC provide a meaningful discussion on the subject. However, DEC entirely failed to analyze carcinogens or provide a basis for whether there is a risk to human health. Inletkeeper claims that DEC relies on the outdated and flawed analysis from the 2007 GP to make the determination the discharges are sufficiently protective.

DEC Appropriately Analyzed Human Health Impacts from Carcinogens

DEC appropriately concluded there would not be adverse human impacts due to carcinogens when authorizing the mixing zone in Fact Sheet Section 6.2.8. Other than stating that DEC relies on outdated and flawed analyses, Inletkeeper fails to specify how DEC failed to conduct the evaluation or why Inletkeeper claims the information that DEC used is inappropriate or questionable.

DEC included significant discussion human health in Fact Sheet Section 6.2.8:

> “The human health POCs [parameters of concern] in the effluent are at low concentrations, enabling human health criteria to be met within a short distance from the point of discharge. The resultant potential exposure period for aquatic organisms passing

through the mixing zone is not sufficient to pose a risk to human health based on consumption."

Although DEC used mercury as a surrogate for all human health POCs, the statement is accurate when considering the few other pollutants in the discharge that are potentially carcinogenic, their average concentrations, and whether or not there is an adequate source of the pollutant and a pathway of exposure to human receptors.

Carcinogenic risk is based on a lifetime up to 70 years of exposure at an average concentration of carcinogenic compound. In simple terms, carcinogenic risk is determined by multiplying the chronic daily intake times oral carcinogenic slope factor. When evaluating potential carcinogenic human health risks, DEC considers the source, pathway, and the receptor (i.e., humans). If the source is insufficient (i.e., not bioavailable or at concentrations that is too low to result in tissue concentrations in aquatic resources), there is no means for a human receptor to be affected. The sediment and water column results from the 2010 PWS indicate that there is insufficient sources of carcinogens to result in human impacts. Per the conclusion from the 2010 PWS:

- "The study found no evidence of hydrocarbon accumulations from the "large-volume" produced water discharges from TBPF or EFTF [MGS Onshore], from any of the oil and gas production operations in central Cook Inlet, or from recent crude oil or distillate product releases in any of the sediment samples from this program."
- "No evidence for enhancement of any metal concentrations in bottom sediments that could be linked to discharges of produced water was found."
- "No enrichment of any dissolved metal concentrations in Cook Inlet from produced water could be identified. Overall, concentrations of all metals in produced water from Cook Inlet were very low relative to typical produced water because the salinity and amounts of dissolved organic matter were quite low in the Cook Inlet samples. Also, all dissolved metal concentrations measured in both the TBPF's and EFTF's [MGS Onshore] produced water discharge were much less than WQS criteria for both aquatic life in marine water and for human health for consumption."
- "No evidence was found in any of the water column hydrocarbon measurements that the TBPF produced water discharge is causing violations in either the NPDES permit and/or WQS criteria outside of the mixing zone."

The importance of the sediment and water column data is that it reasonably demonstrates after many decades of discharges from oil and gas facilities in Cook Inlet that there is no persistence of bioaccumulative, bioconcentrating, or carcinogenic pollutants that could give rise for human health concern. There is no significant source for uptake by aquatic life and then by humans. The only possible aquatic resource that could result in human exposure would be shellfish because of their relative immobile existence in sediment. Fish are mobile such that they would not exist in the discharge for prolong periods of time and; therefore, would not present a pathway from the source to humans. Hence, the lack of adequate source or pathway to humans negates human health concerns relative to oil and gas discharges. Per Comment Response 2.5.2.4.3, metals associated with drilling fluids are not considered bioavailable in an oxygenated marine environment. Hence, there is no source or pathway to humans from discharges of drilling fluids and drill cuttings.

No changes to the Draft Permit or Fact Sheet have resulted from this comment.

2.5.2.12 Comment: Zones of Deposits

Inletkeeper states that little is known about the acute and long-lasting effects from discharges of drill cuttings. For the first time, DEC is authorizing Class C and synthetic drilling fluids but fails to provide data or a basis for their assertion that metals and other additives will only remain on the seafloor from a short period of time and vastly expands the size of mixing zones. Drilling fluids discharges contain metals and other contaminants that are known to bioaccumulate and cause adverse effects. Inletkeeper states that Inletkeeper, and others, heavily criticized DEC for their past failures in previous permits to adequately analyze for the potential for bioaccumulation or to provide any research or basis for concluding there would not be bioaccumulation. DEC has no apparent authority or basis for making this conclusion, and the fact that DEC relies on outdated information raises substantial questions about whether DEC is adequately considering current conditions in Cook Inlet.

DEC Analysis of Bioaccumulation from Zones of Deposits is Based on Science

DEC appropriately applies scientific evaluation to determine there is no potential for bioaccumulation of metals due to discharges of drilling fluids and drill cuttings and permitting short-term zone of deposits. Again, Inletkeeper claims data is outdated and flawed without specificity and suggest there is little information available to address effects from discharges of drilling fluids and drill cuttings. To authorize a zone of deposit, DEC must consider six factors per 18 AAC 70.200(b). For each of these six factors, DEC provides the following discussion and cross-reference to applicable Fact Sheet Sections or other referenced information:

1. Factors number one and five are interrelated and were appropriately addressed in Fact Sheet Section 6.3. The zone of deposit is anticipated to have a short-term duration due to the strong tidal currents at most locations in Cook Inlet. DEC selected the Sabre Project Site as the worst-case location based on being in a nearshore environment where current speeds are less and sediment is more prevalent. The outcome of DEC's CORMIX analysis presented in Fact Sheet Section 6.2.3.1 indicates that the available currents, even during slack tide, will keep fine-grain components in the discharge (drilling fluids) suspended while the coarser-grain components (drill cuttings) sill settle out and become part of the shifting bedforms of the seafloor. Over a tidal cycle or two, the cuttings will mix with the sediment and redistribute such that no adverse effects are expected to occur. Accordingly, the deposit is not expected to have a duration that results in adverse effects.
2. As discussed in Fact Sheet Sections 6.2.8 and 6.3 as well as Comment Responses 2.5.2.4.3 and 2.5.2.8.4 , the discharge of drilling fluids and drill cuttings are not expected to result in impacts on human health.
3. Per Fact Sheet Sections 6.2.8 and 6.3 as well as Comment Response 2.5.2.13.2 the discharge of drilling fluids is not expected to bioaccumulate or persist in the environment. There are no known shellfish beds located within the coverage area of the Permit nor other benthic communities that are anticipated to be impacted by the short-term zone of deposit. However, the applicant seeking coverage under the Permit must evaluate discharge locations and submit information with their NOI to further ensure aquatic

resources are adequately protected through implementation of an EMP Study Plan (See Comment Response 2.2.2.6, 2.2.2.7 and 2.2.2.30 through 2.2.2.37).

4. Per Fact Sheet Section 6.2.6, DEC has evaluated the discharge of drilling fluids and drill cuttings assuming all uses are applicable and have applied the most stringent water quality criteria for all uses per 18 AAC 70.040(1). Therefore, all uses of the waterbody are protected.
5. See factor one above.
6. The ultimate fate and transport of drilling fluids and drill cuttings discharged to the zone of deposit is discussed in Fact Sheet Sections 6.2.3.1 and Appendix A describes areas where there are known net depositional marine environments in Cook Inlet where drilling fluids may be transported and deposited. Sediment samples collected from these areas do not indicate potential for adverse impacts. Section 6.2.3.1 discusses the initial short-term deposit, resuspension of the drilling fluids, and mixing of drill cuttings with native seabed material.

No changes to the Draft Permit or Fact Sheet have resulted from this comment.

2.5.2.13 Comment: Encroachment on Water Supply or Contact Recreation

Inletkeeper claims that DEC did not consider if the discharges will create a public health hazard due to encroachment on water supply or contact uses of the waterbody. Inletkeeper also claims that human health criteria must be met at the boundary of the chronic mixing zone. To demonstrate this, DEC provides a table that shows the dilution necessary to meet mercury compared to the dilution authorized by the various mixing zones. Although mercury may be the primary constituent related to eating fish, there are other constituents that may create an adverse effect due to contact recreation. DEC must consider other toxins that have potential to bioaccumulate in light of the Class C drilling fluid discharges yet DEC provides no explanation. The fact that DEC dramatically expanded the size of mixing zones calls into question the meaningfulness of DEC conclusions given allowance for distributing pollutants over a substantial area of Cook Inlet.

DEC Considered All Uses Including Water Supply and Water Recreation

Per 18 AAC 70.050(3), DEC protects all marine uses by using the most stringent criteria among the use classes per 18 AAC 70.040(1) (See Comment Response 2.5.2.7). Inletkeeper fails to describe which water supply intakes or water recreation sites that are not being protected by the Permit. Therefore, DEC cannot address that part of the comment. Otherwise, the remainder of the comment has been addressed by Comment Responses 2.5.2.7, 2.5.2.11.1, 2.5.2.11.2, and 2.5.2.11.3.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.5.2.14 Comment: Monitoring and Corrective Action Provisions

Inletkeeper states that DEC is required to provide adequate compliance provisions in APDES Permits. Inletkeeper claims that the 2007 GP had inadequate standards that allowed for numerous violations of the ELGs. Now, DEC intends to lessen these inadequate standards further. Instead, DEC needs to strengthen monitoring and corrective action provisions by: 1) increasing

monitoring, 2) increasing the frequency of random inspections, and 3) not using incentives to reduce monitoring. In addition, DEC needs to recognize and address Osprey's and Furies' history of noncompliance.

DEC Approach to Monitoring and Corrective Actions Is Appropriate

DEC's monitoring approach and frequency adjustments are allowable under *Frequency Reduction Gui*de when individual discharges demonstrate long-term compliance with effluent limits. DEC is not required to consider compliance under other agencies that are not related to the Permit. For example, Inletkeeper claims that DEC should punish CIE for their violations under AOGCC for formation pressure exceedances. This is absurd. The violations observed and penalties imposed by AOGCC on CIE are related to their UIC well injection of produced water, which is not regulated by the Permit. Therefore, DEC is not required to address these violations under the authority of other state, or federal, agencies. However, the over-pressurization of the formations demonstrates that the issue of over-injecting presented by CIE as a reason for needing to begin discharges of produced water is supports DEC's authorization at the Osprey. The issue with Furie was due to startup of a new treatment system that has since subsided. Lastly, while violations are considered negative outcomes, the statistical derivation of WQBEL is predicated on an understanding that sufficiently stringent limitations will result in a violation approximately once every three years; limitations that are never exceeded may not be sufficiently stringent.

DEC disagrees that the only means to protect the environment is through violation and penalties. The most successful environmental programs have both a stick and a carrot. DEC would rather have permittees focus their energy on compliance where the potential for environmental damage is the highest while not ignoring those of lesser concern. Hence, incentives can be an effective tool in permitting.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.6 Comments Submitted by Hilcorp Alaska, LLC

Hilcorp is the primary permittee affected by the reissuance of the Permit having authorizations for 18 existing oil and gas facilities in coastal Cook Inlet. Hilcorp and their consultants provided a significant amount of information during the permit development process including updated mixing zones modeling sealed by an Alaskan PE, details in chemical use for miscellaneous discharges, and pollution reduction strategies. As a result of this coordination during permit development, Hilcorp's comments reflect a significant understanding of the intent of modifications to the Permit and the desired effects on protecting the environment while allowing the development of State resources in a sustainable manner.

2.6.1 Comment: Clarification for Applications Including MODUs

Hilcorp raises concerns over the intended implementation of the Permit when using MODUs for conducting construction activities unrelated to the typical drilling activities for the three oil and gas operations related to exploration, development, and production. For example, when using the MODU for development and production- related drilling activities at an existing facility, it is currently understood that once the MODU is relocated to the existing facility the discharges are covered under the authorization for the existing facility rather than the MODU. However, there are situations where a MODU is cantilevered over an existing facility for development and

production well drilling activities but some discharges (i.e., domestic wastewater or graywater) from the MODU would need authorization. The Permit does not describe how these situations would be handled when they arise. In addition, it is not clear how plugging and abandoning a well that is not associated with a facility would be authorized nor for situations where MODUs may be used for HDD or geotechnical investigations. Therefore, Hilcorp makes the following recommendations to account for these scenarios:

a. Include in Section 1.1 the NOI requirements for a MODU:

i. Used to support an existing oil and gas development or production project, such as a MODU cantilevered over an existing oil and gas facility;

ii. Used for stand-alone oil and gas production activities, such as plugging and abandonment (P&A), not associated with a development facility; and

iii. Used to support a geotechnical and/or HDD project. The NOI requirements could be general in nature and apply to MODUs used for various activities within Cook Inlet.

b. Summarize the above proposed new NOI requirements within Table 1 of the Permit.

c. The current NOI form for MODUs in Attachment 1 is specific to oil and gas exploration projects. It is recommended that the form be modified to enable its use for non-exploration projects, including HDD support. This form could be general in nature and just apply to MODUs used for various activities within Cook Inlet.

d. Removal of references to specific oil and gas facilities and operations, and replacing them with general language that can support multiple potential operations, such as:

Section 1.5.1: "This permit authorizes and places conditions on discharges from oil and gas facilities that discharge to Cook Inlet (See Figure 1) under the Offshore and Coastal…"

DEC Disagrees That MODU Coverage Scenarios Require More Specificity

DEC understands Hilcorp's concerns with respect to authorizations associated with MODUs. The lack of clarity stems, in part, from the separation of exploration drilling from the 2007 GP during issuance of the 2015 Exploration GP as well as implications of using MODUs for purposes unrelated to either of these two oil and gas general permits (i.e., MODUs for pulling pipelines or conducting geotechnical investigations). DEC's desire was to ensure that the Permit remained flexible enough to authorize discharges from MODUs in many different scenarios. MODUs can be used legally under the Permit in multiple ways that may not be completely predictable. Given Hilcorp's comment does not specifically describe a situation where a discharge authorization may be challenged due to the intentionally broad language, DEC does not agree that the Permit requires additional specificity with respect to MODUs. Therefore, DEC is cautious not to eliminate the flexibility envisioned with the current permit language and does not agree with the modifying language that could result in less flexibility in permitting MODUs.

No changes to the Permit or Fact Sheet have resulted based on this comment.

2.6.2 Comment: Chronic Toxicity Does Not Result in Instream Excursions

DEC's explanation for its decision to replace WET toxicity triggers with Pollution Reduction (PR) BMP Revision Action Levels for miscellaneous discharges is appreciated. DEC correctly observed that an exceedance of a proposed Action Level would not constitute an exceedance of the relevant water quality standard, since that standard is based on a four day exposure period (see Fact Sheet Section 8.5.4). Aquatic life would not have that long of an exposure period to discharges containing intermittent chemicals, even if they were able to remain within the mixing zone for a period of four days. Chemicals that are batch dosed, such as biocides, react fairly quickly and often degrade in concentration within a system, even prior to discharge.

Fact Sheet Section 4.5.10 provides DECs assumption that dosing twice a week would result in approximately one hour of exposure for each dosing event. Batch dosing (i.e. intermittent chemical addition) can range from an almost instantaneous application (such as manually adding a set amount of chemical into a tank or process), to feeding a chemical into a system over a period of time (usually lasting only a few hours). For the instantaneous application scenario, it is very likely that the chemicals would complete their reaction quickly; the potential presence of the chemical within the discharge would be less than an hour. For chemicals dosed over a few hours, the assumed worse case exposure (resulting from discharge during active dosing) would be the length of time that the chemical is dosed (typically no more than a few hours). Under either scenario, the chronic exposure period for the highest concentration would be substantially less than 4 days for aquatic life. As the analytical testing and Action Levels are all based on chronic criteria, the Action levels established in the Permit are much more limiting for these specific discharges.

DEC Concurs Exceedance of Trigger Not a Violation of Water Quality Standards

DEC concurs with Hilcorp's assessment that chronic toxicity for miscellaneous discharges with intermittent chemical dosing will not typically result in, or contribute to, an instream excursion of the chronic WET criteria at the boundary of the chronic mixing zone. However, there are some facilities that inject chemicals continuously and overall there is insufficient facility information to inform to what extent chronic WET toxicity may be present in the discharge. Although no instream excursion of chronic WET water quality criteria is to be implied by an exceedance of the trigger, this information along with operation details for each affected discharge will allow for better characterization of the effluent and support potential future permit modifications based on this better knowledge of environmental concerns, or lack thereof. DEC envisions that the pollution reduction strategy incorporated into the Permit will result in a reduction of future permit conditions (See Comment Response 2.6.3).

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.6.3 Comment: Pollution Reduction Triggers Not Aligned with Mixing Zones

As demonstrated in the 2017 Mixing Study and approved under Permit Section 3.3.2, Permit Table 24, Fact Sheet Section 6.2.3.5, and Fact Sheet Table 26 for MGS A, MGS C, and Steelhead Platforms, these facilities have been granted a 300-m mixing zone. However, the Action Levels were set for a dilution factor associated with a 100-m mixing zone rather than the requested 300-m. It is requested that these Action Levels align with the 300-m mixing zone dilution factors outlined in Permit Table 24 and Fact Sheet Table 26 to maintain consistency in

PR BMP Revision Action Level development. If ADEC wishes to retain that a dilution factor associated with the 100-m mixing zone should be applied to these three facilities, a tiered approach is recommended for applicable Action Levels. This could consist of setting an initial Action Level based on the 300-m dilution factor, which if passed, would slowly bracket down to an Action Level associated with the 100-m mixing zone.

DEC Purposefully Intends Certain Facilities to Immediately Enact Pollution Reduction

DEC disagrees that the three facilities should have PR BMP Revision Action Levels correspond to the dilution factors at the 300 meter mixing zones. DEC is unwilling to continue past practices that have resulted in no characterization data or limits on chemical use in miscellaneous discharges. The intent of this requirement is to have the permittee conduct accurate characterization and optimize chemical use, or potentially modify the existing processes, so that at the end of the term of the Permit all miscellaneous discharges can comply with a standardized 100 meter mixing zone. The recommendation by Hilcorp would negate this objective and perpetuate past practices.

No changes to the Draft Permit or Fact Sheet have been made based on this comment.

2.6.4 Comment: Clarification on Commingling with Produced Water

Hilcorp would like to provide clarification that there is potential for any of the discharges identified in the Permit to be commingled with produced water, and not just those specifically identified in Permit Section 2.7.3. This could be accomplished through direct or indirect processes or operations, such as fluids routed directly to the produced water tanks, or entering the deck drains prior to commingling with produced water. As such, it is recommended to include language at the end of Permit Section 2.7.3 stating that fluids commingled with produced water will be considered produced water for monitoring purposes. This aligns with Parts II.A.10, II.C.3, II.F.2.c, II.G.4, and II.H.2 of the current administratively extended General Permit and Section 2.1.10 of the Permit and 8.0 of the Fact Sheet.

DEC Concurs Permit Section 2.7.3 Needs Qualification for Produced Water Monitoring

DEC agrees that Permit Section 2.7.3 is missing important context of the monitoring requirements for situations where the commingled waste stream is treated by the produced water system. This modification is consistent with Permit Section 2.1.10 where commingled discharges must comply with the more stringent limitations among the commingled discharges. In this case, the limitations of produced water are more stringent than the limitations of any of the referenced waste streams being commingled. Therefore, DEC adds the following sentence to the end of Permit Section 2.7.3:

> **“Where commingling of the waste streams is prior to treatment, the produced water limitations and monitoring requirements apply to the commingled waste stream with produced water after treatment in the produced water treatment system.”**

2.6.5 Comment: Adjust Produced Water Definition to Account for Commingling

The Permit continues the practice of the current administratively extended General Permit of authorizing the commingling of certain other oily waste streams with produced water for treatment prior to discharge (such as the addition of spill clean-up water, contaminated excavation dewatering, and contaminated groundwater from Trading Bay). It is requested that

the permit also recognize the long standing practice in the oil and gas industry to commingle hydrocarbon fluids authorized for recycle [40 CFR 261.4(a)(12); 40 CFR Part 279.10(g)] are appropriate for commingling with produced water prior to oil-water separation and treatment. This practice facilitates mixture of recycled hydrocarbons into the oil production stream. Any residual contaminants remaining in the water prior to treatment would be similar to the pollutants found in produced water. Metals concentrations in recycled hydrocarbons (e.g., lead, cadmium, chromium, and arsenic) are limited by recycling requirements and are also already present in produced water. It is unlikely that the addition of these fluids to the production stream would cause a noticeable increase in metals concentrations in the discharge, or an increase that would exceed a relevant threshold. The addition of these fluids would be infrequent and negligible in volume compared to the volume of produced water generated by the facilities (approximately 350 bbls of recycled oil annually), with all but residual amounts being separated out and entering the oil production stream. It is also anticipated that the produced water treatment process (oil/water separation) would remove the residual pollutants associated with these fluids.

