



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

Permit Number: AKG521000

Onshore Seafood Waste and Wastewater Discharge General Permit

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Wastewater Discharge Authorization Program

555 Cordova Street

Anchorage, AK 99501

Public Comment Period Start Date: **October 31, 2016**

Public Comment Period Expiration Date: **January 6, 2017**

[Alaska Online Public Notice System](#)

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Proposed issuance of an Alaska Pollutant Discharge Elimination System (APDES) general permit for:

ONSHORE SEAFOOD WASTE AND WASTEWATER DISCHARGES

The Alaska Department of Environmental Conservation (DEC or Department) proposes to issue an APDES general permit (permit) to operators of seafood processors and operators of onshore facilities that discharge seafood waste to coastal and fresh water systems. The permit authorizes and sets conditions on the discharge of pollutants from authorized onshore facilities to waters of the United States (U.S.). In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the facilities and outlines best management practices to which each facility must adhere.

This fact sheet explains the nature of potential discharges from onshore seafood processing facilities and those that discharge seafood waste and the development of the permit including:

- Information on public comment, public hearing, and appeal procedures

- A listing of proposed effluent limitations and other conditions
- Technical material supporting the conditions in the permit
- Proposed monitoring and reporting requirements in the permit

Public Comment

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

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

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

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

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

The proposed final permit will be made publicly available for a five-day potential applicant review. The applicant may waive this review period. After the close of the proposed final permit review period, the Department will make a final decision regarding permit issuance. A final permit will become effective 30 days after the Department's decision, in accordance with the state's appeals processes at 18 AAC 15.185 – 18 AAC 15.340.

The Department will transmit the final permit, fact sheet (amended as appropriate), and the RTC document to anyone who provided comments during the public comment period or who requested to be notified of the Department's final decision.

Appeals Process

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

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

Interested persons can review 18 AAC 15.185 for the procedures and substantive requirements regarding a request for an informal Department review. See <http://dec.alaska.gov/commish/InformalReviews.htm> for information regarding informal reviews of Department decisions.

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

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

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

Documents are Available

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

Dept. of Environmental Conservation
Division of Water
Wastewater Discharge Authorization Program
555 Cordova Street
Anchorage, AK 99501
(907) 269-6285

Dept. of Environmental Conservation
Division of Water
Wastewater Discharge Authorization Program
410 Willoughby Avenue, Suite 310
Juneau, AK 99801
(907) 465-5180

Dept. of Environmental Conservation
Division of Water
Wastewater Discharge Authorization Program
43335 Kalifornsky Beach Rd. - Suite 11
Soldotna, AK 99669
(907) 262-5210

Dept. of Environmental Conservation
Division of Water
Wastewater Discharge Authorization Program
610 University Ave.
Fairbanks, AK 99709
(907) 451-2183

Dept. of Environmental Conservation
Division of Water
Wastewater Discharge Authorization Program
1700 E. Bogard Road #B
Wasilla, AK 99654
(907) 376-1850

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1.0 General Permit

1.1 Legal Basis for Issuance of an APDES Permit

Section 301(a) of the Clean Water Act (CWA) provides that the discharge of any pollutant is unlawful except in compliance with Sections 301, 302, 306, 307, 318, 402 and 404 of the CWA. CWA Section 402(a) of the CWA allows the Administrator of the Environmental Protection Agency (EPA) to issue a permit for the discharge of any pollutant or combination of pollutants that will meet all applicable requirements under Section 301, 302, 306, 307, 308, and 403 of the CWA or other conditions that are necessary to carry out the provisions of the CWA. CWA Section 402(b) allows a state to petition EPA to establish and administer a state run National Pollutant Discharge Elimination System (NPDES) permit program.

On October 31, 2008, EPA approved the State of Alaska Department of Environmental Conservation's (DEC or Department) application to administer the NPDES permitting and compliance program as the Alaska Pollutant Discharge Elimination System (APDES) Program. EPA's approval of the state's application the Department is delegated the responsibilities of carrying out the applicable CWA NPDES program provisions. The Department developed regulations in the Alaska Administrative Code (AAC) to implement the APDES program (18 AAC 83). As established in 18 AAC 83.015, the discharge of any pollutant is unlawful except in accordance with an APDES permit.

Per 18 AAC 83.205, the Department may regulate categories or subcategories of point source discharges within an area through the use of a general permit when the sources:

- Involve the same or substantially similar types of operations;
- Discharge the same types of wastes;
- Require the same effluent limitations or operating conditions;
- Require the same or similar monitoring requirements; and
- In the opinion of the Department, are more appropriately controlled under a general permit than under individual permits.

NPDES regulations found in Code of Federal Regulations (CFR) 40 CFR Part 408 establish Effluent Limitation Guidelines (ELGs) for seafood processors under a single category, "Canned and Preserved Seafood Processing Point Source Category". Seafood processing dischargers are further divided into sub-categories when applying the ELGs found in 40 CFR Part 408 based on seafood species type.

Since the time the 40 CFR Part 408 regulations were promulgated in the late 1970s, several members of the seafood processing industry petitioned EPA regarding the applicability of Non-Remote standards being applicable to certain community locations (Anchorage, Cordova, Juneau, Ketchikan, Kodiak and Petersburg). In 1980, EPA suspended portions of the applicability of which communities in Alaska had to comply with Non-Remote ELGs leaving only Kodiak as a community required to meet Non-Remote ELGs. In 2013, EPA announced via the federal register a Notice of Data Availability (NODA) that EPA had gathered information from Alaskan seafood processing facilities and other publicly available sources information regarding seafood processing waste disposal practices and options. The NODA provided preliminary results of EPA's analyses of the updated data for the five petition locations (Anchorage, Cordova, Juneau, Ketchikan, and Petersburg), as well as preliminary analysis for possible additional locations (Dutch Harbor, Kenia Peninsula and Sitka) being added to the list of Non-Remote locations.

The NODA also provided preliminary indications of how these results may be reflected in EPA's final response to petitions submitted in 1980 by certain members of the Alaskan seafood processing industry, and in amended ELGs. As published on EPA's website (<http://www.epa.gov/eg/alaskan-seafood-processing-effluent-guidelines>), EPA plans to issue a final rule, covering the Alaskan seafood processing subcategories, in 2016.

The Department determined that it is appropriate to issue a general permit for facilities identified in Fact Sheet Part 1.5 because sources are subject to the same water quality-based effluent limitations (WQBELs) and the permit has applied the required technology-based ELG requirements. A single permit for both Remote and Non-Remote locations provides a permit mechanism should EPA's final rule transition several currently categorized Remote seafood processing facilities into the Non-Remote category. The permit establishes Technology-based Effluent Limitations (TBELs) in the same manner 40 CFR Part 408 categorizes facilities as Remote vs Non-Remote, and applies WQBELs, operating conditions, monitoring requirements, and standard conditions.

The Department determined that facilities that grind seafood waste (Community Grinders) and discharge to waters of the U.S. will also be provided coverage under the permit due to the similarity in pollutants discharged.

1.2. Individual Permit (IP)

A permittee authorized to discharge under a general permit may request to be excluded from coverage by applying for an IP. This request shall be made by submitting APDES permit application Forms 1 and 2C, along with Form 2M (if requesting a mixing zone) with supporting documentation (e.g., modeling, antidegradation information, etc.) to DEC.

The Department may require any person authorized by a general permit to apply for and obtain an IP, or any interested person may petition the Department to take this action. Per 18 AAC 83.215, the Department may consider the issuance of an APDES IP when:

- 1.2.1. The discharger is not in compliance with the terms and conditions of the APDES general permit;
- 1.2.2. A change has occurred in the availability of demonstrated technology or practices for the control or abatement of pollutants applicable to the point source;
- 1.2.3. Effluent limitations guidelines are promulgated for point sources covered by the APDES general permit;
- 1.2.4. A water quality management plan containing requirements applicable to a point source is approved;
- 1.2.5. Circumstances have changed since the time of the request to be covered so that the discharger is no longer appropriately controlled under the general permit, or the authorized discharge shall be either temporarily or permanently reduced or eliminated; or
- 1.2.6. The single discharge, or the cumulative number of discharges, is/are a significant contributor(s) of pollutants.

1.3. Permit Issuance History and Coverage Changes

In 1995, EPA issued NPDES general permit AKG520000 for seafood processors operating in the State of Alaska. In 2001, EPA reissued general permit AKG520000. The State of Alaska's accompanying July 2001 CWA Section 401 Certificate of Reasonable Assurance (AKG520000 401 Certification) authorized mixing zones for residues, dissolved gas, oil and grease (O&G), fecal coliform (FC) bacteria, pH, temperature, color, turbidity, and total residual chlorine (TRC), as well as authorized a one-acre Zone of Deposit (ZOD) for each facility discharge area authorized by the AKG520000 general permit.

The 2001 AKG520000 permit authorized the discharge of seafood wastes and other wastewater discharges from seafood processing facilities into waters of the U.S. At the time of the 2001 permit issuance, approximately 250 permitted seafood processing facilities operated in Alaska. This included about 80 onshore facilities (referred to as "shore-based" facilities in the AKG520000 permit as those located on land or pilings) and about 70 'shore-based' processing vessels. 'Shore-based' processing vessels were defined as "a processor operating and discharging less than one-half nautical mile (0.5 nm) from shore at mean lower low water (MLLW) in the AKG520000 permit." It is important to note that the 2001 AKG520000 permit authorized the discharges from 'shore-based' vessels that discharged within zero to 0.5 nm mile of shore, but not necessarily in association with any land-based or onshore processing facility. The AKG521000 permit will also provide coverage for those moored or anchored vessels acting as support facilities to an onshore seafood processing facility.

The 2001 AKG520000 permit expired on July 27, 2006 and was administratively extended by EPA. Accordingly, all AKG520000 general permit authorizations issued to seafood processors were administratively extended. Administrative extensions of a permit's authorizations are allowed in accordance with 40 CFR 122.6(a), which states that "when a timely and complete application is received by EPA, and through no fault of the permittee, EPA does not reissue a new permit prior to the expiration date of the existing permit, then the permit remains fully effective and enforceable." In accordance with 18 AAC 83.155, the Department continued the 2001 AKG520000 administratively extended permit and issued authorizations when it received authority to administer the NPDES program in Alaska.

During the time between the expiration of AKG520000 (July 27, 2006) and the approval of the State's application to administer the NPDES Program (October 2008), EPA worked on reissuing the 2001 AKG520000 general permit but did not reissue the permit before approving the State's application. Following approval of the State's application, AKG520000 was divided into multiple state and federal permitting actions. In December 2009, EPA issued NPDES General Permit AKG524000 'Offshore Seafood Processors in Alaska' to cover vessels discharging in federal waters 3.0 nm or more (outside State waters) from shore or baseline, whichever is greater. In May 2011, DEC issued APDES General Permit AKG523000 'Alaska Offshore Seafood Processors' providing discharge coverage for approximately 40 Offshore Seafood Processors discharging in State waters between 0.5 nm to 3.0 nm from shore as delineated by MLLW or baseline, whichever is greater. Nearshore seafood processing vessels that discharge to waters less than 0.5 nm from shore, that do not moor and provide direct support services to an onshore facility, will not be covered under the AKG521000 general permit, but will continue to be authorized to discharge under the 2001 AKG520000 administrative extensions until an appropriate APDES permit is available.

1.3.1. AKG521000 vessel coverage.

The AKG521000 permit provides vessel coverage to moored processing barges and vessels that provide direct support to an onshore seafood processing facility. Direct support vessels are defined as providing seafood processing services to the onshore facility, or additional freezing capability. Direct support barges and vessels are those that are moored to a dock, pier or permanent anchors to prevent movement through the processing season. Normally, processing vessel follow the fisheries, moving from water body to water body. Since these direct support vessels moor and stay stationary, their discharges occur in the same location throughout the season. Vessels that are ‘shore-based’ vessels, but not providing support services to an on-shore facility will maintain their 2001 AKG520000 permit administrative extended coverage until a new permit is issued by DEC that provides coverage for discharges from these vessels. The operator of an onshore facility shall submit an updated Notice of Intent (NOI) listing the barges and/or vessels to be covered under the onshore permittee’s authorization. All barge and vessel discharges covered under the onshore permittee’s authorization shall be able to meet all permit conditions. The permittee of the onshore facility is responsible to ensure that the barge and vessel discharges comply with the permit.

1.3.2. Inland Water Discharges.

The 2001 AKG520000 permit referred to inland water discharges as “At-Sea” discharges, occurring inside and outside of baselines or closing lines. To eliminate confusion between the association of the terms ‘territorial sea’ and ‘At-sea’ discharges, the AKG521000 permit refers to vessel discharges behind (landward of) baselines and closing lines as “Inland Water” discharges.

The AKG521000 permit proposes coverage for vessels discharging an onshore permittees’ seafood waste, if occurring landward of the baselines, and any closing lines from where the Territorial Sea is measured. The baselines and closing lines often appear on charts mapped by the National Oceanic and Atmospheric Administration (NOAA) and are integrated into the Seafood Wastewaters Geographic Information System (GIS) map maintained by the Department.

Discharge or dumping of fish waste seaward of the territorial baseline, closing lines, or in areas where a baseline has not been established, falls under the legal jurisdiction of the Ocean Dumping Act, that is administered by the EPA. Therefore, an applicant wishing to discharge an onshore facility’s seafood waste in these areas must contact EPA’s Ocean Dumping Management Program for applicable requirements:

EPA Region 10 Ocean Dumping Management Program Coordinator PO Box 20370 Juneau, AK 99802-0370 Phone #: (907) 586-7622 Fax #: (907) 586-7015

1.3.3. **Fresh Water Discharges.**

The 2001 AKG520000 permit Section III (B)(3) listed lakes, rivers and streams (fresh water systems) as “at risk water resources and waterbodies”, yet the 2001 permit allowed an operator with a facility located in a fresh water system to apply for a waiver to discharge to the excluded area(s). One of the listed waiver justifications was, “Pre-existing, permanent shore-based siting may be considered justification for a waiver.” EPA issued approximately 25 AKG520000 authorizations to pre-existing onshore facilities with discharges to estuarine or fresh water systems. DEC intends to continue to provide coverage to these facilities under the AKG521000, as well as new applicants proposing discharges to estuarine or fresh water systems as long as the new facilities meet permit eligibility criteria (see Permit Appendix Table D – D3 Seafood Processing Facilities Discharging to Fresh Waters).

1.3.4. **Non-Remote Facilities.**

The AKG521000 permit provides coverage for a facility operator previously covered by the March 16, 1998, EPA-issued NPDES permit AKG528000 ‘Seafood Processors Operating Shorebased Facilities in Kodiak, Alaska’, which authorized discharges from onshore seafood processors and by-product recovery facilities located in Kodiak, Alaska. The permit became effective on May 1, 1998 and expired on April 30, 2003. The AKG521000 permit has integrated effluent limits and required monitoring established in the 1998 AKG528000 permit. The Department finds that the Non-Remote seafood processing operators qualify for coverage under the general permit under 18 AAC 83.210(h). See http://dec.alaska.gov/Water/WPSdocs/AKG528000_docs.pdf for the AKG528000 permit.

At the time of 1998 AKG528000’s issuance, there were ten onshore processing facilities and one by-product recovery facility in operation in the Kodiak area. Currently, eight processing facilities and one by-product recovery facility are in operation. The Department has determined these facilities to be eligible for coverage under the AKG521000 permit. The existing Kodiak facilities and discharge locations are listed in Appendix D of the permit.

1.3.5. **Remote Facilities.**

The AKG521000 permit proposes coverage for approximately 80 onshore facilities and several nearshore vessels that are currently covered under the administratively extended 2001 AKG520000 permit. Additionally, the AKG521000 permit proposes coverage to seafood waste discharge vessels, some with previous NPDES or APDES permit coverage. The Department proposes to authorize these facilities under the AKG521000 permit as the discharges are all associated within the same ‘seafood processing’ category as found in 40 CFR Part 408. The Department finds that operators discharging seafood waste and wastewater, as well as vessels and community grinders discharging seafood waste and wastewater, qualify for coverage under the general permit consistent with 18 AAC 83.210(h).

1.3.6. **Hatchery and Aquacultural Facility Operators.**

While administering AKG520000, EPA issued authorizations to hatchery operators that were performing seafood processing-like activities (conversion of aquatic animals from a raw form to a marketable form). It is not DEC’s intent to cover hatchery operators under the AKG521000 Onshore Seafood Processors permit. DEC intends on issuing AKG130000 general permit applicable to Hatchery and Aquacultural activity discharges in 2017. Hatchery operators with seafood processing-like activities will not be covered under the AKG521000 general permit, but will continue to be authorized to discharge under the 2001 AKG520000 administrative extensions until an appropriate APDES permit is available.

1.3.7. **Operators previously not required to obtain coverage.**

Low volume discharges from smaller seafood processing facilities were not required to obtain coverage under the 2001 AKG520000 general permit.

AKG520000 Section I (A) “Operations which catch and process seafood and which discharge less than one thousand (1,000) pounds of seafood waste per day and less than fifteen tons (30,000 [*pounds*] (lbs)) of seafood waste per calendar year may be, but are not required to be, covered under this general NPDES permit.”

It is not DEC’s intention to provide coverage for these small, low-volume (less than 30,000 lbs / yr) operators under the AKG521000 Onshore Seafood Processors permit. Yet, these facilities do require APDES permit coverage, as such DEC intends on issuing a separate general permit applicable to small, low-volume discharges.

1.3.8. **Community Grinders.**

Under the 2001 AKG520000 permit, community grinders and outfalls were not a covered discharge. Communities began using grinders and outfall discharges to address concerns regarding animals (primarily bears) accessing an easy food source left on the beach during large shore-side fisheries, which creates potential for dangerous animal/human interactions. To decrease the amounts of seafood waste (carcasses) left on the beaches, some communities have installed community fish waste grinders where the public is able to bring their seafood carcasses and the seafood waste is then ground to 1.27 cm (½-inch) and then discharged out an outfall. The AKG521000 permit proposes coverage for these community grinder waste discharge systems. Note the permit does not require communities to install community fish waste grinders, but provides coverage for those communities with a discharge from community grinder systems. All currently existing or known facilities and discharge locations the permit proposes coverage for are listed in Appendix D of the permit.

1.4. Description of Seafood Processing Facilities (Permit Part 2.0)

Seafood processing facilities and vessels (including barges) are primarily in business to convert raw seafood into a marketable form. Alaska's commercial fishing operations target a number of assemblages including groundfish (e.g., walleye pollock, Pacific cod, sablefish, rockfish species, and other species of flatfish); five species of salmon; herring; and shellfish (e.g., species of crab, shrimp, clams, scallops, abalone, sea urchins, and sea cucumbers).

Seafood processing facilities use a variety of techniques and equipment to produce marketable seafood products. Detailed descriptions of specific seafood processing facilities (e.g., salmon canning, fish meal production) are provided by EPA's 'Development Document for Effluent Limitation Guidelines and New Source Performance Standards for the Fish Meal, Salmon, Bottom Fish, Clam, Oyster, Sardine, Scallop, Herring, and Abalone Segment of the Canned and Preserved Fish and Seafood Processing Industry Point Source Category' (1975) (<http://dec.alaska.gov/water/wwdp/seafood/documents.html>). The seafood processing industry is described as the production of marketable seafood products include packaging whole fresh or frozen seafood for shipment, mechanical filleting, deboning processes, and production of washed and unwashed mince/paste products, and other seafood byproducts. Solid and liquid wastes remaining after other production steps may be further processed into fish meal, fish oil, or fish hydrolysate, or other by-products which converts much of the solid waste to marketable products. Additionally, since the early 1980s, newer types of seafood processing techniques have been introduced into facility production lines, such as surimi and salmon byproduct (unwashed mince and washed mince) have produced economic gains. New techniques in recent years have also been developed to convert salmon waste to salmon hydrolysate and salmon pet food treats, and other animal food supplements. Salmon hydrolysate is used as dietary supplements, in fertilizer, and in pet food. As shown over the previous 30 years, development of new production lines and byproduct production lines such as fish oil, fish oil supplements, and bone meal from seafood waste have also proven successful in Alaska.

At any particular plant, the quantity and character of the seafood waste varies considerably over the course of a year. Seafood waste produced varies by regions, reflecting the distribution of available fishing stocks, the openings and closings of the fishing seasons, as well as fishing quota allocations used to manage stocks. Generally, groundfish and shellfish wastes constitute much of the pollutant discharges in the winter, early spring and autumn. While the discharge of salmon processing waste occurs primarily in the summer (along with groundfish). On a state wide basis, groundfish constitute the largest volume of seafood waste discharged, while broken down by region largest volume of waste comes from the Bering Sea/Aleutian Island area. The largest volume of waste discharged in all other regions comes from salmon and other finfish fisheries.

The timing of the salmon harvest is closely tied to the period when each salmon species returns to spawn. The fishing season for each salmon species depends on the various management regions around the State and the type of gear used but generally spans the period between June and September. The relatively short salmon fishing seasons and large runs of fish result in short, but intense, periods of seafood waste produced in this sector.

Seafood processing waste discharge facilities are divided into categories depending on the location of the facility and their size. These categories include Non-Remote seafood processing facilities and Remote processing facilities as defined by 40 CFR Part 408. In addition, facilities are also classified as either major or minor facilities in accordance with specific rating criteria established by EPA.

Non-Remote. Non-Remote seafood processing facilities process raw seafood products into marketable form and are located in “processing or population centers”, as described in 40 CFR Part 408. The Non-Remote facilities are required to meet the Non-Remote TBELs / ELGs. The AKG521000 permit incorporates the ELGs from 40 CFR Part 408 and includes the application of best professional judgment (BPJ) TBELs to include screening at Non-Remote facilities. The screened waste was then required to be processed into fishmeal or other byproduct production. The AKG528000 permit allowed the permittees to use other solid waste discharge methods (e.g., ocean dumping) in order to meet permit limits if the byproduct production facility was overloaded or offline.

At the time of writing this fact sheet, only seafood processing facilities located in the Kodiak area remain designated as Non-Remote. The AKG528000 permit included discharges to Kodiak Harbor, St. Paul Harbor, Gibson Cove, Near Island Channel, Women's Bay, and Woody Island Channel as Non-Remote discharges. As previously discussed, other Alaska locations were initially listed as Non-Remote in the 1975 ELGs 40 CFR Part 408; however, EPA later suspended those locations until further evaluation and follow-up action was taken by EPA. According to EPA’s Preliminary 2016 Effluent Guidelines Program Plan posted online (<https://www.epa.gov/eg/effluent-guidelines-plan>), EPA is in the process of evaluating the current Canned and Preserved Seafood Category covering Alaskan seafood processing subcategories. As such, additional Non-Remote locations may potentially be designated during the permit cycle based on EPA ELG rulemaking. The AKG521000 permit is structured to accommodate new locations designated as Non-Remote should EPA make new designations.

Remote. Remote seafood processing facilities are facilities not located in a “processing center or population center”, as defined in 40 CFR Part 408. The TBEL requires that seafood processing facilities grind the seafood processing waste into pieces smaller than 1.27 cm (1/2-inch) in any dimension prior to discharge to waters of the U.S.

Non-Compliance and Screening Waste. Some Remote location permittees have been required to install 1.0 millimeter (1.0 mm) seafood waste screening equipment, due to exceeding the AKG520000 permit’s authorized one-acre ZOD size permit condition, and non-compliance with Water Quality Standards (WQS). Screening the seafood waste provides source control for residues, biochemical oxygen demand (BOD), as well as settleable solids loading prior to discharge. Additionally, some of these same permittees were required to obtain IPs. Permittees of Remote facilities who installed or were required to install screening equipment as of the effective date of the permit will be required to continue screening their seafood processing waste under the AKG521000 general permit. Screening of waste is considered a best practicable control technology currently available (BPT) at facilities that have installed such technology, and once installed, the use of BPT screening shall continue to be required for these Remote facilities. At this time, it is not the Department’s intention to provide coverage under the AKG521000 permit to facilities currently issued IPs.

1.5. Facility Eligibility (Permit Part 1.1)

Subject to meeting the conditions of the permit, the following categories of facilities are eligible for coverage to discharge the pollutants set out in Permit Part 1.2 after receiving a DEC APDES permit authorization number:

- 1.5.1. Non-Remote onshore seafood processing facilities located in a designated “processing center or population center” as described in 40 CFR Part 408 that discharge pollutants generated at a seafood processing facility to waters of the U.S.

- 1.5.2. Remote onshore seafood processing facilities by definition are those facilities not located in “a processing center or population center (Non-Remote)” as described in 40 CFR Part 408 that discharge pollutants generated at a seafood processing facility to waters of the U.S. This includes those permittees of moored vessels or moored barges acting as a support facility to Remote onshore facility.
- 1.5.3. “Community Grinders” that discharge a seafood waste and wastewater pollutants to waters of the U.S.
- 1.5.4. Facilities meeting eligibility defined in Permit Parts 1.1.1.1 – 1.1.1.3 whose permittees transport and discharge seafood waste and wastewaters on a vessel or barge as the final step in the onshore facility’s wastewater treatment and discharge process. Coverage for seafood waste discharges are limited to waters located landward from a baseline which the territorial sea is measured, appearing on charts mapped by NOAA.

1.6. Discharges Covered (Permit Part 1.2)

- 1.6.1. New Discharge Coverage - A new permittee is eligible for coverage under this permit for discharges after DEC determines they will meet Alaska Water Quality Standards (WQS) and meet permit conditions. All discharges to waters of the U.S shall comply with WQS [18 AAC 70].
- 1.6.2. The permit authorizes the discharge of pollutants to waters of the U.S., subject to the limitations and conditions set forth herein, including:
 - 1.6.2.1. Seafood Waste and Wastewaters discharged into hydrodynamically energetic waters with a high capacity of dilution and dispersion, including these types of discharges:
 - 1.6.2.1.1. Seafood processing paste and wastewaters, and
 - 1.6.2.1.2. Community grinder seafood waste and wastewaters, and
 - 1.6.2.1.3. Cleaning agents used in process areas where the permittee follows the manufacturer’s recommended use and disposal recommendations and disinfectants used in wash-down water, which include EPA approved disinfectants added to wash-down water to meet Food and Drug Administration’s (FDA) sanitary conditions that facilitate the removal of wastes to maintain sanitary conditions during processing, or to sanitize seafood processing areas or community grind waste disposal areas.

Seafood waste and effluent, as well as disinfectants, pollutants of concern may include residues, pH, O&G, BOD, Settleable Solids, Total Suspended Solids (TSS), color, ammonia and temperature.
 - 1.6.2.1.4. Discharge of “Other Wastewaters”, including: Non-process wastewaters, process wastewaters, ice and water used to transfer seafood (catch transfer water) to the facility and live tank wastewater, and commingled industrial storm water.

Pollutants of concern for “Other Wastewaters” discharges may include ammonia, residues, pH, O&G, BOD, Settleable Solids, TSS, color, and temperature. Further explanation of seafood waste discharge pollutants are found throughout the Fact Sheet, specific “Other Wastewaters” pollutant discussions can be found in Fact Sheet Part 3.13.
 - 1.6.2.2. Domestic Wastewater Discharges. The permit authorizes the discharge of domestic wastewater that has received a minimum of secondary treatment from a permitted facility.

1.6.2.3. Vessel Sanitary Discharges. The permit authorizes the discharge of a vessel's treated sanitary wastewater from a certified and operable Type II Marine Sanitation Device (MSD) and discharge of a vessel's graywater by the vessel, or by the permitted facility's domestic wastewater treatment system.