The practice of adding these fluids to the production stream at a facility are consistent with 40 CFR 261.4(a)(12) and 40 CFR Part 279.10(g), and are common practice within oil and gas operations. These fluids are periodically analyzed in accordance with Resource Conservation and Recovery Act (RCRA) regulations.

In addition to recognition of the above, it is recommended to modify the definition of produced water to: “Fluid extracted from hydrocarbon reserves during development or include formation water, injection water, and any chemicals added downhole or during the oil/water/gas separation process. It is also very common for other waste streams to be commingled with produced water for treatment.”

DEC Concurs Definition of Produced Water Should Include Commingled Sources

DEC agrees that the definition of produced water in Appendix C should reflect the full description of produced water as regulated by the Permit and explained in the Fact Sheet. Therefore, DEC is adding the following sentence to the existing definition of produced water in Permit Appendix C:

> **“For this Permit, produced water may also include commingling of other waste streams including deck drainage, completion fluids, workover fluids, well treatment fluids, test fluids, hydrostatic test water, and incidental spills, or excavation dewatering in, or near to, sites contaminated with petroleum hydrocarbons.”**

2.6.6 Comment: Mismatches of MECs Between Fact Sheet and Mixing Zone Study

The Tyonek A acute and chronic aquatic life mixing zone dimensions associated with Copper in Permit Section 3.4.7 match the April 25, 2018, mixing study revision supplied to ADEC, which were unchanged from the original 2017 Mixing Study for Copper. Fact Sheet Tables 53 and 54 show a MEC for Copper (1,298 µg/L) that is much higher than calculated in the April 25, 2018 revision (439.47 µg/L). Mixing zones were recalculated for Tyonek A based on the higher MEC in Appendix B of the Fact Sheet, and can be found attached (Attachment 1). The attached figure also shows the updated Copper mixing zone associated with the chronic aquatic life WQS.

Based on inference about distribution selection in Fact Sheet Table 54 and the Fact Sheet RPA description, potential errors were identified in the MECs for TBPF Copper and MGS Onshore Silver. Selecting a Log-ROS distribution for TBPF Copper, the MEC is 29.44 µg/L, compared to 24.47 µg/L in Fact Sheet Table 54. Selecting a Normal (ROS) distribution for MGS Onshore Silver, the MEC is 56.41 µg/L, compared to 48.2 µg/L in Fact Sheet Table 54. New mixing zone calculations are provided in Attachments 2 and 3 based on the MECs for TBPF Copper and MGS Onshore Silver.

Fact Sheet Table 54 shows an MEC for GPTF Copper (96.76 ug/L) which is much higher than calculated in the 2017 Mixing Study (57.66 µg/L). Similarly, the MEC for Dillon Silver is higher in the Fact Sheet (56.41 µg/L) than in the 2017 Mixing Study (49.96 µg/L). New mixing zone calculations are provided in Attachments 4 and 5 for these higher MECs.

DEC Performed Data Verification After Mixing Zones Determinations and Needs Updates

DEC modified MECs while verifying data during the development of the Fact Sheet that did not get translated to mixing zone sizes. DEC appreciates Hilcorp discovering this shortfall and providing updates to the mixing zones based on DEC's modifications. The following modifications have been made to the Permit and Fact Sheet based on Hilcorp's comment and corrected mixing zones.

TBPF

Permit Section 3.4.1 and Fact Sheet Section 6.2.3.6.1, no changes were necessary for the acute mixing zone based on copper.

MGS Onshore

Permit Fact Sheet Section 6.2.3.6.2, second to last sentence now reads:

> The dimensions of the acute mixing zone (not shown) are ~~**115**~~ **126** meters long (~~**48**~~ **53** meters ebb and ~~**67**~~ **73** meters flood) by ~~**27**~~ **29** meters (9**.5** meters toward shore and 19**.5** meters away) in the same alignment as the chronic mixing zone."

Permit Section 3.4.2, second sentence now reads:

> "In addition, an acute mixing zone is authorized for copper, zinc, and silver that is ~~**115**~~ **126** meters long and ~~**27**~~ **29** meters wide extending from the sea surface to the seafloor with an acute dilution factor of 20.5."

GPTF

Permit Fact Sheet Section 6.2.3.6.3, second to last sentence now reads:

> "The dimensions of the acute mixing zone (not shown) are **4 10** meters long by **4 6.75** meters wide centered symmetrically about the discharge port."

Permit Section 3.4.3, second sentence now reads:

> "In addition, an acute mixing zone is authorized for ammonia, copper, and zinc that is **4 10** meters long and **4 6.75** meters wide extending from the sea surface to the seafloor with an acute dilution factor of 19.5."

Dillon Platform

Permit Fact Sheet Section 6.2.3.6.6, second to last sentence now reads:

> "The dimensions of the acute mixing zone (not shown) are ~~**20**~~ **24** meters long by 14 meters wide centered on the diffuser and aligned the same as the chronic mixing zone."

Permit Section 3.4.6, second sentence now reads:

> "In addition, an acute mixing zone is authorized for ammonia, copper, mercury, silver, and zinc that is ~~**20**~~ **24** meters long and 14 meters wide extending from the sea surface to the seafloor with an acute dilution factor of 24."

Tyonek

Permit Fact Sheet Section 6.2.3.6.7, the third and fifth sentences now reads:

> "The dimensions of the chronic mixing zone shown in Figure 9 are ~~**286**~~ **278** meters long (~~**143**~~ **140** meters each current direction) by ~~**114**~~ **87** meters wide. The width of the chronic mixing zone was determined by examining the applicable range of current direction representing the 10th percentile current at the intersection of the length direction. The dimensions of the acute mixing zone (not shown) are 158 meters long (79 meters each current direction) by ~~**63**~~ **56** meters wide centered on the diffuser and aligned the same as the chronic mixing zone."

Permit Section 3.4.7, the first and second sentence now reads:

> "Upon submittal of a complete NOI to the Department, the discharge of produced water from the Tyonek A Platform is authorized to have a chronic mixing zone that is ~~**286**~~ **278** meters long and ~~**114**~~ **87** meters wide that extends from the sea surface to the seafloor with a chronic dilution factor of 460 for the parameters ammonia, copper, TAH, and TAqH. In addition, an acute mixing zone is authorized for ammonia and copper that is 158 meters long and ~~**63**~~ **56** meters wide extending from the sea surface to the seafloor with an acute dilution factor of 265."

In addition to the text edits above, DEC also replaced Fact Sheet Figure 9 for the Tyonek mixing zone in Section 6.2.3.7.

2.6.7 Comment: Permit Schedule of Submissions Needs More Details

All deadlines under the Schedule of Submissions are currently based on the postmark date of the submittal. It would be prudent to include the electronic time stamp of the submittal, as DMRs and other associated reports/submittals are moving toward an electronic mechanism.

For Table 1, the following edits are recommended:

- Include the requirements of Section 1.1.10 and identify an applicable due date for the NOI submittal, preferably at least 45 days prior to discharge to align with other NOI submittal requirements identified in the Permit.
- The table currently indicates the submittal requirements applicable to Section 1.1.7 are for "new" facilities. Recommend modifying Table 1 to "Individual permit for produced water discharges" to better align with Section 1.1.7.
- Include Discharge 005 for the written requests of Section 2.6.6.2 indicated in this table.

- Including the Full WET report submittal requirements.
- For written noncompliance notifications, the current due date states five business days. Appendix A Section 3.4.1.2 indicates within five days. The five business days requirement is appreciated and it is recommended to indicate the requirement as such.

DEC Partially Agrees with Suggested Changes; Table of Submissions is a Summary

With the wide use and availability of electronic mail, together with the implementation of the eReporting Rule (40 CFR 127), electronic submission of deliverable documents is not only acceptable, it is encouraged. The Permit includes this mode of submission within the Schedule of Submissions itself (Table 1) and within several subsections of Permit Section 2.11. However, as Hilcorp points out, the Draft Permit introductory paragraph incorrectly only references the postmark date, and how electronic submissions are managed for determining permit compliance should be transparent. Therefore, the second sentence of the introductory paragraph to the Table of Submissions has been modified to:

> "All deadlines for the Schedule of Submissions are based **on the date of electronic submittal or upon** the postmark date of ~~**the**~~ **a hardcop**y submittal."

Regarding the bullet-item comments specifically to Table 1:

Bullet 1: DEC disagrees. Section 1.1.10 addresses the procedure for a permittee to revise their existing authorization under this General Permit. The amount of time to process an updated NOI, in advance of the changes, will be dependent on the nature of the changes. Addition of certain discharges (e.g., HDD or produced water) would require a 30-day public notice period, while most other changes would not and thus could be processed into a revised authorization more quickly. Table 1 is not meant to be all-inclusive, and it is incumbent on all permittees to communicate with the Department during their project planning process to assess the APDES permitting requirements. No changes to the Permit or Fact Sheet have been made as a result of this bullet-item comment

Bullet 2: DEC disagrees. Permit Section 1.1.7 provides the necessary details for compliance. The table merely provides a high level summary of the detailed permit compliance contained in the referenced Permit Section. No Changes to the Permit or Fact Sheet have resulted from this comment.

Bullet 3: DEC concurs and has added discharge **005** to the list of potential discharges available to a frequency reduction.

Bullet 4: DEC disagrees. The table of submissions need not list every submitted requirement because detailed requirements are included in the specified permit section. The table merely provides a high level summary of the detailed permit compliance contained in the referenced Permit Section. No changes to the Permit or Fact Sheet have resulted from this comment.

Bullet 5: Thank you for identifying this discrepancy between Table 1 in the Draft General Permit and Appendix A Section 3.4.1.2. Appendix A is comprised of the Standard Conditions, and Part 3.4 of the Standard Conditions addresses reporting of noncompliance events that may endanger health or the environment. The standard condition for reporting

within five days after the permittee becomes aware is from 18 AAC 83.410(f)(1)(B). Because this requirement is based in regulation and the standard conditions have been approved through public comment, DEC cannot vary this requirement as was unintentionally done. Therefore, DEC must change the reference in Table 1 to require written documentation of noncompliance per Appendix A, Section 3.4.1 must be made "within five **~~business~~** days after the applicant becomes aware of the circumstances."

2.6.8 Comment: Clarifications to Reapplication Requirements

Per this Section, it is understood that existing permittees under the current administratively extended General Permit are required to reapply with the short NOI form found in Attachment 1 within 30 days of the effective final AKG-31-5200. It is also understood that additional discharges not identified in previous application packages for specific facilities (but eligible for authorization) can be included in the NOI. As such, it is recommended to include a statement in this section that new discharge authorizations can be sought by existing facilities during this period, or that they can be sought at a later date per other NOI submittal requirements as identified in Section 1.1.

DEC Disagrees Clarifications and Prudent

The Department does not concur with Hilcorp's understanding that permittees under the 2007 GP seeking to add new discharges cannot include them on the Short Form NOI. Nothing in Permit Section 1.1.5 limits coverage to existing fixed platforms or shore-based coastal facilities. Hence, the reapplication is not based on the past administratively extended authorizations but rather to clarify which discharges the applicant seeks under the reissued Permit moving forward into the next permit term.

No change to the Permit or Fact Sheet has resulted from this comment.

2.6.9 Comment: Suggested Clarification of Permit Section 1.1.7

For clarity, it is suggested to edit the first sentence of this section to read: "<u>New or existing production facilities that are proposing to discharge produced water for the first time, or seeking authorization to increase existing or recommence produced water discharges</u>, must submit…"

DEC Concurs and Adopts Suggested Clarification of Permit Section 1.1.7

DEC concurs with Hilcorp's suggested edits. As a result of this comment, DEC has modified the first sentence of this section to read:

"New **<u>or existing</u> ~~fixed development and production platforms, onshore production~~** facilities**~~, existing facilities not included in Section 2.7.7~~** that are proposing to discharge produced water for the first time, or **~~existing facilities included in Section 2.7.7~~** seeking **~~an~~** authorization to increase existing produced water discharge, must submit…"

2.6.10 Comment: Application One Year in Advance Inconsistent with Regulations

Recommend modifying the requirement to submit the individual permit application one year prior to proposed discharge to 180 days to align with 18 AAC 83.110. It is also recommended to update Table 1 to align with this suggestion.

DEC Disagrees Applications Should be Submitted 180 Days Prior to Effective Date

DEC does not agree as there is no upfront determination of whether the Department may issue an authorization under the Permit or issue a complete separate IP. The Permit is unique in that it allows for a hybrid approach whereby an applicant may obtain an authorization after public notice of a Statement of Basis. Or, the Department may decide to issue an IP instead. Note that an application for coverage under a GP is not typically required; typically coverage under a GP only requires an NOI. However, given new discharges were not included in the public comment period of the Permit, a Statement of Basis must be issued for public comment prior to receiving an authorization under the Permit. Per 18 AAC 83.110(C):

> "A person proposing a new discharge to submit an application *at least* 180 days before the date on which the discharge is to commence, unless the Department has granted permission to submit the application on a later date."

DEC understands that the public notice of a new produced water discharge under the Permit will result in significant public interest such that the 180 days does not provide for adequate time to develop a defensible Statement of Basis. Per 18 AAC 83.110, the Department has discretion to require longer or shorter lead time depending on the complexity and controversial nature of the permitting action. Accordingly, the Department requires a year-long lead time to ensure adequate time to develop a Statement of Basis including effluent characterization, a mixing zone determination, limit development, and antidegradation analysis for public participation.

No change to the Permit or Fact Sheet has resulted from this comment.

2.6.11 Comment: No Timeline Listed for Authorization Revisions

As discussed above, there is no timescale associated with this Section. It is recommended to indicate that the NOI and supporting documents should be submitted at least 45 days prior to discharge to align with other NOI submittal requirements identified in the Draft Permit.

DEC Does Not Agree a Deadline for NOI is Necessary in Permit Section 1.1.10

DEC is not comfortable imposing a deadline on revisions to existing authorizations. The scope and schedule of potential authorization revisions is not easily discerned by DEC; revisions could be simple and short or long and complex. Rather than proposing an arbitrary schedule, DEC anticipates scope and schedules will be coordinated around the time of the NOI submittal for each individual revision.

No change to the Permit or Fact Sheet has resulted from this comment.

2.6.12 Comment: Engineering Report Undefined

The term "engineering report" within this section is vague and undefined. It is recommended to modify this section to: "An applicant must submit a complete NOI form (See Attachment 1) and all applicable plans and attachments, and (if applicable) individual permit applications for evaluation under this section."

DEC Disagrees That Engineering Reports Should be Removed

DEC understands that there are situations where an engineering report, or sealed engineering plans, could be required depending on what is being proposed by the applicant. Note that the

term "all required plans, engineering reports, and (if applicable) individual permit applications" implies there could significant variability in NOI/application requirements that could justify submittal of engineering reports, or documents sealed by a PE to obtain coverage.

No changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.13 Comment: Denial Based on Obtaining Coverage Under Different GP

In Permit Section 1.3.5, DEC could also request that an applicant seek authorization under a different applicable general permit based on the NOI/application submittal. As such, it is recommended to modify this section to: "Deny coverage under the permit and require and applicant to submit an individual permit application or apply under a different applicable general permit."

DEC Disagrees It Is Necessary to Inlcude Authorizations Under Other GPs in Section 1.3.5

Although it is always possible for DEC to direct the applicant to apply under a different GP, DEC is unaware of any equivalent GPs that would be considered. Therefore, it appears unnecessary to modify language given DEC maintains this authority via regulations and there is no equivalent GP identified at this time.

No changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.14 Comment: Denying Coverage Must Be Based on 18 AAC 83.215

Recommend modifying this section to: "The Department may require an applicant seeking authorization to discharge under a general permit to apply for and obtain coverage under an individual permit if the applicant meets the requirements of 18 AAC 83.215."

DEC Disagrees That 18 AAC 83.215 Dictates Conditions When IPs are Required

The Department does not concur. The existing language in Permit Section 1.4.1 is appropriate given 18 AAC 83.215 does not stipulate requirements for when an IP is preferred by DEC. Instead, 18 AAC 83.215(a) merely provides examples of when an individual permit may be required. DEC maintains significant discretion in assigning individual permits versus general permits and the recommended changes do not match the intent of the regulations.

No changes to the Permit or Fact Sheet have resulted from this comment.

2.6.15 Comment: HDD and Geotechnical Coverage Area is Not Restricted

For clarity and to align with Fact Sheet Section 3.3, Hilcorp recommends that DEC include language under Permit Section 1.6 that HDD and geotechnical activities are not prohibited in any of the state waters within Cook Inlet.

DEC Agrees and Modifies Permit Section 1.6

DEC agrees. Section 1.6.1 has been modified to:

"The area of coverage for the permit is generally depicted in Figure 1 in Appendix D. **Note, discharges of drilling fluids and drill cuttings from HDD and geotechnical projects are open to all state waters of Cook Inlet.** An applicant…"

2.6.16 Comment: Hilcorp Recommends Modifying Limit Tables

Hilcorp recommends modifying the flow monitoring requirements for Tables 3-9, 13-20, 22, and 23 under this section to indicate "Estimate and/or Measure" for the sample type and "Daily" for the measurement frequency to align with Sections 2.2.2.1.1, 2.2.3.1, 2.4.2, 2.5.2, 2.6.2, 2.8.2, 2.9.1, and 2.11.1.4.

DEC Disagrees

DEC acknowledges that the information in the Tables are clarified in the text sections. Similar to the Table of Submissions, DEC does not intend for the limit tables to present requirements in an all-inclusive manner. DEC specifically provides reference to the text sections to avoid overly complex limits tables that might lead to confusion.

No changes to the Permit or Fact Sheet have resulted from this comment.

2.6.17 Comment: NOI Should be Called Out in Addition to Application

Hilcorp recommends modifying Permit Section 2.1.2 as follows: "This permit authorizes the discharge of only those pollutants resulting from facility processes, waste streams, and operations that have been clearly identified in this Permit, application process, or NOI."

DEC Agrees and Modifies Permit Section 2.1.2

DEC concurs with the suggested change. Permit Section 2.1.2 now reads:

> "This permit authorizes the discharge of only those pollutants resulting from facility processes, waste streams, and operations that have been clearly identified in this Permit or application **(NOI)** processes.

2.6.18 Comment: Impracticable to Notify 30-days in Advance

Hilcorp states that it is difficult for MODU operations to know 30 days in advance if the facility will become seasonally unmanned. Furthermore, the operator oversight for MODUs can change within a given year. As such, the following language is recommended: "The permittee is not required to conduct monitoring for MODUs when they are seasonally unmanned or when the MODU is not in their operational control. The permittee must provide written notice to DEC Permitting at least 7 days prior to terminating monitoring or prior to relocation to a different drilling site, staging location, or overwinter storage location."

DEC Agrees That Language Should be Modified for Permit Section 2.1.6

DEC agrees and modifies Permit Section 2.1.6 to read:

> "The permittee is not required to conduct monitoring for MODUs when they are seasonally unmanned **or when the MODU is not in their operational control**. The permittee must provide written notice to DEC Permitting ~~**(See Standard Conditions) 30 days prior to terminating monitoring requirements. For MODUs conducting oil and gas exploration, the permittee must notify DEC in writing**~~ at least seven days prior to recommencing discharges after cessation of seasonal drilling activities or when relocating to a different drilling site, staging location, or overwinter storage location.

2.6.19 Comment: Consistency between Permit and Fact Sheet for Commingling

To align with Fact Sheet Section 8.0, Hilcorp recommends modifying Permit Section 2.1.10 to read: "When applying effluent limits to commingled discharges, the more stringent discharge effluent limits apply to the commingled discharge. If the individual discharge is not authorized, the commingled discharge is not authorized."

DEC Disagrees with Recommended Language in Permit Section 2.1.10

DEC does not concur with the recommendation. While the language between the Permit and the Fact Sheet are not exactly the same, there is no substantive difference in the interpretation between the two, and thus there is no conflict to resolve.

No changes to the Permit or Fact Sheet have resulted from this comment.

2.6.20 Comment: Collection of Surface Preparation Waste Should be Practicable

Hilcorp recommends modifying Permit Section 2.1.11 to: "The discharge of maintenance waste, such as removed paint and materials associated with surface preparation and coating applications, is prohibited. Such materials shall be contained, collected, and properly disposed to the extent practicable. Prior to conducting…"

DEC Partially Agrees and Modifies Permit Section 2.1.11

DEC is not intending to limit available disposal options to only shore-based options, but the Department disagrees with including "*to the extent practicable*" as the intent is to prohibit improper management of the waste. DEC is modifying Permit Section 2.1.11 to read:

"All wastes, must be properly managed. As a result of this comment, Section 2.1.11 has been modified to: "The discharge of maintenance waste**,** such as removed paint and materials associated with surface preparation and coating applications**,** is prohibited. Such materials shall be contained**, ~~and~~** collected**, and properly disposed**. **~~All collected material shall be disposed of at an appropriate shore-based facility.~~** Prior to conducting…"

2.6.21 Comment: Incorrect Reference to Table 3

It appears Table 4 should be referenced instead of Table 3.

DEC Agrees Table 4 Should Be Referenced Instead of Table 3 in Permit Section 2.2.1.1

DEC concurs that the reference to Table 3 in this section is incorrect. As a result of this comment, Section 2.2.1.1 has been modified to:

"…as defined **per** 40 CFR 435 (See Table **~~3~~ 4** and noted Sections)."

2.6.22 Comment: Reference to Drilling Fluid SPP Limit Should be ≥

To provide alignment with Tables 3 and 4, Hilcorp recommends modifying the SPP toxicity to ≥ 30,000 for Class B2 and B3 fluids in Table 2.

DEC Agrees that Table 2 Should Be Modified to Reflect ≥ 30,000 ppm

DEC concurs that the limitation set forth in 40 CFR 435 for the 96-hour LC50 of the SPP toxicity test was established as the *minimum* value. Therefore, for both Class B2 and B3 fluids in

Permit Table 2 and Fact Sheet Table 4, the SPP toxicity LC_{50} in parts per million has been modified to: "≥ 30,000"

2.6.23 Comment: Recommend Removal of Bullet 2 in Table 2

Note 1 seems unnecessary and is recommended to be removed.

DEC Disagrees Given There is a Larger Permitted Audience

DEC disagrees. Removal of Note 1 would beg the question of what Class A drilling fluids are and whether the information was erroneously left out. DEC includes Class A so that permittees are aware of the overall permitting framework employed for non-oil and gas drilling fluids.

No changes to the Permit or Fact Sheet have resulted from this comment.

2.6.24 Comment: Spelling Out Acronyms Not Necessary, Should be Upper Case

Recommend modifying Permit Table 3 reference to"..."Flow Million Gallons per Day (mgd)" to just "Flow (MGD)" as MGD is identified in Appendix B.

DEC Disagrees that mgd Should be Changed to MGD

While the comment has merit, writing styles vary and DEC permits typically spell out each acronym when first used in the document even if there is a table of acronyms. While the acronym listed in Appendix B uses all capital letters, this is inconsistent with common technical writing styles for in-text references of units of measure to be lower case acronyms. Therefore, to correct the lower versus upper case, DEC is modifying all acronyms representing units of measure in Appendix B to be lower case.

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.25 Comment: Mercury and Cadmium in Tables 3 and 4 Should be Total

Change Mercury and Cadmium to "Total Mercury" and "Total Cadmium" to align with section 2.2.2.1.6.

DEC Disagrees Total Must be Included

DEC disagrees. The use of "Mercury" and "Cadmium" without the addition of "Total" before the terms do not cause conflict or confusion. As previously stated, the text reference includes the necessary details for compliance; whereas, the Table provides a topical overview.

No change to the Permit or Fact Sheet have resulted from this comment.

2.6.26 Comment: Modify Tables 3 and 4 to Include Supplier Certification of Barite

Change the sample type for Mercury and Cadmium to "Grab and/or Supplier Documentation" to align with Section 2.2.2.1.6

DEC Disagrees Modification is Necessary

Per previous comment responses, the limit tables are an overview of complex relationships that are better explained in the referenced text sections.

No change to the Permit or Fact Sheet has resulted from this comment.

2.6.27 Comment: Modify Table 3 to Qualify it is Barite Metals

Hilcorp recommends changing Tables 3 and 4 to list "Barite Metals" instead of "Metals"

DEC Disagrees with the Terminology Modification

Per previous comment responses, the limit tables are an overview of complex relationships that are better explained in the referenced text sections.

No other changes to the Permit or Fact Sheet have resulted from this comment.

2.6.28 Comment: Change Frequency from Event to Pill Once per Well

Hilcorp recommends changing the measurement frequency for (Barite) Metals from "Event/Once per well" to "Pill/Once per well"

DEC Disagrees with Recommend Changes to Frequency in Permit Table 3

DEC disagrees. Permit Section 2.2.4.2, which describes how and when to sample this suite of metals, also describes drilling fluid and drill cutting sampling requirements. The required sampling for the suite of Barite Metals is not necessarily dependent on the use of mineral oil pills.

No change to the Permit or Fact Sheet has resulted from this comment.

2.6.29 Comment: Include Reference to Permit Section 2.2.2.1.16 in Permit

Hilcorp recommends including a reference to Section 2.2.2.1.16 for (Barite) Metals "event (pill)" monitoring frequency.

DEC Disagrees with Recommendation

Barite Metals in Table 3 includes a reference to Permit Section 2.2.4.2, which in turn includes a reference to Section 2.2.2.1.16 when mineral oil pills are used.

No change to the Permit or Fact Sheet has resulted from this comment.

2.6.30 Comment: Frequencies for Certain Limits Should Not Be Annual

It is unclear how the annual requirements would apply under this table. It is recommended to change annual frequency requirements in this table to "once per drill site"

DEC Disagrees Annual Should not be the Frequency

DEC disagrees because the reporting frequency cannot be greater than annually. Hence, if there is an authorization but no discharge, or activity, the permittee is still required to report once per year even if there is nothing to report.

No change to the Permit or Fact Sheet has resulted from this comment.

2.6.31 Comment: Change Mercury and Cadmium to Total

Similar to Comment 2.6.25, Hilcorp recommends changing Mercury and Cadmium to "Total Mercury" and "Total Cadmium" to align with section 2.2.2.1.6.

DEC Disagrees

Please refer to Response to Comment Section 2.6.25.

No change to the Permit or Fact Sheet has resulted from this comment

2.6.32 Comment: Clarify Sample Type Includes Supplier Certification

Similar to Comment 2.6.26, Hilcorp recommends changing the sample type for Mercury and Cadmium to "Grab and/or Supplier Documentation" in Permit Table 4 Bullet 3 to align with Section 2.2.2.1.6.

DEC Disagrees per Comment Response 2.6.26

Please refer to Response to Comment Section 2.6.26.

2.6.33 Comment: Recommend Changing Frequency to Event/EOW in Table 4

Hilcorp recommends changing the measurement frequency for diesel oil to "Event/EOW". The daily requirement does not align with Section 2.2.2.1.5. Same for the formation oil.

DEC Disagrees Because the Limitation is for Non-aqueous Drilling Fluids

DEC disagrees with the recommendation because unlike water-based drilling fluids, there is more likely to be concerns over the use of diesel when using non-aqueous drilling fluids. Furthermore, the 2007 GP also required daily diesel monitoring for non-aqueous drilling fluids.

No change to the Permit or Fact Sheet has resulted from this comment

2.6.34 Comment: DEC Should Modify Permit Section 2.2.2.1.6

For clarity, it is recommended to modify to: "Prior to drilling each well, a barite supplier can provide analytical information, or an analysis of a representative sample of stock barite for total mercury and total cadmium must be completed. Analyses for total mercury must be conducted using EPA Methods 245.5 or 7471b and analyses for total cadmium must be conducted using EPA Method 200.7 Results must be reported as mg/kg (dry weight) of barite, and reported on the DMR when drilling of the well commences or when stock barite changes during a drilling operation. 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, a comment must be included in the DMR indicating no new barite was received since the last reported analysis."

DEC Disagrees That Changes are Necessary in Permit Section 2.2.2.1.6

This permit language is essentially the same as that in the 2007 GP. As such, the language appears to have been appropriately implemented indicating a change is not necessary.

No change to the Permit or Fact Sheet has resulted from this comment

2.6.35 Comment: Potentially Redundant Permit Sections

Permit Section 2.2.2.1.3 already discusses the requirements in Permit Section 2.2.2.1.7. Recommend removal and modifying the references in Tables 3 and 4 to align with this change.

DEC Disagrees that the Change is Necessary

Although there is apparent redundancy between Permit Sections 2.2.2.1.3 and 2.2.2.1.7, there are also two different emphasis: one is to emphasize the correct method and the other to emphasize

when the sample must be collected. Although these two could be combined, the end result may not justify rearranging the permit to accomplish this streamlining.

No change to the Permit or Fact Sheet has resulted from this comment

2.6.36 Comment: Permit Section 2.2.2.1.8 Inconsistent with Appendix C

Permit Section 2.2.2.1.8 does not align with the definition provided for non-aqueous drilling fluid (NAF) under Appendix C.

DEC Agrees and Includes Previously Truncated Elements in Appendix C Definition

DEC reviewed the definition of NAF in Appendix C and discovered the definition is incomplete; it is missing the last word "**esters**." With the complete definition, there is no misalignment. As a result of this comment, the definition of NAF in Appendix C has been modified to read:

> "Means "drilling fluid" that has water-immiscible fluid as its continuous phase and the suspending medium for solids, such as oleaginous materials (e.g., mineral oil, enhanced mineral oil, paraffinic oil, C16-C18 internal olefins, and C8-C16 fatty acid/2-ethylhexyl **esters).**"

2.6.37 Comment: Reference to TAH and TAqH in Permit Section 2.2.2.1.9

For clarity, it is recommended to remove the second sentence of this section.

DEC Agrees Last Sentence is Unnecessary in Permit Section 2.2.2.1.9

Analysis of TAH and TAqH discussed the second sentence are not relevant to Table 4. As a result of this comment, the following modifications have been made to section:

> "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~~. For analysis of total aromatic hydrocarbons (TAH) and total aqueous hydrocarbons (TAqH), all analytical requirements cited in the Alaska Standards, 18 ACC 70.020(b) are applicable.~~"

2.6.38 Comment: Clarifications for Permit Section 2.2.2.1.13

For clarity, recommend modifying this section and Fact Sheet Section 8.1.1.13 to: "For drill cuttings, no discharge of formation oil is determined by performing the GC compliance assurance method (Appendix 5 of 40 CFR 435, Subpart A) to drill fluids prior to their shipment offsite for proper disposal. Prior to discharge is determined by performing the Reverse Phase Extraction (RPE) Method (Appendix 6 of 40 CFR 435, Subpart A) to drilling fluid removed from drill cuttings."

DEC Disagrees that Clarification is Necessary or Appropriate in Permit Section 2.2.2.1.13

DEC disagrees that Permit Section 2.2.2.1.13 should be revised for clarity. This requirement is based on requirements from 40 CFR 435 and from multiple sections of the 2007 GP, which have been combined in the Permit. DEC is concerned that attempts to modify the language for clarity will result in misapplication of 40 CFR 435 requirements as represented in multiple sections of the 2007 GP.

No changes to the Permit or Fact Sheet have resulted from this comment.

2.6.39 Comment: SPP Toxicity for Mineral Oil Pill Reporting Frequencies

This section discusses an additional report that is due to the agency within 60 days of discharge of drilling fluids containing residual mineral oil. It is recommended the requirements of this report be combined and incorporated within the EOW Report.

DEC Disagrees as Recommended Change

DEC does not concur that the requirements of the referenced monitoring information should be combined and incorporated within the EOW report due to the differences in due dates. The End of Well report is not due until January 31st of each year following well completion whereas the referenced SPP toxicity monitoring information is due by the 28th of the month after each mineral oil pill application, and at EOW. DEC requires submittal of the information both in the monthly DMR and as part of the comprehensive EOW Report because it is desirable to have information timely due to potential public concerns. Furthermore, the EOW Report provides an opportunity to expand upon the need for the pill, impacts, and other information deemed useful for the next reissuance.

No changes to the Permit and Fact Sheet have resulted from this comment.

2.6.40 Comment: Toxicity Testing Clarifications for Mineral Oil Pills

Permit Section 2.2.2.1.16(b) discusses additional drilling fluids toxicity testing that is not identified in Tables 3, 4 or Section 2.2.2.1.3. Hilcorp recommend modifying Tables 3, 4, and Section 2.2.2.1.3 to include the additional toxicity testing requirements when a mineral oil pill is used in Class B fluids.

DEC Disagrees (See Previous Comment Responses)

Per previous comment responses, the limit tables are an overview of complex relationships that are better explained in the referenced text sections.

No changes to the Permit or Fact Sheet have resulted from this comment.

2.6.41 Comment: API Retort Method is the Same in Different Sections

Hilcorp recommends clarifying that the "API retort" method specified in Permit Section 2.2.2.1.16(i) is the same method described in the second paragraph of Section 2.2.2.1.16.

DEC Disagrees Clarification is Necessary

DEC does not concur that clarification is necessary because there is only one API Retort Method; some redundancy is acceptable.

No changes to the Permit or Fact Sheet have resulted from this comment.

2.6.42 Comment: Modify Table for Total Mercury and Total Cadmium

Hilcorp recommends Changing Mercury and Cadmium to "Total Mercury" and "Total Cadmium" in Permit Table 5 Bullet 1 to align with section 2.2.3.3

DEC Disagrees Modification is Necessary

Per previous comment responses, the limit tables are an overview of complex relationships that are better explained in the referenced text sections.

DEC disagrees. Please refer to Response to Comment Section 2.6.25.

No changes to the Permit or Fact Sheet have resulted from this comment.

2.6.43 Comment: Modify Table for Barite Metals

Hilcorp recommends changing “Barite Metals” to “Metals” in Permit Table 5 Bullet 2.

DEC Disagrees Modification is Necessary

Per previous comment responses, the limit tables are an overview of complex relationships that are better explained in the referenced text sections.

Please refer to Response to Comment Section 2.6.27.

No changes to the Permit or Fact Sheet have resulted from this comment.

2.6.44 Comment: Modify Frequency for Metals in Permit Table 5

Hilcorp recommends changing the metals frequency to “Event/Once per Well” in Permit Table 5 Bullet 3.

DEC Disagrees Modification is Necessary

Per previous comment responses, the limit tables are an overview of complex relationships that are better explained in the referenced text sections.

Please refer to Response to Comment Section 2.6.33.

No changes to the Permit or Fact Sheet have resulted from this comment.

2.6.45 Comment: DEC Should Reference HDD or Geotechnical Project

Hilcorp recommends modifying to: “If more than one geotechnical or HDD “borehole/project” is drilled using the same…” in Permit Section 2.2.3.3.

DEC Disagrees with the Addition of Project

DEC disagrees with the inclusion of entire projects. The intent for the cadmium and mercury to be tested, or certified, as needed based on new stock barite being used during the project is satisfied by the section.

No changes to the Permit or Fact Sheet have resulted from this comment.

2.6.46 Comment: Add Header for Consistency

To provide consistency with Section 2.2.1, Hilcorp recommends including a header indicating “Monitoring Requirements for All Drilling Fluids and Drill Cuttings Discharges” in Permit Section 2.2.4.

DEC Disagrees Adding a Header is Appropriate

DEC disagrees because Permit Section 2.2.4.2 is only applicable to drilling fluid systems using barite.

No change to the Permit or Fact Sheet have resulted from this comment.

2.6.47 Comment: Include Deck Drainage Can be Measured in Some Cases

Hilcorp recommends modifying Permit Section 2.3.2 to: "The Permit requires flow to be estimated and/or measured daily. Records are to be maintained in a log at the facility and made available to DEC upon request"

DEC Concurs that Allowance for Measuring Flow from Oil/Water Separators is Prudent

DEC agrees that flow may also be measured and there was a wording error. As a result of this comment, the following modifications have been made to Permit Section 2.3.2 and Fact Sheet Section 8.2.1: "The Permit requires flow to be estimated ~~**in daily**~~ **or measured** daily, maintained in a log at the facility**,** and made available to DEC upon request.

2.6.48 Comment: Oil and Grease Can Also be Removed Via Process

To align with Section 2.3.4, Hilcorp recommends modifying Permit Section 2.3.3 to: "…oil and grease is processed through an oil-water separator, or other similar treatment process."

DEC Agrees But Language Already Included

DEC is confused by Hilcorps comment. The first sentence in Permit Section 2.3.3 states:

> "The permittee must ensure that deck drainage contaminated with oil and grease is processed through an oil-water separator, or other oil removal process, prior to discharge."

No change to the Permit or Fact Sheet has resulted from this comment.

2.6.49 Comment: Modify Table to Match Referenced Text in Permit Table 7

To better align with the requirements stated in Section 2.4.6, it is recommended to include "Foam and Garbage" with the floating solids requirement in Permit Table 7.

DEC Disagrees per Previous Comments

Per previous comment responses, the limit tables are an overview of complex relationships that are better explained in the referenced text sections.

No change to the Permit or Fact Sheet has resulted from this comment.

2.6.50 Comment: Commingling of Domestic (black water) with Domestic Graywater

Hilcorp recommends modifying the header of Permit Section 2.4.3 to: "Commingled Domestic and Graywater"

DEC Disagrees Given Definition of Domestic Wastewater in 18 AAC 72

The definition of domestic wastewater includes both graywater and blackwater. Using the term "domestic wastewater" creates an unintended overlap when considering 18 AAC 72 requirements.

No change to the Permit or Fact Sheet has resulted from this comment.

2.6.51 Comment: Imposing 1.0 mg/L TRC Maximum is Not Necessary

The requirement to maintain as close to 1.0 mg/L minimum as practicable during chlorination in Permit Section 2.4.4 is based on an ELG for residual chlorine in discharge. Since this waste stream is dechlorinated prior to discharge, the requirement should be to maintain a minimum concentration of 1.0 mg/L, which aligns with current administratively extended General Permit Table 3-A.

DEC Partially Agrees and Disagrees Based on Appropriate Compliance with TBELs

The requirement to maintain as close as practicable to the 1.0 mg/L minimum of TRC in the 2007 GP is not readily enforceable. Therefore, DEC includes the maximum of 1.0 mg/L of TRC after dechlorination as a TBEL so that permittees reduce the discharge of TRC, which has been as high as 13 mg/L for some facilities. However, as an outgrowth of this comment, DEC acknowledges there are potential situations where both the maximum and minimum TBELs for TRC of 1.0 mg/L would be equally inappropriate. In cases where treatment via marine sanitation devices (MSDs) that use chlorine destruction and/or the treatment system does not use chlorine for disinfection either, then the Permit cannot impose TRC limits. Therefore, DEC is modifying both Permit Sections 2.4.4 and 2.4.5 and Fact Sheet Sections 8.3.3 and 8.3.4 to include the final sentence that states:

> "**If the treatment system does not use chlorine (i.e., BTUs with ultraviolet disinfection), then the TRC limit is not applicable."**

No other changes to the Permit or Fact Sheet have resulted from this comment.