Pollutants of concern in domestic wastewater and vessel sanitary wastewater discharges may include bacteria, TSS, BOD, pH, and temperature.

1.6.2.4. Vessel Fish Hold Discharges. The permit authorizes discharges of a vessel's fish hold effluent, including catch transfer water, live tank water, refrigerated seawater or brine that is conveyed to the onshore seafood facility from a vessel. Discharges of vessel hold water also includes the discharges covered under and in compliance with the 2013 NPDES Large Vessel General Permit (VGP) (or the most current version).

The EPA-issued NPDES VGP authorizes the discharge of vessel hold fish water while the vessel was is acting in a mode of transportation. The EPA-issued a 2013 VGP requires that:

“All reasonable steps shall be taken to prevent the discharge of excess fish hold water and ice while the vessel is stationary at the pier. If large solid pieces of fish waste are contained in the fish hold effluent (e.g., fish heads, internal organs), the fish hold effluent may not be discharged while the vessel is pierside and stationary, unless a physical separation method is used (e.g., ½ inch coarse screens or smaller, a screened hose having ½ inch screen openings or smaller, filters, or other methods to remove large solids).

Solid fish waste shall be disposed of shore-side on land but outside of harbors or other protected and enclosed coastal waters and other areas where EPA has found that such deposits could endanger health, the environment, or ecological systems in a specific location under the Marine Protection, Research and Sanctuaries Act, 33 U.S.C 1412(d)).

Except for APDES discharges from holding tanks for the sole purpose of keeping the catch alive during transit by pumping continuous “once through” ambient water into and through the tank prior to immediate discharge (e.g., crabbing/lobster vessels), if you are unloading your catch at a shore- based seafood processor or other pier and a shore-based discharge facility is available and economically achievable, you shall discharge your effluent (including dirty ice) to that shore-based facility instead of discharging to surrounding waters if:

- Its use is economically achievable, and
- The facility has a valid NPDES permit, or
- That facility discharges to an NPDES-permitted sewage treatment facility.”

Permittees of several large, onshore seafood processing facilities requested that accepted VGP covered fish hold water be an authorized discharge under the onshore AKG521000 permit. Covered permittees may accept fish hold water and discharge, if discharging fish hold water was proven to be economically achievable.

1.7. Discharges Not Covered by the Permit (Permit Part 1.3)

The discharge of any pollutant to waters of the U.S. that are not expressly authorized by the permit are not covered. Unauthorized discharges include, but are not limited to:

- 1.7.1. Discharge of non-commingled industrial storm water. These discharges are covered under the most current version of the APDES Multi-Sector General Permit (MSGP) for Storm Water Discharges associated with Industrial Activity.
- 1.7.2. Discharge of commingled or non-commingled storm water associated with construction activity disturbing one acre or more, or that are part of a larger common plan of development or sale if the larger common plan will ultimately disturb one acre or more are covered under the most current version of the APDES Construction General Permit.
- 1.7.3. Discharge of petroleum (e.g., diesel, kerosene, and gasoline) or hazardous substances into or upon the waters of the U.S. that may affect natural resources belonging to, appertaining to, or under the exclusive management authority of the U.S. All federal, state and local laws regarding spill notification are applicable.
- 1.7.4. Discharges from Hatchery and Aquacultural facility operators.
- 1.7.5. Disposal by vessel of seafood wastes and wastewaters to the waters of the open seas lying seaward of the baseline from which the territorial sea is measured, appearing on charts mapped by NOAA, or discharge by vessel to territorial seas where no closing baseline has been determined, as provided for in the Convention of the Territorial Sea and the Contiguous Zone (33 USE 1402(b) and 40 CFR 220.2). These disposals are covered by the Ocean Dumping Act.
- 1.7.6. Discharge of screened seafood waste or waste effluent from a Non-Remote facility (trucked, shipped or barged) to a Remote facility for discharge to waters of the U.S.
- 1.7.7. Discharge of processed seafood processing by-products, or food and raw food additives (e.g., salts, sugars, etc.) or seafood processing chemicals (e.g., sulphates, phosphates, acids, bases, etc.) that have not been used in the permitted facility's seafood processing production line.

Discussion: DEC has been made aware through review of Ocean Dumping activities that additives or other products other than raw or cooked seafood waste have been disposed of in State waters under the AKG520000 permit and under At-Sea discharges covered by IPs. The discharge or disposal of these chemicals, food (e.g., sugars, salts), or food additives can severely alter the chemistry of the receiving water, and is not authorized under the permit. Facilities who have previously been discharging these materials by vessel or through their outfalls are required to seek other permitted disposal methods. The permit also does not authorize the discharge of any seafood processing by-products, as discharging these seafood processing by-products result in very high BOD and COD pollutant loading. The restriction does not apply to by-product effluent wastes and wastewaters meeting the terms of the permit.
- 1.7.8. Discharge of pollutants covered by other general or individual APDES permits.
- 1.7.9. Discharge of pollutants within three nautical miles (3.0 nm) of the Pribilof Islands.
- 1.7.10. Discharge of uncooked seafood processing pollutants to Orca Inlet (Cordova facilities) occurring during the months of November, December, January, February and March.
- 1.7.11. Discharge of pollutants to waters in the Norton Sound Critical Habitat Area occurring from June 24 to October 31.

1.8. Excluded Area Provisions (Permit Part 1.4)

As provided for in 18 AAC 83.205(d), the Department establishes conditions applicable to a general permit for each category of discharger and may establish areas excluded from coverage. Permit Part 1.4 sets conditions applicable to excluded areas. In 1994, EPA formed a work group of state and federal managers of fish and wildlife, public lands, and the environment to determine areas meriting exclusion from coverage under the Alaska seafood processors' general permit. The work group reached consensus on the excluded areas, and EPA included the list of excluded areas in the 1995 and 2001 AKG520000 permits. The excluded areas included protected water resources, such as national parks, national wildlife refuges, and critical habitat areas (CHAs). The permit established 1.0 – 3.0 nm buffer zones around excluded area waters to allow for the dilution of pollutants to ambient levels under worst-case conditions. The permit also excluded discharges to at-risk waters, special waters, and degraded water bodies. These excluded areas from the 2001 AKG520000 permit are being carried forward in the AKG521000 permit.

In consideration of the seafood processing industry's interest in continuing to operate in some of these areas and to meet future processing needs, EPA made an allowance in the 2001 AKG520000 permit for an operator to apply for a waiver to discharge to a water in an excluded area. The 2001 AKG520000 permit required additional information to be submitted in the form of a waiver request regarding the excluded area, including alternatives to discharging within the excluded area. The permit required EPA and DEC to evaluate the waiver request and work with other federal, state, local and tribal organizations before making a decision to authorize a discharge to an excluded area. An operator also had the choice of applying for an APDES IP to discharge in an excluded area.

The AKG521000 permit continues to provide the case-by-case requests to discharge to excluded areas based on conditions included in the 2001 AKG520000 permit, consistent with Alaska Statute (AS) 46.03.110(d) and 18 AAC 83.205(d) where a general permit clearly identifies the conditions applicable to each category or subcategory of discharges and areas of coverage authorized by the permit. The AKG521000 permit NOI review process for discharges to excluded areas waters or near otherwise excluded areas carries forward the same evaluation approval process as established in the 2001 AKG520000 permit. There is an additional requirement that the permittee is required to provide written notice to the agency with management authority over of the excluded area (e.g., United States Fish and Wildlife Service (USFWS), Alaska Department of Fish and Game (ADF&G), National Marine Fisheries Service (NMFS), National Park Service (NPS), etc.). The permittee must provide the agency with management authority's comments to DEC to inform the authorization decision making process. DEC will take into consideration site-specific requirements or conditions deemed necessary to protect the excluded areas. DEC will also provide written notice to agencies with management authority over waters listed in the permit as excluded areas for those proposed new permittees. DEC views a request to discharge to an excluded area and the approval process as a permit condition added to the AKG521000 permit to address issues raised during the 1994 Seafood Processors Work Group and for the 2001 AKG520000 draft permit development. DEC does not consider the approval as a "waiver" to exceed WQS or a waiver to meeting established ELGs. Thus, DEC is eliminating confusion by not referring to the request to discharge to these areas as a "waiver" request.

The AKG521000 permit proposes to continue authorizing previously approved 2001 AKG520000 discharges listed in Appendix D for facilities discharging to 'Excluded areas'. The AKG521000 permit requires that a new facility submit a request to discharge to an excluded area in compliance with Permit Part 3.1. DEC may require the permittee to apply for APDES IP coverage if the discharge to the excluded area causes water quality concerns. See Permit Part 3.1 for the applicable excluded area's Special Conditions for discharges to CHAs. The special conditions were submitted to DEC by agencies

with management authority over the excluded areas during the previous AKG520000 and AKG523000 permit cycles and as part of the early agency review.

‘Excluded areas’ are being carried forward in the AKG521000 permit. The AKG521000 permit list of excluded areas included in Permit Part 1.4 are consistent with the list of excluded areas identified by the 1994 workgroup as established in the 1995 and 2001 AKG520000 permits. Refinement of the location of the excluded areas through GIS mapping, and updates to endangered and threatened species (ETS) lists have occurred since the AKG520000 permit was issued. Changes to ETS lists or the available resources to identify various excluded areas are discussed in Fact Sheet Part 1.8.1 - 1.8.5. Excluded Areas include:

- 1.8.1. Three nautical mile limits (Permit Part 1.4.3). A three nautical mile limit is set from critical habitat for Western Steller’s sea lions and Pacific walrus at haulouts. Sea lions and Pacific Walrus have high site fidelity and the tendency to return to a previously occupied location. Even minor human activity, such as sight, sound and odors from humans and machines, cause walruses to flee haulout locations. Thus, 3.0 nm buffer zones have been established to provide disturbance protection.
- 1.8.2. One nautical mile limit (Permit Part 1.4.4). One nautical mile limit is set from State designated Game Refuges, Sanctuaries, CHAs, National Parks, preserves or monuments, National wilderness areas, National wildlife refuges and nesting colonies of 1000 birds or more.

The AKG521000 permit clarifies ambiguous areas listed in the 2001 AKG520000 permit and pin points new areas that warrant inclusion as sensitive areas and that require site-specific evaluation. Two examples include CHAs identified as Steller eider concentration habitat areas and Western Steller sea lion habitat areas, which were established after the 1994 consensus workgroup decision making process. Additional information on these areas can be found at the DEC Maps webpage, the DEC Seafood Wastewater Discharge Map, and the Alaska Protected Water Maps document, as well as NOAA and USFWS mapping websites.

If a permittee authorized to discharge to an excluded area, including an existing facility permittee listed in Appendix D, proposes a material change to the operation of the facility after an authorization is granted (e.g., a 25 percent increase in the amount of seafood waste proposed to be discharged, a change in a process that increases seafood waste to be discharged, a change in the seasonality of processing, a change in the type of seafood processed, or the addition of by-product recovery lines), the permittee is responsible for providing information required in Permit Part 3.1 to allow the agency with management authority to evaluate the proposed change of the discharges to the excluded area. If the agency with management authority of the excluded area does not respond to the information within 30 calendar days, DEC may proceed with a decision regarding the proposed change without waiting for additional agency input. The permittee shall submit copies of any special studies required by the agency with management authority, and/or respond to comments submitted by the agency to DEC.

The permit proposes removal of Eastern Stellar sea lion critical habitat as previously covered under AKG520000 permit. On November 4, 2013 the NMFS public noticed a final action in the federal register, [Docket No. 110901553–3764–02] titled, ‘Delisting of the Eastern Distinct Population Segment (DPS) of Steller Sea Lion under the Endangered Species Act; Amendment to Special Protection Measures for Endangered Marine Mammals.’ NMFS made a finding that:

“Under the authority of the Endangered Species Act of 1973, as amended (ESA), we, NMFS, issue this final rule to remove the eastern distinct population segment (DPS) of Steller sea lion (*Eumetopias jubatus*) from the List of Endangered and Threatened Wildlife. After receiving two petitions to delist this DPS, we completed a review of the status of the eastern

DPS of Steller Sea Lion. Based on the information presented in the Status Review, the factors for delisting in section 4(a)(1) of the ESA, the recovery criteria in the 2008 Recovery Plan, the continuing efforts to protect the species, and information received during public comment and peer review, we have determined that this DPS has recovered and no longer meets the definition of an endangered or threatened species under the ESA: It is not in danger of extinction or likely to become so within the foreseeable future throughout all or a significant portion of its range. This rule also makes technical changes that recodify existing regulatory provisions to remove special protections for the eastern DPS and clarify that existing regulatory protections for the western DPS of Steller sea lions continue to apply. This rule becomes effective on December 4, 2013.”

The NMFS final rule resulted in changes to the applicability of the excluded areas from the protection applicable to all Steller sea lion critical habitat to only those areas designated as NMFS critical habitat for the Western DPS Stellar Sea Lion (West of 144°, Cape Suckling, AK). Based on the NMFS rule, the Department is removing the 3.0 nm excluded area designation for the Eastern DPS of the Steller sea lion critical habitat from the AKG521000 permit. The permit will maintain the 3.0 nm excluded area provisions for the NMFS designated CHAs for the Western DPS Stellar sea lion. (See Permit Attachment K.)

- 1.8.3. Living Substrates (Permit Part 1.4.5). “Living substrates” have been identified as important marine habitat and are susceptible to impacts from human activities. Installation of seafood processing outfalls and possible subsequent burying of living substrate by seafood processing residues must be minimized. Thus, the AKG521000 permit will continue to provide areas with living substrates special protection.
- 1.8.4. At Risk Waterbodies (Permit Part 1.4.6). Areas with water depth of less than 10 fathoms (60 feet) at MLLW are excluded from permit coverage if they have or are likely to have less than 0.33 knots average current within 300 feet of the discharge point of seafood waste. In the 2001 AKG520000 permit, waters within 3 nm of the Pribilof Islands were considered ‘At Risk Waterbodies’, because seafood waste discharged in these waters was found not to disperse quickly, got trapped, and settled within these areas, not decomposing as quickly as modeling predicted. The 2001 AKG520000 permit listed Akun Island’s Lost Harbor as an “Excluded Area” because of a vessel’s seafood processing waste deposits forming in the deep-water bay, which is mostly enclosed by a shallow sill. The sill was found to limit the flushing that normally occurs with tidal currents. The AKG521000 permit continues to list “At Risk Waterbodies’ as ‘Excluded Areas’ to protect them from this known residues buildup issue, defining them as ‘semi-enclosed water basins with depths deeper than the bordering or enclosed sills of less than 10 fathoms’. A new facility permittee will be required to identify if the facility is proposed to be located in an ‘At Risk Waterbody’ and may be limited to the amounts of seafood processing solids that are allowed to be discharged, dependent on meeting permit conditions.
- 1.8.5. Impaired Waterbodies (Permit Parts 1.4.7 and 3.2). Facility permittees proposing to discharge to impaired waterbodies where the permittee applies to the Department with revisions to a Total Maximum Daily Load (TMDL) for a specified water body, changes to the water use classes and subclasses, revisions to water quality criteria, adoption of site-specific criteria, and / or the reclassification of waters will be required to apply for an IP.

If an existing facility permittee’s receiving water becomes listed as an impaired waterbody (Permit Part 1.4.7) due to the actions of the permittee during the life of the permit, DEC may request that the applicant perform a site-specific analysis of the assimilative capacity of the receiving water. Based on the results, the Department may develop a TMDL or may propose interim discharge limitations

(i.e., limiting amounts of total waste solids that may be discharged) in the authorization. A permittee can, or the Department may require the permittee to, apply for an APDES IP if a new discharge is proposed to an area listed in Permit Part 1.4.7, or if a TMDL is being developed. Discharges will not be authorized for those pollutants for which the waterbody is impaired, except in compliance with Permit Part 3.2 (see Fact Sheet Parts 4.2 and 6.1 for more information).

1.9. Requesting Authorization (Permit Part 1.5)

- 1.9.1. A permittee shall apply electronically or by hard copy for coverage and authorization under the permit. It is likely due to the EPA promulgated e-Reporting Rule that, with a few exceptions, only electronic submittals will be accepted at some point during the permit cycle. Permittees will be notified in advance of this change. A facility permittee wishing to apply for new coverage for a seafood processing or Community grinding facility shall submit a complete NOI and required attachments 90 days prior to the start of discharge. The 90-day notice is increased from the 60 days specified in the 2001 AKG520000 permit to allow for adequate time for the Department to review the NOI and complete any necessary review that may be required per 18 AAC 72.
- 1.9.2. The AKG521000 permit supersedes AKG520000 and AKG528000 general permits for onshore seafood processors. All eligible permittees are required to submit a new NOI (Attachment A) along with all required attachments within 180 days of the effective date of the AKG521000 permit to obtain coverage. If the permittee does not submit a complete NOI application within 180 days, the administratively extended coverage under AKG520000 or AKG528000 for facility permittees listed in Appendix D will expire. With the submittal of a complete NOI package, existing administrative extended coverage will continue under a permittee's applicable permit until the Department issues an AKG521000 authorization.
- 1.9.3. If the onshore permittee does not submit a complete NOI application within 180 days, including its vessels proposing to discharge under Permit Part 2.6, permittee the AKG523000 administratively extended authorizations (Permit Appendix D - Table D2) will also expire 180 days after the effective date of the AKG521000 permit. With the submittal of an onshore permittee's complete NOI package, existing AKG523000 administratively extended coverage will continue until the Department issues an AKG521000 authorization.
- 1.9.4. The AKG521000 general permit does not authorize any discharges from a facility unless the permittee has submitted a complete NOI application as specified and received written authorization from DEC to discharge under the permit, or has been notified in writing by DEC that they are covered under the permit as provided for in 18 AAC 83.210(h). The permittee may only discharge the pollutants authorized under the permit upon delivery of a written APDES Authorization and the assignment of a site-specific APDES Permit Authorization number. The permittee shall retain a copy of the APDES Authorization and the permit, as well as applicable inspection and monitoring records at the facility and/or on-board the vessel, as applicable. Maintenance of records may be kept of electronically, except those requiring hard signature.
- 1.9.5. Permittees who have submitted a complete application for coverage under 2001 AKG520000, but have been unable to obtain coverage, will obtain coverage under the AKG521000 permit upon the submission of a complete NOI (Attachment A) and meeting the qualifications for coverage.
- 1.9.6. The permit requires permittees to submit an updated Notice of Transfer (NOT) when the information regarding ownership or permittee changes, or submit a NOI if changes to management, authorized representative or changes to the plant discharges, production levels, treatment systems, mixing zone or ZOD requests have changed.

1.9.7. Multiple parties. Multiple parties may discharge out of a single outfall line, and operate under a single authorization if a single Responsible Party is identified on the NOI. Identification of a single responsible party is required in Permit Part 1.5.8. Many seafood processing facility permittees accept seafood waste from outside their facility. Also many communities have installed seafood waste grinding stations in order to decrease seafood waste accumulations on the beach and decrease human wildlife interaction. Additionally, many Alaskan communities desire to install a seafood waste grinding station to serve not only their community members, but also provide a service to small volume seafood processors as a way to decrease overall capital investment costs. In order to eliminate confusion as to which entity is responsible for permit compliance responsibilities when multiple facilities or sources are discharging out a single outfall line, the permit requires a single responsible party to be identified. The owner of the outfall and waste/wastewater treatment system or community grinder shall be designated as the responsible party, unless otherwise indicated on the NOI. The responsible party must submit a Best Management Practices (BMP) certification signed by all parties clearly identify who is responsible for various parts of permit compliance inspections and/or monitoring. Additionally, the responsible party is required to provide training to the delivering parties regarding the type of seafood waste that is accepted. The responsible party must provide a tracking mechanism to the delivering parties for annual reporting purposes. If the responsible party enters into an agreement with other entities to perform permit responsibilities, a copy of that agreement must be submitted to the Department.

1.10. Requirement to Submit a Complete Notice of Intent (Permit Part 1.6)

- 1.10.1. An applicant seeking coverage under the permit shall submit a complete and timely NOI (Attachment A) per 18 AAC 83.210(b) to fulfill the duty to apply for a permit. Permit Part 1.6 lists the information that must be included on the NOI. A discharger that fails to submit a complete NOI in compliance with the requirements of the permit is not authorized to discharge under the general permit unless the Department:
- 1.10.1.1. Determines that a NOI is not required for coverage under the general permit, as provided for in 18 AAC 83.210(g), or
 - 1.10.1.2. Notifies a discharger that it is covered by a general permit as provided for in 18 AAC 83.210(h).
- 1.10.2. DEC requires previous permit information, permittee information, billing contact information, owner information, facility name and address/ location information in order to accurately maintain facility permit records.
- 1.10.3. Production Capacity Information. DEC requires facility production capacity and discharge amounts to determine if the proposed discharge will fit under the permit requirements. Additionally, the permit requires the amount of a vessel's annual seafood waste discharged for the past 4 years. There are two reasons the Department is requesting this type of information. First, vessels acting as support facilities (moored vessels and barges) usually discharge their seafood waste out of ports located adjacent to onshore facility's outfall terminus(es). The two facilities discharging seafood waste in such close proximity to each other increases the probability that greater than a one-acre deposit will form if the total cumulative seafood waste discharge is greater than 10 million lbs. This assumption is based on the modeling discussed in Fact Sheet Part 4.8.2.

The second reason the permit requires this information is for reviewing discharges to Excluded Areas (Permit Part 1.4). If requesting to process seafood near Excluded Areas, permittees are required to submit the proposed amount of seafood waste to be discharged to the agencies with management authority. The permittee has to submit the proposed increase on the NOI to the agency

with management authority and then has to perform additional seafloor monitoring if that 25% increase in seafood waste is discharged (Permit Part 3.1.2.2). Further discussion of Excluded Areas is found in Fact Sheet Part 1.8.

- 1.10.4. **Line Drawing and Flow Rates.** The permit added a new permit requirement of requiring facility permittees to provide line drawings and approximate incoming flow rates and discharge rates of the seafood processing lines and waste treatment systems within their facilities. The line drawings assist DEC in understanding the flow of seafood processing facility wastewater. Additionally, the flow line drawings will assist permittees in identifying areas in which water usage may be decreased as an opportunity to decrease pollutant loading, as the longer distances and time the seafood waste spends in contact with water the greater the pollutant loading that occurs.

Seafood processing requires large amounts of water, primarily for washing and cleaning purposes, but also as media for storage and refrigeration of seafood products before and during processing. In addition, water is an important lubricant and transport medium in the various handling and processing steps of bulk seafood processing. Seafood processing wastewater has a high organic content, and subsequently a high BOD, because of the presence of blood, tissue, and dissolved protein. It also typically has a high content of nitrogen (especially if blood is present) and phosphorus. Detergents and disinfectants may also be present in the wastewater stream after application during facility cleaning activities. A range of chemicals is typically used for cleaning, including acid, alkaline, and neutral detergents, as well as disinfectants. The disinfectants commonly used include chlorine compounds, hydrogen peroxide, and formaldehyde. Other compounds also may be used for select activities (e.g., disinfection of fishmeal processing equipment).

As a general rule, water used for all purposes in food production must meet drinking water standards. Process water must often undergo disinfection prior to use. The following chemicals are often used as disinfectants: chlorine, chloramine, ozone or UV irradiation (Bykowski, Piotr & Dutkiewicz, Daniel, FAO, 1996).

All of the above listed chemicals and processes can lead to greater pollutant loading of the seafood waste and wastewater discharges. As a result, DEC is requiring further information on chemicals, disinfectants used in the facility that may be discharged, as well as provide the permittee a better overview of the facility prior to updating their next NOI. The requirement to provide a listing of chemicals, annual amounts used and the use in the facility is new Annual Report (Permit Part 2.8) reporting requirement.

- 1.10.5. **Written Authorization.** A permittee may only discharge the pollutants authorized under the permit upon delivery of a written APDES Authorization and the assignment of a site-specific APDES Permit Authorization number. When a permittee submits an updated NOI, discharge under that updated NOI is not authorized until the permittee receives an APDES authorization referencing the new NOI with a new APDES authorization effective date. The permittee shall retain a copy of the APDES Authorization and the permit, as well as applicable inspection and monitoring records at the facility and/or on-board the vessel, as applicable. Maintenance of records may be kept of electronically, except those requiring hard signature.
- 1.10.6. **Date of Authorized Discharge.** Department is required to specify the date(s) in a general permit when a permittee is authorized to begin discharging, per 18 AAC 83.210(f). Commencement of facility discharges may occur any time after the effective date of the APDES written authorization from DEC. The written authorization will assign the facility permittee an APDES permit number for the site specified in the NOI. Relocation to another site will require the permittee to submit an updated NOI at least 90 days prior to commencing discharge from the new site.

1.11. Department Review of the Notice of Intent and Issuance of a Permit Authorization

Upon the AKG521000 permit becoming effective, each facility listed in Permit Appendix D –Table D1 will be required to apply for coverage under AKG521000 within 180 days using the NOI form (Permit Attachment A). Those permittees with previous AKG520000 or AKG528000 Administratively Extended coverage will expire 180 days from the effective date of the permit (See Fact Sheet Part 1.9.2). Those facilities, as listed in Permit Appendix D, applying for coverage will have the standard 100 foot radius mixing zone(s), and will be issued a mapped project area ZOD or mapped seafloor survey area, as public noticed through the AKG521000 General Permit.

Only facilities meeting the provisions of the permit will be provided an APDES AKG521000 written authorization. The Department's evaluation will include the facility's NOI, the receiving water characteristics, ensuring that the facility's flow and required receiving water characteristic, along with TMDL status, allow the discharge and authorization of standardized mixing zone and project area ZOD.

Transfer of Authorization or Change in Location (Permit Part 1.8). As found in 18 AAC 83.150, permit coverage for a facility may be transferred from an existing owner to a new owner. The permit authorizes a transfer only for an existing facility located at the site designated in the original NOI. Discharge authorization for a particular existing facility may not be transferred to the same facility permittee at a new facility location.

1.11.1. At the completion of the Department's NOI review process, DEC will either:

- 1) Prepare and transmit a written authorization specifying whether a mixing zone is authorized - including the maximum size of the mixing zone; whether a Project Area ZOD is authorized - including the location and size of the Project Area ZOD; the maximum amount (lbs) of seafood waste that can be discharged; and whether each vessel's area(s)-of-operation are authorized.

In determining the appropriateness of granting an authorization, the Department will evaluate the information provided by the permittee, including:

Location coordinates provided in the NOI for each proposed discharge outfall/port location or area(s)-of-operation will be used to determine if:

- A discharge is to a water in an Excluded Area (Permit Parts 1.4.3 – 1.4.4),
- Multiple permittees are proposing to discharge to the same or in close proximity to the same receiving water,
- The amount of proposed discharge. While a Remote permittee may apply for coverage up to 10 million pounds on the NOI, the amount of seafood processing waste discharge authorized may be limited by the conditions at the proposed discharge location or to each area-of-operation. When determining whether to limit the amount of discharge, the Department will include in its consideration the following:
 - The effects that the discharge might have on the uses of the receiving water,
 - The flushing and mixing characteristics of the receiving water,
 - The total aggregate area any continuous deposits found during Seafloor Surveys, and
 - The cumulative effects of multiple discharges to the receiving water and other inputs affecting the receiving water. The Department will make a determination of whether a standard sized mixing zone (Permit Part 2.7.4.4) is appropriate at the proposed discharge, or for each area-of-operation, and will identify the appropriateness of authorizing a mixing zone for those pollutants identified in Part 2.7.4.5.