2.6.52 Comment: Permit Section 2.4.6 and 2.5.3 Should be Indentical

To maintain consistency, Hilcorp recommends to modifying Permit Section 2.4.6 to the language provided in Section 2.5.3.

DEC Agrees These Two Requirements Can be Identical

Given both discharges are a form of domestic wastewater with the same WQBEL for floating solids, Foam, and Garbage, the requirements can be identical although slightly different in characteristics and discharge conditions. Therefore, DEC is replacing the text in Permit Section 2.4.6 with that from Section 2.5.3, which states:

> **"This Permit prohibits the discharge of floating solids, foam, and garbage as determined by a visual observation of the receiving water surface at a minimum frequency of once per day during daylight at the time of maximum estimated discharge (e.g., following morning or midday meals). Monitoring of the observations must be recorded in a daily operating log and made available to DEC upon request."**

2.6.53 Comment: Oil and Grease Sheen Visual Rather Than Observation

Hilcorp recommends changing the oil and grease (sheen) sample type to "visual" instead of "observation" in Permit Table 8 to be consistent with other sections of the permit.

DEC Agrees Visible Sheen Can be the Standard

Although "observation" and "Visual" are often used interchangeably or together (visual observation) to describe the monitoring method/sample type, in this case DEC acknowledges that for sheen there are other potential alternatives to observing the surface water (i.e., Static Sheen Test). Therefore, DEC has modified Table 8 to include "**visual**" instead of "~~**observation**~~."

2.6.54 Comment: MSD for Primary Treatment of Graywater Not Limited to MODUs

In Permit Section 2.5.5, Hilcorp assumes that ADEC intends that the maximum TRC limit will apply to any graywater discharge treated with an MSD, and not just discharge from a MODU. Since a platform may also use a MSD to treat graywater it is recommended to modify this section to: "For facilities that use a MSD to treat graywater to greater than primary treatment, this Permit establishes a maximum concentration limit of 1.0 mg/L TRC after dechlorination and prior to discharge. If the facility uses a treatment system other than an MSD to meet the primary treatment requirement, the 1.0 mg/L maximum TRC limit does not apply."

DEC Agrees That TRC Limit is Not Limited to MODUs

Although it is more common with MODUs, DEC agrees that the maximum TRC limit applies to any graywater discharge treated with an MSD and is not meant to be limited to just MODUs as the permit currently implies. As a result of this comment, the following modifications have been made to Permit Section 2.5.5 and Fact Sheet Section 8.4.4:

> "For ~~**MODUs**~~ **facilities** that use an MSD to treat graywater to greater than primary treatment, the Permit establishes a maximum **concentration** limit ~~**on the concentration of TRC**~~ of 1.0 mg/l **TRC** after dechlorination and prior to discharge. If the ~~**MODU**~~ facility uses a treatment other than an MSD,…"

2.6.55 Comment: Flow Monitoring for Miscellaneous Discharges Inconsistent

To align with other permit sections regarding flow volume requirements, Hilcorp recommends modifying in Permit Section 2.6.2 to read: "This Permit requires effluent flow volume to be measured and/or estimated for each month a discharge occurs with the average daily flow reported on the DMR." Furthermore, it is recommended to remove reference to the chemical inventory from this section as it is discussed in Section 2.6.4.

DEC Disagrees Flow Monitoring for Permit Section 2.6.2 Should be Consistent

DEC disagrees with the recommended modification which changes the reporting from maximum daily flow to average daily flow. The Permit purposefully requires the permittee to record estimated or measured daily flow volumes consistently (e.g., approximately the same time daily) in a daily log maintained onsite and report the maximum daily volume during a given month in mgd on the DMR so that there can be a determination of whether the discharge exceeds 10,000 gpd, which could trigger chronic WET monitoring and PR BMP Revision Action Levels if chemicals are being used. For the same reason, DEC calls attention to chemical use by cross-referencing Section 2.6.4 so there is a stepwise progression to Permit Section 2.6.5.

No change to the Permit or Fact Sheet has resulted from this comment.

2.6.56 Comment: Typographic Error in Permit Table 10 Header

Hilcorp points out that Permit Table 10 heading should be corrected to read: "PR Action Levels…"

DEC Agrees that the Heading is Missing Context

DEC agrees there is missing "**PR**" in the beginning of the heading for Permit Table 10 and has corrected it.

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.57 Comment: Action Level Clarification forUnidentified Facilities

Hilcorp recommends the following edits to the paragraph after Table 11: "Existing facilities covered by this Permit will have PR BMP Revision Action Levels as shown in Table 12. For facilities that do not have a PR Revision Action Level specified in Table 12, the appropriate PR BMP Revision Action Level in Table 10 and 11 will be based on the miscellaneous discharge with the maximum flow rate provided in the NOI."

DEC Partially Agrees that More Clarification is Appropriate

Hilcorp's comment appears to present two concepts: 1) there could be situations where an existing facility discharges for the first time using chemicals and exceeds 10,000 gpd; and 2) applicants should be able to propose a PR Action Level in the NOI. DEC acknowledges that the requirement should flexibly apply to either an existing or a new miscellaneous discharge over 10,000 gpd with chemical addition. However, DEC disagrees that the applicant can request a PR Action Level in an NOI because such request would bypass public participation requirements prior to authorization. Hence, it could force a 30-day public notice that would be unnecessary. Based on this comment, DEC is modifying the second sentence after Permit Table 11 and Fact Sheet Table 38 to read:

> "For any new **or existing** platforms or MODUs that do not have a PR BMP Revision Action Level specified in Table 12, the appropriate PR BMP Revision Action Level in Table 10 and Table 11 will be based on the maximum flow rate among the miscellaneous discharges included in the NOI and issued in the authorization letter prior to discharge."

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.58 Comment: Schedule for Submitting RP BMP Revisions Needs to be Clarified

In the first sentence of second paragraph in Permit Section 2.6.5, we recommend adding clarification of when the BMP revision letter is due: "…submit a letter within 60 days of the initial Department notification specifying what BMP revisions..." The second to last sentence of this paragraph should also be modified to: "(See Fact Sheet Section 4.5.10)".

DEC Concurs with Addition Clarification and Typographic Error Correction

Hilcorp comments point out lack of specificity in the deadline to submit a PR BMP Action Level after an exceedance of the trigger and a typographic error in a Fact Sheet cross-reference in the second to last sentence in the paragraph. To correct this oversight and provide clarification, DEC is modifying the first sentence in the fourth paragraph of Permit Section 2.6.5 and Fact Sheet Section 8.5.4 to read:

> "…submit a letter within 60 days **<u>of obtaining the chronic WET results</u>** specifying what BMP revisions will be implemented prior to the next scheduled chronic WET monitoring event."

In addition, DEC corrects the typographic error in the second to last sentence of the fourth paragraph of Permit Section 2.6.5 to read:

> "As explained in the fact sheet, an exceedance of a PR BMP Revision Action Level does not constitute a violation of water quality standards because the intermittent use of chemicals will not exceed the chronic WET criterion for an exposure period of four days required for there to be chronic affects in the receiving environment (See Fact Sheet Section 4.5.10 for ~~future~~ **<u>further</u>** explanation)."

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.59 **Comment: Critical Flow Rate Should Emphasize GPD Instead of MGD Units**

Hilcorp recommend modifying Permit Section 2.6.6 to read: "…chemical additives are used and greater than 10,000 gallons discharged per day…" to align with the Fact Sheet and other permit sections.

DEC Disagrees Because Units are Interchangeable and Does Not Affect Implementation

DEC disagrees; there is no misalignment or conflict to correct.

No changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.60 **Comment: Permit Section 2.6.6.1**

To provide clarity, Hilcorp recommends modifying this section to: "After the initial invertebrate species screening, the permittee is required to conduct chronic WET monitoring on one invertebrate species on a frequency established in Section 2.6.6.2.

DEC Agrees Clarification with Respect to Screening Should be Included

DEC agrees the referenced Section to 2.10.1.1 is incorrect. As a result of this comment, DEC is has modified the last sentence in Permit Section 2.6.6.1 to:

> "…**<u>after the initial screening per Permit Section 2.10.1.2</u>** the permittee is required to conduct chronic WET monitoring on one invertebrate species on frequency established in Section **<u>2.10.2</u>**."

For Fact Sheet Section 8.5.5.1, DEC makes similar edits that read:

> ""…**<u>after the initial screening per Permit Section 8.9.1.2</u>** the permittee is required to conduct chronic WET monitoring on one invertebrate species on frequency established in Section **<u>8.9.2</u>**."

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.61 **Comment: Typographic Error in Permit Section 2.6.6.2.2**

Second sentence should read "After two consecutive chronic WET results ~~that~~ are below…"

DEC Agrees and Deletes "That" from text

DEC deleted that as suggested by Hilcorp.

No other change to the Permit or Fact Sheet has been made as a result of this comment.

2.6.62 Comment: Consistency on Treatment of Contaminated Groundwater

To align with the Fact Sheet, Hilcorp recommends modifying Permit Section 2.7.5 to red: "The permittee must contact the DEC Contaminated Sites Program to verify site contamination is consistent with hydrocarbons in the produced water stream treated at onshore facilities."

DEC Agrees That Permit Section 2.7.5 Should be Modified

DEC concurs with the suggested modification as the purpose is to ensure the shore-based coastal facility can adequate treat the groundwater contamination. Therefore, DEC is modifying the second sentence in Permit Section 2.7.5 and Fact Sheet Section 8.6.5 to read:

> "The permittee must contact the DEC Contaminated Sites Program to verify site contamination **~~is only petroleum hydrocarbons~~** **consistent with hydrocarbons in the produced water stream treated at the shore-based coastal facility**."

2.6.63 Comment: MDLs Appear to Be Switched with AMLs in Permit Tables 13 - 20

The limitations in these tables for the MDL and AML appear to be switched. The volume limitation should be specific to the MDL and not the AML.

DEC Disagrees That Flow Limits Should be MDL

The 2007 GP did not include flow limits for produced water discharges. In the Permit, average monthly flow limits are developed to be consistent with industry standards and support the Antidegradation Analysis. When calculating maximum daily loadings, industry standard is to apply the average flow limit to the maximum daily concentration limit. Similarly, average monthly loadings apply the average monthly flow to the average monthly concentration limit.

No changes to the Permit or Fact Sheet has been made as a result of this comment.

2.6.64 Comment: Produced Water Limitations Tables Incorrectly Reference pH

In Table 13, 14, and 15, the reference to 2.7.8 should be under Oil and Grease, not pH. In Table 17 it is recommended to delete the reference to 2.7.8 under pH.

DEC Agrees and has Corrected the Reference to Oil and Grease Section 2.7.8

As a result of this comment, DEC has correctly placed the reference for oil and grease monitoring to correspond to the oil and grease limitation in Tables 13, 14 and 15 and has deleted the incorrect cross reference for pH in Table 17. Similar corrections were made to Fact Sheet Tables 40, 41, and 42 as well as 44.

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.65 Comment: Produced Water Metal Limits List as Total in Permit Tables

Hilcorp requests that Copper, Silver, Zinc and Manganese in Permit Tables 13-20 be referenced as Total.

DEC Disagrees Because Total Recoverable is Cited in Permit Section 2.7.7

DEC does not concur because "Total Recoverable" has been specified in Permit Section 2.7.7.

No change to the Permit or Fact Sheet has been made as a result of this comment.

2.6.66 **Comment: Metals Must be Sampled Concurrently With Chronic WET**

Because the metals in Permit Tables 13 through 20 and Fact Sheet Tables 40 through 47 must be sampled concurrent with chronic WET monitoring per Permit Sections 2.7.9 and 2.7.10, Hilcorp recommends including a reference to Sections 2.7.9 and 2.7.10 for metals parameters and changing the sample type to grab or composite to be consistent with WET sampling.

DEC Agrees That Metals Should Have the Same Sample Type But No Cross Reference

DEC agrees that the sample types for metals in Permit Tables 13 through 20 and Fact Sheet 40 through 47 should specify grab or composite to be consistent with Permit Sections 2.7.9 and 2.7.10. DEC has modified the referenced metals to be sampled using either grab or composite. However, DEC does not agree that cross referencing to Permit Section 2.7.9 and 2.7.10 for each metal is necessary.

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.67 **Comment: MGS Onshore TAH Limits are Inconsistent**

Hilcorp points out a potential typographic error between Permit Table 14 where the MGS Onshore TAH MDL is 28 but in Fact Sheet Table 41 it is 27. This needs to be reconciled.

DEC Has Reconciled the MDL for TAH at MGS Onshore to be Consistent

Upon review of the Fact Sheet Appendix C, DEC confirms the correct MDL for TAH at MGS Onshore is 28. DEC has corrected the MDL in Fact Sheet Table 41 to ensure consistency with Permit Table 14.

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.68 **Comment: pH Frequencies are Inconsistent in Permit and Fact Sheet**

Hilcorp points out that Permit Table 16 shows pH frequency of monthly but weekly in the corresponding Fact Sheet Table 43 the pH is weekly. In addition, Permit Table 20 and Fact Sheet Table 47 have a blank for sample type for TAqH.

DEC Appreciates Noting Typographic Errors in Permit Tables

DEC has confirmed that the pH frequency for pH at Osprey should be ~~**monthly**~~ **weekly** and has corrected Permit Table 20. In addition, DEC has corrected the typographic error for TAqH in Fact Sheet Table 47 and Permit Table 20 by entering "**Grab**" for sample type.

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.69 **Comment: Clarification for Limiting Frequency Reduction During the Term**

Recommend modifying to: "Only one *step* reduction can be approved during the permit term" in Permit Section 2.7.9.

DEC Disagrees the Modification is Necessary

DEC does not agree to make the suggested changes because it does not affect implementation of the Permit.

No change to the Permit or Fact Sheet has been made as a result of this comment.

2.6.70 Comment: Recommend Clarifications and Detail to Permit Section 2.7.10

Hilcorp recommends modifying Permit Section 2.7.10 to read: "Per the frequency specified in Tables 13-20, the permittee is required to conduct…the permittee must research the anomalously high toxicity event and provide written notification to DEC within one week of obtaining results that exceed a chronic WET Notification Level and provide information…"

DEC Agrees Modifications Will Add Needed Clarity and Details to Permit Section 2.7.10

DEC agrees that the recommended modifications and details will result in more clarity. Therefore, DEC has modified Permit Section 2.7.10 and Fact Sheet Section 8.6.7.3 to read:

> "Per the frequency specified ~~**in each facility-specific limits and monitoring table**~~ **Tables 13 through 20 [Tables 40 through 47]**, the permittee is required to conduct chronic WET monitoring… the permittee must research the anomalously high toxicity event and provide written notification to DEC within one week **of obtaining results** and provide information

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.71 Comment: Chronic WET Monitoring in Permit Table 22 May be a Mistake

Table 22 includes chronic WET monitoring for these discharges, but there is no section discussing WET monitoring requirements for these discharges within any other section of the Permit or Fact Sheet. Given that the existing administratively extended General Permit does not require WET monitoring for these discharges, their intermittent nature, and the planning and coordination that must take place to complete a WET sampling event, we believe it was not DECs intent to require chronic WET monitoring for these discharges. Recommend deleting the Chronic WET monitoring requirements from Table 22.

DEC Agrees Chronic WET is a Mistake; Should be Chemical Inventory

DEC concurs with Hilcorp that the Chronic WET monitoring is a typographical error carried forward from the produced water limit tables. Instead, the intention was for this to be Chemical Inventory with cross-reference to Permit Section 2.8.8 that directs the permittee to include an inventory in the EOW Report. Therefore, DEC is modifying Permit Table 22 and Fact Sheet Table 49 to require a ~~**Chronic WET**~~ **Chemical Inventory** with cross-reference to chronic WET deleted but reference to Permit Section 2.8.8 and Fact Sheet Section 8.7.8 retained.

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.72 Comment: Permit Section 2.8.7 May Be a Mistake Too

Hilcorp comments that there is reference to an EOW report within Permit Section 2.8.2; however, subsequent sections in the permit and fact sheet do not require an EOW report to be

completed for these fluids. It is believed this section should reference the DMR and that the total flow volume for each fluid type must be reported in the comments section of the DMR.

DEC Disagrees Per Finding in Comment Response 2.6.1

The intent of Permit Section 2.8.8 and Fact Sheet 8.7.8 is for there to be transparency in the chemicals used during well testing, workover, etc. See Comment Response 2.6.1.

2.6.73 Comment: Unnecessary and Confusing Language in Permit Section 2.8.3

Hilcorp recommends removing the last two sentences in Permit Section 2.8.3 as they appear to duplicate Table 22.

DEC Agrees These Two Sentences Should be Deleted

DEC agrees these two sentences should be deleted because text for the limits are inconsistent with MDL and AML in Table 22. The following two sentences have been deleted from Permit Section 2.8.3 and Fact Sheet 8.7.3:

> "Unless commingled with produced water, all completion, workover, treatment, and test fluids must be processed through an OWS, or other oil removal process, prior to discharge and samples must be collected after the final treatment step. ~~**Well completion, workover, treatment, and test fluid discharges must have no more than 42 mg/l of oil and grease in a given day and no more than 29 mg/l for any 30 day average. These values are to be reported per discharge type on the appropriate DMRs**~~."

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.74 Comment: Permit Section is Repetitive and Should be Deleted

Hilcorp recommends removing Permit Section 2.8.6 entirely because it seems to be repetitive with the permit limits and the requirements under Section 2.1.

DEC Disagrees Deleting the Entire Section is Necessary

Although Hilcorp has a point, the information is not a contradiction and removing the section may cause unintended conflicts due to reformatting the Permit.

No changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.75 Comment: Chemical Inventory Reporting for Well Workovers Unclear

Hilcorp states that Permit Section 2.8.8 discusses supplying a chemical inventory with the EOW report. It is assumed this is a separate report submitted by January 31 the following year along with the EOW report as there is no discussion of the chemical inventory for these fluids being required as part of the EOW report in Section 5.3. It is recommended to clarify that this is a separate report submitted simultaneously with the EOW report by January 31 of the following year and call it out as a separate submittal within Table 1.

DEC Concurs the Reporting Requirement Needs Clarification

DEC acknowledges that the Chemical Inventory for Well Completion, Workover, Treatment, and Test Fluids may, or may not, include drilling activities that would result in a simultaneous EOW Report. Therefore, DEC is modifying Permit Section 2.8.8 and Fact Sheet Section 8.7.8 to read:

> "For each fluid type discharged, the permittee must maintain an inclusive chemical inventory including the type and volume of all constituents added, including all completion, workover, treatment, and test fluid additives used and submit with the EOW Report**, if applicable, or separately if appropriate**."
>
> No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.76 Comment: Monitoring Frequency of Hydrostatic Test Water

Hilcorp recommends modifying the TAH and TAqH monitoring frequency in Permit Table 23 to "Event/Per Discharge" to align with Sections 2.9.3, 2.9.4 and other APDES permits available.

DEC Concurs with Hilcorp Recommendation for Hydrostatic Test Water Frequency

DEC concurs with the comment. As a result of this comment DEC has modified Permit Table 23 and Fact Sheet Table 50 to show TAH and TAqH monitoring frequencies as: "Per **Event/** Discharge."

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.77 Comment: Sampling Locations Can Be Inaccessible

Hilcorp claims it is not always practicable to collect a representative sample for turbidity during a potable flush of some facility tanks and pipelines. Some of the tanks or lines may be below the platform where there is limited access to collect a representative sample of the discharge. As such, Hilcorp recommends these requirements be removed. There are other APDES permits available that allow the discharge of potable water without preliminary monitoring (i.e., authorized non-storm water discharge).

DEC Does Not Agree Removing the Monitoring is Appropriate

DEC is sympathetic to the conditions presented by Hilcorp but there are likely many instances where sampling accessibility is practicable. Therefore, DEC is modifying Permit Section 2.95 and Fact Sheet Section 8.8.5 to allow for using a No Discharge (NODI) Code in those cases as shown below:

> "…the permittee must also monitor for turbidity in addition to sheen and pH and report results on the DMR along with a comment "potable water flush." **In situations where a sample cannot be collected due to access issues, the permittee may instead use NODI Code F – Insufficient Flow for Sampling.**

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.78 Comment: Qualifying Language on Invertebrate Substitutions

Hilcorp recommends adding the following final sentence to Permit Section 2.10.1 for clarity. "The permittee shall not make any changes to the selection of test species or dilution series without prior written approval except as provided in Section 2.10.1.1 and 2.10.1.2."

DEC Concurs the Qualifying Language is Appropriate

DEC adopts the proposed qualifying language to Permit Section 2.10.1 and Fact Sheet Section 8.9.1:

"The permittee shall not make any changes to the selection of test species or dilution series without prior written DEC approval **except as provided in Sections 2.10.1.1 and 2.10.1.2**."

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.79 Comment: Alternate Fish Species Should be Called Out in Chronic WET

Hilcorp recommends modifying the first sentence in Permit Section 2.10.3.1 to: "For the Americamysis bahia (shrimp) and Menidia beryllina (alternate fish) species, the presence…"

DEC Disagrees with Recommended Qualification

DEC does not agree, the scientific names of the various test species were provided in prior sections.

No change to the Permit or Fact Sheet has been made as a result of this comment.

2.6.80 Comment: Retesting and Representative Samples for Chronic WET

Hilcorp assumes that DEC will want resample conditions per Permit Section 2.10.3.6(b) to be similar to that of the original sample. Should there be an instance when similar chemical dosing conditions are not available within the timeframe of the following month, it is recommended to modify this section to: "…then the permittee shall re-sample and re-test within the month following the original sample event, or when original sample conditions can be reasonably replicated to meet the requirements of Section 2.6.6.3."

DEC Does Not Agree Delaying is Necessary for Retesting Due to Test Criteria

The sampling plan developed as part of the Quality Assurance Project Plan for chronic WET sampling for miscellaneous discharges is intended to help provide consistent results. Hence, if the QAPP and sampling plan are appropriate, DEC concerns are greatly lessened. However, DEC does understand that representative samples is paramount for successful PR BMP Revision practices and will work with permittees with this objective. Hence, DEC may approve a delay in resampling given situations where it is warranted.

No change to the Permit or Fact Sheet has been made as a result of this comment.

2.6.81 Chronic WET Reporting Appears to be Only for Miscellaneous Discharges

Hilcorp believes DEC intended Permit Section 2.10.4.3(c) to apply only to Miscellaneous Discharges only, as this information would be extremely difficult to generate for produced fluids. For clarity, it is recommended to modify this section to: "For Miscellaneous Discharges (005, 009, and 014), a list of corrosion inhibitors, biocides, algaecides, clarifying agents, or other additives used by the facility that could be in the effluent during the 30-day period preceding sampling."

DEC Concurs the Requested Information is Pertinent to Miscellaneous Discharges

DEC concurs that produced water is not the emphasis for Permit Section 2.10.4.3(c). Therefore DEC is modifying Permit Section Permit Section 2.10.4.3(c) and Fact Sheet Section 8.9.3.7.3(c) to read:

> "A list of corrosion inhibitors, biocides, algaecides, clarifying agents, or other additives being used by the facility **for miscellaneous discharges (005, 009, and 014)** that could potentially be in the effluent during the 30 day period preceding sampling."

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.82 **Comment: Use of Sample Bottles Approved by Laboratory**

Hilcorp recommends modifying Permit Section 2.11.1.1 to read: "…shall use bottles and sampling procedures provided or approved by a laboratory when taking samples…"

DEC Agrees Approval from Laboratory is Equivalent to Providing Bottles

DEC agrees that the purpose of the requirement is to ensure the sample bottles used are appropriate for the parameter being sampled. As such, approval by a qualified laboratory for bottle selection and preservative (if applicable) meets this intent. Therefore, DEC is modifying Permit Section 2.11.1.1 to read:

> "The permittee shall use current calibrated equipment when taking field measurements and shall use bottles and sampling procedures provided**, or approved,** by a laboratory when taking samples for laboratory analysis."

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.83 **Comment: Additional Monitoring Provisions are Confusing and Unnecessary**

Hilcorp recommends removing Permit Section 2.11.1.2 entirely as it creates confusion.

DEC Disagrees as Confusion Can Be Overcome

DEC disagrees this section should be removed. Additional monitoring provisions are fairly standard in APDES Permits and highly recommended to ensure data collected is appropriate and defensible. DEC can assist with understanding this requirement as part of a post-issuance conference with permittees.

No changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.84 **Comment: Additional Monitoring Provisions are Confusing and Unnecessary**

Hilcorp recommends removing Permit Section 2.11.1.3 as it is redundant with other permit sections.

DEC Disagrees as the Provision Ensures DEC Authority to Request Information

DEC does not agree. DEC has removed requirements from the Permit for conducting TRI/TIE evaluations and accelerated testing for when an exceedance of chronic WET triggers in produced water occurs. However, this removal does not diminish DEC's authority to require such evaluations upon request. Permit Section 2.11.1.3 ensures there is no contest to DEC authority should it be necessary to invoke toxicity evaluations.

No changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.85 **Comment: Hard Copy DMR Submittals Should be Clarified**

Hilcorp recommends modifying Permit Section 2.11.3.3 to read: "The DMR must be submitted by the 28th day of the following calendar month as postmarked or time stamped. If hard copies are submitted, they should be addressed as indicated in Appendix A Part 1.1.2."

DEC Disagrees Clarification is Necessary

DEC does not agree. As written, there is no conflict or confusion to address.

No change to the Permit or Fact Sheet have been made as a result of this comment.

2.6.86 **Comment: Waterflood Should Not Include TRC as a Mixing Zone Parameter**

Hilcorp recommends modifying Permit Section 3.3.1.10 to read: "Discharge 014: Waterflooding Wastewater for Chronic WET."

DEC Disagrees Because Some Waterflood Discharges Periodically Have TRC

DEC disagrees that TRC was incorrectly included as a mixing zone parameter based on DEC's understanding of chemical injection practices for Discharge 014. DEC believes that certain facilities inject chlorine to prevent biofouling of marine water filtration systems. Although it is also captured by monitoring chronic WET, the fact that WQS include criteria for TRC it is appropriate for DEC to generally include TRC in the mixing zone for those specific situations.

In addition, during DEC's review in response to this comment, a typographical error was noted in Section 3.3.1. The following modification has been made to Section 3.3.1:

> "For authorizations of chronic mixing zones under this section for Miscellaneous Discharges 00~~4~~**5** through 014,…"

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.87 **Comment: Applications Submittals 180 Days Prior Per 18 AAC 83.110**

Hilcorp recommends modifying the requirement to submit an individual permit application 1 year prior to proposed discharge to 180 days to align with 18 AAC 83.110 in Permit Section 3.4.9.

DEC Disagrees Based on Past Comment Response 2.6.1

DEC does not agree. Please refer to Response to Comments Section 2.6.1.

No changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.88 **Comment: Certification for QAPP Should Be Based on Authorization Date**

To align with Table 1, Hilcorp recommends modifying the last sentence in Permit Section 5.1 to read: "The permittee must submit a letter to the Department stating that the plan has been implemented within 90 days of the effective date of the Permit or authorization."

DEC Disagrees But Acknowledges Deadline May Be Problematic

DEC does not agree the QAPP Certification should be based on authorization. However, given the emphasis on QAPPs for Miscellaneous Discharges DEC would rather extend the deadline than to have ineffective QAPPs. Therefore, DEC is modifying the requirement to submit QAPP

Certifications ~~**90 days**~~ **120 days** after the effective date of the permit or authorization for new facilities or discharges. Accordingly, Permit Section 5.1, Fact Sheet Section 11.2, and Schedule of Submissions has been modified to submit the certification 120 days after the effective date of the permit for existing facilities or 120 days after the authorization date for new facilities.

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.89 **Comment: Sentence Should Be Deleted As it Has No Implication**

Hilcorp recommends removal of the last sentence of Permit Section 5.1.3. The only submittal requirement indicated in the permit associated with the QAPP is a certification that the plan has been developed and implemented.

DEC Disagrees As There Are Conditions Where QAPPs Must Be Revised

DEC disagrees because of the emphasis on development of QAPPs to support the PR BMP Revision process. Given the possibility that this process will be iterative, Hilcorp may need to revise the QAPP as an outgrowth of Permit Section 2.6.5. It is also important for QAPPs to be updated because they have to be submitted in order to receive a frequency reduction per Permit Section 2.6.5.

No changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.90 **Comment: Certification for BMP Plan Should Be Based on Authorization Date**

To align with the submittal requirements identified in Table 1, Hilcorp recommends to modifying Permit Section 5.2.2 to read: "For new facilities, the permittee shall submit certification that the plan has been developed and implemented within 90 days of authorization under this permit. For existing facilities, permittee must revise existing BMP plans for compliance with this Part, and submit written certification that the BMP Plan has been revised and implemented within 90 days of the effective date of the Permit."

DEC Disagrees But Acknowledges Deadline May Be Problematic

This response is similar to that provided in Comment 2.6.88 for QAPPs. Therefore, DEC is modifying the requirement to submit BMP Plan Certifications ~~**90 days**~~ **120 days** after the effective date of the permit or authorization for new facilities or discharges. Accordingly, Permit Section 5.2.2 and Fact Sheet Section 11.3 has been modified to read:

> "Within ~~**90**~~ **120** days of the effective date of the Permit, the permittee must be revise and implement the BMP Plan. Upon revising the BMP Plan, the permittee must submit written certification that the BMP Plan has been revised and implemented within ~~**90**~~ **120** days of the effective date of the Permit **or of the date authorization for new facilities**."

The Schedule of Submissions has also been updated to reflect this permit modification.

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.91 **Comment: BMP Review Inappropriately Includes MODU Operator**

To align with Fact Sheet Section 11.3, Hilcorp recommends to modifying Permit Section 5.2.6.1 to read: "Annual review by the BMP Committee."

DEC Agrees That MODU Operator Is a Typographic Error

DEC concurs that MODU operator was erroneously included in this Section. As a result of this comment, Permit Section 5.2.6.1 have been modified to: "Annual review by the ~~**MODU operator and**~~ BMP Committee.

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.92 **Comment: Grammatical Error for Hydrostatic Test Water**

Hilcorp recommends modifying Permit Section 5.2.9.5 to read: "For infrastructure that is known to have been in contact with hydrocarbons, the permittee must implement BMPs…"

DEC Agrees and Replaces Grammatical Errors

DEC concurs there are grammatical errors and is correcting the Permit Section 5.2.9.5 and Fact Sheet Section 11.3.1.5.

"For infrastructure that has ~~**known to**~~ **previously** been in contact with petroleum…"

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.93 **Comment: Missing Cross Reference Section**

Hilcorp points out that there is currently no indication of the appropriate Section at the end of the paragraph of Permit Section 5.2.9.5. Hilcorp recommends editing to read: "However, this specific BMP requirement does not apply if hydrostatic test water is commingled with produced water per Section 2.9."

DEC Disagrees Modification is Necessary

DEC concurs and has modified Permit Section 5.2.9.5 to include reference to Section **2.9** and in Fact Sheet Section 11.3.1.5 the reference is added for Section **8.8**.

No other changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.94 **Comment: Sections for Reporting EOW and EOP Should be Separated**

Hilcorp recommends dividing Permit Section 5.3 into two: one applicable to EOW report, and the other to the end of HDD or geotechnical project (EOP). Section 5.3.6 seems only to apply to the EOW while Sections 5.3.9-5.3.11 all seem to only apply to the EOP.

DEC Disagrees Splitting Sections is Necessary

Similar to previous comment responses, modifying these sections does not appear to be necessary as the edits would not affect implementation. Therefore, DEC is not modifying these Sections as requested.

No changes to the Permit or Fact Sheet have been made as a result of this comment.

2.6.95 **Comment: Chemical Inventory Based On Actual Discharges**

To align with Section 2.4.4.1, Hilcorp recommends Section 5.3.3 be modified to read: "For drilling fluid systems discharged, an inclusive chemical inventory of all constituents added downhole, including all drilling fluid additives used to meet specific drilling requirements;"

DEC Disagrees That the Modification Is Necessary

DEC disagrees. The requirement for reporting a chemical inventory is predicated on there being a discharge. Otherwise, there would be no authorization needed under the Permit.

No change to the Permit or Fact Sheet have been made as a result of this comment.

2.6.96 Comment: Estimating Versus Measuring Lost Fluids

Hilcorp recommends clarifying Section 5.3.6 that the lost fluid to the formation or downhole is to be estimated.

DEC Disagrees the Modification Is Necessary

DEC understands there are no exact measurements available that can be reported and the lost fluid must be estimated based on the return volumes. A modification is not necessary.

No change to the Permit or Fact Sheet have been made as a result of this comment.

2.6.97 Comment: Annual Reports for Drilling Fluids Not Required

To align with the submittal requirements outlined in Table 1, it is recommended to remove the last sentence in this section that requires the permittee to supply a statement in lieu of a report. Table 1 indicates that the EOW and EOP are only required to be submitted by January 31 each year following well/project completion, and monthly DMRs indicate when drilling discharges have or have not occurred. An additional statement seems redundant and unnecessary, as it is not required for other discharge categories.

DEC Disagrees Because Authorizations Tend to Be Long-term and Requires Reporting

There are no "on/off" toggles for submitting annual reports for a discharge authorization. Even if there are no discharges (i.e., no wells drilled) in a given year, the fact that the permittee holds an authorization to discharge obligates the permittee to report. Alternatively, the permittee could terminate the authorization in order to avoid the reporting requirement.

No change to the Permit or Fact Sheet have been made as a result of this comment.

2.6.98 Comment: Permit Appendix B Missing Acronyms

Hilcorp indicates Appendix B should include MG, CEP, eDMR, MSD, WDAP.

DEC Agrees and Adds the Acronyms to Appendix B

DEC concurs and has added the referenced acronyms to Permit Appendix B.

2.6.99 Comment: Recommendations to Permit Appendix C – Definitions

Hilcorp recommends modifying the following definitions in Appendix C:

- Bilge Water: Water that collects in the lower internal parts of a drill rig or vessel hull authorized under this Permit.
- Boiler Blowdown: Discharge of water, minerals, and chemical additives, such as oxygen scavengers and de-scalers, from boiler drums.

- Non-Contact Cooling Water; Water used to reduce temperature and does not come into direct contact with any raw material, intermediate product, water product (other than heat), or finished product."
- Excess Cement Slurry: The excess cement and wastes from equipment wash down after a cementing operation. It may also contain trace amounts of cement spacer that separate the cement from drilling fluids or other additives, such as those that enhance setting.
- Fire Control Test water: Water released during the training of personnel in fire protection and the testing and maintenance of fire protection equipment. It also includes fire water discharges released in response to an alarm or event and chemicals added to firewater systems, such as corrosion inhibitors.
- Fixed Platform: For this Permit, mobile offshore drilling units (MODUs) that are periodically used at or near a fixed platform are considered part of the fixed platform."
- Geotechnical Facility: For the purposes of this permit means any facility conducting geotechnical surveying in open water.
- Horizontal Directional Drilling: Drilling for the purpose of installing an underground oil and gas pipeline or conduit using a rotary drill bit that can affect the direction of the drilling path near horizontal. Horizontal Directional Drilling (HDD) activities for this Permit may also include discharges from a facility conducting associated activities, such as pulling pipe or conduit through the HDD borehole.
- Hydrostatic Test Water: Means water used to pressure test the integrity of pipelines, tanks, or equipment. It can also include the flushing of tanks, utility lines, pipelines, or other equipment or fluids associated with pipeline cleaning, maintenance, and pigging operations. For the purposes of this permit, is also includes incidental discharge of potable water or water purposefully flushed from potable water systems.
- Mobile Offshore Drilling Unit: Mobile Offshore Drilling Units (MODUS) are semisubmersibles, drilling vessels, jack-up rigs, submersibles, ultra-deep water units, etc. that are used in drilling operations. For this permit, MODUs used at or near a fixed facility to perform oil and gas operations are considered part of the fixed facility once the MODU is secured to the seafloor. When operations are complete and the securing mechanism (i.e., legs or anchor) is raised, the MODU is no longer considered part of the fixed facility.
- Mineral Oil Pill: The current definition of mineral oil pills only discusses one of the two parts mentioned.
- Production Facility: For this Permit means any mobile or fixed structure, or other structures such as subsea completion components of onshore facilities, involved in the active recovery of hydrocarbons from production formations. These operations may occur simultaneously with or following development operations, and include well plugging and abandonment activities.

- Test Fluid: Discharge that would occur should hydrocarbons be located during drilling and tested for formation pressure and content. This would consist of fluids sent downhole during testing along with water from the formation."
- Twice per year: Modify to Jan-June and July-Dec to align with a calendar year.
- Water-based Drilling Fluid: "Drilling fluid" that has water as the continuous phase and the suspending medium for solids, whether or not oil from the formation or mineral oil pill is present.

DEC Appreciates Input on Definitions

DEC carefully considers definitions but at times industry considers alternative definitions. For the most part, DEC relies on definitions in regulation with modifications needed to align with permit objectives. The following provides DEC's acceptance, or rejection with commentary on the recommended definitions.

- Bilge Water:
  - DEC: No Change Necessary.
- Boiler Blowdown: **Discharge of water, minerals, and chemical additives, such as oxygen scavengers and de-scalers, from boiler drums.**
  - DEC: Change Accepted
- Excess Cement Slurry:
  - DEC: No Change Necessary.
- Fire Control Test water:
  - DEC: No Changes Necessary
- Fixed Platform: "**For this Permit, mobile offshore drilling units (MODUs) that are periodically used at or near a fixed platform are considered part of the fixed platform**."
  - DEC: Change accepted. Sentence added to the base definition.
- Geotechnical Facility:
  - DEC: No Change Necessary.
- Horizontal Directional Drilling: **Drilling for the purpose of installing an underground oil and gas pipeline or conduit using a rotary drill bit that can affect the direction of the drilling path near horizontal. Horizontal Directional Drilling (HDD) activities for this Permit may also include discharges from a facility conducting associated activities, such as pulling pipe or conduit through the HDD borehole**.
  - DEC: Change Accepted.
- Hydrostatic Test Water: **Means water used to pressure test the integrity of pipelines, tanks, or equipment. It can also include the flushing of tanks, utility lines, pipelines, or other equipment or fluids associated with pipeline cleaning, maintenance, and**

pigging operations. For the purposes of this permit, is also includes incidental discharge of potable water or water purposefully flushed from potable water systems.

- DEC: Change Accepted.

- Mobile Offshore Drilling Unit: **Mobile Offshore Drilling Units (MODUS) are semisubmersibles, drilling vessels, jack-up rigs, submersibles, ultra-deep water units, etc. that are used in drilling operations. For this permit, MODUs used at or near a fixed facility to perform oil and gas operations are considered part of the fixed facility once the MODU is secured to the seafloor. When operations are complete and the securing mechanism (i.e., legs or anchor) is raised, the MODU is no longer considered part of the fixed facility**.
  - DEC: Change Accepted
- Mineral Oil Pill: The current definition of mineral oil pills only discusses one of the two parts mentioned.
  - DEC: No Change Necessary. Definition verbatim from 2007 GP.
- Non-Contact Cooling Water; **Water used to reduce temperature and does not come into direct contact with any raw material, intermediate product, water product (other than heat), or finished product**.
  - DEC: New Definition Accepted. Nothing in ELGs or 2007 GP.
- Production Facility: For this Permit means any mobile or fixed structure, or other structures such as subsea completion components of onshore facilities, involved in the active recovery of hydrocarbons from production formations. These operations may occur simultaneously with or following development operations, and include well plugging and abandonment activities.
  - DEC: No Change Appropriate. Definition established based on past comments from industry.
- Test Fluid: Discharge that would occur should hydrocarbons be located during drilling and tested for formation pressure and content. This would consist of fluids sent downhole during testing along with water from the formation.
  - DEC: No Change Necessary.
- Twice per year: Modify to Jan-June and July-Dec to align with a calendar year.
  - DEC: Change Accepted.
- Water-based Drilling Fluid: "Drilling fluid" that has water as the continuous phase and the suspending medium for solids, whether or not oil from the formation or mineral oil pill is present.
  - DEC: No Change Necessary.