When determining the appropriateness of authorizing a mixing zone other than the standard 100 foot radius mixing zone, the Department will include in its consideration the following:

- The information included on Form 2M, if required,
- Available effluent monitoring results reflecting the proposed waste or wastewater treatment system is able to meet the requirements of the permit,
- The effects that the discharge might have on the uses of the receiving water,
- The flushing and mixing characteristics of the receiving water,
- The cumulative effects of multiple mixing zones and other inputs affecting the receiving water, and
- Compliance with permit requirements, including receiving water monitoring results.

When determining the appropriateness of allowing a new project area ZOD (e.g., for project area ZODs not listed in Appendix D), the Department will consider the following:

- The permittee project area ZOD information submittal, as required under Part 1.6.11.3,
 - Comments received during the public comment period,
 - The effects that the discharge might have on the uses of the receiving water,
 - The flushing and mixing characteristics of the receiving water,
 - The size of the marine seafloor operational areas of the seafood processing facility, to include areas around dock, over water facilities, mooring areas, seafloor areas along the length of the outfall(s) and previous seafloor surveys indicating the location and size of seafood waste deposits, if any, and
 - The cumulative effects of multiple project area ZODs and other inputs affecting the receiving water.
- 2) Find the NOI incomplete and notify the permittee of needed revisions or updates to the NOI submittal, or
 - 3) Deny coverage under the general permit and require a permittee to submit an APDES IP application.

1.11.2. Providing Notice, as applicable. The following will be noticed in accordance with 18 AAC 83.120 requirements:

- 1.11.2.1. New proposed project area ZODs that have not been previously public noticed,
- 1.11.2.2. New domestic wastewater discharges requesting mixing zones, or mixing zones for pollutants not listed in Permit Part 2.7.4.5.
- 1.11.2.3. New facility permittees (e.g., those not listed in Permit Appendix D) proposing to discharge into impaired waterbodies after the effective date of the permit.
- 1.11.2.4. The Department will provide 30-day notice to agencies with management authority over Excluded Areas for new facility permittees proposing to discharge into waters of Excluded Areas listed in Permit Parts 1.4.3 – 1.4.5.

1.12. Change in Location (Permit Part 1.10)

Authorization under the permit is specific to the outfall(s)/port(s) identified in the NOI, and a facility's specified geographic location. If a permittee moves to a new facility location that changes the location of the discharge, the permittee shall submit a NOT form for the former facility's authorization within 30 days of ceasing discharge from the facility. The permittee shall apply for coverage for a new facility location by submitting a new NOI. If a permittee moves the location of any outfall, the permittee shall apply for coverage at the facility's new outfall location by submitting a new NOI and any documents as required under Permit Part 1.5.5.

1.13. Continuation of Expired General Permit (Permit Part 1.12)

If the AKG521000 permit is not reissued prior to the permit's specified expiration date, it will be administratively extended in accordance with 18 AAC 83.155 and remain in force and effect. In order to continue coverage, the permittee shall submit an updated NOI to the Department six months (180 days) prior to the expiration of the permit requesting authorization for coverage under a reissued permit. The Department may allow the NOI application to be submitted at a later date, but prior to the permit's expiration date. Following a permittee's timely and appropriate submittal of a complete NOI and receipt of a DEC APDES administrative extension letter, the permittee is covered under administrative extension until the permit is reissued or the authorization is terminated.

The permittee is required to abide by all limitations, monitoring, and reporting included in the permit when the permit enters administrative extension until such time the permit is reissued, or a NOT is submitted by the permittee and processed by the Department.

If the permit is administratively extended beyond five years, the permittee shall be required to reinitiate all of the originally required monitoring schedules established in the permit. If reduction in monitoring, or alternative permit compliance conditions(s) were granted in an APDES authorization prior to administrative extension, the permittee shall make a written re-request for the reduction in monitoring or other operating conditions with submittal of the administrative extension NOI application.

1.14. Termination of Permit Coverage (Permit Part 1.13)

If a permittee desires to terminate coverage, the permit requires the permittee to provide an NOT to DEC within 30 days following cessation of discharges. The notice shall include certification that the facility is not subject to an enforcement action or citizen suit. The notice shall also include any final reports required by the permit.

2.0 Compliance History

The compliance histories of the existing facilities authorized by the 2001 AKG520000 permit and the AKG528000 Kodiak permit were evaluated. Due to the large number of existing authorized facilities, a detailed breakdown of the instances of non-compliance is not provided in the fact sheet. Specific details regarding the compliance history of a specific facility can be found by visiting the EPA's Enforcement & Compliance History Online (ECHO) at <http://www.epa-echo.gov/echo/>. Permit Appendix D provides a list of facility permit numbers and facility names that can be used to search for summary and detailed information about a specific facility's compliance and enforcement status and history.

3.0 Effluent Limits and Monitoring Requirements

3.1. Basis for Permit Effluent Limits

In general, the CWA requires that the limits for a particular pollutant be the more stringent of either TBEL or WQBEL. A TBEL is set according to the level of treatment that is achievable using available technology. For industrial sources, the national ELGs in the form of TBELs are developed based on the demonstrated performance of a reasonable level of treatment that is within the economic means for specific categories of industrial facilities. A WQBEL is designed to ensure that the WQS of the waterbody are met and may be more stringent than a TBEL. The most stringent limitations will be selected as the final permit limitations.

3.2. Effluent and Receiving Water Monitoring

In accordance with AS 46.03.110(d), the Department may specify in a permit the terms and conditions under which waste material may be disposed. Monitoring and waste treatment system inspection requirements established in a permit are required to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and receiving water data to determine if additional effluent limits are required and/or to monitor effluent impact on receiving water quality.

The permittee is responsible to conduct the monitoring and report results, in some cases, on discharge monitoring reports (DMR), and in all cases, in an Annual Report to the Department.

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. The permittee has the option of taking more frequent samples than required under the permit. If the permittee monitors any pollutant more frequently than the permit requires using test procedures approved under 40 CFR Part 136, adopted by reference in 18 AAC 83.010, or as specified in the permit, the results of that additional monitoring must be included in the calculation and reporting of the data reported on the DMR and the Annual Report. All limits that require averaging of measurements shall be calculated using an arithmetic mean unless the Department specifies another method in the permit. Tests shall be conducted using the Department-approved test methods, and monitoring data reported even if the method detection limits (MDLs) are less than the effluent limits.

3.3. Domestic Wastewater Discharges (Permit Part 2.1.2)

The AKG521000 permit proposes to provide coverage to onshore facility's domestic wastewater discharge if it meets secondary wastewater treatment standards prior to discharge. The domestic wastewater treatment system must be able to meet treatment limitations found in 40 CFR 133, adopted by reference in 18 AAC 83.010(e). An onshore facility may choose to discharge domestic wastewater to a municipal domestic wastewater treatment facility, or septic system, both of which are not regulated or covered by the AKG521000 permit.

Providing coverage for domestic wastewater discharges is consistent with the requirements included in the 2001 AKG520000 permit. Sanitary wastewater was the term used for the discharge of shower, toilet, and sink wastewater in the 2001 AKG520000 permit and covered both onshore and vessel wastewater discharge. The AKG521000 permit proposes to use the term "sanitary wastewater" for vessel discharges (See Fact Sheet Part 3.4 for more information), but uses the term "domestic wastewater" and "graywater" for onshore facility domestic wastewater discharges, as defined in 18 AAC 72.990(23).

The AKG521000 permit defines domestic wastewater per state regulation 18 AAC 72.990 (23) *"domestic wastewater" means waterborne human wastes or graywater derived from dwellings, commercial buildings, institutions, or similar structures; "domestic wastewater" includes the contents of*

individual removable containers used to collect and temporarily store human wastes.” Additionally, the AKG521000 permit defines graywater per 18 AAC 72.990 (35) *“graywater means wastewater (A) from a laundry, kitchen, sink, shower, bath, or other domestic source; and (B) that does not contain excrement, urine, or combined stormwater.”*

These two terms used in the APDES AKG521000 permit are consistent with the definition for “domestic wastewater” found in 40 CFR 122.2 *“domestic sewage” includes waste and waste water from humans or household operations that are discharged to or otherwise enter a treatment work.”* The term ‘domestic wastewater’ is therefore the term used in the AKG521000 permit for regulating an onshore facilities waterborne human wastes and graywater wastewater discharges.

3.3.1. **History of AKG520000 Domestic Waste Definitions**

The AKG520000 defined “domestic waste” as *“materials discharged from showers, sinks, safety showers, eyewash stations, hand-wash stations, fish-cleaning stations, galleys and laundries.”*

The 2001 AKG520000 definitions of domestic wastewater, graywater, and domestic sewage were intermingled. The 2001 AKG520000 “domestic waste” definition didn’t correspond to 40 CFR 122.2 ‘domestic sewage’ either, rather the definition seems to have mixed the Alaska State definition of “graywater” and a federal definition found in 40 CFR 122.2 “graywater” ... *For the purposes of this definition, “graywater” means galley, bath, and shower water* (see definition: *sewage from vessels*). Inexplicably, the AKG520000 definition for “domestic waste” mirrored the definition of “domestic waste” found in 40 CFR 435.11 Applicable to Offshore Oil & Gas exploration- (j) *Domestic waste means materials discharged from sinks, showers, laundries, safety showers, eye-wash stations, hand-wash stations, fish cleaning stations, and galleys located within facilities subject to this subpart.*

DEC suspects this mixed definition of domestic waste was used in the AKG520000 permit because coverage was provided to both onshore (shore-based) facility’s domestic wastewater discharges, and seafood processing vessel’s sewage wastewater and graywater discharges. The AKG520000 permit’s definition of “sewage” is that found in the MSD Standards in 40 CFR 140.1 (a) *“Sewage means human body wastes and the wastes from toilets and other receptacles intended to receive or retain body wastes”*, not of that ‘domestic sewage’ definition found in 40 CFR 122.2.

The ramifications of Alaska’s regulation is that per 18 AAC 72.050(a)(3), community domestic wastewater treatment works (onshore facility’s domestic wastewater discharges to waters of the U.S.) must meet minimum treatment requirements (i.e., secondary treatment as defined in 18 AAC 72.990(59)), unless a waiver from minimum treatment is granted by the Department under 18 AAC 72.060. The permit requires onshore facility graywater discharges (falling under domestic wastewater definition) to meet secondary treatment as defined in 18 AAC 72.990(59). If the applicant segregates graywater and requests coverage that includes limits less stringent than the minimum treatment requirements of 18 AAC 72.050, the applicant must also obtain a waiver for minimum treatment under 18 AAC 72.060 prior to obtaining authorization for domestic wastewater discharges. Waivers will only be approved if the applicant can demonstrate that public health and the environment are protected.

CWA Part 301 requires a Publicly Owned Treatment Works (POTW) to meet requirements based on available wastewater treatment technology. Section 301 of the CWA established a required performance level, referred to as secondary treatment, which all POTWs were required to meet standards by July 1, 1977, with limited exception (e.g., POTWs discharging to marine waters and granted CWA 301(h) waivers).

“Secondary treatment” TBELs for POTWs include limits for BOD, TSS, pH and are established in 40 CFR 133.102, adopted by reference at 18 AAC 83.010(e). BOD and TSS effluent limits are based

on TBELs meeting federal regulations of 40 CFR 133.100 – 40 CFR 133.105. In addition to the federal secondary treatment regulations in 40 CFR Part 133, the State of Alaska requires maximum daily limits of 60 mg/L for BOD and TSS in its definition of secondary treatment found in 18 AAC 72.990. However, 18 AAC 72 does not specify the percent removal requirements required by 40 CFR 133, so the AKG521000 permit applies the more stringent 40 CFR 133 requirements.

While an onshore seafood processors' domestic waste treatment systems are not POTWs, the type of treatment technology a permittee of a seafood processor would employ to treat domestic wastewater prior to discharging to waters of the U.S is nearly identical to the treatment technology that a permittee of a POTW would use. Therefore, the secondary treatment standards directly applicable to POTWs provide the most meaningful limits for controlling the pollutants a seafood processor's domestic wastewater treatment system discharges to waters of the U.S. Accordingly the AKG521000 permit requires domestic wastewater, not being discharged to an on-site septic or municipal domestic wastewater treatment system, discharged directly to waters of the U.S. to meet secondary treatment standards, found in 40 CFR 133, adopted by reference in 18 AAC 83.010(e), unless a waiver for treatment less than secondary has been approved.

When evaluating the effluent to determine if WQBELs based on chemical-specific numeric criteria or mixing zones are needed, the Department projects the receiving waterbody concentration for each pollutant of concern downstream of where the effluent enters the receiving waterbody. The chemical-specific concentration of the effluent and receiving waterbody and, if appropriate, the dilution available in the receiving waterbody, are factors used to project the receiving waterbody concentration. If the projected concentration of the receiving waterbody at the boundary of the mixing zone exceeds the numeric criterion for a limited parameter, then there is a reasonable potential that the discharge may cause or contribute to an excursion above the applicable water quality standard, and a WQBELs need to be developed.

Examining individually permitted facilities and facilities authorized under general permits for secondary treatment domestic wastewater plants' effluent monitoring data around the State, DEC has determined there is reasonable potential for WQS for FC bacteria, TRC, and/or pH be exceeded at the chronic mixing zone boundary. Thus, in the AKG521000 permit, the Department proposes to apply the WQBELs for FC bacteria, TRC and pH from domestic wastewater based on state WQS found in 18 AAC 70.020(b). After the application of WQBELs, domestic wastewater discharge facilities are required to meet state WQS found in 18 AAC 70.020(b) at the boundary of the mixing zone. The AKG52100 permit proposes to authorize a 100 foot radius standard mixing zone for domestic waste water discharges.

3.3.2. **Enterococci Bacteria**

Enterococci bacteria are indicator organisms of harmful pathogens recommended by EPA as the best indicator of health risk in marine water used for recreation. In 1986, EPA published Ambient Water Quality Criteria for Bacteria that contained recommended bacteria water quality criteria for primary contact recreational users. The Beaches Environmental Assessment and Coastal Health Act that followed in 2000 required states and territories with coastal recreation waters to adopt bacteria criteria into their WQS that were at least as protective as EPA's 1986 published bacteria criteria by April 10, 2004. Alaska did not adopt the enterococci bacteria into the WQS by the April 10, 2004 deadline; therefore EPA promulgated the 1986 bacteria criteria for Alaskan coastal recreational waters in 2004. Enterococci bacteria monitoring is a new permit requirement based on EPA's promulgation of enterococci bacteria standards for marine waters to protect primary contact recreation. While in the process of promulgating updated recreational bacteria criteria, the Department has currently not adopted the federally established WQS for enterococci bacteria in

18 AAC 70. However, as a delegated program to administer the NPDES program, the Department must apply the federal enterococci bacteria standard, which is codified in 40 CFR 131.41. The AGK521000 permit requires monitoring the effluent for both FC bacteria and enterococci bacteria to determine the presence of the organisms in the waste stream and at the boundary of the mixing zone. Bacteria monitoring will be required during the months of June through September when the receiving water would most likely be used for primary contact recreation.

3.3.3. Chlorine

Many domestic wastewater treatment plants use chlorine to disinfect wastewater prior to discharge. The *Water Pollution Control Federation's Chlorination of Wastewater* (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/L chlorine residual is maintained after 15 minutes of contact time. Therefore, a wastewater treatment plant that provides adequate chlorine contact time can meet a 0.5 mg/L TRC limitation on a monthly average basis. In the absence of new information to indicate TRC technological advances that would alter the WPCF's 1976 conclusions, an average monthly limit (AML) of 0.5 mg/L for TRC and a MDL of 1.0 mg/L for TRC has been applied as a TBEL in the permit for facilities with mixing zones for TRC.

Table 1 below summarizes the domestic wastewater effluent limits and monitoring requirements incorporated into the permit.

Table 1: Domestic Wastewater Discharge Effluent Limits and Monitoring Requirements (Permit Table 2)

EFFLUENT PARAMETER	UNITS	EFFLUENT LIMITS					MONITORING REQUIREMENTS		
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	Average Monthly Percent Removal	Minimum Daily Limit	Sample Location	Sample Frequency	Sample Type
Flow Rate ^a	mgd	---	---	---	---	---	effluent	daily (5/week)	Measured or calculated ^a
pH Standard pH units (SU)	SU	---	---	8.5	---	6.5	effluent	3/week	grab
Total Residual Chlorine (TRC) ^{b, c}	mg/L	0.011 (fresh) 0.0075 (marine)	---	0.019 (fresh) 0.013 (marine)	---	---	effluent	3/week	grab
Dissolved Oxygen	mg/L	---	---	17	---	7 (fresh) 6 (marine)	effluent	1/month	grab
5-Day Biochemical Oxygen Demand (BOD ₅)	mg/L	30	45	60	85% ^e (minimum)	---	influent and effluent ^f	1/month	grab or composite
	lbs/day ^d	---	---	---					
Total Suspended Solids (TSS)	mg/L	30	45	60	85% ^e (minimum)	---	influent and effluent ^f	1/month	grab or composite
	lbs/day ^d	---	---	---					
Fecal Coliform (FC) Bacteria	FC/100 mL	200	400	800	---	---	effluent	1/month ^g	grab
Enterococci Bacteria	count/ 100 mL	---	---	report	---	---	effluent	1/month ^g	grab

Notes:

- a. A facility-specific flow limitation based on the hydraulic design capabilities of the facility shall be included as a part of the authorization to discharge.
- b. The TRC effluent limits are not quantifiable using EPA-approved standard analytical methods found in 40 CFR Part (most current version), adopted by reference at 18 AAC 83.010 (most current version) and those found in 18 AAC 70. DEC will use the minimum level (ML) of 0.1 mg/L as the compliance evaluation level for this parameter.
- c. Monitoring for chlorine is not required if chlorine is not used as a disinfectant, nor introduced elsewhere in the domestic wastewater treatment process.
- d. BOD₅ and TSS mass loading limits apply to each discharge. The loading limits are calculated for each facility by the following formula: pounds per day limitation = concentration limit (mg/L) x facility design flow (mgd) x 8.34 (conversion factor). Loading limitations are applicable to the average monthly, average weekly and maximum daily basis.
- e. Minimum % Removal = [(monthly average influent concentration in mg/L – monthly average effluent concentration in mg/L) / (monthly average influent concentration in mg/L)] x 100. The monthly average percent removal shall be calculated using the arithmetic mean of the influent value and the arithmetic mean of the effluent value for that month.
- f. Influent and effluent samples shall be taken over approximately the same time period.
- g. All FC bacteria and enterococci bacteria average results shall be reported as the geometric mean. When calculating the geometric mean, replace all results of zero, 0, with a one (1). The geometric mean of “n” quantities is the “nth” root of the quantities. For example the geometric mean of 100, 200, and 300 is (100 x 200 x 300)^{1/3}= 181.7. The standard holding time for a FC bacteria or enterococcus bacteria sample is eight hours from the sample collection time.

3.4. Treated Sanitary and Graywater Discharges from Vessels (Permit Part 2.1.2)

The AKG521000 permit provides coverage for vessel discharges of treated sewage and graywater wastewater.

A vessel's sanitary waste must be treated prior to discharge by a Type II MSD that meets the applicable Coast Guard pollution control standards in effect [33 CFR Part 159: "Marine sanitation devices"]. Alternatively, a vessel's sanitary wastewater may be discharged to a permitted onshore facility's domestic wastewater discharge system.

Vessel sanitary (sewage) discharges were not included in the 40 CFR Part 408 TBELs applicable to seafood processors, but were authorized under the AKG520000 permit as a result of a blending of terminology and regulations. The term "sanitary wastes" was introduced in the AKG520000 permit, when referring to a vessel's sewage waste discharges; however, for consistency the AKG521000 will continue to use the term "sanitary wastes" for vessels, but DEC is unable to trace why this definition was introduced. The AKG520000 general permit required sanitary waste to be treated prior to discharge by a sanitary waste system that meets the applicable Coast Guard pollution control standards then in effect [33 CFR Section 159: "Marine sanitation devices"]. Currently the U.S. Coast Guard requires vessels greater than 19.7 feet in length to have a Type II or Type III MSD.

The AKG521000 permit requires moored barges and vessel's acting as support facilities and discharging sanitary effluent, to have APDES permit coverage. The permit requirement stems from the moored barge or vessel are acting as an commercial/industrial facility (seafood processing) and not as a transportation vessel, per 18 AAC 83.015 (b)... *exclusion does not apply to (B) other discharges when the vessel is operating in a capacity other than as a means of transportation, including when the vessel is (i) used as an energy or mining facility, a storage facility, or a seafood processing facility; (ii) secured to a storage facility or a seafood processing facility.*

In accordance with 40 CFR 125.3, adopted by reference at 18 AAC 83.010, the Department is applying BPJ to determine that treated sanitary wastewater discharged from a U.S. Coast Guard certified, operable Type II MSD shall serve as the basis for Best Available Technology Economically Achievable (BAT) / Best Conventional Pollutant Control Technology (BCT) effluent limitations for sanitary discharges from a seafood processor vessel when acting as an industrial facility. State regulations established in 18 AAC 72.050 Editor's Note states: *The discharge of domestic wastewater from vessels is regulated by federal standards of performance for marine sanitation devices under 33 U.S.C. 1322 (CWA, sec. 312).* The regulatory performance standards for a Type II MSD are located at 33 CFR Part 159. The AKG521000 permit proposes requiring effluent sampling and analysis of sanitary effluent for suspended solids and bacteria, and that BMPs be developed and implemented, consistent with 18 AAC 83.475, to achieve the effluent limits established by BPJ for vessel's sanitary discharges.

The BPJ determination were based on the following considerations:

- The age of equipment and facilities involved. U.S. Coast Guard regulations require that no person may operate a vessel equipped with a toilet facility unless it is equipped with an operable MSD certified or labeled in accordance with 33 CFR 159. The MSD is required to be operated in such a manner to maintain certification regardless of the age of the equipment.

- Engineering aspects of the application of various types of control techniques. Space on vessels is limited and changes to a MSD system can affect the stability of vessels and require re-licensing of such vessels from the U.S. Coast Guard. Every vessel is required to have a labeled or certified MSD that is tested in accordance with 33 CFR 159.
- Cost Considerations. Since DEC's determination that the currently utilized treatment technology, a Type II MSD, will be utilized as BAT/BCT treatment for these facilities, there is no incremental cost involved in attaining the technology based limits of the permit.

Microbiological monitoring. For compliance purposes, microbiological samples (FC bacteria and enterococci bacteria) are required to be analyzed within 8 hours of sample collection (40 CFR Part 136, Standard Methods, 20th edition. 9060 B. Page 9-21).

Graywater discharges were not included in the 40 CFR part 408 TBELs, but were authorized by the 2001 AKG520000 permit. EPA's VGP regulates discharges incidental to the normal operation of a vessel. The VGP included limitations and controls for various discharges from vessels when acting as a means of transportation and not as an industrial facility, including graywater. The proposed AKG521000 graywater control measures are modeled after the VGP control measures. Using BPJ, the proposed permit requires the development and implementation of BMPs to control or abate the discharge of graywater from a seafood processing vessels, when acting as an industrial facility. Table 2 presents the limits and monitoring requirements for each vessel's MSD device port when sanitary effluent is discharged. Table 3 presents the monitoring requirements for each vessel's graywater port when graywater is discharged.

Table 2: MSD System Effluent Monitoring (Permit Table 3)

Parameter	Units	Effluent Results	Sample Location	Sample Frequency	Sample Type
Flow Rate	gallons per day (gpd)	report	effluent	1/Month when Discharging	Measured or Calculated
Total Residual Chlorine (TRC) ^a	mg/L	report	effluent	1/Month when Discharging	Grab
Total Suspended Solids ^{b, c}	mg/L	report	effluent	1/Month when Discharging	Grab
Fecal Coliform (FC) Bacteria ^{b, c}	FC/100 mL	report	effluent	1/Month when Discharging	Grab
Enterococci Bacteria ^c	#/100 mL	report	effluent	1/Month when Discharging	Grab
<p>Notes:</p> <ul style="list-style-type: none"> a. Monitoring for chlorine is not required if chlorine is not used as a disinfectant or introduced elsewhere in the treatment process. b. Certified Type II Marine Sanitation Devices (MSD) must be operated in accordance with manufacturer's recommended operational procedures. c. All FC bacteria and enterococci bacteria average results shall be reported as the geometric mean. When calculating the geometric mean, replace all results of zero, 0, with a one, 1. The geometric mean of "n" quantities is the "nth" root of the quantities. For example the geometric mean of 100, 200, and 300 is $(100 \times 200 \times 300)^{1/3} = 181.7$ FC/100 mL. 					

Table 3: Graywater System Effluent Monitoring (Permit Table 4)

Parameter	Units	Sample Location	Sample Frequency	Sample Type
Flow Rate	gallons per day (gpd)	effluent	monthly	Measured or Calculated
Fecal Coliform (FC) Bacteria	FC/100 mL	effluent	1/Month when Discharging	Grab
Enterococci Bacteria	#/100 mL	effluent	1/Month when Discharging	Grab
<p>Note:</p> <ul style="list-style-type: none"> a. All FC bacteria and enterococci bacteria average results shall be reported as the geometric mean. When calculating the geometric mean, replace all results of zero (0), with a one (1). The geometric mean of "n" quantities is the "nth" root of the quantities. For example the geometric mean of 100, 200, and 300 is $(100 \times 200 \times 300)^{1/3} = 181.7$ FC/100 mL. 				

3.5. Remote Facilities Requirements (Permit Part 2.2.1)

The AKG521000 permit contains limits based on both TBELs and WQBELs. The TBELs applicable to the Remote seafood processing industrial sector are found in 40 CFR Part 408 - Canned and Preserved Seafood Processing Point Source Category.

A Remote seafood processor is a facility that is not located in a designated processing or population center (40 CFR Part 408). Most seafood processing facilities operating in Alaska are considered Remote, and many of the existing seafood processing facilities were previously covered under the 2001 AKG520000 permit.

The permit requires new Remote facilities to install flow rate meters, install new outfalls at certain depths, perform pre-installation outfall surveys, monitor and report the operability of their seafood waste treatment system and limit their total pounds of seafood waste discharged in Permit Parts 1.6 and 2.2.1. The following paragraphs discuss these requirements in more detail.

3.5.1. Outfall Depth and Flow

The proposed permit requires Remote facilities provide information regarding their discharge flow and their outfall depth. The permit requires the identification of all outfalls, types of waste and wastewater discharged from each outfall, as well as specific outfall terminus depth reporting. The 1994 Seafood Processing Ocean Discharge Criteria Evaluation (ODCE) provided predictions on the formation of deposits on the seafloor in order to project environmental impacts (more information may be found in the 1994 ODCE regarding the environmental impacts of seafood waste deposits <http://dec.alaska.gov/water/wwdp/seafood/documents.html>).

Mixing zone modeling requires certain parameter inputs to assess the mixing behavior and plume geometry of the ground seafood waste discharge (e.g., outfall depth, hydrodynamics of the water characteristics, pollutant loading, etc.). Previous 2001 AKG520000 permit compliance inspections have often revealed multiple outfalls installed at various facilities, but only one outfall identified on the NOI. In order to accurately model environmental impacts as well as fully disclose all wastewaters discharged at the facility, the correct number and location of outfalls must be identified, along with the associated pollutant loading, flow rates and terminus depth associated with each outfall.

Requiring identification of all outfall lines, their depths, average flow rates, types of wastewater effluent being discharged, along with the development and implementation of a robust BMP Plan, should increase permittee's compliance with permit requirements, and ultimately result in increased water quality protection.