2.6.100**Comment: Updates to Permit Attachments**

Hilcorp has provided several comments applicable to the Draft NOI that were provided as examples. Instead of listing 7A or 7B etc., some references appear to be incorrectly referencing 6A or 6B, etc.

DEC Revises the NOIs and Will Again Before the Effective Date of the Permit

The NOIs in the Draft Permit were provided as examples of upcoming final NOIs developed after the Final Permit is issued; while NOIs may reflect final permit decisions they are not intended to the mechanism for those decisions. Hence, comments on NOIs do not typically result in changes to permit requirements during the public notice process. Although NOIs are not required to be part of the general permit during public comment, DEC has modified the NOI per Hilcorp comments. DEC anticipates additional modifications will be provided prior to the effective date of the Final Permit and will upload these final NOI versions to the DEC WDAP Website at that time.

No changes to the Permit or Fact Sheet have resulted from this comment.

2.6.101 Comments Continued: Related to General Comments 1.d

Hilcorp previously provide recommendations to change facility callouts and descriptions in Permit Section 3. Assuming the recommendation in General Comment 1.d were accepted, Hilcorp recommends additional correction at other locations of the Permit that would result from their overall acceptance.

DEC Did Not Accept Previous Comment

These recommended changes were not accepted per Comment Response 2.6.1. In addition, these sections were modified for other reasons or comments such that further modification is not appropriate. Therefore, DEC is not changing the Permit to reflect this continuation of previous comments.

2.6.102 Comment: Hilcorp Recommends Updating Related Facts

Fact Sheet Section 2.1 should be updated to include more recent events, such as Marathon's acquisition of Andeavor and the Cook Inlet LNG facility. Furthermore, the Cross Inlet Pipeline Project has been completed, and the second half of the paragraph should be updated to address this as suggested below:

"Connecting these upstream oil and gas facilities is a network of subsea and land-based pipeline networks operated by Harvest Alaska, LLC. In 2018, Harvest completed the Cross Inlet Pipeline Project, eliminating the need to transport crude generated on the west side of Cook Inlet from the Drift River Terminal via tanker to the refinery. The subsequent decommissioning of the Drift River Terminal, located at the base of the active volcano Mt. Redoubt, and eliminating tankers in Cook Inlet is seen as a large reduction in environmental risk for the Cook Inlet oil and gas industry.

DEC Disagrees Updating Fact Sheet 2.1 is Necessary

While Hilcorp is correct that there have been changes in facility ownerships and completion of important projects that are related to the Permit, this information was provided as an overview and updating these sections will not affect permit implementation. Therefore, DEC does not agree these changes are necessary.

No changes to the Permit or Fact Sheet have resulted from this comment.

2.6.103 Comment: Mixing Zone Authorizations Need Update

The final paragraph of Fact Sheet Section 6.2.3.5 discusses facility specific mixing zones and indicates that two facilities are authorized a 300-m mixing zone. It is recommended to update this discussion to indicate that three facilities have been authorized the 300-m mixing zone as identified in Fact Sheet Table 26 and Permit Table 24.

DEC Agrees Fact Sheet Updates Necessary

DEC concurs there was a mismatch of 300 meter radii mixing zones between the tables and the text. Therefore, DEC has modified the last sentence in Fact Sheet Section 6.2.3.5 to read:

> "~~**Two**~~ **Three** have been authorized to have a 300 meter radii mixing zone due to unique facility considerations."

2.6.104 Comment: Ensure Consistency Between Permit and Fact Sheet

Hilcorp recommends that DEC ensure Fact Sheet Section 8.0 aligns with the final permit requirements and stipulations as some inconsistencies were identified between the Draft Permit and Fact Sheet per previous comments.

DEC Concurs But No Specific Changes Identified

DEC agrees that the Fact Sheet must be updated to reflect inconsistencies with the Permit. DEC believes that those inconsistencies have been addressed through cross referencing comments provided for the Permit to those affected sections of the Fact Sheet.

No further changes to the Fact Sheet have been made as a result of this comment.

2.6.105 Comment: Updates to Social/Economic Information

Hilcorp recommends that DEC consider updating the socio-economic portions in Fact Sheet Section 10 with the new information included in the Draft AK0055883 (Tyonek Supplemental) Fact Sheet.

DEC Disagrees Because a Tier II Antidegradation Analysis is No Longer Applicable

Per Comment Responses 2.2.2.18 and 2.5.2.9, DEC is no longer required to conduct a Tier II Antidegradation Analysis as a result of there being no new or expanded discharges.

No further changes to the Fact Sheet have been made as a result of this comment.

2.7 Comments Received By Concerned Citizens

DEC received form emails prior to the public notice deadline from the following 84 members of the public that raised mostly the same concerns as those raised by Inletkeeper:

Anderson, David	Forrester, Larrica	Leenseater,	Seater-Buerger, Kristi
Baldwin, Laura	Frank, Diana	Lund, Rob	Seifert, Lisa
Banks, Dale	Frankel, Allen	Macnaughton, Rob	Service, Bruce
Berwick, Crystal-ann	Gill, Shelley	Massey, Justin	Smith, Dawnell
Blankenship, Elizabeth	Gordon, Phil	Mathias, Mary	Spence, Lynn
Blumer, Tonia	Gower, Thelma	May, Richard	Spindler, Ted
Buccione, Marlene	Graedeke, John	Menke, Kathleen	Stone, Shanah
Byl, Christine	Hagen, Collin	Mjos, Brita	Stover, Nicole
Carl, Janelle	Hayden, Scott	Mulcare, James	Sullivan, Shaun
Christiansen, Amy	Heineman, Gail	Mullineaux, Marja	Tenhoff, Jessica
Christiansen, Sue	Hill, Brandon	Neale, Max	Tiger, Allen
Cornelious, Don & Karen	Hill, Patti	Nelson, Marion	Tollefsrud, Jane
Coyle, Darlene	Horine, Stephanie	Noongwook, Edwin	Tomkins, Ed
Dawson, Katie	Hudon, Virginia	Parker, Barbara	Vernon, Robert
Delbecq, Claire	Huschle, Wren	Parker, Jeanne	Waring, Margo
Douglas, Hector	Irwin, Holly	Peck, Leonard	Weber, Alice
Dupree, Louis	Johnson, Timm	Pederson, Mary	Weber, Joe
Elwin, Michael	Koenig, Brenda	Ransy, Denis	West, Laura
Eskelin, Alison	Kroll, Henry	Raymon-Yakoubian,	Whitecar, Debbie
Ferrari, Angela	Kuehler, Thomas	Rognstad, Rodney	Whynott, Gregory
Fisher, Patricia	LaPointe, Kenneth	Seater, Karen	Zitmanis, Diana

DEC also received two late emails from Nichols and Oxford that DEC is not obligated to respond to but include them in this response for completeness. The following sections provide areas covered by the comments in quasi-form email and where they have already been responded to.

Zero Discharge for Produced Water and Drilling Fluids and Drill Cuttings: Responses to comments pertaining to these topics can be found at: 2.2.1, 2.2.2.19, 2.3.4, 2.4.1.4, 2.4.2.3, 2.5.2.2.1

Increased Pollutant Loads: Responses to comments pertaining to these topics can be found at: 2.4.1.1, 2.4.1.4, 2.4.2.5, 2.5.2.2.3, 2.5.2.5.1, 2.5.2.9.1.

Protection of Uses, Degradation, Critical Habitat, and Cumulative Affects: Responses to comments pertaining to these topics can be found at: 2.1.1, 2.2.2.6, 2.2.2.34, 2.5.2.5.6, 2.5.2.9.3, 2.5.2.10.1, 2.5.2.10.2, 2.5.2.3, 2.5.2.5.2, 2.5.2.9.4.1, 2.5.2.9.7.

Human Health and Consumption of Aquatic Resources: Responses to comments pertaining to these topics can be found at: 2.5.2.4.3, 2.5.2.11.1, 2.5.2.11.2, 2.5.2.11.3, 2.5.2.12.

Compliance and Enforcement: Responses to comments pertaining to these topics can be found at: 2.2.2.35, 2.3.1, 2.3.2, 2.5.2.14.

2.8 Comments Received During Public Hearings

The following three entities that provided testimony at the public hearings:

- Bob Shavelson of Inletkeeper at the Homer hearing;

- Roberta Highland of the Kachemak Bay Conservation Society (KBCS) at the Homer hearing; and
- Becky Long of the Susitna River Coalition at the Anchorage hearing via phone.

DEC has reviewed the transcripts from the hearings and compare the comments to those received in writing to ascertain if all comments received have been adequately responded to. Both Mr. Bob Shavelson and Ms. Becky Long submitted written comments in addition to their testimony. In each of these two cases, the written comments provided coverage of their testimony talking points (zero discharge for oil and gas facilities) with additional details. Hence, all comments from Ms. Long and Mr. Shavelson have been adequately addressed in this RTC document. Ms. Highland followed Mr. Shavelson at the Homer hearing and indicated that everything that he said before her represents her concerns as well. Note KBCS is also represented by comments submitted by Inletkeeper. Given that the comments during the hearings have been adequately covered in this RTC document based on written comments received, no additional responses from DEC appears necessary for these testimonies. DEC thanks all for their input into this decision.

3 Comments Received During Five-day Applicant Review

The following subsections provide comments received during the five-day applicant review with DEC responses and descriptions of changes made as an outgrowth of comments received, if applicable.

3.1 Comments Received by EPA

3.1.1 Comment: Clarifying Onshore Discharge Prohibitions

EPA commented that although DEC explains the ELG prohibitions for discharges from oshore facilities per 40 CFR 435, Subpart C – Onshore Subcategory in Comment Response 2.1.1, EPA suggests adding language to the Final Permit to reflect this acknowledgement. Specifically, EPA recommends adding a footnote to Permit Table 20 indicating that the Osprey Platform may not discharge onshore produced water that becomes commingled with produced water from coastal facilities.

DEC Concurs Onshore Prohibition Should be Noted in Permit

Because 40 CFR 435 prohibits discharges of produced water from onshore facilities, it is not necessary for the Permit to duplicate these requirements as regulations supercede permit requirements. Nonetheless, given multiple concerns raised during the pubic notice of the Draft Permit, DEC concurs that language clarifying that commingling of onshore produced water with coastal produced water is prohibited should be repeated in the Permit. However, DEC disagrees that this language should reference only the Osprey Platform as this requirement applies to all facilities. Therefore, DEC is modifying Permit Section 1.5.1 to read:

> "This Permit authorizes and places conditions on discharges from oil and gas exploration, development, and production facilities (including shore-based coastal facilities) that discharge to Cook Inlet (See Figure 1) under the Offshore and Coastal Subcategories of the Oil and Gas Extraction Point Source Category (40 CFR 435, Subparts A and D) as adopted by reference at 18 AAC 83.010(g)(3). **Note that per 40 CFR 435 Subpart C –**

Onshore Subcategory, there shall be no discharge of waste water pollutants into navigable waters from any source associated with production, field exploration, drilling, well completion, or well treatment from onshore facilities as defined by 40 CFR 435.30, including produced water from onshore facilities that becomes commingled with produced water from coastal facilities prior to discharge. In addition, this Permit authorizes discharges from non-oil and gas facilities discharging wastewater with similar characteristics to those from oil and gas facilities including drilling fluids and drill cuttings from geotechnical surveys and HDD projects that discharge to Cook Inlet."

3.2 Comments Received on Proposed Final Permit From Hilcorp

Hilcorp suggests modifications to provide clarification or do correct typographic errors as provided in the following subsections.

3.2.1 Typographical Errors

The following subsections outline the typographical errors that Hilcorp recommends correcting in the Final Permit and Fact Sheet.

3.2.1.1 Incorrect Reference Exempting Prohibition for Non-aqueous Fluids on Cuttings

Hilcorp points out that the reference in Permit Section 2.2.1.2 for exemptions to the zero discharge of non-aqueous drilling fluids which adhere to drill cuttings based on technical limitations may be granted should 40 CFR 435, Appendix 1 of Subpart D Coastal Subcategory rather than "Appendix A."

DEC Concurs and Corrects Reference to Exemption Procedures in Permit Section 2.2.1.2

DEC has corrected ~~Appendix A~~ to read **Appendix 1** in Permit Section 2.2.1.2.

3.2.1.2 Incorrect Reference for Oil and Grease Monitoring in Permit Table 5

Hilcorp calls out an apparent incorrect reference in Table 5 for oil and grease monitoring. The incorrect reference provided is to Permit Section 2.2.3.1 and should be 2.2.3.2 instead.

DEC Concurs and Corrects Reference to Oil and Grease Monitoring in Permit Table 5

DEC has corrected the misreference in Table 5 for oil and grease from Permit Section ~~2.2.3.1~~ to **2.2.3.2**.

3.2.1.3 Incorrect Reference in Permit Section 2.6.6.1 Should be Section 2.10.1

Hilcorp calls attention to Permit Section 2.6.6.1 that appears to incorrectly reference Permit Section 2.10.2 when it is likely to be 2.10.1.

DEC Concurs Modification for Clarity Needed in 2.6.6.1 for Test Species

DEC concurs that Permit Section 2.6.6.1 has an incorrect reference and requires clarification. Therefore, DEC has modified Permit Section 2.6.6.1 to read:

"For miscellaneous discharges that have chemical additives and discharge 0.010 mgd (10,000 gpd) or more per day, after the initial screening required per Permit Section

> 2.10.1.1 the permittee is required to conduct chronic WET monitoring on one invertebrate species **per Section 2.10.1.2** on **a** frequency established in Section ~~2.10.2~~ **2.6.6.2**."

Similarly, DEC has modified corresponding Fact Sheet Section 8.5.5.1 to read:

> "For miscellaneous discharges that have chemical additives and discharge 0.01 mgd (10,000 gpd) or more in a 24 hour period, after the initial screening required per Permit Section 8.9.1.2 the permittee is required to conduct chronic WET monitoring on one invertebrate species on the frequency established in Section ~~8.9.2~~ **8.5.5.2**."

3.2.1.4 Permit Table 22 Should Refer to Permit Section 2.8.1 for Discharge Frequency

Hilcorp indicates there is a broken link in Permit Table 22 for cross-reference to Permit Section 2.8.1.

DEC Concurs and Has Corrected Broken Reference Link

Reference to Permit Section has been updated to **2.8.1** instead of ~~0~~.

3.2.1.5 Permit Section 3.4.2 Needs Update for Mixing Zone Width to 483 Meters

While Fact Sheet Section 6.2.3.6.2 was updated to reflect an update to mxing zone dimensions for MGS Onshore, the corresponding Permit Section 3.4.2 still includes the previous width of 966 meters and should be changed to 483 similar to the Fact Sheet.

DEC Concurs and Corrects Typographic Error on MGS Onshore Mixing Zone Width

DEC has corrected the chronic mixing zone width from ~~966~~ meters to **483** meters in Permit Section 3.4.2.

3.2.1.6 Incorrect Dilution Factor in Permit Section 3.4.7 and Fact Sheet Table 53

Hilcorp indicates there is a typographic error in the acute dilution factor authorized in Permit Section 3.4.7, Fact Sheet Table 54, as well as comment response 2.6.6 for the Tyonek A Platform. Fact Sheet Section 6.2.3.6.7 and Table 27 correctly reference an acute dilution factor of 265 instead of the typographic error of 165.

DEC Concurs and Has Corrected Repetitive Typographic Error for Tyonek A Platform

DEC has carefully reviewed the mixing zone information for the Tyonek A and has concluded the acute dilution factor should be **265** instead of ~~165~~. These corrections have been made in Permit Section 3.4.7, Fact Sheet Table 54 (not Table 53), and Comment Response 2.6.6.

3.2.1.7 Response to Comment 2.6.6 Misreferences Permit and Fact Sheet Sections

In Comment Response 2.6.6, DEC appears to misreference the Fact Sheet Section for TBPF ad Permit Section for the Tyonek, which should be 6.2.3.6.1 and 3.4.7, respectively.

DEC Concurs and Corrects Misreference in Comment Response 2.6.6

DEC has modified Comment Response 2.6.6 to correctly reference Fact Sheet Section ~~6.2.6.6.1~~ **6.2.3.6.1** for TBPF and Permit Section ~~3.4.6~~ **3.4.7** for the Tyonek A Platform.

3.2.2 Hilcorp Suggested Fact Sheet and Permit Clarification

Hilcorp provides recommendation clarifications to the Final Permit and Fact Sheet in the following subsections.

3.2.2.1 Conditions for Commingled Discharges Permit Sections 2.1.10 and 2.7.3

While Permit Section 2.1.0 indicates the most stringent effluent limits among commingled discharges must be imposed, Permit Section 2.7.3 appears to be an exception to 2.1.10. Therefore, Hilcorp recommends adding "*Except as provided in Section 2.7.3*" to the beginning of Section 2.1.0.

DEC Concurs There is Confusion But Disagrees With Recommended Change

DEC has reviewed the basis for Permit Section 2.7.3, which Hilcorp suggests conflicts with 2.1.10. Section 2.7.3 was developed based on an understanding that produced water shares similar characteristics with other sources of wastewater (i.e., hydrostatic test water, contaminated groundwater, etc.) as well as acknowledgment that sources with similar characteristics commingled with produced and treated at onshore-coastal facilities is the environmentally preferred option because of the level of treatment attained by these facilities. Furthermore, DEC allows these commingling of sources based on evaluation of the requirements of Permit Section 2.1.10. Hence, the limitations enforced on produced water are the more stringent standards for the commingled sources identified in Permit Section 2.7.3 and the definitions of Appendix C. So Section 2.7.3 is not an exception to the rule, it follows the rule. To provide better clarity between these two sections, DEC is modifying Permit Section 2.7.3 by adding the following sentence to the end of the section:

> "…**This requirement satisfies Section 2.1.10.**"

3.2.2.2 Produced Water Definition Needs Clarity for Commingled Sources

While Hilcorp appreciates DEC's concurrence in Comment Response 2.6.5 for the definition of produced water, the definition is not clear as to what "sources of wastewater includes. Therefore, Hicorp recommends stating "produced water may also include commingling of other **waste streams** while deleting ~~facility sources of wastewater with similar characteristics~~ so that the listing of commingled sources provide the necessary clarity alone.

DEC Concurs and Makes the Recommended Changes

DEC concurs that the recommended modifications improve clarity and reduce ambiguity in the definition. Thererore, DEC makes the following edits to the definition of produced water in Permit Appendix C and Comment Response 2.6.5:

> "For this Permit, produced water may also include commingling of other ~~facility sources of wastewater with characteristics~~ **waste streams** including~~,~~ deck drainage, completion fluids, workover fluids, well treatment fluids, test fluids, hydrostatic test water, and incidental spills, or excavation dewatering in, or near to, sites contaminated with petroleum hydrocarbons."

3.2.2.3 Permit Section 2.4.7 Should Include MSDs and MSD/BTUs

Although consistent with the 2007 GP, Hilcorp points out that the instream credit provided in Permit Section 2.4.7 is not aligned so much with BTUs but more so for MSDs or MSDs with

BTU capabilities. Most BTUs do not allow for use of marine water for flushing urinals or toilets that this allowance is based on upon. Hilcorp recommends including MSDs and MSD/BTUs in addition to just BTUs.

DEC Concurs and Modifies Permit Section 2.4.7

DEC agrees that MSDs or MSDs with BTUs (MSD/BTUs) are more likely to use the intake credits for TSS and should be included. Therefore, DEC has modified the heading and text to include all three possible scenarious as follows:

> "2.4.7 TSS Limit for **MSDs,** BTUs**, and MSD/BTUs**
>
> Compliance with the TSS limit for **MSDs,** BTUs**, or MSD/BTUs** can be net value for those facilities that use filtered seawater for flushing and treat with BTUs. The TSS of the effluent may be reported…"

3.3 Comments on Proposed Final Permit and Fact Sheet By Cook Inlet Energy

No comments were submitted by CIE on the Draft Permit and Fact Sheet. However, CIE provided three comments on the Proposed Final Permit and Fact Sheet after the close of the five-day applicant review that focus on the reduction of produced water flow rates for the Osprey Platform since the public notice of the Draft Permit. Although not required to consider or respond to the late comments by CIE, DEC provides the responses to CIE comments in the following subsections for completeness.

3.3.1 Many Onshore Wells Have Bottom Holes Beneath Coastal Waters of Cook Inlet

CIE states that DEC may be using the term "Onshore" incorrectly given many of their producing wells from onshore are directionally drilled such that the bottom of the well is a producing formation directly below coastal waters of Cook Inlet. This has a major impact on how CIE will segregate onshore versus coastal produced water as they seek to begin discharging produced water from the Osprey Platform and, possibly, wells that produce oil from formations beneath Cook Inlet.

DEC Correctly Differentiates Onshore Facilities from Coastal Facilities

Per 40 CFR 435.30 provides a description of onshore facilities as part of the applicability statement as follows:

> "The provisions of this subpart are applicable to those facilities engaged in the production, field exploration, drilling, well completion and well treatment in the oil and gas extraction industry which are located landward of the inner boundary of the territorial seas as defined in 40 CFR 125.1(gg) and which are not included within subpart D, E, or F, Provided, however, that the applicability of this subpart to (a) facilities in existence on April 13, 1979 or thereafter engaged in the production, field exploration, drilling, well completion and well treatment in the oil and gas extraction industry which are located on land and which would have been considered "coastal" as defined under the interim final regulations for this industry (40 CFR 435.41, 41 FR 44942, October 13, 1976) or which are (b) located in the Santa Maria Basin of California is suspended.

Meanwhile, the ELGs define coastal per 40 CFR 435.40 as:

a) Any location in or on a water of the United States landward of the inner boundary of the territorial seas; or

(b)

(1) Any location landward from the inner boundary of the territorial seas and bounded on the inland side by the line defined by the inner boundary of the territorial seas eastward of the point defined by 89°45′ West Longitude and 29°46′ North Latitude and continuing as follows west of that point [See ELGs for Latitudes and Longitudes]:

(2) East to 97°19′ West Longitude and Southward to the U.S.-Mexican border.

The definition of coastal under (b) above orginates from a lawsuit between EPA and API in 1981 concerning locations in EPA Region 6. Hence, that part of the definition is not applicable to Alaska.

The definition of coastal provided in a) is simply a facility located in or on the water of the U.S. landward of the inner boundary of the territorial seas (See Fact Sheet Figure 1). Note that the clearest definition of what is onshore is based on what is not onshore. Per 40 CFR 435.30, onshore cannot be those facilities applicable to Subcategories D (Coastal), E (Agricultural and Wildlife Water Use), or F (Stripper). None of the onshore facilities operated by CIE are known to fall under either E or F subcategories. The onshore facilities are not under D (Coastal) either because they do not reside "in or on the water of the U.S. Hence, facilities located in or on the water are considered coastal as well as shore-based treatment facilities that discharge produced water that is piped from a coastal facilities. Because an onshore well is neither in or on the water of the U.S., it cannot be considered a coastal facility per 40 CFR 435 and Sections I though III of the *ELG Technical Development Document.*

3.3.2 Why is the Antidegradation Analysis Provided By CIE Eliminated

The Draft Fact Sheet issued for public review included a Tier II Antidegradation Analysis supported by CIE's application to discharge 25,000 bpd of produced water. The Proposed Final Fact Sheet does not include the Tier II Antidegradation Analysis. CIE seeks an understanding of why this content has been eliminated or no longer referenced.

DEC Reduced Produced Water from the Osprey So There is No Expanded Discharges

DEC reduced the proposed flow rate of produced water from Osprey Platform so that there would be no expansion of a limited concentrations or loadings in the Final Permit when comparing to the 2007 GP. If there is no expanded discharge since the 2007 GP, then no Tier II Antidegradation Analysis needs to be conducted. See also comment responses

3.3.3 Reduction in Proposed Discharge of Produced Water Does Not Support Business

Although the requested flow by CIE of 25,000 bpd of produced water discharge needed to be reduced due to restricting onshore produced water, the volume presented by DEC (1.835 bpd) is insufficient for CIE longterm operations. CIE needs a minimum of 7,000 bpd based on just the Osprey Platform, which is about four times more than DEC has authorized. DEC should reconsider this amount.

DEC Indicates Larger Volumes are Possible Through Other Permitting Actions

DEC understands CIE's position and it is possible to increase the volume through other permitting actions, including an individual permit or a future authorization under a general permit. Given the originally proposed produced water volume from the Osprey Platform resulted in an expanded discharge requiring a Tier II Antidegradation Analysis, DEC sought to simplify the Permit by reducing the Osprey volume at this time. DEC plans to conduct other permitting actions to support the Osprey Platform without compromising the current plan to reissue the Permit for the immediate benefit of vast majority of Cook Inlet operators.

ATTACHMENTS

Attachment 1: EPA Grammatical Comments

Attachment 2: DEC Produced Water Loading Expansion Analysis for AKG315200

EPA Grammatical Comments

Document	Page	Section	Paragraph	Sentence	Suggested Corrections	Accept/Reject	Comment
Fact Sheet	15	2.2.8	1st	4th	The existing permit for the Osprey Platform ~~was~~ became effective in October 2009 (2009 Osprey IP)…	A	——
Fact Sheet	22	3.4.4	3rd	last	The Permit does not authorize~~d~~ incidental discharges from a MODU while in port. MODU operators should contact the port authority.	A	——
Fact Sheet	23	3.5.1	2nd	5th	Therefore, the ~~authorized~~ authorization of HDD discharges for Discharge 001 under the Permit requires submittal of a mixing zone application, Form 2M, along with an NOI and Drilling Fluids Plan (DFP).	A	——
Fact Sheet	24	3.5.4.1	2nd	9th	During the issuance of the CWA 401 Certification of Reasonable Assurance for the 1999 GP, DEC granted a categorical waiver from secondary treatment ~~to~~ for facilities that treat domestic wastewater using a biological treatment unit (BTU) or a combination of marine sanitation device (MSD) and BTU (MSD/BTU) and is staffed with 10 people or less.	A	——
Fact Sheet	25	3.5.5	2nd	8th	The submittals of updated line diagrams will inform~~ation to~~ DEC on the system and any chemical additives, dosing practices, and sampling locations.	A	——

EPA Grammatical Comments

Document	Page	Section	Paragraph	Sentence	Suggested Corrections	Accept/Reject	Comment
Fact Sheet	26	3.5.6	1st	4th	Essentially, the established triggers were much higher than the actual observed toxicity in the recent test such that ~~is~~ it seemed unrealistic that triggers would ever be exceeded that would require evaluation of causal circumstances and retesting, or accelerated testing if repeated tests also exceed triggers.	A	——
Fact Sheet	26	3.5.6	2nd	1st	Instead, DEC ~~applies~~ applied statistical procedures to the available data to establish notification levels that are lower than previous triggers.	A	——
Fact Sheet	27	3.6.2.2.2	1st	1st	New fixed platforms, onshore production facilities, or existing facilities not included in Section 8.6.7 that are proposing to discharge produced water for the first time must submit an individual permit application (Form 1, Form 2C, and Form 2M) within 1 year prior to discharging.	A	——
Fact Sheet	28	3.6.10	1st	1st	The NOI or individual application requires the applicant to submit a line drawing ~~showing~~ depicting waste streams from new facilities including estimated flow rates and other information necessary to characterize the discharges, including sampling locations.	A	——
Fact Sheet	29	3.6.13	1st	1st	~~The~~ A permittee with an existing authorization under the Permit may revise their authorization by submitting updated an NOI with the new information.	A	——

EPA Grammatical Comments

Document	Page	Section	Paragraph	Sentence	Suggested Corrections	Accept/Reject	Comment
Fact Sheet	34	4.1.4	1st	1st	The tiered drilling fluid classification system is based, in part, on the Oslo and Paris (OSPAR) Commission's List of Substances Used and Discharged Offshore which are considered to Pose Little or No Risk to the Environment PLONOR (OSPAR 2013) ~~list~~ and generic drilling fluid toxicity results from EPA (1984).	A	——
Fact Sheet	39	4.4	2nd	1st	In most of the facilities in Cook Inlet, graywater is piped separately from domestic wastewater and there ~~is~~ are often several discharge points on a single platform or MODU.	A	——
Fact Sheet	40	4.4	Table 11	Notes	Enumeration font size reduction	A	——
Fact Sheet	42	4.5.5	3rd	2nd	Although the ~~estimates of~~ chronic toxicity estimated through desktop analysis of discharge rates and dosing practices indicated potential for spikes of high chronic toxicity associated with the use of chlorine, none of the seven chronic WET monitoring tests results from 2012 to present have comparable toxicity.	A	——
Fact Sheet	43	4.5.9	1st	1st	Drilling fluid, cuttings, and cement are materials discharged at the seafloor during various phases of drilling operations, ~~including~~ include spudding, re-entering an abandoned, shuttingin, or plugging a well, or during cementing operations before casing is set for plugging and abandoning, or shutting-in wells.	A	——

EPA Grammatical Comments

Document	Page	Section	Paragraph	Sentence	Suggested Corrections	Accept/Reject	Comment
Fact Sheet	44	4.6.1	1st	3rd	Formation water is seawater or fresh water that has been trapped for millions of years with oil and natural gas in a geologic reservoir consisting of a porous sedimentary rock formation between layers of impermeable rock within the earth's crust (Collins, 1975).	A	——
Fact Sheet	45	4.6.2	1st	3rd	An ~~incomprehensive~~ incomplete list is provided below:	A	——
Fact Sheet	46	4.6.2	1st	3rd	Many of the platforms under the 2007 GP have authorizations to discharge as ~~merely as~~ a contingency for situations when onshore treatment may not be possible and, except for Tyonek A and Julius R platforms, typically use skim tanks that are not as efficient ~~treatment~~ as systems at onshore facilities.	A	——
Fact Sheet	46	4.6.2	3rd	3rd	For existing onshore processing facilities, it is not technically possible to inject large volumes of produced water into underlying formations and piping to locations farther away was determined to be economically infeasible (EPA 1993).	A	——
Fact Sheet	48	4.6.4.1	1st	2nd	Based on the characterization data summarized above, all parameters except oil and grease (a TBEL), manganese and silver appear to have concentrations that warrant consideration for being included in the mixing zone evaluation.	A	——

EPA Grammatical Comments

Document	Page	Section	Paragraph	Sentence	Suggested Corrections	Accept/Reject	Comment
Fact Sheet	50	4.6.4.4	2nd	1st	Since the Baker Platform has not been discharging for the past ~~10~~ 14 years, representative data from the most recent discharge reports (April 1999 to June 2003) were used to complete the data set for evaluation.	A	——
Fact Sheet	51	4.6.4.4	1st	1st	Based on the characterization data summarized above, all water quality parameters appear to have concentrations that warrant consideration for being included in the mixing zone evaluation.	A	Similar grammatical edit also made to 4.6.4.2 and 4.6.4.3
Fact Sheet	53	4.6.4.6	1st	1st	Based on the characterization data summarized above, all parameters except oil and grease (a TBEL), manganese appear to have concentrations that warrant consideration for being included in the mixing zone evaluation.	A	——
Fact Sheet	53	4.6.4.7	1st	1st	The Tyonek A Platform is a gas production platform that has not discharged produced water since 2003 ~~since~~ when it began injecting fluids rather than discharging.	A	——
Fact Sheet	54	4.6.4.7	1st	1st	For Tyonek A, the characterization data summarized above indicates the parameters TAH, TAqH, ammonia, and copper have concentrations that warrant being considered for ~~included~~ inclusion in the mixing zone evaluation.	A	——

EPA Grammatical Comments

Document	Page	Section	Paragraph	Sentence	Suggested Corrections	Accept/Reject	Comment
Fact Sheet	55	4.6.4.7	1st	last	Because of the high concentration of copper in the effluent **and** the relatively low ~~**acute and chronic**~~ water quality criteria, copper is the obvious driving parameter for both the chronic and acute mixing zones, which will require development of a single WQBEL.	A	——
Fact Sheet	57	4.7	2nd	5th	The volume estimates in Table 25 are from applications and indicate~~**s**~~ the combined volume could be up to 204,000 bbl.	A	——
Fact Sheet	58	5.0	2nd	3rd	Hence, the other three DMRs that were not also submitted cause**d** ICIS to report non-compliance due to the missing DMR.	A	——
Fact Sheet	62	6.2.1	2nd	5th	In addition, with the new requirement for dechlorination of domestic wastewater (Discharge 003) and limiting the TRC to 1~~/~~ mg/L, DEC is able to apply standardized mixing zones for many of these discharges as well.	A	——
Fact Sheet	64	6.2.3.1	3rd	3rd	The representative drilling fluid is characterized as **a** mixture of 24 % drill cuttings with spud drilling fluid and 33 % cuttings with KCL fluid.	A	——
Fact Sheet	70	6.2.3.6	1st	3rd	During permit development, the applicant used newly available NOAA data that allowed for better analysis of slack tide~~**d**~~ conditions and applied modeling and practicable methods to determine better estimates of the width of the plume.	A	——

EPA Grammatical Comments

Document	Page	Section	Paragraph	Sentence	Suggested Corrections	Accept/Reject	Comment
Fact Sheet	71	6.2.3.6.1	1st	5th	Based on meeting water quality criteria for these driving parameters at ~~the boundary of~~ their respective mixing zone boundary, DEC authorizes rectangular acute and chronic mixing zones that extend from the sea surface to the seafloor centered asymmetrically and aligned according to the drogue tracks observed during the ICIEMAP data collection.	A	——
Fact Sheet	72	6.2.3.6.2	1st	4th	Based on ~~the~~ meeting water quality criteria for these driving parameters at the boundary of their respective mixing zone boundary, DEC authorizes a polygonal acute and chronic mixing zones that extend from the sea surface to the seafloor centered asymmetrically and aligned with the prevailing current directions determined using NOAA data.	A	——
Fact Sheet	74	6.2.3.6.5	1st	3rd	The dimensions of the chronic mixing zone shown in Figure 7 are 860 meters long (430 meters each current direction) by 370 meters wide.	A	——
Fact Sheet	75	6.2.3.6.6	1st	3rd	The dimensions of the chronic mixing zone shown in Figure 8 are 1,690 meters long (845 meters each current direction) by 856 meters wide.	A	——
Fact Sheet	76	6.2.3.6.7	1st	3rd	The dimensions of the chronic mixing zone shown in Figure 9 are 286 meters long (143 meters each current direction) by 114 meters wide.	A	——

EPA Grammatical Comments

Document	Page	Section	Paragraph	Sentence	Suggested Corrections	Accept/Reject	Comment
Fact Sheet	77	6.2.3.6.8	1st	3rd	The dimensions of the chronic mixing zone shown in Figure 10 are 1,060 meters long (530 meters each current direction) by 348 meters wide.	A	——
Fact Sheet	79	6.2.3.6.10	Table 27	GPTF	Replace space in the value of 2007 GP DF with a comma (i.e. ~~7~~ 7,756)	A	——
Fact Sheet	80	6.2.4	1st	3rd	The total linear length of the critical cross section is 53,113 meters (33 miles) and the cumulative linear length of the intersected mixing zones is 5,816 meters (3.6 miles), which results in a percentage of 10.9 %.	A	——
Fact Sheet	81	6.2.5.2	1st	6th	Graywater is domestic wastewater that requires at least primary treatment and waiver to secondary treatment (18 AAC 72.060) to be discharged under the Permit.	A	——
Fact Sheet	82	6.2.8	1st	5th	Cook Inlet~~,~~ is a very dynamic waterbody and constantly changing tidal velocities and directions cause a continuous reworking and scouring of fine-grained sediments in the vicinity of the discharges.	A	——
Fact Sheet	83	6.2.8	2nd	1st	Data on persistence in biota has been reviewed for species at several trophic levels including fish, sea otters, and beluga whale.	A	——
Fact Sheet	84	6.2.8	1st	2nd	Mercury was selected ~~at~~ as the surrogate because the criteria is the most stringent, 0.051 µg/L, among the human health POCs authorized in the mixing zones.	A	——
Fact Sheet	86	7.1	3rd	2nd	The Permit contains TBELs per 40 CFR 435, TBELs developed using ~~best~~ BPJ, and WQBELs.	A	——

EPA Grammatical Comments

Document	Page	Section	Paragraph	Sentence	Suggested Corrections	Accept/Reject	Comment
Fact Sheet	88	8.1	1st	1st	The discharge of non-aqueous fluids (NAF) is prohibited except for situations where such fluids adhere to drill cuttings at facilities within the Territorial Seas, as defined **in** 40 CFR 435 (See Table 31 and noted Sections).	A	——
Fact Sheet	90	8.1.1.9	1st	last	For analysis of TAH and TAqH, all analytical requirements cited in the Alaska **Water Quality** Standards, 18 AAC 70.020(b) are applicable.	A	——
Fact Sheet	95	8.3	Table 34	Effluent Parameter Column	*The superscript to indicate referenced permit section in the TSS Row Heading for M9IM BTUs is incorrect.*	A	"8.3.6" in superscript was inserted following the TSS Row Heading as noted, and also for the other Row Headings where it was also missing.
Fact Sheet	96	8.3.6	1st	1st	Compliance with the TSS limit for BTUs can be **the** net value for those facilities that use filtered seawater for flushing and treat with BTUs.	A	——
Fact Sheet	97	8.5.2	1st	2nd	Compliance is based on observation of a visible sheen on the water surface during slack tide while discharging during daylight or by Static Sheen Test at the permittee**'**s option.	A	——
Fact Sheet	97	8.5.2	1st	4th	The permittee must ensure that contaminated ballast water (Discharge 010) or bilge water (Discharge 011) ~~must~~ be processed through an oil-water separator, or similar process to remove oil and grease, prior to discharge.	A	——

EPA Grammatical Comments

Document	Page	Section	Paragraph	Sentence	Suggested Corrections	Accept/Reject	Comment
Fact Sheet	99	8.5.4	2nd	4th	Regardless of exceeding a PR BMP Revision Action Level, the permittees will be required to submit updated line drawings of the discharge piping systems with the next application for reissuance for each authorized discharge of desalination waste, noncontract cooling water, or waterflooding where chemicals are used and the discharge is greater than 10,000 **gpd**.	A	——
Fact Sheet	100	8.5.4	2nd	2nd	Written requests must include updated line diagrams, a narrative of sample collection procedures used **to** ensure representative sampling (See Section 11.2), and cover letter describing the pollution reduction methods used to reduce chronic toxicity.	A	——
Fact Sheet	100	8.5.5.1	1st	1st	For miscellaneous discharges that have chemical additives and discharge 0.01 mgd (10,000 gpd) or more in a 24 hour period, the permittee is required to conduct chronic WET monitoring on one invertebrate species on **the** frequency established in Section 8.9.1.2.	A	——
Fact Sheet	100	8.5.5.3	1st	1st	For MODUs, the frequency is annual per authorization~~s~~ when discharges occur. Hence, a MODU that discharges under two authorizations in a given year must conduct two chronic WET tests	A	Section 8.5.5.3 has been renumbered to 8.5.5.2.1
Fact Sheet	100	8.5.5.4	1st	last	Approval is also contingent upon collection of representative samples of the effluent and submittal per Section 8.5.5.5~~)~~**.**	A	Section 8.5.5.4 has been renumbered to 8.5.5.2.2