3.5.2. Pre-Installation / Pre-Discharge Survey Requirement (Permit Appendix I)

The permit includes a new requirement to conduct a pre-biological survey prior to the placement of a new outfall, planned movement or removal of an existing outfall, or the re-startup of an existing facility outfall where no discharge has occurred in the past 12 months. The purpose of the survey is two-fold. First, the survey must demonstrate that the proposed placement of the outfall will not result in the discharge occurring into "living substrate" (see Permit Part 1.4 – Excluded Areas). Second, the survey must record the occurrence and extent of persistent sea surface films, foam, scum or sheens (water quality criteria 18 AAC 70.020(b)), the presence and extent of any seafood waste deposits on the seafloor (following Permit Appendix F – Protocol II) and/or the presence of any listed endangered or threatened species near the proposed outfall site. The permit does not require the permittee to conduct a pre-biological seafloor survey for a facility's approved in-transit vessel area(s)-of-operation disposal site(s). Hydrology information – Identifying if the receiving water is hydrodynamically energetic, the surveyor is required to

report ambient tidal current velocity and direction, and water chemistry (both seasonal and in-situ on the day of the survey, including salinity, water temperature, density, turbidity, DO and pH). These parameters should be taken on the same day the survey is performed at the proposed outfall terminus location and at proposed depth of outfall as a grab sample, or at depth by using in-situ probe sampling. For grab sampling at depth, a Van Dorn sampling bottle can be used to obtain water samples at selected depths below the surface. It consists of an open ended clear plastic cylinder that can be attached to the hydrographic wire (the steel wire wound on the winch) and lowered to any desired depth. The bottles also provide a platform to which thermometers can be attached to record the temperature of the water at the location of each Van Dorn bottle.

3.5.3. **Waste Treatment System**

The TBELs applicable to Remote seafood processing facilities are found in 40 CFR Part 408 - Canned and Preserved Seafood Processing Point Source Category. The regulatory ELGs found in 40 CFR Part 408 for Alaskan seafood processors in Remote locations require that no pollutants may be discharged which exceed 1.27 cm (0.5 inch) in any dimension. This technology-based requirement has been incorporated into the permit.

DEC does not require the use or installation of particular technologies. Rather, the CWA requires permittees to meet certain performance standards (TBELs) that are based upon the proper operation of pollution prevention and treatment technologies identified by EPA during an effluent guidelines and pretreatment standards rulemaking.

In addition to seafood processors subject to TBELs, the Department finds the performance-based level of pollutant controls applicable to seafood processors is most appropriate pollution control mechanism for community Grinders discharging seafood waste. Community grinders discharging seafood waste generally do not create seafood processing waste as defined in AKG520000, conversion of aquatic animals from a raw form to a marketable form, yet seafood waste from community grinders contains similar types of pollutants as compared with that of seafood processors. The AKG521000 permit proposes community grinding systems / facilities discharging seafood waste meet the same waste treatment requirement of 1.27 cm (0.5 inch) grind and perform monitoring as described in the permit.

3.5.4. **Total Waste Discharge (Pounds) limit (Permit Part 2.2.1.7.13)**

The ten million pound (10,000,000 lb) maximum annual permit limit for seafood waste discharge has been retained in the AKG521000 permit based upon previous residue modeling performed. See Fact Sheet Part 4.7 for more information regarding deposits, revised seafloor survey methods and mixing zone study (Fact Sheet Part 4.7.6). Two facilities, after the submittal of a complete NOI application, will be allowed to continue discharges greater than 10,000,000 lbs – Ocean Beauty Excursion Inlet Plant and Icicle Seafoods – Petersburg Plant. Icicle Seafoods – Petersburg facility is required to continue the use of its by-production plant as required its AKG520000 waiver approval. The Department will evaluate these two facilities during the permit cycle to determine if APDES IP coverage is more appropriate.

3.5.5. **Seafood System Inspection Requirements (Permit Parts 2.2.1.9)**

The permit requires routine inspection of both the outfall and the waste discharge system. DEC experience in performing compliance inspections and sites visits is that operational maintenance issues are often the cause of historical permit violations. Requiring daily and/or weekly inspections of facility waste treatment system lines and outfall lines, yearly and/or biannual

inspections of the outfall line, along with the development and implementation of a robust BMP Plan should increase permittee compliance with permit requirements.

The AKG521000 permit proposes the permittee inspect the grinder system to evaluate compliance with the grind size requirement to ensure that foreign objects (e.g., ear plugs, plastic, etc.) are not being discharged, and to evaluate the effectiveness of currently established BMPs in place for the maintenance of the grind waste conveyance system. The permit requires that the permittee follow the standard grind size sampling and analysis protocol (Permit Appendix H). Protocol modifications is allowed, but requires written approval from the Department prior to implementation. Taking digital pictures of the grinder, waste and effluent on a monthly basis to document compliance with the grind size limitation is a new permit requirement. The purpose of the monitoring is to confirm permit compliance and implement operational corrections based on BMP Plan requirements and the observations made by permittee. Facilities with grind size violations are not required to verbally report the non-compliance event(s) within 24 hours, nor follow-up with a 5 day written report, as the Department does not view single day or single sample grind size violations as a noncompliance event that may endanger health or the environment. Grind size noncompliance events are required to be recorded on the Grinder Logs and submitted as noncompliance occurrences with the Annual Report consistent with 18 AAC 83.455(e) and 18 AAC 83.410(f) and (g).

3.5.6. **Spoiled Seafood Waste (Permit Part 2.2.1.10)**

A vessel's seafood that is being delivered to a Remote onshore facility and found to be "spoiled" due to temperature, histamine concentration or decomposition may be discharged if ground to a ½-inch consistent with the Remote TBEL.

Seafood processors cannot economically buy only the premium loads of seafood. Processors have to buy the entire boatload, good or partially acceptable, except if a vessel is entirely composed of spoiled fish, and must often accept highly variable seafood product. If an onshore processor is going to accept and discharge a vessel's entire boatload full of spoiled seafood product, the permit requires the facility to grind the seafood material and perform monitoring. The required monitoring is only intended for the acceptance and discharge of an entire load or partial boat/fish hold load of a vessel's spoiled seafood. The monitoring is not required for the occasional fish / individual seafood product that is found to be spoiled, or needs to be discarded while in the processing line.

The AKG521000 permit includes new monitoring requirements to monitor the effluent for temperature, pH and ammonia during the acceptance of and discharge of a vessel load or partial load of spoiled seafood (Table 4).

Early Post Mortem Changes. Ordinarily the most important post mortem change in fish is the changing of the muscle metabolism reactions largely to irreversible ones with the resulting accumulation of lactic acid in the tissue and a decline in its pH. The pH of the living fish muscle is not far from 7.0; however, as a result of post mortem accumulation of lactic acid, pH values in the range of 5.8 to 6.2 are reached at peak rigor development. Shellfish, such as oysters and clams, which contain relatively large quantities of glycogen attain a much lower pH as a result of post mortem changes with values of pH 5.0 or even lower being not uncommonly reached (Stansby, 1976).

During the routine seafood offloading procedures at the dock, the seafood is checked for on-board temperature monitoring, internal temperature of seafood at the time of docking, and amounts of histamine formation and seafood decomposition. Histamine formation and

decomposition can occur due to a number of factors, including the seafood delivery vessel or onshore facility having a problems with the refrigeration system. If the seafood does not meet FDA seafood Hazard Analysis and Critical Control Point (HACCP) regulations (such as measured indole (an alkaloid) or temperature), the seafood aboard the vessel or at the facility needs to be disposed of (FDA Compliance Policy Guide, Sec. 540.370). This type of discharge only occurs on occasion (2-3 vessels statewide per year). Spoiled seafood waste does not meet the definition of seafood processing waste because it is not seafood that is processed into marketable form, yet the composition of the spoiled, ground, non-processed seafood has been assumed to not vary in its water quality pollutants of concern (e.g., pH, ammonia, BOD & TSS loading, temperature) compared to that of processed seafood. Depending on boat fish hold conditions, there is possible water quality pollutants of concern such as extreme changes in pH, increased ammonia content and/or increased effluent discharge temperature (Shi 2012; EPA, 1974).

Development of an undesirable “fishy” odor due to the formation of multiple ammonia containing products including trimethylamine (TMA), dimethylamine (DMA), total volatile base nitrogen (TVBN), ammonia, volatile sulphur compounds, and other undesirable compounds are characteristic of microbial spoilage. While total volatile acid gives as accurate correlation with freshness of seafood, the method requires considerable attention, keeping the steam distillation rate constant. The volatile reducing substances test requires special equipment and in the hands of some permittees, fails to give reproducible results. Using a measurement of pH for the measure of seafood being spoiled is unreliable for most species of fish because end products of spoilage of both alkaline and acidic nature tend to neutralize each other (Stansby, 1976). With shellfish, particularly oysters where the initial primary spoilage substance is lactic acid, pH is a simple, fairly reliable freshness test. Of the many specific tests for single chemical substances used as a measurement of freshness, that for TMA has been most widely used. While the TMA measured during spoilage of fish contributes little to the fishy odor, with some species of fish there is a fairly consistent increase in TMA with spoilage. The test has proved to be useful in low-oil content marine species such as cod and haddock. Among the many other specific tests which have been used for fish freshness are those for histamine, hydrogen sulfide, acetoin, and certain free amino acids. Several other chemical methods are currently in use for the quality assessment of seafoods. Of these, biogenic amines, adenosine-triphosphate (ATP)-breakdown compounds, and K-related values (Ki, G, Fr, H, and P-values) are the most common and provide accurate quality indices. (Stansby, 1976).

In addition to the above mentioned oxidation products, unsaturated fatty acids present in seafood can lead to a wide range of lipid oxidation products such as peroxides, carbonyls, aldehydes, alcohols, and ketones, and their interaction form compounds that contribute to pollutant loading effects on water quality. Facilities permittees are encouraged to deliver this type of product to an appropriate by-product facility, instead of discharging, if feasible. This monitoring information is required to be collected as a study this permit cycle to assist DEC in future potential permit limit development and for potential use in mixing zone modeling efforts. For more information regarding ammonia toxicity and sampling see Fact Sheet Part 3.13.

Table 4: Required Monitoring during Discharge of Ground, Spoiled Seafood Waste (Permit Table 5)

Effluent Parameter	Units	Effluent Reporting		Monitoring Requirement		
		Average Monthly	Maximum Daily Limit	Sample Location	Sample Frequency	Sample Type
Spoiled Fish Discharge Monitoring						
Amount Discharged	lbs ^a	report	report	effluent	Once per discharge event	measured or calculated ---
Grind Size Compliance Sampling ^b	cm	N/A	1.27	effluent	Once per discharge event	grab
Temperature ^{c, d}	° C	report	report	effluent	Once per discharge event	grab
pH ^{c, d}	SU	report	report	effluent	Once per discharge event	grab
Total ammonia ^{c, d}	mg-N/L	report	report	effluent	Once per discharge event	grab
Ambient Parameter	Spoiled Seafood Discharge Ambient Monitoring					
pH	SU	report	report	receiving water	within 5 days of discharge	grab
Alkalinity ^e	Mg-CaCO ₃ /L	report	report	receiving water	within 5 days of discharge	grab
Salinity	ppt	report	report	receiving water	within 5 days of discharge	grab
Temperature	° C	report	report	receiving water	within 5 days of discharge	grab
<p>Notes:</p> <ul style="list-style-type: none"> a. lbs = pounds b. See Permit Appendix H for the sampling and analysis protocol to determine grind size compliance. Exceedances of the 1.27 cm (0.5 inch) limit shall be reported to DEC in accordance with Permit Appendix A, Part 3.5, (Other Noncompliance Reporting). c. The effluent ammonia, pH and temperature readings shall be collected and analyzed from the same, single grab sample. d. Sampling shall be performed midway through the grinding and discharge process, or if discharging under Permit Part 2.6, the vessel shall sample just prior to discharge. e. Alkalinity monitoring is only required if spoiled seafood waste is discharged to fresh water receiving water. <p>* Pounds of spoiled fish or other spoiled seafood brought the facility, but not processed (not brought to a marketable form - because it is being ground for discharged with no profit), shall count toward total pounds waste discharged.</p>						

3.6. Remote Onshore Seafood Processing and Community Grinder Waste and Wastewater Discharges (Permit Part 2.2.2)

The 0.5 inch grind requirement has been retained in the AKG521000 permit, as have the grinder system and waste conveyance daily monitoring, sea/shoreline monitoring while discharging and seafloor monitoring requirements. The 0.5 inch grinding requirement does not apply to (1) the calcareous shells of scallops, clams, oysters and abalones; (2) the calcareous shells of sea urchins; or (3) incidental catches of prohibited and by-catch species that are neither retained nor processed.

Monitoring the effluent discharge volume as “daily flow rate” is a new requirement. This information is being collected to assist DEC in future potential permit limit development and for potential use in mixing zone modeling efforts.

The extension of fresh seafood shelf-life has significant effect on the fresh (only frozen once) fish market. Also, increasing shelf-life improves seafood quality for longer periods of time. The seafood processing industry uses a number of chemical techniques to extend shelf life that includes dipping the seafood fillets or rounds in to a solution to alter (lowers) the pH at critical timeframes. Fran-kem is a commercial preservative used by the fishing industry, a combination of sodium benzoate and fumaric acid. Additionally, ascorbic acid, salts, citric acids and poly phosphates are all used in seafood processing preservatives. A new permit requirement is that the facility permittee record and report of the amounts, concentrations of chemical and food additives used and how the chemicals are used in their facility (i.e. product use - disinfecting, cleaning, preservative, additive, bleaching tissue, biocide, rodenticide, etc.) in their annual reports to establish if there is a need for updates to the facility’s NOI. Additionally, this information is being collected for future potential permit limit development and for potential future mixing zone modeling efforts.

The permit requires permittees of Remote facilities to continue to prepare and submit monitoring reports in the form of Annual Reports (Permit Part 2.8) that will serve to inform DEC of the seafloor monitoring results, grinder performance, and shoreline monitoring.

Table 5 summarizes the effluent limits and monitoring requirements for a Remote facilities that discharge seafood waste.

Table 5: Remote Onshore Seafood Processing Facility Seafood Waste – Effluent Limits and Monitoring (Permit Table 6)

Effluent Parameter	Units	Effluent Limits				Monitoring Requirements		
		Average Monthly Limit	Minimum Daily Limit	Maximum Daily Limit	Maximum Annual Limit ^c	Sample Location	Sample Frequency	Sample Type
Flow Rate– Daily Discharge	mgd ^a	report	---		---	effluent	daily	measured or calculated
Seafood Waste discharged	lbs ^b	report	---		10,000,000 Note c, d	N/A	daily	calculated
	cm	report		1.27 cm (0.5 inch)		effluent	daily	grab
Total Residual Chlorine (TRC) ^h	µg/l	report	---		---	effluent	monthly	grab
Total Ammonia ^e	mg N/L	report	---		---	effluent	monthly	grab
pH ^e	S.U.	report	6.5	8.5		effluent	monthly	grab
Temperature ^e	° C	report				effluent	monthly	grab
Waste Conveyance System	N/A	report	---		---	system ^e	daily	visual
Grinder System ^{f, g}	N/A	report	---		---	after treatment	daily	visual/grab
Operational Photos ^h	N/A	report	---		---	system	monthly ^g	digital

Notes:

- a. mgd = million gallons per day.
- b. lbs = pounds
- c. The permittee shall not discharge an amount (by weight) of seafood waste on an annual basis which exceeds the Department’s written authorization.
- d. For accepting offsite, seafood waste, the permittee shall provide a method to record (or record themselves) the lbs of waste discharged on a daily basis for the days on which a seafood waste discharge occurs.
- e. The effluent ammonia, pH and temperature readings shall be collected and analyzed from the same, single grab sample.
- f. See Appendix H for the sampling and analysis protocol to determine grind size compliance.
- g. Two photographs per month while discharge is occurring.
- h. Monitoring for chlorine is not required if chlorine is not used as a disinfectant or introduced elsewhere in the treatment process.

3.7. Remote Washed and Unwashed Mince / Paste Seafood Processing Effluent Limits and Monitoring Requirements (Permit Part 2.2.3)

3.7.1. As defined in AKG521000 Appendix C:

3.7.1.1. **Washed Mince / Paste:** Means minced / paste seafood or seafood flesh that is washed, dewatered and is processed fresh or frozen into blocks. In example, surimi, kamaboko, fish sausage, washed seafood carcasses as by-product, and cured surimi products are included in this classification.

3.7.1.2. **Unwashed Mince / Paste:** Means minced seafood or seafood flesh that is paste consistency that is neither washed, nor dewatered and is processed fresh or frozen into blocks.

Mince is produced by mechanically or chemically recovering flesh from either filled fish carcasses, fillets or whole fish. There are several grades of mince available. The highest grade mince is made from fresh, carefully prepared raw material, and is light in color with few dark flakes or pieces of belly cavity. The lowest grade mince is produced by de-boning fish frames, resulting in a dark colored mince. In frozen block form, fish mince is a valuable commodity used either for human consumption or pet food manufacture, depending on the grade of the product (Seafish, 2001).

3.7.2. Description of Washed Mince / Paste Seafood Production Methods

3.7.2.1. Whitefish (white colored flesh) Washed Mince / Paste (including surimi)

Whitefish washed mince / paste (most often produced in Alaska from Alaskan Pollock) is minced or paste fish flesh that is washed to remove most of the lipids, blood, enzymes, and sarcoplasmic proteins and processed to concentrate myofibrillar protein. Washing reduces lipid content, pigments, water-soluble proteins, and pro-oxidants (Hultin, et al., 1992). Washed mince/ paste seafood product is often stabilized for frozen storage by cryoprotectants (sugars, phosphates and salts). Fish proteins are then mixed with cryoprotectants (5% sucrose, 4% sorbitol and 0.3% sodium tripolyphosphate) and the pH adjusted to approximately 7.0 using 2% Sodium Hydroxide (NaOH). Additionally, to stabilize many washed mince / paste products the following additives and chemicals are often used: Hydroxybutanedioic acid, malic acid, fumaric acid and pH adjustment to 7.0 by 1% NaOH, sodium citrate, sodium erythorbate, sodium citrate plus sodium erythorbate, and polyphosphates. Minced seafood products have become increasingly popular due to their unique textural properties, storage properties and high nutritional value (Akil et al. 2008; Park and Morrissey 2000; Bourtoom et al. 2009). Surimi processing and minced seafood operations are highly-water intensive, with most of the water use and generation of wastewaters related to the washing or dewatering of the minced seafood. Washed minced seafood processing effluent streams contains 0.5-6.0% protein solids. These suspended solids in surimi effluent are primarily composed of sarcoplasmic proteins and other intracellular contents (after removal of the myofibrillar). The washed mince / paste effluent containing this protein mix where the proteins have an approximate average molecular mass of 100-500 kilodaltons, or in other words, a size equal to approximately 0.15mm or smaller (Wu, T.Y., 2002 and Park, 2005).

A raw material balance shows 50 percent of the fish is lost before washing. An additional 20 percent of the raw material is lost during washing processes, resulting in an approximate surimi yield of 15-20 percent of the raw fish input. Park and Morrissey (2000) found that processing Pacific whiting, Alaskan Pollock and shrimp in Oregon, Alaska and Washington generates 20 million tons/year of waste and wastewater.

3.7.2.2. Percent Recovery of Washed Mince / Paste Verses Other Types of Seafood Processing (butchering)

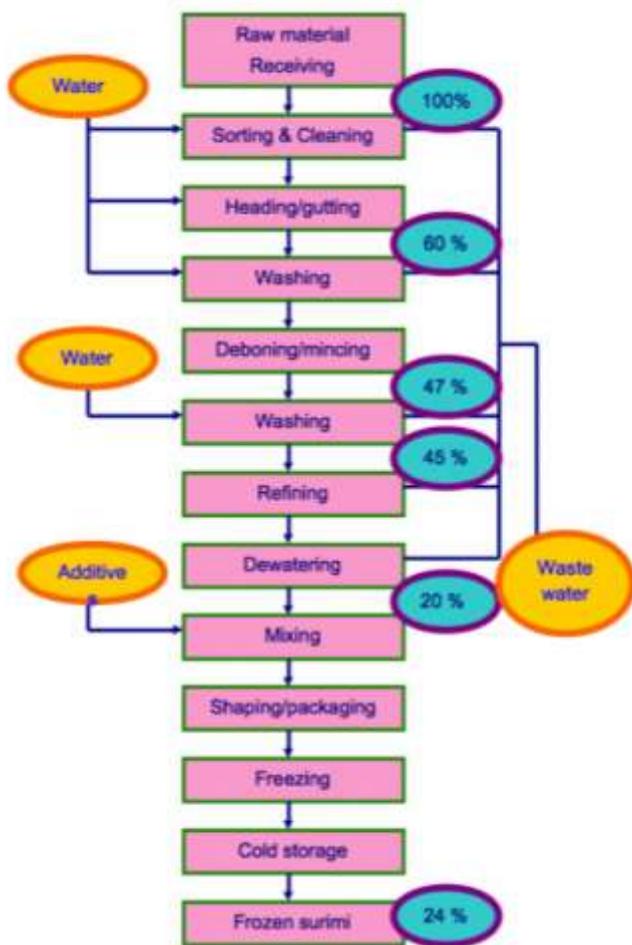
When considering pollutant loading of wastewater, often the smaller the percentages of the seafood recovered (made into product), the greater pollutant loading because more of the initial product is lost to the waste stream. Larger carcass waste can be screened and be sent to a by-product recovery facility. The following information regarding percent recovery for Alaska Seafood (including) washed mince / paste versus traditional butchering process was obtained from the following sources:

- <http://www.fao.org/docrep/003/T0219E/T0219E03.htm>
- 1989/1990 Study - <http://www.st.nmfs.noaa.gov/tm/nwc/nwc175.pdf>
 - Pollock Surimi 22% Recovery
 - Pollock Minced 50% Recovery
- 2016 ASMI Alaska Whitefish Recovery - Recovery and yield data presented as headed gutted to specific product type - http://pressroom.alaskaseafood.org/wp-content/uploads/2016/03/ASMI1601%20Whitefish%20Guide_v11%20FINAL-web-small.pdf

Figure 1: Alaska Seafood Percent Recovery

Product Type	Percent Recovery
Pacific Cod Fillets Skin/Bone	54-80%
Pacific Cod Fillets Skinless/Boneless	25-70%
Pacific Halibut Fillets	45-60%
Pacific Halibut Steaks/Loins	70-94%
Alaska Pollock Fillet (PBO & PBI) and Deep-Skinned -Fillet block	18-40%
Alaska Pollock IQF Fillets (Skinless/Boneless)	15-30%
Alaska Pollock Mince block	3-6%
Alaska Pollock Surimi	7-16%
Alaska Pollock Roe	2-14%
Alaska Pollock Milt	Jan-June: 1.2-1.5% July-Dec: 2.5-3%
Sole/Flounder Whole round to Head and Gut (H&G)	60-83%
Sole/Flounder Whole round to IQF Fillets	16-30%
Sole/Flounder H&G to skinless fillet	10-25%
Sole/Flounder H&G to J-cut/tail-off (kiriimi)	24-33%
Rock Fish Fillets (skin/skinless, pinbone-in, pinbone-out, skin-on, scaled)	Skin-on: 14-22% Skinless: 12-21%
Sablefish/Black Cod Fillets (skin/skinless, pin-bone in)	Skin-on: 64% Skinless: 56%
Sablefish/Black Cod Steaks	36-44%
Alaska Whitefish Fish Meal – produced from trimmings	10-20% Fish Oil production

Figure 2: Flow Chart Demonstrating Washed Mince / Paste, Percent Recovery and losses to Wastewater

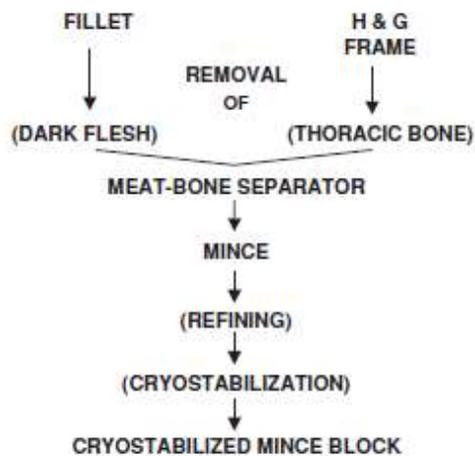


3.7.3. Description of Unwashed Mechanical Deboning

Mechanical deboning basically involves grinding the seafood flesh and bone together and forcing the flesh/fillets through a fine screen or slotted surface of a mechanical deboner. The shearing action of the mechanical deboning process causes considerable cellular disruption.

Bone separators working on different principles are available commercially, but the kind most widely used for seafood is of comparatively simple design. Fish, or pieces of fish, are fed from a hopper to pass between a moving rubber belt and the outside of a revolving perforated drum of stainless steel. The flesh is forced through the perforations into the drum from where it is expelled as a coarse mince by a fixed screw. Skin and bone are retained on the outside of the drum and removed continuously by a scraper blade. The drum perforations are commonly 5 mm in diameter, but drums with smaller or larger holes are available, which produce mince of different texture. Yield can be increased by increasing the tension on the belt, at the expense of some increase in the degree of fragmentation of the flesh, and in the amounts of bone, pieces of skin and black belly wall lining. Often flaked ice is fed into these machines to clean and to cool. Further washing is necessary by high pressure hose for sanitation purposes.

Figure 3: Flow Chart of Mechanical Deboning



The common problem with conventionally prepared mechanical deboning fish mince from frames or H&G is inclusion of blood and viscera, which results in poor color, flavor and texture changes during frozen storage. A simple solution to this problem is to remove the thoracic cavity which harbors the blood and viscera. Viable sources of fish frames that yield a good portion of mince are salmon, catfish and tilapia. Washing is an effective means for removing blood, but it also removes large amounts of flavor and nutrients that are characteristic to each species. However, washing improves frozen stability of fish mince, especially when cryoprotectants are added.

3.7.3.1. Treatment Options for Washed Mince / Paste (Stine, et. al, 2011):

Small-scale preliminary tests carried out at the Fishery Industry Technology Center in Kodiak, AK, found that membranes with a molecular cutoff of 50 kDa resulted in recovery of approximately 80% of the protein contained in the wash-water while salts and smaller organic molecules still passed through the membrane. Experiments indicated that membranes with a molecular cutoff between 50 and 100 kDa achieved a good balance between recovery and filtration rates (flux). Selection of the appropriate membrane material also determines the methods required to clean the membrane effectively between runs.

The tests showed that high cross flow rates (340 L/min per element) and very low transmembrane pressures (8–10 psi) were required to avoid fouling of the membrane surfaces (Fig. 2). At these settings, the membrane filters maintained reasonable flux levels during the 7–8-h test periods without showing any noticeable degradation.

With the 80 kDa cutoff, product recovery was approximately 75% of the solids. This resulted in the recovery of the product containing the higher molar mass molecules, while the salts and smaller organic molecules still pass through this type of membrane. Solids from surimi wash-water (washed mince / paste) were successfully recovered using an ultrafiltration system. Protein concentrates recovered in these experiments had a significantly higher moisture and lipid content when compared with surimi. From the results of this study, it is possible that the recovered wash-water protein could be used to obtain a fish protein ingredient or added back at a low percentage to surimi (mince / paste seafood) products.