EPA Grammatical Comments

Document	Page	Section	Paragraph	Sentence	Suggested Corrections	Accept/Reject	Comment
Fact Sheet	100	8.5.5.5	1st	3rd	However, if the discharge is intermittent and/or chemical dosing is discontinuous, the permittee must evaluate the timing and duration of pea~~c~~k concentrations in the effluent to properly time sample events to obtain a representative sample.	A	Section 8.5.5.5 has been renumbered to 8.5.5.3
Fact Sheet	101	8.6.3	1st	last	These waste streams include, deck drainage (Discharge 002), completion fluids (Discharge 016), workover fluids (Discharge 017), well treatment fluids (Discharge 018), test fluids (Discharge 019), hydrostatic test water (Discharge 020), and incidental spills or excavation dewatering in, or near ~~to~~, contaminated sites.	A	——
Fact Sheet	106	8.6.7.3	1st	3rd	The permittee must repeat the chronic WET and metals monitoring within 30- days of notifying DEC and submit a follow up written notification of the subsequent results.	A	Hyphen replaced with a space after "30".
Fact Sheet	108	8.8.3	1st	1st	TAH and TAqH monitoring is not required for all new/unused infrastructure (i.e. tanks, pipelines, or similar vessels) **which** are not expected to have hydrocarbons (e.g., potable water systems per Section 8.8.5).	R	"that" is more appropriate.
Fact Sheet	109	8.9.1	1st	2nd	The permittee must conduct the WET testing to screen for the most sensitive invertebrate species in Section 8.9.1.2 once~~r~~ per permit term for each discharge (i.e., desalination waste, noncontract cooling water, waterflooding, and produced water).	A	——
Fact Sheet	110	8.9.3.9	Section Heading		**Full Report Preparation:**	A	Underline added to the text format

EPA Grammatical Comments

Document	Page	Section	Paragraph	Sentence	Suggested Corrections	Accept/Reject	Comment
Fact Sheet	111	8.9.3.10	Itemized list	c)	A list of corrosion inhibitors, biocides, algaecides, clarifying agents, or other additives being used by **the** facility that could potentially be in the effluent during the 30 day period preceding sampling.	A	——
Fact Sheet	111	8.11	1st	1st	DEC has the authority to consider reduced reporting and monitoring frequencies in reissued permits when the permitted facilities ~~has~~ **have** a record of good compliance and pollutant discharges at levels below permit requirements during the previous Permit cycle.	A	——
Fact Sheet	113	9.0	2nd	2nd	Accordingly, 18 AAC 83.480(b) applies to the relaxation **of** previously established case-by-case TBELs developed using BPJ.	A	——
Fact Sheet	113	9.0	4th	3rd	The triggers in the 2007 GP were based on data that were generally biased high due **to** chronic WET test results that did not achieve observation of endpoints because the test dilution series were too low to target toxicity such that triggers would never be initiated (See Section 4.6.5).	A	——
Fact Sheet	122	11.2	1st	2nd	The permittee is required to develop **a** QAPP and submit a letter to the Department stating that the plan has been implemented within 90 days of the effective date of the Final Permit for existing facilities or the date of the authorization for new facilities.	A	——
Fact Sheet	122	11.3	2nd	1st	Within 90 days of the effective date of the Permit, the permittee must ~~be~~ revise and implement the BMP Plan.	A	——

EPA Grammatical Comments

Document	Page	Section	Paragraph	Sentence	Suggested Corrections	Accept/Reject	Comment
Fact Sheet	123	11.3.1.5	1st	3rd	For infrastructure that has known ~~to been in~~ contact with petroleum and is anticipated to have dissolved hydrocarbons and possibly free oil, the permittee must implement BMPs to remove free and dissolved phase hydrocarbons prior to discharge per Section 8.8.4.	A	——
Fact Sheet	123	11.3.1.5	1st	last	However, this specific BMP requirement is not subject to commingling with produced water per Section **3.5.2**.	A	The missing referenced Section number has been added.
Fact Sheet	123	11.3.1.6	Section Heading		11.3.1.6 Cooling Water Intake Structure **(CWIS)** Requirements.	A	——
Fact Sheet	126	11.5.7	1st	1st	DEC may grant a written exemption to this requirement if the permittee can satisfactorily demonstrate that information on the fate and effects of the discharge is available (e.g., EMP studies from previous wells at the location) or the discharge will not have significant impacts on the receiving environment in the area of discharge (e.g., sediment is **not** significantly present at the site due to scour).	A	——
Fact Sheet	128	12.1.3	1st	3rd	These areas contain~~s~~ 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).	A	——

EPA Grammatical Comments

Document	Page	Section	Paragraph	Sentence	Suggested Corrections	Accept/Reject	Comment
Fact Sheet	129	12.2	1st	1st	As can be surmised from Figure 11, EFH is prevalent in Cook Inlet ~~much~~ like most of Alaskan marine waters.	A	——
Fact Sheet	130	12.2	1st	last	Because the discharges disperse rapidly within the deeper waters, activities associated with the Permit will not likely have an adverse~~ly~~ effect on EFH.	A	——
Fact Sheet	141	A.1	2nd	3rd	~~Measured t~~Tidal velocities were measured up to 150 cm/s for both north-south and west-east flows. Johnson (2008) also calculated the kinetic energy (KE) from all drift buoy data.	A	——
Fact Sheet	142	A.1	last	2nd	The receiving water density used to model is slightly stratified, from 1014 to 1016 kg/m~~3~~^{3}.	A	——
Fact Sheet	144	A.2	1st	1st	As discussed in Fact Sheet Section 6.2.1, the applicants submitting revised mixing zone evaluations for reissuance researched ~~new~~ information that was previously unavailable to refine past modeling efforts to result in better predictions of plume behavior.	A	——
Fact Sheet	144	A.2	1st	7th, or second to the last	Also, because there were multiple NOAA stations within the area of coverage, the applicants evaluated currents spatially and were able to adjust critical currents through ~~interpolate~~ interpolation or ~~extrapolate~~ extrapolation for various facilities within the area of coverage.	A	——
Fact Sheet	144	A.2	2nd	4th	The applicant used CTD casts from the 17 ~~at~~ at- large stations to conduct a conservative evaluation of critical density stratification conditions for modeling discharges over the general Cook Inlet coverage area.	A	——

EPA Grammatical Comments

Document	Page	Section	Paragraph	Sentence	Suggested Corrections	Accept/Reject	Comment
Fact Sheet	144	A.2	3rd	2nd	While the focus here is on water column metals to support the mixing zone evaluation and RPA, the sediment metal data is relevant to the discharge of drilling fluids and drill cuttings containing barite and potential short-term zones of deposit resulting from the discharge.	A	——
Fact Sheet	149	B.1	2nd	1st	For the chronic mixing zone, the characterization of the effluent for produced water at each facility demonstrated that, except for produced water from the Tyonek A Platform, the driving parameter for the chronic mixing zones ~~for produced water~~ is dominated by total aromatic hydrocarbons (TAH); the driving parameter for the Tyonek A chronic mixing zone is copper.	A	——
Fact Sheet	153	B.5	5th	1st	~~By i~~Inputting values into Equation B-8 results in an RPM = 1.23	A	——
Fact Sheet	153	B.5	1st	1st	An evaluation of each POC~~s~~ identified in Fact Sheet Section 4.6.4 for produced water was conducted using the acute and chronic dilution factors authorized in the mixing zones and the respective acute and chronic water quality criteria for the parameter.	A	The Draft document identified two sections as "B.5". This corrected sentence appears in Section B.6 of the Proposed Final document.
Fact Sheet	153	B.5	1st	2nd	Of the chronic parameters, TAH was ~~predominantly an obvious~~ the driving parameter for all facilities except Tyonek A, which had copper as ~~an obvious~~ the driving parameter not only for the chronic mixing zone, but also the acute mixing zone.	A	The Draft document identified two sections as "B.5". This corrected sentence appears in Section B.6 of the Proposed Final document.

EPA Grammatical Comments

Document	Page	Section	Paragraph	Sentence	Suggested Corrections	Accept/Reject	Comment
Fact Sheet	155	Appendix C	1st	last	Per these statutory and regulatory requirements, general permit AKG315200 – Oil and Gas Exploration, Development, and Production in Cook Inlet in State Waters (Permit) includes effluent limitations that require the discharger to (1) meet standards reflecting levels of technological capability, (2) comply with 18 AAC 70 – Alaska Water Quality Standards (WQS), and (3) ~~and~~ comply with other state requirements that may be more stringent.	A	——
Fact Sheet	155	Appendix C	2nd	5th	In cases where both TBELs and WQBELs have been generated, the more stringent of the two limits ~~will be~~ is selected as the final permit limit.	A	——
Fact Sheet	156	C.1.1	1st	1st	…. authorization to discharge produced water under the ELGs, must ensure that the treatment of produced water meets the model technology based on improved gas flotation prior to obtaining coverage under the Permit.	A	——

EPA Grammatical Comments

Document	Page	Section	Paragraph	Sentence	Suggested Corrections	Accept/Reject	Comment
Fact Sheet	156	C.1.1	1st	last	The following sections discuss the applicable ELGs for Drilling Fluids and Drill Cuttings from oil and gas facilities (Discharge 001); Deck Drainage (Discharge 002); Domestic Wastewater as defined by 18 AAC 72 but titled sanitary waste in the ~~ELGS~~ ELGs (Discharge 003); Graywater as defined by 18 AAC 72 but titled domestic waste in the ~~ELGS~~ ELGs (Discharge 004); Produced Water (Discharge 015), and Well Treatment (Discharge 016), Workover (Discharge 017), and Completion Fluids (Discharge 018).	A	——
Fact Sheet	156	C.1.1.1	1st	3rd	The ELGs address ~~to~~ what quantity and quality of NAF is allowed to be adhered to cuttings discharged.	A	——
Fact Sheet	156	C.1.1.1	1st	5th	Hence, 40 CFR 435 Subpart~~s~~ A (Offshore Subcategory) applies to NAF.	A	——
Fact Sheet	156	C.1.1.1	2nd	3rd	Non-oil and gas ~~drilling~~ Class C fluids are used in geotechnical surveys and horizontal directional drilling (HDD) projects ~~and are not subject to the oil and gas ELGs~~.	R	No change made. Sentence is meant to call attention to the non-applicability of the oil and gas ELGs to HDD and geotechnical uses.
Fact Sheet	158	C.1.1.2	2nd	1st	The ELGs for BAT and BCT ~~require a limitation of no~~ prohibit the discharge of free oil as determined by the presence of film, sheen, or a discoloration of the surface on the receiving water for deck drainage discharges.	A	——
Fact Sheet	158	C.1.1.5	1st	2nd	This uniqueness allows for the discharge of produced water ~~where everywhere else, it~~ which is prohibited elsewhere.	A	——

EPA Grammatical Comments

Document	Page	Section	Paragraph	Sentence	Suggested Corrections	Accept/Reject	Comment
Fact Sheet	158	C.1.1.5	1st	3rd	The ELGs for produced water discharged to Cook Inlet requires an oil and grease average monthly limit (AML) of 29 mg/L a maximum daily limit (MDL) of 42 mg/l.	A	——
Fact Sheet	160	C.1.2.1.2	1st	1st	The 1986 GP 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 AMLs and 60 mg/L as MDLs.	A	——
Fact Sheet	161	C.1.2.1.3	1st	2nd	In the 1999 GP, EPA adopted the no free oil TBELs using case-by-case BPJ. DEC has evaluated these ~~TBELS~~ TBELs and has determined the evaluation conducted by EPA is still appropriate.	A	——
Fact Sheet	162	C.2.2	1st	1st	... discharge to exceed, or contribute to an exceedance of, the chronic marine temperature criterion at the boundary of the chronic mixing zone for total aromatic hydrocarbons (TAH) in produced water from ~~in~~ all but one discharge of produce water; the Tyonek A Platform has reasonable potential for copper rather than TAH.	A	——
Fact Sheet	162	C.2.2	1st	5th	There were no other discharges authorized under the Permit that resulted in a reasonable potential for numeric limits.	A	——
Fact Sheet	162	C.2.4	1st	2nd	~~Each other facility~~ Other facilities discharging produced water also require~~s~~ a WQBEL for TAH, or copper, and the procedures are identical as that for TBPF except the input variables are different.	A	——

EPA Grammatical Comments

Document	Page	Section	Paragraph	Sentence	Suggested Corrections	Accept/Reject	Comment
Fact Sheet	163	C.2.5	1st	2nd	~~Each other facility~~ Other facilities discharging produced water also require~~s~~ a WQBEL for either copper, silver, or zinc and the procedures are identical as that for TBPF except the input variables and driving parameters are different.	A	——
Fact Sheet	165	C.3	1st	4th	However, in three instances the calculated MDL or AML were less stringent ~~to~~ than those in the 2007 GP: the development of WQBELs for GPTF resulted in calculation of an MDL and AML for TAH that were less stringent than those in the 2007 GP; the Dillon had a less stringent MDL for TAH; and the Tyonek A had a less stringent MDL and AML for Copper.	A	——
Fact Sheet	165	C.3	1st	11th	Table 55 provides a summary of the primary limits for the chronic driving parameters developed for the Permit ~~and~~ compared to those same parameter limits in the 2007 GP.	A	——

Comparison of Produced Water Loadings from the 2007 GP to New Permit

Evaluation of Expanded TAH Loadings Based on MDLs

Facility	2021 Permit Loadings			2007 GP Loadings		
	Flow Limits [1] (mgd)	TAH Limits [2] (mg/L)	TAH Loadings [3] (lbs/d)	Flow Limits [4] (mgd)	TAH Limits [5] (mg/L)	TAH Loadings [3] (lbs/d)
Anna	0		0.000	0.084	183	128.202
Baker	0.045	47	17.639	0.045	257	96.452
Bruce	0.0252	46	9.668	0.0252	143	30.054
Dillon	0.1935	42	67.779	0.1935	42	67.779
GPTF	0.1932	20	32.226	0.1932	20	32.226
TBPF	8.4	17	1190.952	8.4	27	1891.512
MGS Onshore	0.84	28	196.157	0.84	32	224.179
Osprey	0.07707	9	5.785	0	0	0.000
Tyonek	0.038	0.14	0.044	0.03107	0.14	0.036
Totals	**9.81197**	---	**1520.250**	**9.81197**	---	**2470.441**

Notes:

1 From Proposed Final Permit Tables 13 - 20 and Fact Sheet Table 15
2 From Proposed Final Permit Tables 13 - 20 and Fact Sheet Table 15
3 TAH Loadings = Flow Limits x TAH Limits x 8.34
4 From 2007 Fact Sheet
5 From 2007 GP Limit Tables

Evaluation of Expanded TAH Loadings Based on AMLs

Facility	2021 Permit Loadings			2007 GP Loadings		
	Flow Limits [1] (mgd)	TAH Limits [2] (mg/L)	TAH Loadings [3] (lbs/d)	Flow Limits [4] (mgd)	TAH Limits [5] (mg/L)	TAH Loadings [3] (lbs/d)
Anna	0		0.000	0.084	109	76.361
Baker	0.045	34	12.760	0.045	128	48.038
Bruce	0.0252	31	6.515	0.0252	78	16.393
Dillon	0.1935	31	50.027	0.1935	31	50.027
GPTF	0.1932	14	22.558	0.1932	14	22.558
TBPF	8.4	12	840.672	8.4	18	1261.008
MGS Onshore	0.84	20	140.112	0.84	24	168.134
Osprey	0.07707	7.7	4.949	0	0	0.000
Tyonek	0.038	0.09	0.029	0.03107	0.09	0.023
Total	9.81197	---	1077.623	9.81197	---	1642.543787

Notes:

1 From Proposed Final Permit Tables 13 - 20 and Fact Sheet Table 15
2 From Proposed Final Permit Tables 13 - 20 and Fact Sheet Table 15
3 TAH Loadings = Flow Limits x TAH Limits x 8.34
4 From 2007 Fact Sheet
5 From 2007 GP Limit Tables

Comparison of Produced Water Loadings from the 2007 GP to New Permit

Evaluation of Expanded Metal Loadings Based on MDLs

Facility	Metal [1]	2021 Permit Loadings			2007 GP Loadings		
		Flow Limits [2] (mgd)	Metal Limits [3] (mg/L) MDL	Metal Loadings [4] (lbs/d)	Flow Limits [5] (mgd)	Metal Limits [6] (mg/L) MDL	Metal Loadings [4] (lbs/d)
Silver (Ag)							
Anna	Ag	0	0	0	0.084	1.378	0.9654
Dillon	Ag	0.1935	0.048	0.07746192	0.1935	0.055	0.0888
MGS Onshore	Ag	0.84	0.048	0.3362688	0.84	0.149	1.0438
Total Ag				**0.4137**			**2.0980**
Zinc (Zn)							
Baker	Zn	0.045	13	4.8789	0.045	14.3	5.3668
Bruce	Zn	0.0252	25	5.2542	0.0252	47	9.8779
Anna	Zn	0	0	0	0.084	22	15.4123
Total Zinc				**10.1331**			**30.6570**
Copper (Cu)							
GPTF	Cu	0.1932	0.054	0.0870	0.1932	0.13	0.2095
TBPF	Cu	8.4	0.022	1.5412	8.4	0.117	8.1966
Osprey	Cu	0.07707	0.195	0.1253	0	0	0.0000
Tyonek	Cu	0.038	1.033	0.3274	0.03107	1.033	0.2677
Total Copper				**2.0810**			**8.6737**

Notes:
1 Primary Limited Metal Parameter Based on Reasonable Potential at Acute Mixing Zone Boundary
2 From Proposed Final Permit Tables 13 - 20 and Fact Sheet Table 14
3 From Proposed Final Permit Tables 13 - 20 and Fact Sheet Table 14
4 TAH Loadings = Flow Limits x TAH Limits x 8.34
5 From 2007 Fact Sheet Table 2
6 From 2007 GP Limit Tables 7-B1 through 7-B8

Evaluation of Expanded Metal Loadings Based on AMLs

Facility	Metal [1]	2021 Permit Loadings			2007 GP Loadings		
		Flow Limits [2] (mgd)	Metal Limits [3] (mg/L) AML	Metal Loadings [4] (lbs/d)	Flow Limits [5] (mgd)	Metal Limits [6] (mg/L) AML	Metal Loadings [4] (lbs/d)
Silver (Ag)							
Anna	Ag	0	0	0	0.084	0.687	0.4813
Dillon	Ag	0.1935	0.019	0.03066201	0.1935	0.028	0.0452
MGS Onshore	Ag	0.84	0.019	0.1331064	0.84	0.046	0.3223
Total Ag				**0.1638**			**0.8487**
Zinc (Zn)							
Baker	Zn	0.045	6	2.2518	0.045	6.7	2.5145
Bruce	Zn	0.0252	10	2.10168	0.0252	28	5.8847
Anna	Zn	0	0	0	0.084	22	15.4123
Total Zinc				**4.3535**			**23.8115**
Copper (Cu)							
GPTF	Cu	0.1932	0.021	0.0338	0.1932	0.067	0.1080
TBPF	Cu	8.4	0.012	0.8407	8.4	0.047	3.2926
Osprey	Cu	0.07707	0.097	0.0623	0	0	0.0000
Tyonek	Cu	0.038	0.328	0.1039	0.03107	0.328	0.0850
Total Copper				**1.0408**			**3.4856**

Notes:
1 Primary Limited Metal Parameter Based on Reasonable Potential at Acute Mixing Zone Boundary
2 From Proposed Final Permit Tables 13 - 20 and Fact Sheet Table 14
3 From Proposed Final Permit Tables 13 - 20 and Fact Sheet Table 14
4 TAH Loadings = Flow Limits x TAH Limits x 8.34
5 From 2007 Fact Sheet Table 2
6 From 2007 GP Limit Tables 7-B1 through 7-B8