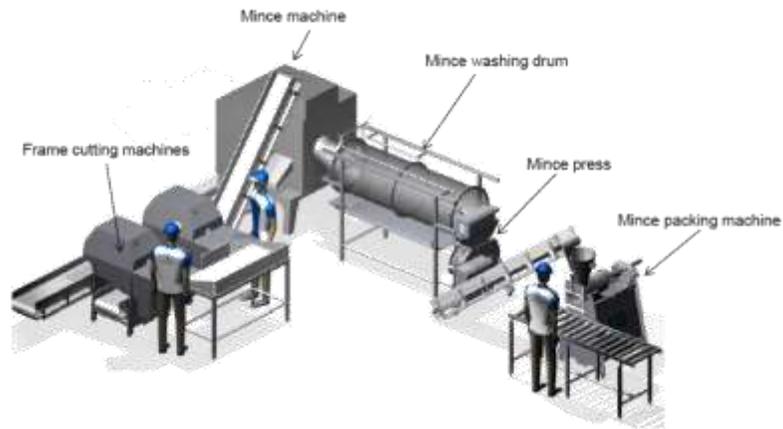
In Alaska, Non-Remote and some Remote IP facility's production of washed mince / paste wastewaters have been required to be screened to 0.5 mm to 1.0 mm screens as the most common wastewater treatment. The wastewaters produced by washed and unwashed mince / paste production can be of such small particle size, 0.15 mm that it can pass through the wastewater treatment screens prior to discharge. Alaska's Remote IP NPDES seafood processing facilities have used different wastewater treatment systems approaches including the use of centrifuges, decanters and very fine-mesh screening systems (0.02 mm and smaller). Other wastewater treatment systems that have been used for washed mince /paste processing wastewater include Dissolved Air Flotation (DAF) and Bubble Air Flotation (BAF). These wastewater treatment systems have not been analyzed in an effort to update the ELGs for Seafood Processing industry's production of washed or unwashed mince / paste, and thus have not been determined to be the most technically and economically viable across the spectrum of Alaska or other State's permittees. However, these wastewater treatment systems are shown to be superior to many methods currently in use in for addressing pollutant loading reduction in Remote facilities.

3.7.3.2. Typical Washed Mince / Paste Pollutant Loading

The pollutant loading of wastes and wastewaters from washed and unwashed minced seafood processing comes first from the removal of scales, guts and heads, which can be processed into fillets or sent to washed mince production lines. Next, the release of blood, fat and intracellular soluble proteins that are leached from the seafood mince during wash processing occurs. The high TSS and BOD generated during washed mince / paste seafood processing is a direct result of the intentional removal of these materials through washing of the seafood tissue. The quality of the desired final product is directly proportional to the efficiency of the washing process in removing the undesirable components. Since the soluble components can be recovered through several potential methods (e.g., settling, centrifugation, ultrafiltration) for further product recovery and for secondary product use, a significant reduction in waste load has shown to be realized in washed and unwashed mince / paste seafood processing facilities worldwide in Sweden/Denmark, Thailand and the U.S. (Nolsoe et. al (2011), Kanjanapongkul, et. al (2008), Stine, et. al (2011), respectively).

During whitefish processing, the effluent TSS results can vary between 50 and 3,000 mg/L, and Chemical Oxygen Demand (COD) result often vary between 2,000 and 30,000 mg/L, BOD₅ 1200 -20,000 mg/L (Colic, 2007, Sridang, 2006).

Figure 4: Drum Washing (washed mince / paste)



3.7.4. **Establishing Remote Permit Conditions and Monitoring for Washed and Unwashed Mince / Paste Seafood Production.**

In 1974, EPA established technology-based ELGs in 40 CFR Part 408 for Canned and Preserved Seafood Processing Point Sources. In establishing permit limitations, DEC first determined if TBELs had been established by EPA through ELG rule making. If ELGs had been established, DEC would have applied the TBELs to the discharges and incorporated them into the permit. DEC finds that EPA has not promulgated ELGs for processing seafood into either washed or unwashed mince / paste seafood products for Remote dischargers. EGL rule making would include an industry wide-scale analysis be completed to set appropriate TBELs for the waste streams generated from these products at Remote locations; which has not been done by the time of writing this fact sheet.

Where EPA has not yet developed ELGs for a particular industry or subcategory of dischargers, TBELs may be established on a case-by-case basis using Best Professional Judgment (BPJ) where BPJ meets the requirements of Best Conventional Technology and Best Available Technology Economically Achievable (BCT/BAT) [CWA Section 402(a)(1)]. TBELs have not been promulgated for this sub-category of seafood processing (washed or unwashed seafood mince/ paste). As mentioned previously, the ELGs for the seafood processing industry at 40 CFR Part 408 apply to discharges from any seafood processing facility for specific product lines. Even though washed and unwashed mince / paste is a type of seafood process found in the U.S. since the mid-1980's, ELGs found in 40 CFR Part 408 do not include language applicable to this sub-category. Additionally, numeric WQBELs were found largely to be infeasible to derive as well, so BMPs have been incorporated to control the discharge (note, a numeric limit on ZOD size was included in the permit and narrative WQS have also been incorporated into the permit). NPDES regulations at 40 CFR Part 122.44(k) allow for use of BMPs when numeric limits are infeasible.

Due to the known high TSS, COD and BOD pollutant loading levels (which do not have corresponding Alaska WQS, but may affect WQS DO levels and the formation of residue deposits) of washed mince / paste, the AKG521000 permit requires the development and implementation of pollution reduction investigational BMPs for washed mince / paste seafood processing lines. These specific pollution reduction BMPs are only required for those facilities in Remote designations that generate washed and unwashed mince / paste , but may also be appropriate Non-Remote locations to meet permit limits. These BMPs are in addition to the existing pollution prevention controls and procedures currently in place. Since almost all

seafood processing plants are in Alaska designed differently, and discharge to wide range of receiving waters, a single waste treatment system or pollution reduction strategies cannot be applied across the board to all. As such, the washed and unwashed mince / paste BMP Plan specific requirements outline ~~investigational~~ investigational BMPs. The investigational BMPs are intended to allow the permittee to monitor their discharge, determine current levels pollution loading, and investigate pollutant source control technologies that will work best for each facility to demonstrate source control, and thus pollutant loading. The schedule for the subject investigational BMPs is set as six months to develop proposed BMP source control strategies. The selected BMP pollutant source control strategies are required to be implemented eighteen months after the effective date of the permit.

Permittees are encouraged to contact the Department for mince / paste pollution research articles and journals, as well as referring to Fact Sheet Part 9.0 (References) for data gathering when evaluating the implementation of possible pollution source control options.

BMP development to reduce pollutant loading should include addressing ancillary activities related to seafood processing chemical and food additive “material storage areas” where various acids and other chemicals are stored for the use in seafood processing (e.g., storage of acid(s) and bleach(es) used for bleaching seafood tissue during washed mince production). The BMPs developed should address the potential for spills and containment to reduce potential pollutant loading. Also, the permittee should review the commingling of washed mince / paste waste streams occurring prior to treatment, such as allowing storm waters to mix with washed mince / paste wastewater prior to the treatment system will reduce the effectiveness of the treatment processes. Additionally, further reduction in pollutant loading can be gained by implementation of reduced water use in transporting waste and wastewater through the seafood processing facility. The longer seafood waste particles are in contact with water (e.g., due to travel time with other wastewaters through lengths of pipe, or amount of time sitting in sump pumps), the greater pollutant loading occurs. The earlier in the waste stream discharge pipe a permittee can remove the solids from a wet flume system, the less pollutant loading occurs to the wastewater. Permittees are encouraged to evaluate their facilities using EPA’s Water Sense program for Commercial and Industrial users. <https://www3.epa.gov/watersense/commercial/bmps.html>.

While the AKG520000 permit did not authorize Remote facilities to discharge washed mince / paste wastewaters within 1.0 nm of shore, there are some facilities operating in Remote areas that have developed (or are looking to process) washed mince / paste seafood processing due to market changes and increased profitability in washed mince or paste seafood processing.

The production of a washed mince or paste seafood product increases TSS, O&G and BOD loading in receiving waters if not properly treated. Due to the seafood processing industry’s increased production of both washed and unwashed mince, the AKG521000 permit proposes to provide coverage for the discharge of both washed and unwashed mince / paste seafood product wastewater at Remote facilities if the permittee develops BMP strategies and implements source reduction techniques.

Both salmon and whitefish (e.g., pollock and hake) are being used at Remote locations to make washed and unwashed mince and paste seafood products (human, pet food, aquacultural and other types of uses). As such, the AKG521000 permit proposes incorporating the investigational BMPs and implementation of chosen pollutant source reductions for all Remote facilities incorporating washed and unwashed mince / paste product lines. These same BMPs can be used for source reduction in all types of seafood processing lines.

3.7.4.1. Treatment Technology Development and Compliance

Since the rule making process for the 1974 ELGs found in 40 CFR Part 408, many new wastewater treatment process improvements and technologies have been developed. Applicable treatment technologies to reduce pollutant loading, which can be applied to washed and unwashed mince / paste wastewater treatment, include decreased fish holding times prior to washing the mince / paste, high speed centrifuges, and decanters, as well as membrane bioreactors (MBR), nano and ultra-filtration processes. During average onshore washed mince or paste seafood processing activities, between 40-50% of all protein can be lost during the first two wash cycles, which results in high pollutant loading in the wastewater (Park, 2005). Studies have shown that using nano and ultra-filtration could enable greater than 65% recovery of proteins currently being discharged and that these recovered proteins can be effectively added back to the surimi (type of washed paste) cake to increase productivity and generate revenue (Afonso, et al. 2004). Through careful O&G capture, the use of the MBR, and/or nano and ultra-filtration processes to capture the proteins lost to the wastewater, in addition to the use of further by-product recovery techniques (fish meal, fish oil and bone meal), the ELGs for wastewater treatment can be met while also improving washed mince or paste seafood production levels and increasing economic gains.

EPA stated in the 1998 AKG528000 permit fact sheet: “Depending on the processing of individual facilities, the surimi and fish powder waste streams are sampled prior to screening and commingling with the final effluent discharge waste stream. The concentrations of TSS and O&G in the surimi and fish powder waste streams can be subtracted from the final effluent waste stream concentrations of TSS and O&G. The purpose of this allowance is to appropriately apply the mechanized or conventional limitations to the final effluent waste stream minus the surimi or fish powder waste streams.” This allowed the subtraction of TSS and O&G loadings before compliance with final effluent limits was determined.

It is unclear to DEC why the subtraction of the loading of the surimi waste stream (or the fish powder waste stream...as fish powder production occurs at a completely separate facility in Kodiak) was allowed in the 1998 AKG528000 permit. The Department assumes that during the issuance of the 1998 AKG528000 permit, the surimi line used to be considered a by-product recovery line. As a by-product recovery line, the surimi process would have been viewed as follows: fish are brought into the facility, headed, gutted and filleted, and the rest of the carcass is sent to surimi production. Following this approach, the loading from a by-product recovery line would then be thought of as additional material being “removed” from the filleted carcass, perhaps thought to decrease loading of the waste stream (thereby allowing its loading subtraction) because it was perceived less of the fish was being sent out the outfall line.

Upon reviewing the washed mince or paste seafood production lines and conducting literature research, this washed mince / paste product does not appear to be processed into surimi as discussed in the paragraph above. The whole fish enters the plant where it is graded. Depending on offered market price, fish often referred to as “number one” fish are headed, gutted and filleted. The carcass is then sent to the fish powder/fish meal facility. If the fillet price is less than the offered surimi product market price, even “number one” fish may be processed into washed mince or paste seafood. Fish

graded “number twos” and below are most often headed, gutted and the entire rest of the filleted fish meat is sent to surimi the main production line, which then becomes its own butchering line. Filleting and washed mince or paste seafood production lines are both then main butchering and processing production lines. As such, the BOD₅, TSS, and O&G measured from the washed mince or paste seafood line’s internal outfall contributes loading of the final effluent.

As discussed above, the 1998 AKG528000 relied on a one millimeter (1mm) fine mesh screen size as Best Available Control Technology limitation to control effluent loading originating from production of surimi at Non-Remote facilities.

A Remote facility permittee choosing to discharge washed and unwashed minced seafood effluent will need to develop BMPs within six months of the effective date of the permit identifying pollutant load reduction techniques and implement those BMPs to reduce pollutant loading with eighteen months of permit effective date.

The facility permittee may choose from a number of pollution control approaches to reduce pollutant loading. The main pollutant loading that occurs from washed mince or paste is that of conventional pollutants of TSS, BOD, COD and O&G. The problem of the high BOD and COD loading in the wash waters can be addressed by separators used to yield an oil water phase which can be heated to separate out oil, water and solids. The solid phase, mostly protein (5-7%), is currently underutilized, but is usable as feed. However, the oil is already economically viable and following separation, the water phase can be more easily discharged. For example, for wastewater with only 1.5% content oil in the water, if 30 tons of wastewater are discharge without separation over 720 tons of oil are added per year to the receiving water. Even at 70% recovery rate, the amount of oil recovered if passed through the separation facility is sufficient to pay for the process of oil separation.

Other options currently used include Chitosan-alginate coagulants (seafood-based by-product) that is used by the shrimp, poultry, dairy and meat processors to recover (floc out) suspended solids for use in crude dietary supplements in animal and aquacultural feed, or refined further into uniform protein fraction (Bechtel, 2009 (Rodrigo-Garcia et al. Recovery and Utilization of Surimi Processing Water, 2009)).

3.7.4.2. Monitoring Washed and Unwashed Mince / Paste Seafood Processing Discharge

Remote facility washed and unwashed mince / paste seafood waste stream has the same pollutants of concern as the washed and unwashed mince / paste seafood waste stream produced at Non-Remote facilities. The permit requires Remote facilities processing washed or unwashed mince / paste to implement pollution control technologies (waste treatment systems) based on investigational BMPs to control TSS, O&G and BOD₅ associated with this type of production line. Further discussion regarding investigational BMPs can be found in Fact Sheet Part 5.2.

The permit proposes a monitoring schedule to collect effluent samples a facility’s washed and unwashed/ mince and paste seafood product line(s) or by-product line(s). For determining pollutant loading associated with washed and unwashed mince / paste, the effluent monitoring schedule requirements are found in Fact Sheet Table 6. Monitoring at an internal outfall for TSS, O&G and BOD₅ are new permit requirement for Remote facility operators. The permit requires internal outfall sampling for the washed and unwashed mince /paste seafood processing line(s). The internal outfall samples shall be collected prior to commingling with any other ground seafood waste

discharge lines, “Other Wastewaters” or storm water discharges. The permit requires the sample be collected as a flow proportional composite sample, taken during a single mince / paste processing production cycle. If there is a short discharge time (less than 6 hours) for the mince / paste wastewater production cycle discharge, the sample may be performed as a grab sample. If performed as a grab sample, the sample shall be taken as two different aliquots. The first required aliquot of the internal outfall grab samples (Fact Sheet Table 6) shall be collected from the waste stream during discharge of the first half of washed mince / paste washing cycle(s). The second required aliquot for the internal outfall grab samples shall be collected during that on the same day, during the discharge of the same production cycle’s last wash cycle(s) and dewatering. Permit Part 2.2.3.9 and Fact Sheet Table 6 (Permit Table 7) summarize the frequency monitoring requirements.

Permittees are also required to monitor the effluent for temperature, pH and ammonia during the discharge of washed and unwashed mince / paste seafood wastewaters. For more information regarding ammonia toxicity and sampling see Fact Sheet Part 3.13.

Where sampling is required or performed to determine pollutant loading, unless otherwise noted, the permittee shall use Department approved standard analytical methods found in 40 CFR Part 136 (most current version), adopted by reference at 18 AAC 83.010 (most current version) and those found in 18 AAC 70 that can analyze the sample parameters using a MDL less than the effluent limit. If the sample arrived outside hold times the permittee shall notify the Department on the DMR or accompanying cover letter. The Collins-Tenney test method is allowed for testing of O&G. EPA Method 1664 for O&G has been approved as an alternative test procedure for Region 10.

The permit requires Remote facilities to report the pounds of seafood waste discharged in the Annual Report (Permit Part 2.8). The permittee is required to account for amounts of seafood waste that is discharged during washed and/or unwashed mince/paste production.

Example

Day	Incoming lbs of seafood from delivering vessel	Type	lbs mince / paste produced	lbs of by-product produced from mince / paste seafood waste	lbs seafood waste discharged
1	100,000	Pollock	20,000	0	80,000
2	100,000	Pollock	20,000	30,000 (10,000 lbs water evaporated)	40,000

Formula if waste or wastewater is not sent to the permittee’s by-product or wastewater treatment system:

Pounds (lbs) raw seafood sent to mince / paste line – (lbs mince / paste produced)
 = lbs seafood waste discharged.

EXAMPLE Day 1: 100,000 lbs raw seafood intended for mince / paste line – 20,000 lbs mince / paste produced

= 80,000 lbs seafood waste discharged.

The permit also provides the opportunity for the permittee to account for any reductions seafood waste discharged. When the washed and/or unwashed mince /paste seafood waste or wastewater is sent to the permittee's by-product facility or wastewater treatment system where additional solids are shown to be removed the permittee may subtract these amounts from the total pounds of seafood waste discharged required to be reported.

Formula if waste or wastewater is sent to by-product or wastewater treatment:

lbs raw seafood sent to mince / paste line – (lbs mince / paste produced + the pounds of by-product + lbs of water vapor)

= lbs seafood waste discharged.

EXAMPLE Day 2: 100,000 lbs raw seafood intended for mince / paste line – (20,000 lbs mince / paste produced + 30,000 lbs fish meal produced + 10,000 lbs to water vapor)

= 40,000 lbs seafood waste discharged.

Table 6: Remote Washed and Unwashed Mince or Paste Seafood Effluent (Internal Outfall) Monitoring Requirements (Permit Table 7)

Effluent Parameter	Units	Effluent Result	Sampling Frequency Internal Outfall	Sample Type
Flow Rate- Daily Discharge for internal outfall on the day sampled	mgd	report	record daily, report daily value for sample day	measured/calculated
Flow Rate – Daily Discharge for all processing lines on day sampled	mgd	report	daily	measured/calculated
Flow Rate – Average Monthly Discharge	mgd	report	monthly	calculated
Raw Product incoming for Mince / Paste Line(s) ^a	lbs	report	record per production cycle, then report total monthly	measured, calculated for each species
Number of Days Processing ^b	days	report	monthly	measured
Amount of Mince / Paste Product Produced	lbs	report	record per production cycle, then report total monthly	measured
BOD ₅ ^{c, d}	mg/L	report	monthly	Internal = Composite or Grab ^e
	lbs/1000 lbs			
COD ^{c, d}	mg/L	report	monthly	Internal = Composite or Grab ^e
	lbs/1000 lbs			
TSS ^{c, d}	mg/L	report	monthly	Internal = Composite or Grab ^e
	lbs/1000 lbs			
Oil & Grease ^{c, d}	mg/L	report	monthly	grab
	lbs/1000 lbs			
Settleable solids	ml/L	report	monthly	8-hr composite ^{d, e}
Total Dissolved Solids ^f	mg/L	report	monthly	8-hr composite ^{d, e}
Salinity	mg/L	report	monthly	grab
Total Residual Chlorine (TRC) ^h	µg/l	report	monthly	grab
Total Ammonia ^g	mg-N/L	report	monthly	grab
pH ^g	SU	report	monthly	grab
Temperature ^g	° C	report	monthly	grab
Notes:				
<p>a. The permittee shall report the amount in pounds of production of each type of seafood sent to each mince / paste seafood production line (crab, salmon by conventional/hand butchering processes, salmon by mechanized processing, bottom fish, etc.).</p> <p>b. The permittee shall report the number of days in the calendar month on which each type of washed and/or unwashed mince / paste seafood processing occurred.</p> <p>c. Permittees shall report the daily and monthly lbs BOD₅, TSS, and O&G / 1,000 lbs seafood processed for each calendar month.</p> <p>d. Calculations to determine lbs of pollutant discharge per 1,000 lbs of seafood processed are shown in Permit Appendix E.</p> <p>e. Samples as required in Permit Part 2.2.3.9.</p> <p>f. Total Dissolved Solids sampling is only required in Fresh Water Systems</p> <p>g. The effluent ammonia, pH and temperature readings shall be collected and analyzed from the same, single grab sample.</p> <p>h. Monitoring for chlorine is not required if chlorine is not used as a disinfectant, nor introduced elsewhere in the seafood processing area.</p>				

3.8. Remote Fish Meal, Fish Powder, Fish Oil, and Fish Hydrolysate and Other By-product Effluent Descriptions and Discharge Monitoring (Permit Part 2.2.4)

There continues to be increased interest in starting by-product recovery facilities/production lines in Remote locations, in addition to existing Remote facilities already using by-product recovery processes for either economic reasons and/or necessary source control. Remote facilities using by-product recovery/productions lines including, but not limited to, fish meal, fish powder, fish oil, and fish hydrolysate have discharges that are similar in nature to the discharges from the Non-Remote facilities using by-product recovery. Remote permittees under the permit are authorized to discharge fish meal, fish powder, fish oil, fish hydrolysate or other by-product effluent or other by-product effluent under the permit if they perform the required effluent monitoring in Fact Sheet Table 7 (Permit Table 8).

3.8.1. Description of Types of Seafood Processing By-products

3.8.1.1. Fish Meal

Fish can be reduced to meal and oil in a number of ways. Common to all methods of practical importance are the following processing steps:

- heating, which coagulates the protein, ruptures the fat depots and liberates oil and physicochemically bound water;
- pressing (or occasional centrifugation), which removes a large fraction of the liquids from the mass;
- separation of the liquid into oil and water (stickwater). This step may be omitted if the oil content of the fish is less than 3%;
- evaporation of the stickwater into a concentrate (fish solubles);
- drying of the solid material (press cake) plus added solubles, which removes sufficient water from the wet material to form a stable meal,
- grinding the dried material to the desired particle size.

The main steps of the process are cooking for coagulation of the protein releasing bound water and oil. Separation by pressing of the coagulate yields a solid phase (press cake) containing 60-80% of the oil-free dry matter (protein, bones) and oil, and a liquid phase (press liquor) containing water and the rest of the solids (oil, dissolved and suspended protein, vitamins and minerals). The main part of the sludge in the press liquor is removed by centrifugation in a decanter and the oil is subsequently removed by centrifuge. The stickwater is concentrated in multi-effect evaporators and the concentrate is thoroughly mixed with the press cake, which is then dehydrated usually by two-stage drying. This activity may result in significant odor levels, and in populated areas the odor production requires use of air scrubbers that removes odors. Air scrubbers remove odors by spraying significant amounts of fine mist water through the evaporative coming off the drying of the fish meal. Evaporators for the stickwater, however expensive, may today be considered standard items of equipment for fishmeal facilities, because they recover dry matter that can increase the yield of meal by 20 percent or more, depending upon the freshness and nature of the raw material (Bykowski, et al., 1996). This combined material is then dried until it has a water content of below 10 percent.

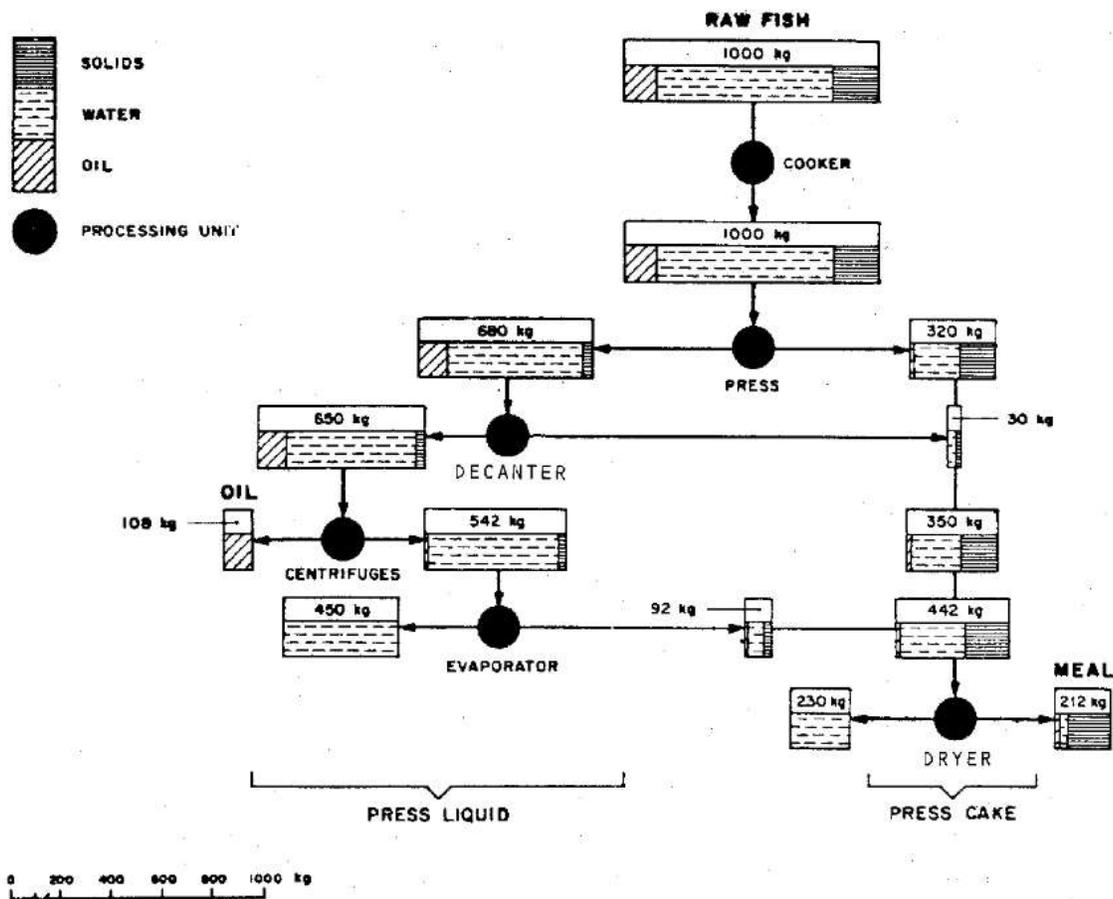
Stickwater from fish meal facilities often contains high levels of proteins and oils, which has made recovery of oils and proteins financially feasible. Many seafood

processing companies in Alaska who have begun using fish meal plants have also integrated fish oil recovery systems into their facility. These Alaska seafood processors in turn use the produced fish oil to supplant past diesel use. Consequently, the most current technology and best cost recovery systems in newly installed fish meal facilities now have fish oil and stickwater evaporation plants, where the liquid fraction after the press is evaporated and the proteins and oils are recovered (Bykowski, et al., 1996). The following measures reduce the volume of disposable waste generated from fish meal waste and wastewater treatment processes:

- Land application (as fertilizer) of wastes from on-site wastewater treatment in agricultural production;
- Sludge dewatering on sludge drying beds for small-scale factories and dewatering using belt presses and decanter centrifuges for medium and large-scale factories;
- Pathogens can be destroyed during controlled anaerobic digestion (biogas) or aerobic treatment (composting);
- Disposal of wastes in landfill if not used for biogas production or combustion.

Pressing during fish meal production removes approximately 70% of the raw material mass as water, and 10% as oil.

Figure 5: Figure from FOA, 1996 – Mass Balance in Fishmeal Production



3.8.1.1 Fish Meal (*con't*)

The permit requires in Permit Parts 2.2.2.2.4 and 2.2.2.2.5 require that pounds of seafood waste discharge be reported on the Annual Report (Permit Part 2.8). Since a Remote facility's discharge is limited to a total of 10 million pounds seafood waste annually, all processing lines need to track seafood pounds of product coming in and products amounts being produced. Permittees are required to record the total weight of seafood coming in for various product lines. Additionally, permittees are required to report amount(s) of product produced. A permittee then subtracts the pounds of product(s) produced from raw weight of the seafood coming into the facility. The difference equals the weight of seafood waste discharged. Facilities that discharge stickwater, even though it may be commingled with other fishmeal process wastewaters, will account for the pounds of seafood waste discharged as follows:

Raw weight of fish coming into the plant subtracting production amounts (lbs) of any and all of the following:

- lbs of butchering/canning product produced
- lbs of fishmeal produced (or other by-product)
- lbs oil produced
- lbs of solubles recovered from stickwater decanter (tricanter)
- lbs sludge sent to solid waste
- lbs of stickwater solids removed by coagulant (sometimes a non-saleable product)
- lbs water vapor to air) = lbs total waste discharged.

Other by-product streams may follow a similar pattern, where additional seafood waste solids (pollutants) are removed by flow-through processing. Each by-products processing line should be depicted in the permittee's BMP plan using process waste and wastewater flow diagrams, which should be updated as process lines are added and subtracted. The flow diagrams should clearly depict how the permittee calculates total seafood waste discharged, including calculations used for reporting seafood waste discharged in the Annual Report totals (Permit Part 2.8).

3.8.1.2. Seafood Protein Powder

Seafood protein powder is a concentrated source of high-quality marine protein with a composition of essential amino acids and marine omega-3 fatty acids.

“Seafood powder can be made from most Alaska seafood sources, including underutilized fish byproducts, which represent new economic opportunities for Alaskan companies. Manufacturing a human-grade seafood protein powder from Alaska seafood byproducts has resulted in reduced waste discharged to the receiving water, increase the value of seafood resources, and provide an important new source of high protein nutrition. This is a clear triple bottom-line opportunity for the Alaska seafood industry.” (<http://www.alaskaseafood.org/food-aid/products/seafood-powder>).

Seafood byproducts are gently processed to yield a dry product that can be rehydrated while maintaining all functionality and nutrition of the natural protein. (www.alaskaseafood.org)

Enzymatic hydrolysis similar to the body's natural digestive process provides the most efficient breakdown of the proteins into smaller fractions termed peptides which can then be separated from the oil and non-digested proteins during liquid phase processing. Subsequent steps of solids and oil removal through various mechanical separation techniques create a final fish protein product for use in human food. Malodor issued can be addressed through the removal of fat and oil from the protein solution, creating a refined fish protein. Some facility processes utilize solvents to extract the fat, but these can result in dangerous handling and potential residual wastewater issues. The final step in producing the seafood powder product is to use spray drying, which involves atomizing the liquid protein in a hot air chamber resulting in rapid evaporation of the water and the fine powder falling to the bottom of the chamber for removal. Spray drying is different from typical oven dehydration used in animal grade fish meal production in that spray drying will not denature the protein fraction resulting in a higher quality protein product for human consumption. [https://en.wikipedia.org/wiki/Fish_protein_powder]

3.8.1.3. Fish Oil

Fish oil production is typically an integrated part of fish meal production, however, the production of cod liver oil and other specialty products can be established as stand-alone production units. The quality of the fish oil obtained depends largely on the quality of the fish raw material and the equipment used. Today, the extraction of fish oil is conducted exclusively by centrifugal machinery, typically three-phase decanters and separators.

3.8.1.4. Fish Hydrolysate

Production of fish hydrolysate (silage) to be used as feed is the cheapest way of utilizing offal. Considering the capital needed and the operating costs for fishmeal and hydrolysate production (cost ratio 4:1), production of the liquid form of this by-product is very profitable and it can be done by small plants. The main phases of offal processing are: grinding of offal or whole fish, acidifying of the pulp and liquefying it which results from a self-digestion (autolysis) process or enzyme/chemically induced digestion process. Adequate grinding is a basic operation of the process.

Liquefaction is an autolytic process carried out by enzymes already present in the fish and accelerated by an acid that induces the proper conditions for the enzymes to breakdown the tissues and limits the growth of spoilage bacteria (Gildberg, 1993). Typically malic acid is used. But pH is often adjusted with sodium chloride (NaCl) or hydrochloric acid (HCl). Preservatives are used to produce pyrosilage, such as sodium pyrosulphite (Na₂S₂O₅), 1% for fatty and medium fatty offal, and 1.3% for lean product, sulphuric or HCl, both at 1% concentration in the mix.

Hydrolysate research indicates that measured pH should always be the final indicator of a proper level of acidification and should range from 3.5 to 4.5. The pH should never exceed 4.5.

3.8.1.5. Chitin and Chitosan By-product

Chitin is a structural component in crustacean exoskeletons, which contain 15–20% chitin by dry weight. The production of chitin and chitosan from food industry waste (crustacean canning) has proved environmentally attractive and economically feasible, especially when it includes the recovery of carotenoids. Considerable amounts of chitin are present in the wastes and are marketed as a fish food additive ([Arvanitoyannis, 1999](#); [Kumar, 2000](#)). [Coward-Kelly et al. \(2006\)](#) demonstrated shrimp head waste (*Penaeus indicus*) can be treated with lime at different temperatures (75, 100 and 125 °C) to form chitin. Below are examples of chemicals used in the chitin and chitosan production mechanisms:

Crustacean shells → size reduction → protein separation → (NaOH) → washing
demineralization → (HCl) → washing and dewatering → de-coloration → chitin
→ deacetylation (NaOH) → washing and dewatering → Chitosan

Chitosans also exhibit excellent film-forming ability with use of acetic or formic acids, resulting in flexible and transparent films that resemble plastic films (USDA, 2004). Additionally, chitosan forms aldimines and ketimines with the addition of aldehydes and ketones, respectively, at room temperature.

3.8.1.6. Biodiesel / Biogas

The use of animal fat to produce bio-diesel is not a new technology, however the adaptability of this technology to aquatic resources has only attracted public interest recently. The bio-diesel produced from seafood waste would be a non-toxic and fully biodegradable renewable fuel that can easily be adapted without any modification to current diesel engines. The fish oil is similar to a vegetable oil or animal oil and it reacts with an alcohol (methanol), the catalyst used is generally caustic soda. This produces a pure bio-diesel or B100 (100% bio-diesel) with a valued by product glycerin. Glycerin is an important by-product, and is currently further being enhanced and could become a new source of income for bio-diesel producers. It is a colour-less, odorless, liquid which is used for pharmaceutical, food and cosmetic purposes. One other note of care is the acid content of the oil extracted. For example, salmon oil is high in acid and this acid needs to be removed. Therefore an additional step in removing this acid is required. Sulfuric acid is added to reduce the acid value of the oil.

Raw processing line chemicals / additives (those not actively used in production or disinfection) such as NaOH, HCl, aldehydes or ketones being poured directly into wastewater discharge lines or proposals to discharge under Permit Part 2.6 (Inland Water Discharge) as a method of disposal or discharge are prohibited discharges under Permit Part 1.3. Unmonitored and/or untreated discharges of these chemicals can lead to violations to WQS. Additionally, unmonitored and/or untreated discharges of these raw food ingredients (salts and sugars) can lead to impaired water quality for total dissolved solids (TDS) in fresh water and impairment of dissolved inorganic substances in marine water.

3.8.2. **Typical Pollutant Loading**

During fishmeal and fish oil production, the effluent TSS results often result in 30,000 mg/L, and (COD) and BOD₅ results as high as 30,000 – 50,000 mg/L, and O&G of 10,000 mg/L (Colic, 2007, Sridang, 2006). The large volume and high concentration (COD 80,000 to 100,000 ppm) can result in significant oxygen depletion in the area of discharge (Bechtel, 2009 (Petersen et al. – Stickwater Processing by Membrane Filtration)). Membrane filtration resulted in the COD reduced from 170,000 to 15,000 mg/L – a 90% reduction (Bechtel, 2009 (Petersen et al. – Stickwater Processing by Membrane Filtration)). Carawan et al. (1986) reports fish meal plants were reported to have a BOD of 100–24,000 mg/L, COD of 150–42,000 mg/L, TSS of 70–20,000 mg/L, and FOG of 20–5000 mg/L, COD of 150–42,000 mg/L, TSS of 70–20,000 mg/L, and FOG of 20–5,000 mg/L.

3.8.3. **By-product Permit Conditions and Reporting**

The AKG521000 permit includes new monitoring requirements for Remote facilities for effluent TSS, BOD, O&G, Total Solids, TDS, temperature, pH and ammonia during the discharge of fish meal, fish powder, fish oil, fish hydrolysate or other by-product effluents. Water quality pollutants of concern are the same as that of by-products produced at non-Remote facilities (BOD₅, TSS, O&G). Monitoring is also required for pH, ammonia and temperature. For more information regarding ammonia toxicity and sampling see Fact Sheet Part 3.13.

The AKG521000 permit requires permittees of Remote facilities discharging fish meal, fish powder, fish oil, fish hydrolysate or other by-product effluent to perform monitoring (see Permit Table 9) at an internal outfall prior to the waste stream comingling with other waste stream(s). The proposed permit require permittees to monitor (see Permit Table 9) for TSS, O&G and other pollutant parameters to characterize the nature of the waste stream. The monitoring of the waste stream on a monthly basis is a new permit requirement. Monitoring the effluent generated by the by-products' production lines will provide data to Department to evaluate the possible pollutant loading effects on water quality. This increased by-product effluent monitoring in Remote locations, coupled with mixing zone monitoring, should assist in developing a better understanding of potential water quality effects from these discharges.

The permit requires Remote facilities to report the pounds of seafood waste discharged in the Annual Report (Permit Part 2.8). The permittee is required to account for amounts of seafood waste that is discharged by-product production.

Example:

Day	Incoming lbs of seafood waste from delivering facilities	Type	lbs by-product produced	Type of by-product	lbs seafood waste discharged
1	100,000	Mixed	30,000 (10,000 lbs water evaporated)	Fish Meal	40,000
2	125,000	Salmon Heads	5,000 gallons (7.5 lbs / gal) 30,000 lbs water evaporated)	Fish Oil	57,500

Formula to measure pounds seafood waste discharge from by-product facility

Pounds (lbs) seafood sent to by-product line – (lbs by-product produced + water vapor lost) = lbs seafood waste discharged.

EXAMPLE Day 1: 100,000 lbs seafood waste – (30,000 lbs fish meal produced + 10,000 lbs to water vapor)

= 40,000 lbs seafood waste discharged.

EXAMPLE Day 2: 125,000 lbs seafood waste – (37,500 lbs fish oil produced + 30,000 lbs to water vapor)

= 57,500 lbs seafood waste discharged.

Monitoring results will be recorded in a per-month table format and submitted with the Annual Report (Permit Part 2.8). The table shall include the date and time of the sample, total daily flow rate volume for the by-product line on the monitoring date, effluent parameters sampled, as well as daily and average monthly monitoring data. Table 7 (Permit Table 8) below summarizes the frequency at which effluent parameters must be sampled and reported.

Table 7: Remote Fish Meal, Fish Powder, Fish Oil, Fish Hydrolysate and Other By-product Monitoring Requirements (Permit Table 8) - End-of-pipe or Internal Outfall dependent on Facility Design

Effluent Parameter	Units	Effluent Result	Sample Frequency	Sample Type
Flow Rate - Daily Discharge for internal outfall on day sampled	mgd	report	daily	measured/calculated
Incoming Flow Rate	mgd	report	daily/monthly	measured/calculated
Flow Rate – Daily Discharge end-of-pipe total on day sampled	mgd	report	daily	measured/calculated
Flow Rate – Average Monthly Discharge	mgd	report	monthly	calculated
Number of Days Processing ^a	days	report	monthly	measured
Amount seafood sent to be processed into by-product	lbs	report	daily	measured
	% ^b			
Amount by-product produced	lbs	report	daily	measured
Report amount & how (inland water, land fill, etc.) wastes are disposed of	lbs	report	total each week	measured
BOD ₅ ^{c, d}	mg/L	report	monthly	8-hr composite ^d
	lbs/1000 lbs	report		
TSS ^{c, d}	mg/L	report	monthly	8-hr composite ^d
	lbs/1000 lbs	report		
Oil & Grease ^{c, d}	mg/L	report	monthly	grab
	lbs/1000 lbs	report		
Total Residual Chlorine (TRC) ^f	µg/l	report	monthly	grab
Total Ammonia ^e	mg-N/L	report	monthly	grab
pH ^e	SU	report	monthly	grab
Temperature ^e	° C	report	monthly	grab
Notes:				
<p>a. The permittee shall report the number of days in the calendar month on which each type of seafood processing occurred.</p> <p>b. The permittee shall report the amount in pounds of production of each type of seafood sent to the by-product line (crab meat, whole crab or crab sections, salmon by conventional/hand butchering processes, salmon by mechanized processing, bottom fish, herring fillet processing, herring frozen whole, scallops, etc.). The permittee is required to report the percentage of total raw pounds processed that is sent to the by product line. In example, if 40,000 lbs of carcasses are produced from filleting, but only 20,000 lbs are sent by-product production, the percent reported would be 50%.</p> <p>c. Permittees shall report the daily and monthly pounds (lbs) BOD₅, TSS, and O&G / 1,000 lbs seafood processed.</p> <p>d. A grab sample may be collected instead of an 8-hour composite sample during periods of intermittent processing where processing alternately ceases and begins again in less than eight hours. If a grab sample is taken it shall be taken midway during the processing.</p> <p>e. The effluent ammonia, pH and temperature readings shall be collected and analyzed from the same, single grab sample.</p> <p>f. Monitoring for chlorine is not required if chlorine is not used as a disinfectant, nor introduced elsewhere in the seafood processing area.</p>				

3.9. Non-Remote Onshore Seafood Processing Facilities (Permit Part 2.3)

3.9.1. History of Designating “Non-Remote” Facility Locations

EPA published ELGs for the Canned and Preserved Seafood Processing Point Source Category on July 30, 1975 specifying BPT currently available, BCT, and new source performance standards (NSPS) for seafood processing activities across the nation. The ELGs are codified at 40 CFR Part 408, adopted by reference at 18 AAC 83.010. The seafood ELGs provided for two primary categories of Alaskan processors, dependent on whether a processor operates at a “Remote” or a “Non-Remote” location. Effluent limitations are set forth for the degree of effluent reduction attainable through the application of the "Best, Practicable Control Technology Currently Available" and the "Best Available Technology Economically Achievable" which must be achieved by existing point sources by July 1, 1977 and July 1, 1983 respectively.

The regulations are based on the best identified primary or physical-chemical treatment technology currently available for discharge into navigable water bodies by July 1, 1975 and for NSPS. This technology is generally represented by fine screens and air flotation. The regulations for July 1, 1983 are based on best identified, physical-chemical and secondary treatment and in-plant control as represented by significantly reduced water use and enhanced treatment efficiencies in existing systems, as well as new systems. In addition to the aforementioned technology, the basis for the 1983 and NSPS includes physical/chemical and secondary treatment and the adoption of in-plant controls as represented by significantly reduced water use and enhanced treatment efficiencies in existing systems, as well as new systems.

The term “New source” and Existing source” are defined in the Permit’s Appendix C. DEC will apply the terms to both newly constructed or reconstructed facilities, as well new types of seafood processing lines installed in existing facilities. Further information can be found in Fact Sheet Appendix A.

“Non-Remote” facilities are those facilities located in “population or processing centers.” The regulations provided a non-exclusive list of Alaskan locations considered to be “Non-Remote,” including Anchorage, Cordova, Juneau, Ketchikan, Petersburg and Kodiak. In “Non-Remote” locations, the ELGs are based on the screening of the processing solids from the seafood processing wastewaters and disposing of the screened solids by means other than discharging in the facility’s effluent.

In 1980, EPA temporarily suspended the original regulations applicable to five “Non-Remote” locations (Anchorage, Cordova, Juneau, Ketchikan and Petersburg) and published a notice of this suspension in the Federal Register (45 Federal Register 32675, May 19, 1980). In a 1981 response to industry petitions, EPA proposed to grant the petition to reclassify Juneau as “Remote” and to deny the petition to delete the locations of Anchorage, Cordova, Ketchikan and Petersburg from the group of “Non-Remote” ELG subcategories. EPA’s 1981 notice stated that the suspension would remain in effect until EPA made a final decision.

The seafood processing facilities in Alaska that are considered “Non-Remote” are currently limited to those that are located on Kodiak Island, Alaska (including Kodiak Harbor, St. Paul Harbor, Gibson Cove, Near Island Channel, Women's Bay, and Woody Island Channel). Note, it is possible during the permit cycle that additional Non-Remote designations could be established based on current EPA rule making.

The ELGs subcategories applicable to Alaskan seafood processing include (40 CFR Part 408 (subcategory in parentheses)): Non-Remote Alaskan crab meat processing (D), Remote Alaskan crab meat processing (E), Non-Remote Alaskan whole crab and crab section processing (F), Remote Alaskan whole crab and crab section processing (G), Non-Remote Alaskan shrimp processing (I), remote Alaskan shrimp processing (J), Alaskan hand-butchered salmon processing (P), Alaskan mechanized salmon processing (Q), Alaskan bottom fish processing (T), Alaskan scallop processing (AC), and Alaskan herring fillet processing (AE). Additional information regarding ELGs applied to the Kodiak facilities can be found in the NPDES 1998 AKG528000 General Permit Fact Sheet.

The CWA requires particular categories of dischargers to meet TBELs established by EPA (see <http://water.epa.gov/scitech/wastetech/guide/index.cfm>). ELGs are regulations that establish national technology-based effluent limitations for a specific industrial category or subcategory. Where EPA has not yet developed guidelines for a particular industry or subcategory, permit conditions may be established using BPJ procedures (18 AAC 83.425, 18 AAC 83 Article 5, and 18 AAC 83.010).

When TBELs do not exist for a particular pollutant expected to be in the effluent, the Department shall determine if the pollutant may cause or contribute to an exceedance of a WQS for the waterbody. If a pollutant causes or contributes to an exceedance of a WQS, a QBEL for the pollutant shall be established in the permit.

Non-Remote seafood processors were previously covered under general permit AKG528000. Most of the 1998 AKG528000 permit effluent limits and monitoring requirements are incorporated in the AKG521000 permit by applying ELGs established in 40 CFR Part 408 and applying QBELs for Non-Remote facilities. While some effluent limitation and monitoring requirements have remained unchanged from the 1998 AKG528000 permit, changes from those previously applied requirements are summarized in this section.

The permit retains the requirement for all wastewaters originating from Non-Remote butchering, surimi / minced seafood processing (washed and unwashed mince/paste), and by-product production operations to be treated by screening with fine mesh screens, or equivalent technology, to minimize the discharge of pollutants (Permit Part 2.3.1). This is a BPJ requirement which has been shown by facilities currently covered under the permit as cost-effective relative to the environmental benefits achieved by the treatment technology.

The 1998 AKG528000 general permit limitation of fine mesh screen was developed through the application of BPJ TBELs. The 1998 AKG528000 Section 3.1 permit contained the following language:

“Treatment of the butchering waste stream prior to discharge shall be accomplished through the use of fine mesh screening (1 mm) or equivalent technology. Seafood wastes shall not be pulverized, chopped, ground, or otherwise altered prior to screening and discharge through the facility’s outfall.”

The permit continues the requirement for the use of fine mesh screening or equivalent technology for Non-Remote seafood processors. It is important to note that the permit incorporates the ELG requirements for the Non-Alaskan Conventional and Mechanized Bottom Fish Processing Subcategories and not the ELG requirements for the Alaskan Conventional and Mechanized Bottom Fish Processing Subcategories. When the 1998 AKG528000 became effective on May 1, 1998 (AKG528000 Fact Sheet, Section 6.2.2), the ELG limitations for Alaskan Bottom Fish were based on halibut being the dominant bottom fish species. Because other bottom fish are processed by the Kodiak facilities (e.g., cod,

pollock, flounder, rockfish/red snapper, black cod/sable fish, flatfish/sole, and other whitefish species), limitations based on halibut alone do not adequately reflect actual bottom fish processing. The bottom fish species are usually brought to the plant whole, where processing involves more extensive butchering and mechanization. At the time of the 1998 AKG528000 permit issuance, it was determined that ELG requirements for the Non-Alaskan Mechanized Bottom Fish Processing [40 CFR Part 408.222] subcategory ELGs were more appropriate for Non-Remote seafood processing facilities, and the Department concurs with that determination.

The monitoring frequency for Non-Remote facilities previously operating under the 1998 AKG528000 permit shall maintain a weekly monitoring schedule in the AKG521000 permit. The AKG521000 permit requires the effluent monitoring results be reported on a monthly DMR, which is consistent with the 1998 AKG528000 permit. A new permit requirement includes that a monitoring data summary report be included with the Annual Report.

Permit Parts 2.3.1.12 and 2.3.1.13 clarify that compliance with ELGs for seafood processing operations will be based on effluent pollutant monitoring of the total facility discharge after screening and on the total discharge flow rate of wastewaters that originate from all seafood processing operations. Additionally, internal outfall monitoring has been required for specific product and byproduct production lines prior to comingling to assist facilities in determining compliance with effluent limits.

Effluent limitations from the ELGs are expressed in terms of pounds of TSS, O&G, or pounds of BOD₅ per 1,000 pounds of seafood processed. If an authorized facility processes more than one type of seafood, for compliance purposes, effluent limitations shall be calculated as aggregate figures which reflect the commodity mix for the appropriate time period. The end-of-pipe limits are based on and limited to the actual pounds of specific fish or seafood species processed on a daily basis. Permit Appendix E presents sample calculations for determining compliance with the production-based effluent limitations of Permit Tables 9 and 10. The application of the 40 CFR Part 408.160-167 ELGs into the AKG521000 permit are continued from the 1998 AKG528000 permit.

The permit requires new Non-Remote facilities to install flow rate meters, install new outfalls at certain depths, perform pre-installation outfall surveys, monitor and report the operability of their seafood waste treatment system in Permit Parts 1.6 and 2.3.1. The following paragraphs discuss these requirements in more detail.

3.10. Non-Remote Facility Requirements (Permit Part 2.3.1)

3.10.1. Outfall Depth and Flow (Permit Part 2.3.1.2)

The proposed permit requires Non-Remote facilities provide information regarding their discharge flow and their outfall depth. The permit requires the identification of all outfalls, types of waste and wastewater discharged from each outfall, as well as specific outfall terminus depth reporting.

Previous permit compliance inspections have revealed multiple outfalls installed at various facilities, but only one outfall identified on the NOI. In order to accurately model environmental impacts, the correct number and location of outfalls must be identified, along with the associated pollutant loading, flow rate and depth associated with each outfall.

Additionally, compliance actions have been taken for permittees discharging ammonia (a refrigerant often used at seafood processing facilities and also created during the natural

decomposition of seafood). See Fact Sheet Part 3.13 for more information regarding ammonia toxicity. Requiring identification of all outfall lines, types of wastewater effluent being discharged and monitored, along with the development and implementation of a robust BMP Plan, should increase permittee compliance with permit requirements and ultimately result in increased water quality protection.

3.10.2. Pre-Installation / Pre-Discharge Survey Requirement (Permit Parts 2.3.1.3 and Permit Appendix I)

The permit includes a new requirement to conduct a pre-biological survey prior to the placement of a new outfall, planned movement or removal of an existing outfall, or the re-startup of an existing facility outfall where no discharge has occurred in the past 12 months. The purpose of the survey is two-fold. First, the survey must demonstrate that the proposed placement of the outfall will not result in the discharge occurring into “living substrate” (see Permit Part 1.4 – Excluded Areas). Second, the survey must record the occurrence and extent of persistent films, foam, scum or sheens (water quality criteria 18 AAC 70.020(b)), the presence and extent of any seafood waste deposits on the seafloor and/or the presence of any listed endangered or threatened species near the proposed outfall site. The Appendix I survey is due with submittal of the NOI documents, prior to installation of outfall occurring. The permit does not require the permittee to conduct a pre-biological seafloor survey for a facility’s approved in-transit vessel area(s)-of-operation disposal site(s).

3.10.3. Waste Treatment System (Permit Part 2.3.1.6.7)

All wastewaters originating from Non-Remote seafood processing operations (including washed or unwashed mince / paste processing and by-product lines) are required to be treated by screening with fine mesh screens, or other equivalent technology to meet effluent limits established in Table 8 or Table 9, as applicable.

3.10.4. System Installation and Inspection (Permit Part 2.3.1.7)

The permit proposes Non-Remote (Permit Part 2.3.1) facility permittees meet specific requirements applicable to all Non-Remote facilities, whether they are a butchering operation, surimi/ minced seafood production, or by-product facility. The Department has placed the applicable requirements at the beginning Non-Remote section to allow the permittees to easily identify the permit requirements.

The permit requires the identification of all outfalls, types of waste and wastewater discharged from each outfall, as well as specific outfall terminus depth reporting. In order to accurately model environmental impacts, the correct number and location of outfalls must be identified, along with the associated pollutant loading, flow rate and depth associated with each outfall.

Additionally, compliance actions have been taken for permittees discharging ammonia (a refrigerant often used at seafood processing facilities and also created during the natural decomposition of seafood) into receiving waters without monitoring in order verify the discharge is meeting WQS, or providing information on NOI application. Requiring identification of all outfall lines, types of wastewater effluent being discharged and monitored, along with the development and implementation of a robust BMP Plan, should increase permittee compliance with permit requirements and ultimately result in increased water quality protection.

The AKG521000 permit requires routine inspection of both the outfall and the waste discharge system. DEC experience in performing compliance inspections and sites visits has found that operational maintenance issues are often the cause of historical permit violations.

Requiring daily and/or weekly inspections of facility waste treatment system lines and outfall lines, yearly and/or biannual inspections of the outfall line, along with the development and implementation of a robust BMP Plan should increase permittee compliance with permit requirements.

3.10.5. New Permit Limits and Requirements

The AKG521000 permit includes the previously required AKG528000 monitoring for TSS and O&G. The Collins-Tenney test method is allowed for testing of O&G. EPA Method 1664 has been approved for O&G as an alternative test procedure for Region 10. Where sampling is required, unless otherwise noted, the permittee shall use Department approved standard analytical methods found in 40 CFR Part 136 (most current version), adopted by reference at 18 AAC 83.010 (most current version) and those found in 18 AAC 70 that can analyze the sample parameters using a sufficiently sensitive MDL less than the effluent limit. The permittee shall notify the Department if sample arrived outside hold times. As a new permit requirement, the AKG521000 permit has effluent limits and monitoring for BOD₅, for specific seafood production lines based existing limits established in the ELGs. A review of 40 CFR Part 408 revealed that BOD₅ effluent limits for new source facilities in Non-Remotes are codified in the ELGs, but were missing from the 1998 AKG528000 permit. It is unclear why the BOD₅ effluent limits were not included in the 1998 AKG528000 permit as the matter was not discussed in the fact sheet. The AKG521000 permit incorporates the 1998 AKG528000 new source performance effluent standards, along with the new BOD₅ limits and monitoring, for the production lines of Bottom Fish¹-Mechanized Processing and Mechanized Clam Processing.

A review of the ADF&G's Commercial Fisheries Geoduck (Clam) harvest data for 2001 - 2014 shows that the average harvest per diver is 9,500 pounds. The ELG applicable to Clams in 40 CFR Part 408.230-247 is applicable to processing 4,000 pounds per day. Thus, while one diver may not process that poundage of clams per day, a commercial processor may. The application of the 40 CFR Part 408.230-247 ELGs into the AKG521000 permit are new permit effluent limits and monitoring requirements based on harvest numbers suggesting the need for implementation of the applicable ELGs.

A review of the ADF&G's Commercial Fisheries Herring harvest data for 2001-2012 shows the average harvest is 60 to 110 million pounds of herring per year. The 1998 AKG528000 permit did not include effluent limits for filleted herring processing, even though a significant amount of the product is processed in Alaska as evident based on review of the Fish and Game data. The inclusion of 40 CFR Part 408. 310-317 ELGs applicable to Alaska herring fillet are new permit effluent limits and monitoring requirements based on harvest numbers suggesting the need for implementation of the applicable ELGs.

Additionally, Alaska has a substantial amount of herring-frozen whole as part of a subgroup of herring processing methods. This method of processing produces less TSS and O&G effluent loading than filleted herring processing, thereby more applicable effluent limits needed to be applied. In the 1998 AKG528000 permit, EPA applied BPJ with the use of 1mm fine mesh screening as the best available technology to treat the effluent generated from the

¹ The 1998 AKG528000 permit mechanized bottom fish limits were established based on the BPJ application of 40 CFR Part 408, 'Subpart U—Non-Alaskan Conventional Bottom Fish Processing Subcategory', instead of Subpart T – Alaskan Bottom Fish. This was due to the type of fish and treatment system applicable to the processing of pollock, the predominant processed bottom fish species, which more closely resembles the ELGs for the non-Alaskan bottom fish than the Subpart T ELGs, which apply to predominately halibut processing only.

processing of freezing whole herring. Processing herring frozen whole produces effluent loading similar to processing salmon. Therefore, the EPA applied the Salmon – Conventional / Hand Butchered ELGs (40 CFR Part 408.160-167) as end-of-pipe effluent limits for facilities processing herring-frozen whole.

A new permit requirement (Permit Part 2.3.1.8.2) requires permittees to identify on their DMRs the applicable monitoring results as compared to the effluent limits during each reporting period based on the type of seafood or the seafood commodity mix that was processed during the reporting period. Limits are based on whether the facility is a new or existing facility. Permittees must show calculations of effluent limits that reflect the commodity mix when more than one type of seafood has been processed concurrently.

Table 8 (Permit Table 9) summarizes the waste stream effluent limits for an existing Non-Remote facility, which is defined as constructed prior to December 1, 1975. Table 9 (Permit Table 10) summarizes the waste stream effluent limits for a new Non-Remote facility, which is defined as a facility constructed after December 1, 1975. Designated Non-Remote locations are defined in 40 CFR Part 408. Table 10 (Permit Table 11) summarizes the monitoring schedule requirements for Non-Remote location discharges.

Table 8: Non-Remote Location Existing Source/Facility Butchering Effluent Limits (Permit Table 9)

Seafood Processing Subcategory	AKG521000 Permit Part	Total Suspended Solids (TSS) (lbs /1000 lbs)		Oil and Grease (O&G) (lbs/1000 lbs)		BOD ₅ (lbs/1000 lbs)		Rationale (40 CFR Part) BPT/BCT
		30 Day Avg	Daily Max	30 Day Avg	Daily Max	30 Day Avg	Daily Max	
Crab Meat	2.3.2	6.2	19	0.61	1.8	report	report	408.42/408.47
Whole Crab and Crab Section	2.3.2	3.9	12	0.42	1.3	report	report	408.62/408.67
Shrimp	2.3.2	210	320	17	51	report	report	408.92/408.97
Hand-Butchered Salmon	2.3.2	1.6	2.6	0.19	0.31	report	report	408.162/408.167
Mechanized Salmon ^a	2.3.2	26	44	11	29	report	report	408.172/408.177
Bottom Fish ^b (Conv. / Hand Butchered)	2.3.2	1.9	3.1	0.56	4.3	report	report	408.202/408.207 ^d
Bottom Fish – Mechanized Processing	2.3.2	12	22	3.9	9.9	report	report	Existing AKG528000 BPJ determination using 408.222
Scallops	2.3.2	1.4	6.0	0.24	7.7	report	report	408.292/708.297
Herring – Frozen Whole	2.3.2	1.6	2.6	0.19	0.31	report	report	Application of 408.162 /408.167 - Undocumented basis in AKG528000
Herring Fillet Processing	2.3.2	24	32	10	27	report	report	408.312/408.317
Hand Shucked Clam ^c	2.3.2	18	59	0.23	0.60	report	report	408.232/408.237
Mech. Clam Processing	2.3.2	15	90	0.97	4.2	report	report	408.242/408.247
Notes:								
<p>a. If 50% or more of the weight of the solid wastes are generated from the use of one or more automated or mechanized method, then select the mechanized limitations for reporting.</p> <p>b. Bottom fish include flounder (e.g., arrowtooth), rockfish/red snapper, pacific cod, halibut, pollock, black cod/sablefish, grey cod, flatfish/sole, and whitefish</p> <p>c. Discharges resulting from existing hand-shucked clam processing facilities which process more than 1816 kg (4000 lbs) of raw material per day on any day during a calendar year and all new sources</p> <p>d. The limitations in 40 CFR Part 408.207 for Alaskan Bottom Fish was based on halibut being the dominant bottom fish species. With the introduction of a multitude of other bottom fish being processed, such as cod, pollock, flounder (arrowtooth), rockfish/red snapper, black cod/sable fish, flatfish/sole, and other whitefish species, the limitations based on halibut did not adequately reflect the processing occurring. The bottom fish species are usually brought to the plant whole, where processing the fish involves more extensive butchering and mechanization; therefore, it has been determined that Non-Alaskan Mechanized Bottom Fish Processing Effluent Guidelines [40 CFR Part 408.222] more accurately reflect current processing operations for bottom fish.</p>								

Table 9: Non-Remote Location New Source/Facility Butchering Effluent Limits (Permit Table 10)

Seafood Processing Subcategory	Permit Part	Total Suspended Solids (TSS) (lbs discharged/1000 lbs raw seafood)		Oil and Grease (O&G) (lbs/1000 lbs seafood)		BOD ₅		NSPS Rationale (40 CFR Part)
		30 Day Avg	Daily Max	30 Day Avg	Daily Max	30 Day Avg	Daily Max	
Crab Meat	2.3.2	5.3	16	0.52	1.6	report	report	408.45
Whole Crab and Crab Section	2.3.2	3.3	9.9	0.36	1.1	report	report	408.625
Shrimp	2.3.2	180	270	15	45	report	report	408.95
Hand-Butchered Salmon	2.3.2	1.4	2.3	0.17	0.28	report	report	408.165
Mechanized ^a Salmon	2.3.2	25	42	10	28	report	report	408.175
Bottom Fish ^b (Conventional/Hand Butchered)	2.3.2	1.1	1.9	0.34	2.6	report	report	408.205
Mechanized Bottom Fish	2.3.2	2.9	5.3	0.47	1.2	7.5	13	408.225
Scallops	2.3.2	1.4	5.7	0.23	7.3	report	report	408.295
Herring – Frozen Whole	2.3.2	1.6	2.6	0.19	0.31	report	report	408.162
Herring Fillet Processing	2.3.2	18	23	7.3	20	report	report	408.315
Hand Shucked Clam ^c	2.3.2	17	55	0.21	0.56	report	report	408.235
Mechanized ^c Clam Processing	2.3.2	4.4	26	0.092	0.40	5.7	15	408.245

Notes:

- a. If 50% or more of the weight of the solid wastes are generated from the use of one or more automated or mechanized method, then select the mechanized limitations for reporting.
- b. Bottom fish include flounder (e.g., arrowtooth), rockfish/red snapper, pacific cod, halibut, pollock, black cod/sablefish, grey cod, flatfish/sole, and whitefish.
- c. Discharges resulting from existing hand-shucked clam processing facilities which process more than 1816 kg (4000 lbs) of raw material per day on any day during a calendar year.

Table 10: Non-Remote Onshore New and Existing Sources Effluent Monitoring Requirements (Permit Table 11)

Effluent Parameter	Units	Effluent Result	Sample Frequency	Sample Type
Incoming Flow Rate	mgd	report	daily/monthly	measured/calculated
Flow Rate – Daily Discharge end-of-pipe total on day sampled	mgd	report	daily	measured/calculated
Flow Rate – Average Monthly Discharge	mgd	report	monthly	calculated
Raw Product Processed ^a	pounds	report	daily	calculated for each species
Number of Days Processing ^b	days	report	daily, then monthly	measured
Waste Solids Generated	pounds	report	total each week	measured
Report amount & how (inland waters, land fill, etc.) screened wastes are disposed of	pounds	report	daily	measured
BOD ₅ ^{c, d}	mg/L	report	weekly	8-hr composite ^e
	lbs/1000 lbs			
TSS ^{c, d}	mg/L	report	weekly	8-hr composite ^e
	lbs/1000 lbs			
Oil & Grease	mg/L	report	weekly	grab
	lbs/1000 lbs			
Settleable solids	mL/L	report	weekly	8-hr composite ^e
Total Residual Chlorine (TRC) ^g	µg/l	report	weekly	grab
Total Ammonia ^f	mg-N/L	report	weekly	grab
pH ^f	SU	report	weekly	grab
Temperature ^f	° C	report	weekly	grab
System Inspection Requirements	N/A	report	daily	record of condition

Notes:

- a. The permittee shall report the amount in pounds of production of each type of seafood produced (crab meat, whole crab or crab sections, salmon by conventional/hand, salmon by mechanized processing, bottom fish, herring fillet processing, herring frozen whole, or scallops).
- b. Daily reporting is required, identifying amounts and each type of seafood processed.
- c. Calculations to determine pounds of pollutant discharged per 1,000 pounds of seafood processed, as well as calculations necessary to determine compliance with the effluent limitations of Table 8 (Permit Table 9) or Table 9 (Permit Table 10), are shown in Permit Appendix E of the permit. On DMRs, permittees shall identify which effluent limitations are applicable based on the amount processed, the type of seafood or the commodity mix that was processed during the reporting period.
- d. The permittee shall report the pounds TSS and O&G / 1,000 pounds seafood processed on the day of monitoring, as well as the monthly average concentration (in accordance with Permit Appendix E).
- e. A grab sample may be collected instead of an 8-hour composite sample during periods of intermittent processing where processing alternately ceases and begins again in less than eight hours. If a grab sample is taken it shall be taken midway during discharge.
- f. The effluent ammonia, pH and temperature readings shall be collected and analyzed from the same, single grab sample.
- g. Monitoring for chlorine is not required if chlorine is not used as a disinfectant, nor introduced elsewhere in the seafood processing area.

3.11. Non-Remote Washed and Unwashed Mince or Paste Seafood Processing. (Permit Part 2.3.3)

See Fact Sheet Part 3.7 for an explanation of washed and unwashed mince / paste seafood processing waste discharges occurring at Remote Facilities as this narrative of pollutant content in the effluent is the same for both Remote and Non-Remote Facilities.

3.11.1. Establishing Non – Remote Effluent Limits and Monitoring for Washed and Unwashed Mince / Paste Seafood Processing

As previously discussed, EPA has not promulgated ELGs applicable to surimi, or either washed or unwashed minced seafood products. Therefore, EPA had to consider relevant and technical factors when developing the BPJ for the Non-Remote case-by-case TBELs during development of the 1998 AKG528000 permit (See the 1998 AKG528000 General Permit Fact Sheet - Section 6.2.3 of the), applicable to the seafood wastewater discharge consisting of a combined butchering waste stream and surimi processing waste stream.

To establish the effluent limits for Non-Remote facility's combined butchering and surimi processing waste streams, EPA exercised BPJ and applied the Alaskan applicable ELGs established in 40 CFR Part 408, as well as the broader application of the non-Alaskan bottom fish ELGs in 40 CFR Part 408.222-225 to the combined waste stream of butchering and surimi processing waste discharges. As discussed in Fact Sheet Part 3.7.2, pollock are one type of bottom fish used to make surimi which EPA used BPJ TBELs by applying Non-Alaskan Mechanized Bottom Fish Processing Effluent Guidelines [40 CFR Part 408.222] to more accurately reflect current processing operations for bottom fish. Since salmon is also being used to make washed and unwashed mince / paste seafood product, the permit proposes the effluent limitations applicable to Alaska Mechanized Salmon ELG [40 CFR Part 408.175] to be applied as end-of-pipe limitations for those facilities processing salmon into washed or unwashed mince / paste products.

The Department has evaluated the original BPJ TBELs developed by EPA in relation to age of equipment and current engineering aspects of control techniques, as well as other pertinent considerations. The Department determined that the 1998 AKG528000 TBELs end-of-pipe limits established for butchering and processing lines, including the processing of surimi and its wastewater discharges, continue to be applicable to Non-Remote washed and unwashed mince /paste seafood processing discharges covered by the AKG521000 permit. Non-Remote seafood processing facilities that incorporate unwashed mince or washed mince /paste production lines or by-product production lines (human, pet food or other surimi/mince seafood types of use) are required to meet applicable effluent limits (Permit Table 9 or Table 10).

3.11.2. Treatment Technology Development and Compliance

A Non-Remote permittee discharging washed and unwashed mince / paste wastewater is required through BPJ to implement fine mesh screening technologies (Permit Part 2.3.1), or equivalent technology, in order to meet end-of-pipe limits (Permit Table 10). Permittees have chosen a number of equivalent treatment approaches to comply with the ELG permit limitations.

3.11.3. Controlling Pollutant Loading Associated with Washed Mince or Paste Seafood Wastewater Discharge

The production of a washed and unwashed mince or paste seafood product increases TSS, O&G and BOD₅ loading in receiving waters if not properly treated. The 1994 AKG520000 ODCE established that washed paste (surimi operations) had a discharge rate of an order of magnitude

higher than that for other product groups (median mo. ave TSS = 1,079 mg/L and median daily max = 1,366 mg/L). Non-Remote Facilities may need to establish the same types of investigational BMPs (See Fact Sheet Part 3.7.4) that are required for Remote facilities processing washed and unwashed mince / paste seafood in order to control TSS, O&G and BOD₅ associated with this type of production line. The effluent limits and monitoring are continued from the AKG528000 permit requirements, but permittees are not allowed to subtract washed mince/paste monitoring data (pollutant loading) from final end-of-pipe monitoring data.

The permit proposes to continue the AKG528000 internal outfall sampling site to monitor the effluent pollutant loading from Non-Remote facility's washed and/or unwashed mince / paste lines or mince / paste by-products (see Permit Part 2.3.3.7 and Table 12). Internal outfall samples of washed and/or unwashed mince / paste lines effluent shall be collected as two aliquots (one mid-cycle and one at the end of the processing cycle) during the mince / paste seafood waste stream discharge. The washed and/or unwashed mince / paste lines shall be monitored at two sampling locations (internal and end-of-pipe) within the facility:

Sampling required at internal outfall location, shall be performed on the monitoring schedule set out in Table 11 (Permit Table 12), prior to commingling any with other wastewater discharge stream(s). The permittee is required to determine washed and unwashed mince / paste seafood production effluent TSS, O&G, and BOD₅ loading. The mass of TSS, O&G and BOD₅ found at the internal outfall sampling shall not be subtracted from the mass of TSS, O&G and BOD₅ in the final facility effluent discharge monitoring data found from sampling required in Permit Part 2.3.3.6.

The internal sample shall be collected as single production cycle as a composite sample. Or, the sampling period shall be set as; the first required aliquot for the internal outfall grab samples (Table 11) shall be collected from the waste stream during discharge of the first-half of the washed mince / paste lines wash cycle(s). The second required aliquot for the internal outfall grab samples (Table 11) shall be collected during that same production cycle, on the same day, during the waste stream discharge of the washed mince / paste lines last wash cycle(s) and dewatering.

If the minced seafood is not washed, then the internal outfall waste stream sampling shall be collected as an 8-hour composite (or less if the processing cycle is less) prior to commingling.

The permit proposes to continue the AKG528000 end-of-pipe compliance point with the effluent limits established for a combined waste stream.

The sampling period for end-of-pipe monitoring as established in Table 11 (Permit Table 12) shall be collected on the same day as samples taken under Permit Part 2.3.3.6 while washed and unwashed mince / paste seafood effluent is being discharged to the waters of the U.S. End-of-pipe effluent monitoring results for TSS, O&G and BOD₅ shall be reported separately on the DMR from the internal outfall monitoring data. Monitoring for compliance with combined waste stream effluent limits found in Table 9 shall occur at the last point prior to discharge to waters of the U.S. Depending on the facility design, the effluent limits of Table 9 (Permit Table 10) shall apply at the end-of-pipe, prior to discharge. The effluent limits apply whether discharged out a commingled wastewater outfall/port or discharged directly to waters of the U.S.

If wastewater is not produced during the washed or unwashed mince / paste seafood production or washed and unwashed mince / paste seafood by-product production, effluent sampling under this part is not required.

The AKG521000 permit includes requirements to monitor the effluent for temperature, pH and total ammonia during the discharge of washed and unwashed mince / paste wastewater. For more information regarding ammonia toxicity and sampling see Fact Sheet Part 3.13

REPEATED FOR EASIER REFERENCE Non-Remote Location End-of-Pipe Effluent Limits (Permit Table 10)

Seafood Processing Subcategory	Permit Part	Total Suspended Solids (TSS) (lbs discharged/1000 lbs raw seafood)		Oil and Grease (O&G) (lbs/1000 lbs seafood)		BOD ₅		Rationale (40 CFR Part) NSPS
		30 Day Avg	Daily Max	30 Day Avg	Daily Max	30 Day Avg	Daily Max	
Crab Meat	2.3.2	5.3	16	0.52	1.6	report	report	408.45
Whole Crab and Crab Section	2.3.2	3.3	9.9	0.36	1.1	report	report	408.625
Shrimp	2.3.2	180	270	15	45	report	report	408.95
Hand-Butchered Salmon	2.3.2	1.4	2.3	0.17	0.28	report	report	408.165
Mechanized ^a Salmon	2.3.2	25	42	10	28	report	report	408.175
Bottom Fish ^b (Conventional/Hand Butchered)	2.3.2	1.1	1.9	0.34	2.6	report	report	408.205
Mechanized Bottom Fish	2.3.2	2.9	5.3	0.47	1.2	7.5	13	408.225
Scallops	2.3.2	1.4	5.7	0.23	7.3	report	report	408.295
Herring – Frozen Whole	2.3.2	1.6	2.6	0.19	0.31	report	report	408.162
Herring Fillet Processing	2.3.2	18	23	7.3	20	report	report	408.315
Hand Shucked Clam ^c	2.3.2	17	55	0.21	0.56	report	report	408.235
Mechanized ^a Clam ^c Processing	2.3.2	4.4	26	0.092	0.40	5.7	15	408.245

Notes:

- If 50% or more of the weight of the solid wastes are generated from the use of one or more automated or mechanized method, then select the mechanized limitations for reporting.
- Bottom fish include flounder (e.g., arrowtooth), rockfish/red snapper, pacific cod, halibut, pollock, black cod/sablefish, grey cod, flatfish/sole, and whitefish
- Discharges resulting from existing hand-shucked clam processing facilities which process more than 1816 kg (4000 lbs) of raw material per day on any day during a calendar year

Table 11: Non-Remote Location Washed and/or Unwashed Mince / Paste Seafood Effluent Monitoring Requirements (Permit Table 12)

Effluent Parameter	Units	Effluent Result	Sampling Frequency Internal and End-of-pipe	Sample Type
Flow Rate - Daily Discharge for internal outfall on day sampled	mgd	report	record daily, report daily value for sample day	measured/calculated
Incoming Flow Rate	mgd	report	daily/monthly	measured/calculated
Flow Rate – Daily Discharge end-of-pipe total on day sampled	mgd	report	record daily, report daily value for sample day	measured/calculated
Flow Rate – Average Monthly Discharge	mgd	report	monthly	calculated
Raw product sent to each washed and unwashed mince / paste line ^a	lbs	report	record per production cycle, then report total monthly	measured, calculated for each species
Number of Days Processing ^b	days	report	record daily, report monthly total	measured
Amount of washed and unwashed mince / paste produced	lbs	report	record per production cycle, then report total monthly	measured
BOD ₅ ^{c, d}	mg/L	report	weekly, Internal and End-of-pipe	Internal = Composite or Grab, End-of-pipe = Composite
	lbs/1000 lbs			
TSS ^{c, d}	mg/L	report	weekly, Internal and End-of-pipe	Internal = Composite or Grab, End-of-pipe = Composite
	lbs/1000 lbs			
Oil & Grease ^{c, d}	mg/L	report	weekly, Internal and End-of-pipe	Internal = Grab, End-of-pipe = Grab
	lbs/1000 lbs			
Settleable solids	mL/L	report	weekly, Internal and End-of-pipe	8-hr composite ^d
Total Dissolved Solids ^f	mg/L	report	weekly, Internal and End-of-pipe	8-hr composite
Total Residual Chlorine (TRC) ^g	µg/l	report	weekly	grab
Total Ammonia ^h	mg-N/L	report	weekly	grab
pH ^h	SU	report	weekly	grab
Temperature ^h	° C	report	weekly	grab

Notes:

- a. The permittee shall report the amount in pounds of production of each type of seafood sent to the washed and unwashed mince / paste seafood production line (crab, salmon by conventional/hand butchering processes, salmon by mechanized processing, bottom fish, etc.).
- b. The permittee shall report the number of days in the calendar month on which each type of washed and unwashed mince / paste seafood processing occurred.
- c. Permittees shall report the daily and monthly pounds (lbs) BOD₅, TSS, and O&G / 1,000 lbs seafood processed for each calendar month.
- d. Calculations to determine lbs of pollutant discharge per 1,000 lbs of seafood processed are shown in Permit Appendix E.
- e. Samples shall be taken as required in Permit Part 2.3.3.7.
- f. Total Dissolved Solids monitoring is only required in Fresh Water Systems.
- g. Monitoring for chlorine is not required if chlorine is not used as a disinfectant, not introduced elsewhere in the seafood processing area.
- h. The effluent ammonia, pH and temperature readings shall be collected and analyzed from the same, single grab sample.

3.12. Non-Remote Fish Meal, Fish Powder, Fish Oil, Fish Hydrolysate and Other By-products (Permit Part 2.3.4)

The proposed permit contains effluent limits based the AKG528000 permits developed on case-by-case basis using BPJ applied to Fish Meal and Fish Powder. During the development of the draft 1998 AKG528000 permit and RTC, EPA found that ELGs had not been developed for Alaskan (or other) Fish Powder processing in 40 CFR Part 408. The AKG528000 permit effluent limits for the Fish Powder processing discharge stream came from the application of BPJ utilizing the ELGs for Fish Meal Processing Subcategory, 40 CFR Part 408.155 standards of performance for new sources. These TBELs are based upon the performance of specific technologies, but do not require the use of any specific technology. The facility can then choose its own approach to comply with permit limitations. In developing BPT-based TBELs, EPA considered the total cost of applying the technologies in relation to the effluent reduction benefits achieved from the technologies; the size and age of equipment and facilities; the processes used; the engineering aspects of applying various types of control techniques; process changes; and non-water quality environmental impacts, including energy.

EPA made a determination in the issuance of the final AKG528000 permit in the Federal Register Vol. 63, No. 61 / Tuesday, March 31, 1998 / pg 15404:

“Requirements for fish powder in the draft permit were less stringent than is usually required of fish meal production so EPA determined that the production of fish powder and the production of fish meal are essentially the same and has applied the effluent limitation guidelines for fish meal to the two facilities operating fish meal/powder plants, thereby allowing Kodiak Fishmeal Company to be covered by the Kodiak general permit. The draft permit fact sheet had contained the following language, ‘The operation of a fish powder processing plant is being done by one facility and is significantly different than the fish meal production done in other facilities where the effluent guidelines [40 CFR Part 408.155] have been applied. EPA does not have the data to support a determination of appropriate technology-based limits for fish powder processing at this time.’”

This determination lead EPA to limiting fish powder production with the same effluent limits as those that were being applied to fish meal production. The AKG528000 Fact Sheet under the Fish Meal seafood processing subcategory noted that 40 CFR Subparts 408.150-157 were the ELGs applied. The Fish Meal (40 CFR Subparts 408.150-157) section of the regulation reads:

“The provisions of this subparts are applicable to discharges resulting from the processing of menhaden on the Gulf and Atlantic Coasts and the processing of anchovy on the West Coast into fish meal, oil and solubles.”

EPA then applied the BPJ Fish Meal ELGs to the discharge Fish Powder by-product effluent. The Department has reevaluated these BPJ limits to ensure ongoing applicability. EPA considered relevant factors (e.g., age of the equipment, engineering aspects, etc.) when developing TBELs using BPJ during development of the AKG528000 permit. The Department has evaluated the original BPJ TBELs developed by EPA in relation to age of equipment and current engineering aspects of control techniques, as well as other pertinent considerations.

The permit proposes continue to apply these Fish Meal and Fish Powder AKG528000 BPJ TBEL permit limits and proposes to apply the Fish Meal, Fish Powder (Permit Table 13) effluent limits applicable to Fish Oil, Fish Hydrolysate discharges as well (see Fact Sheet Table 12). The application of these effluent limits to fish oil, fish hydrolysate discharges are referenced in 40 CFR Subparts 408.150-157, by the regulatory reference in code to fish oils and solubles. Since the rule making process of the 1974 ELGs, many new wastewater treatment process improvements and technologies have been developed. Applicable wastewater treatment technologies that could be

utilized for fish meal, fish powder, fish oil, fish hydrolysate and other by-products (by-products) includes multi-sequence batch reactors (SBRs), MBRs, nano and ultra-filtration processes. Through careful O&G capture, and use of the treatment technologies discussed, and use of upstream by-product recovery techniques, the ELGs for wastewater treatment can be met while also improving by-product production levels and increasing economic gains.

The AKG521000 permit adds new internal outfall monitoring requirements for effluent temperature, pH and total ammonia during the discharge by-product wastewaters. Water quality pollutants of concern are the same as that of other processed seafood, except for the possible increased pH, increased ammonia content and/or increased temperature. For more information regarding ammonia toxicity and sampling see Fact Sheet Part 3.13.

The AKG528000 – Section 3.3.7 permit specific internal-outfall-monitoring requirements for stickwater are retained in the AKG521000 permit, and the effluent limits found in Table 12 are applied prior to commingling with other waste streams. If stickwater is discharge directly to waters of the U.S., sampling must be performed when stickwater is being discharged.

As found in, Permit Part 2.3.4 the effluent limitations for the fish meal, fish powder, fish oil, fish hydrolysate waste streams (including any produced stickwater discharges) are being applied if these waste streams are proposed to be discharged directly to the receiving water. The end-of-pipe limitations for the fish meal, fish powder, fish oil, fish hydrolysate waste stream, may become more stringent than in the previous permit, depending on a facilities previous monitoring plan, or stickwater disposal mechanisms. The permit requires stickwater to be recycled in an environmentally safe manner whenever feasible. Permit Part 2.10 requires development of BMPs applicable to stickwater.

Permit Part 2.3.4 and Table 12 (Permit Table 13) establish Non-Remote by-product facility effluent limits and Table 13 (Permit Table 14) establishes monitoring schedule by-product effluent discharges. Sampling shall occur before such waste streams are commingled with other wastewaters. Since fish meal, fish powder, fish oil, fish hydrolysate and other by-product production typically occur after filleting / butchering, if waste streams are commingled, the monitoring data of mass of TSS and O&G obtained from sampling the internal outfall (Permit Part 2.3.4.10) shall not be subtracted from the mass of TSS and O&G in the total plant discharge effluent sample before compliance with effluent limitations for butchering waste streams (Permit Part 2.3.2 and Tables 9 or 10) are determined. If needed, the permittee may use a commodity mix for Appendix E calculations for determining compliance.

It is unclear to DEC why the subtraction of the loading of the by-product waste stream was allowed in the 1998 AKG528000 permit (see AKG528000 – Section 3.3.5). The Department assumes that during the issuance of the 1998 AKG528000 permit, the by-product would have been viewed as follows: fish are brought into the plant, headed, gutted and filleted, and the rest of the carcass is sent to an onsite by-product production line. Following this approach, the loading from a by-product recovery line would then be thought of as additional material being “removed” from the filleted carcass seafood waste loading totals, perhaps thought to decrease loading of the waste stream (thereby allowing its loading subtraction) because it was perceived less of the seafood waste was being sent out the outfall line. The seafood processors in Kodiak do not actually have their own, individual on-site by-product facility. Each facility has a seafood processing butchering lines, possibly integrate washed or unwashed mince / paste processing. Then, after screening their seafood processing waste, the facility ships (i.e., trucks) the waste to a completely separate, independent facility (Kodiak Fishmeal Company). Thus, the AKG521000 end-of-pipe limits (Table 12) being applied to Seafood by-product effluent is the same limits established in the AKG528000 Non-Remote facilities.

Table 12: Non-Remote Fish Meal, Fish Powder, Fish Oil, Fish Hydrolysate and Other By-products Effluent Limits Requirements (Permit Table 13)

Effluent Parameter	Units	Monthly Average Limit	Daily Maximum Limit	Daily Minimum Limit
BOD ₅ ^a	mg/L	3.8 ^a	6.7 ^a	-----
	lbs/1000 lbs			-----
TSS ^a	mg/L	1.5 ^a	3.7 ^a	-----
	lbs/1000 lbs			-----
Oil and Grease	mg/L	0.76 ^a	1.4 ^a	-----
	lbs/1000 lbs			-----
Total ammonia ^b	mg-N/L	report	-----	-----
pH ^b	SU	-----	8.5	6.5
Temperature ^b	° C	report	-----	-----

Notes:

- a. Example calculations for pounds of pollutant discharge per 1,000 pounds of seafood processed can be found in Permit Appendix E.
- b. The effluent ammonia, pH and temperature readings shall be collected and analyzed from the same, single grab sample.

Table 13: Non-Remote Monitoring Requirements for Fish Meal, Fish Powder, Fish Oil, Fish Hydrolysate and Other By-product Waste and Effluent Streams (Permit Table 14)

Effluent Parameter	Units	Effluent Results	Sample Frequency	Sample Type
Flow Rate - Daily Discharge for internal outfall on day sampled	mgd	report	daily	measured/calculated
Incoming Flow Rate	mgd	report	daily/monthly	measured/calculated
Flow Rate – Daily Discharge end-of-pipe total on day sampled	mgd	report	daily	measured/calculated
Flow Rate – Average Monthly Discharge	mgd	report	monthly	calculated
Number of Days Processing ^a	days	report	daily/monthly	measured
Amount of seafood sent to, or brought to By-product line(s)	lbs ^b	report	daily	measured
	%			
Amount by-product produced, per line	lbs	report	daily	measured
Report amount & how (inland waters, land fill, etc.) screened wastes are disposed of, if any	lbs	report	daily, total each week	measured
BOD ₅ ^{c, d}	mg/L	report	weekly	8-hr composite ^d
	lbs/1,000 lbs			
TSS ^{c, d}	mg/L	report	weekly	8-hr composite ^d
	lbs/1,000 lbs			
Oil & Grease ^e	mg/L	report	weekly	grab
	lbs/1,000 lbs			
Total Residual Chlorine (TRC) ^e	µg/l	report	weekly	grab
Total Ammonia ^f	mg-N/L	report	weekly	grab
pH ^f	SU	report	weekly	grab
Temperature ^f	° C	report	weekly	grab

Notes:

- a. The permittee shall report the number of days in the calendar month on which each type of seafood processing occurred.
- b. The permittee shall report the amount in pounds of production of each type of seafood sent to the by-product line (crab meat, whole crab or crab sections, salmon by conventional/hand butchering processes, salmon by mechanized processing, bottom fish, herring fillet processing, herring frozen whole, scallops, etc.). The permittee is required to report the percentage of total raw pounds processed that is sent to the by product line. In example, if 40,000 lbs of carcasses are produced from filleting, but only 20,000 lbs are sent by-product production, the percent reported would be 50%.
- c. Permittees shall report the daily and monthly pounds (lbs) BOD₅, TSS, and O&G / 1,000 lbs seafood processed.
- d. A grab sample may be collected instead of an 8-hour composite sample during periods of intermittent processing where processing alternately ceases and begins again in less than eight hours. If a grab sample is taken it shall be taken midway during the processing.
- e. Monitoring for chlorine is not required if chlorine is not used as a disinfectant, nor introduced elsewhere in the seafood processing area.
- f. The effluent ammonia, pH and temperature readings shall be collected and analyzed from the same, single grab sample.

3.13. “Other Wastewaters” (Remote and Non-Remote Facilities) (Permit Part 2.4)

3.13.1. Historical discussion of “Other Wastewaters”

The AKG521000 permit proposes requirements applicable to the discharge of “Other Wastewaters” for Remote and Non-Remote facilities. Previously, “Other Wastewaters” were regulated differently between NPDES permits AKG520000 and AKG528000. The 2001 AKG520000 permit stated:

AKG520000 (V)(A, B & C)(1)(h) “Wastewaters that have not had contact with seafood are not required to be discharged through the seafood process waste-handling system.”

The 1998 AKG528000 requirements for non-process waters (other wastewaters) stated:

1998 AKG528000 (2.4) “Non-process wastewaters include non-contact cooling water, boiler water, freshwater pressure relief water, refrigeration condensate, water used to transfer seafood to the facility, live tank water, and other non-process water (except wastewater from floor drains). These wastewaters may be discharged without treatment to the receiving water through conveyances, provided that the discharges are in compliance with Alaska State Water Quality Standards.”

3.13.2. All “Other Wastewaters” Outfall Monitoring

Permittees interpreted the “Other Wastewaters” language found in the AKG520000 and AKG528000 permits to allow the discharges of “Other Wastewaters” from multiple outfall configurations. The seafood processing ELGs make no differentiation for these “Other Wastewater” discharges from seafood processing facilities. Thus, the AKG521000 permit requires monitoring for both Remote and Non-Remote “Other Wastewaters” outfalls discharging to waters of the U. S.

For Non-Remote facilities, the AKG521000 permit includes new requirements that all outfalls, including those outfalls discharging seafood processing waste and wastewaters and discharging “Other Wastewaters” directly to waters of the U.S. (i.e., without passing the wastewater through the screening system) be monitored to ensure TBELs and other permit requirements are met.

For Remote facilities the AKG521000 permit includes new requirements to clarify what standards apply to “Other Wastewaters” and requires the development of BMP to assist in pollution reduction and meeting effluent limits. The AKG521000 permit contains the requirement that all Remote facility discharges meet the TBEL established for Remote facilities found in 40 CFR Part 408, which states that “No pollutants may be discharged which exceed 1.27 cm (0.5 inch) in any dimension.” Of note, the TBELs found in 40 CFR Part 408 do not establish what waste or wastewater treatment system has to be used to meet the 1.27 cm limitation.

To meet the 1.27 cm grind size TBEL, most facilities send their seafood waste through a combination of different grinders. However, “Other Wastewaters”, like live tank waters or catch transfer waters that come in contact with raw, unprocessed seafood may not contain significant amounts of solids, and the wastewater would not necessarily need to be ground to meet the TBEL. Additionally, the grinding pumps often do not function (i.e., grind) as designed when large hydraulic loads (such as catch transfer flows) are forced through the pump systems. Sending the “Other Wastewaters” waste stream through the seafood waste-handling system (grinding) is not the only way to meet the 1.27 cm grind size TBEL. As an alternative to meet the grind size TBEL, the “Other Wastewaters” could be passed over a mesh (screen) to remove solids greater than the 1.27 cm in size.

Monitoring these discharges and requiring BMPs to be written and implemented to control these documented waste streams is a new permit requirement. If a permittee is planning on discharging toxic (ammonia, chlorine) and other deleterious organic or inorganic discharges through “other wastewater” outfalls, the facility’s BMP Plan shall discuss where in the facility the chemicals or pollutants are found, and facility processes that contribute to pollutant loading. Additionally, the BMP Plan shall discuss which waste streams the chemicals can be found in, the standard operating procedures for how these chemicals are handled, and how discharges (e.g., ammonia and chlorine) will be controlled to meet WQS. Note, the permit does not authorize the discharge of spills or other non-monitored, uncontrolled releases.

3.13.3. All “Other wastewaters” Outfalls to be Identified on the NOI

Additionally, based on experience administering the AKG520000 and AKG528000 permits, DEC found permittees often made changes to seafood processing line configurations, which occasionally resulted in plumbing cross-connections or other unanticipated routing. Non-process drain pipes would be cutoff, reconnected, re-routed or often left uncapped in seafood processing plants. Reconnected or rerouted discharges were often found to be connected to seafood processing plant floor clean up drains, loading and unloading areas, seafood and fish transfer areas, and processing water drains, that then were discharged directly to waters of the U.S without passing through the correct waste treatment systems. While neither the 2001 AKG520000 nor the AKG528000 permits required the permittees to identify all outfalls in the NOI that discharged “Other Wastewaters”, the AKG521000 permit has made such identification a new permit requirement.

3.13.4. Calculating Flow Rates for “Other Wastewaters” (Permit Part 1.6)

Historically, seafood processing facilities have not been required to calculate or measure flow rates of “Other Wastewaters” outfalls. To provide further information to the department regarding “Other Wastewaters” discharges, the AKG521000 permit requires the operator to meter or calculate “Other Wastewaters” flow rates. Seafood processing operators expressed concern during the 10-day AKG521000 permit review period that this new requirement (i.e., to calculate or measure flow rate) would be used by the Department for compliance actions if the DEC Compliance inspector measured the flow rate and found the volume to be incorrect as compared to the NOI. Since not historically measured, it is not expected that all operators would know the exact flow rate to be proposed on the NOI for the initial application. DEC expects the operator’s initial application for “Other Wastewaters” discharges to be a ‘proposed’ flow rate. As the permit cycle progresses, if the permittee finds through the installation of meters or refining of pump discharge rate calculations that their initial estimate “Other Wastewaters” flow rate was inaccurate, the permittee may need to submit an updated NOI. The Department expects it may take the permittee one to two discharge seasons to better refine flow rate(s).

The AKG521000 permit provides coverage for commingled storm water discharges through “Other Wastewaters” outfall(s), or through commingling with the seafood waste discharge outfall(s). The AKG521000 requires the discharge of storm water flow rates to be measured or calculated. During the initial 10-day permit review period seafood processing operators were concerned with the new permit requirement to calculate the flow rates of commingled stormwater discharges. The operators requested clarification on how they were supposed to calculate seasonally variable storm water discharge flow rates. To calculate storm water flow rates, the permittee can calculate the square feet of hard surface that the storm water is collected from and then convert to acres of storm water discharged times the inches of annual precipitation → = discharges from 1 acre = 6,272,640 sq. inches collected * 9 inches precipitation/yr = 56,453,760 cu inches * 0.00433 in³/gal = 244,388 gal/yr. Flow rates from vessel fish hold discharge can be calculated by pump rate and time measurements or

measurement of volume left in holding tanks after seafood processing occurs, prior to discharging to sump(s) areas.

3.13.5. “Other Wastewaters” Pollutant Loading

Similar to most food processing industries, effluents from seafood processing plants are characterized by high concentrations of nutrients, high levels of nitrogen content as ammonia (NH₃-N; 29 to 35 mg·L⁻¹), high total suspended solids (0.26 to 125,000 mg·L⁻¹), increased biological oxygen demand (10 to 110,000 mg·L⁻¹) and chemical oxygen demand (496 to 140,000 mg·L⁻¹), and by the presence of sanitizers (AMEC, 2003). Seafood processing wastewater has been noted to sometimes contain high concentrations of chlorides from processing water and brine solutions, and organic total nitrogen (0–300 mg/L) from processing water (Islam, 2004). The fish hold and transfer water may create foam and scum on the surface of the receiving water and may contribute to increased ammonia concentrations.

Ammonia Toxicity of ammonia is temperature and pH dependent in freshwater systems, additionally alkalinity affects pH in fresh water systems, thus affecting toxicity. Toxicity of ammonia is temperature, pH, alkalinity and salinity dependent in marine systems. When dissolved in water, normal ammonia (NH₃) reacts to form an ionized species called ammonium (NH₄⁺)



The chemical reaction above demonstrates that one molecule of ammonia reacts with one molecule of water to form one ammonium ion and a hydroxyl ion. The doubled headed arrow indicates that the reaction can go either way and hydroxyl ions and ammonium ions could combine to form ammonia and water. When the pH of water increases, the water becomes more alkaline. Alkalinity is caused by an increase in hydroxyl ions. Alkalinity is the carbon source for nitrifier growth and nitrite oxidizers increase in numbers faster than ammonia oxidizes at typical effluent temperatures. The increase in hydroxyl ions (or alkalinity) pushes the equilibrium to the left and more unionized ammonia is formed, thus increasing toxicity. It is highly soluble in water, with one volume of water absorbing 1.148 volumes of ammonia at 32 °F. Thus, if found as a pollutant, ammonia in air can be stripped or “scrubbed” out of air streams by fine mist vapor and condensation, but then the ammonia is found in the wastewater stream. The amount of free ammonia at the base of the scrubber’s columns can range from 100 ppm to 200 ppm (<https://www3.epa.gov/ttn/catc/dir1/ammonia.pdf>). An ammonia destructor can be used to condense and remove the ammonia, but if one is not in place these levels of ammonia can enter the wastewater discharge stream.

Amounts of ammonia discharged to air may be a required monitoring and reporting item for some seafood processing facilities have that have a DEC Air Quality Clean Air Act (CAA) permit, most seafood processing facilities in Alaska do not have a CAA permit. Therefore, losses of ammonia, and possible discharges to wastewater, are not tracked by the facility or by DEC AQ. The AKG521000 permit requires that facilities that use ammonia as a refrigerant monitor ammonia discharges from these systems. Ammonia is lost to the air or to wastewater by various facility activities. Some facilities exchange their whole refrigerant system ordering XX gallons of ammonia each year, and have the entire system flushed out by a contract specialist. Others “purge” their refrigerant systems of air to remove the air from the refrigeration lines in order for the system to permittee correctly. When condenser surfaces are insulated with air, the effective condenser size is reduced. This size reduction is offset by increasing the temperature and pressure of the refrigerant gas, purging the air restores the efficiency of the system by decreasing required gas pressure to cool the system. The ammonia can enter the wastewater

stream during these purging procedures, enter during routine maintenance and pipe replacement, or can enter the wastewater stream during breaks in the line.

Historically, receiving water alkalinity monitoring has not been required. For accurate mixing zone modeling of ammonia, the freshwater alkalinity must be known as the receiving water alkalinity affects the disassociation and therefore the ionization rate of nitrification (total ammonia transitioning to nitrate or nitrites). Therefore, the proposed permit requires the permittee to determine average seasonal data for the receiving water temperature, pH, salinity and alkalinity for discharges, Permit Part 2.7.5.

For marine discharge, the AKG521000 permit requires the permittee to collect the sample and analyze the effluent for ammonia, temperature and pH from the same grab sample. If the average seasonal receiving water quality parameters of temperature, pH, salinity and alkalinity have already been determined from monitoring previously performed by the permittee, then the effluent only needs to be analyzed. If the receiving water quality parameters have not been collected, the permittee should identify when during the season they should be collected, as the permit requires sampling two times per year, Permit Part 2.7.5.

Federally-promulgated WQS for the State of Alaska regarding toxic substances (including pollutants of concern such as ammonia, chlorines, chlorites), are found at 40 CFR Part 131.36. The documents are adopted by reference in 18 AAC 70.020(b) and in the *Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances (Toxics Manual)*, dated December 12, 2008. Alaska's ammonia WQS referenced above are based off of both unionized ammonia sampling and total Ammonia sampling, and applying mathematical equations to the sample result as found in the Toxic Manual's Appendices C – G converting the total ammonia toxicity based on pH, temperature, and salinity.

If "Other Wastewaters" are discharged through outfalls to waters of the U.S., the new monitoring requirements found in Permit Table 15 are required. This monitoring information is being collected for future potential permit limit development and for potential future mixing zone modeling efforts. Remote permittees are required to sample "Other Wastewater" outfalls monthly. Non-Remote permittees are required to sample "Other Wastewater" outfalls weekly. The discharge of non-contact cooling water, retort water, boiler water may have the potential to affect the temperature of the receiving water as well.

Table 14: Other Wastewater Outfall(s) / Port(s) Remote and Non-Remote Monitoring Requirements (Permit Table 15)

Effluent Parameter	Units	Monitoring Data	Frequency Remote	Frequency Non-Remote	Sample Type
Flow Rate	mgd ^a	report	record daily and report monthly ave.	record daily and report monthly ave.	measured or calculated
Seafood Waste Size Sampling (Remote only)	cm (1.27cm limit)	report	daily	N/A	grab
BOD ₅ (Non-Remote – only seafood processing)	mg/L	report	N/A	weekly	8-hr composite ^d
	lbs/1000 lbs ^c				
TSS (Non-Remote – only seafood processing)	mg/L	report	N/A	weekly	8-hr composite ^d
	lbs/1000 lbs ^c				
O&G (Non-Remote – only seafood processing)	mg/L	report	N/A	weekly	grab
	lbs/1000 lbs ^c				
pH ^b	SU	report	monthly	weekly	grab
Temperature ^b	° C	report	monthly	weekly	grab
Total Ammonia ^b	mg-N/L	report	monthly	weekly	grab
Salinity	mg/L	report	monthly	weekly	grab
Total Residual Chlorine ^e	mg/L	report	monthly	weekly	grab

Notes:

- a. mgd = million gallons per day
- b. The effluent ammonia, pH, salinity and temperature readings shall be collected and analyzed from the same, single grab sample.
- c. Permittees shall report the daily and monthly pounds (lbs) BOD₅, TSS, and O&G / 1,000 lbs seafood processed.
- d. A grab sample may be collected instead of an 8-hour composite sample during periods of intermittent processing where processing alternately ceases and begins again in less than eight hours. If a grab sample is taken it shall be taken midway during the processing.
- e. Monitoring for chlorine is not required if chlorine is not used as a disinfectant, nor introduced elsewhere in the seafood processing area.

3.14. Storm Water Discharge Requirements for Seafood Processing Facilities (Remote and Non-Remote) (Permit Part 2.5)

Non-commingled industrial storm water discharge coverage is available under the APDES MSGP. The 2015 APDES MSGP contains provisions that require industrial facilities in 29 different industrial sectors to implement control measures and develop site-specific storm water pollution prevention plans (SWPPP) to comply with APDES requirements. APDES MSGP Part 1.2.1 states that to be eligible to discharge, a permittee shall have a storm water discharge associated with an identified primary industrial activity. The MSGP defines ‘Primary Industrial Activity’ as including any activities performed on-site, which are identified by a list of primary SIC codes. The APDES MSGP lists ‘SECTOR U: FOOD AND KINDRED PRODUCTS – U3’ with SIC codes as 2091-2099 Miscellaneous Food Preparations and Kindred Products. Seafood Processing falls under Section U3 SIC codes (Frozen, Fresh or Canned).

Seafood processing facility permittees discharging non-commingled storm water need to determine if coverage is needed under the 2015 APDES MSGP, or most recent version. The AKG521000 permit requires the permittee identify if the permittee has MSGP coverage, or if the facility has No Exposure Certificates. The MSGP specifically states that industrial (seafood processing) discharges (non-storm water) that are mixed with storm water are not covered.

‘MSGP Permit Part 1.2.4.1 Discharges Mixed with Non-Storm Water. Storm water discharges that are mixed with non-storm water, other than those non-storm water discharges listed in Part 1.2.3 (*Allowable Non-Storm Water Discharge*), are not eligible for coverage under this permit.’

Thus, the AKG521000 permit proposes coverage for commingled storm water discharges mixed with seafood processing (industrial) waste and wastewater and/or domestic wastewater.

Section 402(p) of the CWA provides the basis for regulating storm water from certain categories of industry described in 40 CFR 122.26(b)(14). The permit proposes specific storm water requirements for seafood processing facilities that commingle their storm water with seafood wastewater and/or domestic wastewater to ensure that those seeking coverage under the permit select, install, implement, and maintain control measures at their industrial site that will be adequate and sufficient to meet WQS. Based on EPA’s *1996 Interim Permitting Approach for Water Quality-Based Effluent Limitations in Storm Water Permits (EPA 833-D-96-001)*, DEC determined that control measures when properly selected, installed, implemented, and maintained provide effluent quality that can meet WQS. However, because proper selection, installation, implementation, and maintenance are so critical to the success of control measures, the effectiveness of simply “installing control measures” at seafood processing sites may not provide adequate water quality protection. Unless notified otherwise by DEC, compliance with the storm water permit requirement will be assumed to be as stringent as necessary to ensure that discharges do not cause or contribute to an excursion above any applicable WQS.

DEC has identified five types of activities at seafood processing facilities that have the potential to be major sources of pollutants in storm water. These activities must be addressed in the permittee’s SWPPP.

- **Loading and Unloading Operations.** Loading and unloading operations can include pumping of seafood / fish from the vessel (catch transfer water) to the interior of the seafood processing facility, transfer by mechanical conveyor systems, or transfer of totes containing fish and ice, or other containers by forklift, davit, crane or other material handling equipment. Material spills or losses in these areas can accumulate and be washed away during a storm.

- **Outdoor Storage.** Outdoor storage activities include storage of fuels, raw materials, by-products, intermediate products, final products, and process residuals. Materials may be stored in containers, on platforms or pads, in bins. Storage areas that are exposed to rainfall and/or runoff can contribute pollutants to storm water when solid materials wash off or materials dissolve into solution.
- **Outdoor Process Activities.** Although many seafood processing activities are performed indoors, some activities, such as seafood / fish sorting and grading occurs outdoors. Outdoor seafood processing activities can result in liquid spillage and losses of material solids, which makes associated pollutants available for discharge in runoff.
- **Illicit Connections and Non-Storm Water Discharges.** Illicit connections of process wastes or other pollutants to storm water collection systems can be a significant source of storm water pollution. More discussion on “other wastewater” connections can be found in Fact Sheet Part 3.13. These piping cross-connections in seafood processing facilities may lead facilities to be unable to qualify for coverage under the 2015 MSGP or subsequent version. Non-storm water discharges include any discharge from the facility that is not generated by rainfall/snowfall runoff (for example, wash water from industrial processes).
- **Waste Management.** Waste management practices include everything from landfills to waste piles to trash containment. All seafood processing facilities conduct some type of waste management at their site, much of it outdoors, which must be controlled to prevent pollutant discharges in storm water.

The AKG521000 permit proposes a new permit requirement for commingled storm water discharges. Seafood processing facility permittees must develop, implement and submit a SWPPP in accordance with two EPA documents. (1) Developing Your Stormwater Pollution Prevention Plan- A Guide for Industrial Permittees, (EPA Doc. #: EPA 833-B-09-002, Feb. 2009), and (2) Monitoring of the storm water waste stream shall be performed in accordance with: Industrial Stormwater Monitoring and Sampling Guide (EPA Doc. #: EPA 832-B-09-003, March 2009).

3.15. Onshore Facility's Vessel Seafood Waste Inland Waters Effluent Discharge (Remote and Non-Remote) (Permit Part 2.6)

The 2001 AKG520000 permit and the 1998 AKG528000 permit both authorized at-sea discharges from vessels. In the issuance of the AKG524000 permit, EPA determined that the at-sea discharges to federal waters (i.e., beyond 3.0 nm from baseline) did not fall within the authority of the NPDES Program and that the Ocean Dumping Act provides the authority for these types of discharges. More information can be found in the AKG524000 permit and accompanying RTC document.

The Marine Protection, Research, and Sanctuaries Act of 1972 (i.e., the Ocean Dumping Act) provides per Section 2 of 33 United States Code (U.S.C) 1401 (SEC. 2. 33 U.S.C. 1401) Regulation of dumping and transportation for dumping purposes outlines the following.

SEC. 2. 33 U.S.C. 1401 (c) It is the purpose of this Act to regulate (1) the transportation by any person of material from the United States and, in the case of United States vessels, aircraft, or agencies, the transportation of material from a location outside the United States, when in either case the transportation is for the purpose of dumping the material into ocean waters, and (2) the dumping of material transported by any person from a location outside the United States, if the dumping occurs in the territorial sea or the contiguous zone of the United States.

SEC. 3. 33 U.S.C. 1402 (b) "Ocean waters" means those waters of the open seas lying seaward of the base line from which the territorial sea is measured, as provided for in the Convention on the Territorial Sea and the Contiguous Zone (15 UST 1606; TIAS 5639).

33 U.S.C. 1411 (b) Except as may be authorized by a permit issued pursuant to section 102 of this title, and subject to regulations issued pursuant to section 108 of this title, no person shall dump any material transported from a location outside the United States (1) into the territorial sea of the United States, or (2) into zone contiguous to the territorial sea of the United States, extending to a line twelve nautical miles seaward from the base line from which the breadth of the territorial sea is measured, to the extent that it may affect the territorial sea or the territory of the United States.

CWA Section 502(8) defines "territorial seas" to mean the belt of the seas measured from the line of ordinary low water along that portion of the coast which is in direct contact with the open sea and the line marking the seaward limit of inland waters (*baseline and any established closing lines*), and extending seaward a distance of three miles, which coincides with the outer boundary and demarcation of State jurisdictional waters. State jurisdictional waters also include those inland waters located landward of baseline and any established closing lines.

DEC intends to authorize the vessel discharge of seafood waste as a point source as defined by 18 AAC 83, but only if the discharge occurs in inland waters (i.e., landward of mapped baseline(s) and established closing lines). Otherwise, disposal seaward of any baselines and any closing lines, or where no closing lines exist, is regulated by EPA's Ocean Dumping Management Program.

These vessel discharges will be authorized if performed within the confines of the required permit requirements. The Department considers the vessel's discharge to be the last step in the conveyance of onshore facility's non-domestic wastewater treatment and discharge process. Permit requirements include that each area-of-operation (i.e., discharge sites) be located landward of mapped baseline(s) or any closings lines. Vessels discharges must occur in hydro-dynamically energetic marine waterbodies only. DEC will require those vessels listed in Permit Appendix D – Table D2, formerly covered under APDES AKG523000, to apply for coverage under AKG521000. The subject AKG523000 vessel authorizations are associated with an onshore facility seafood waste

discharge, and are more appropriately covered under the AKG521000 permit. The AKG521000 permit establishes conditions on where and how the vessel may discharge the waste. The permit establishes limits on amounts of seafood waste that may be discharged at each area-of-operation based on the 1994 modeling. New permit provisions include the permittee identifying GIS mapping of the proposed area(s)-of-operation, providing receiving water flushing characteristics, depth of receiving water, currents, meeting one-half inch grind standard in all dimensions prior to discharge, as well as limiting the Department's continuing authorizations based on the vessel's performance results and permit compliance.

3.15.1. Vessel's Area(s)-of-Operation

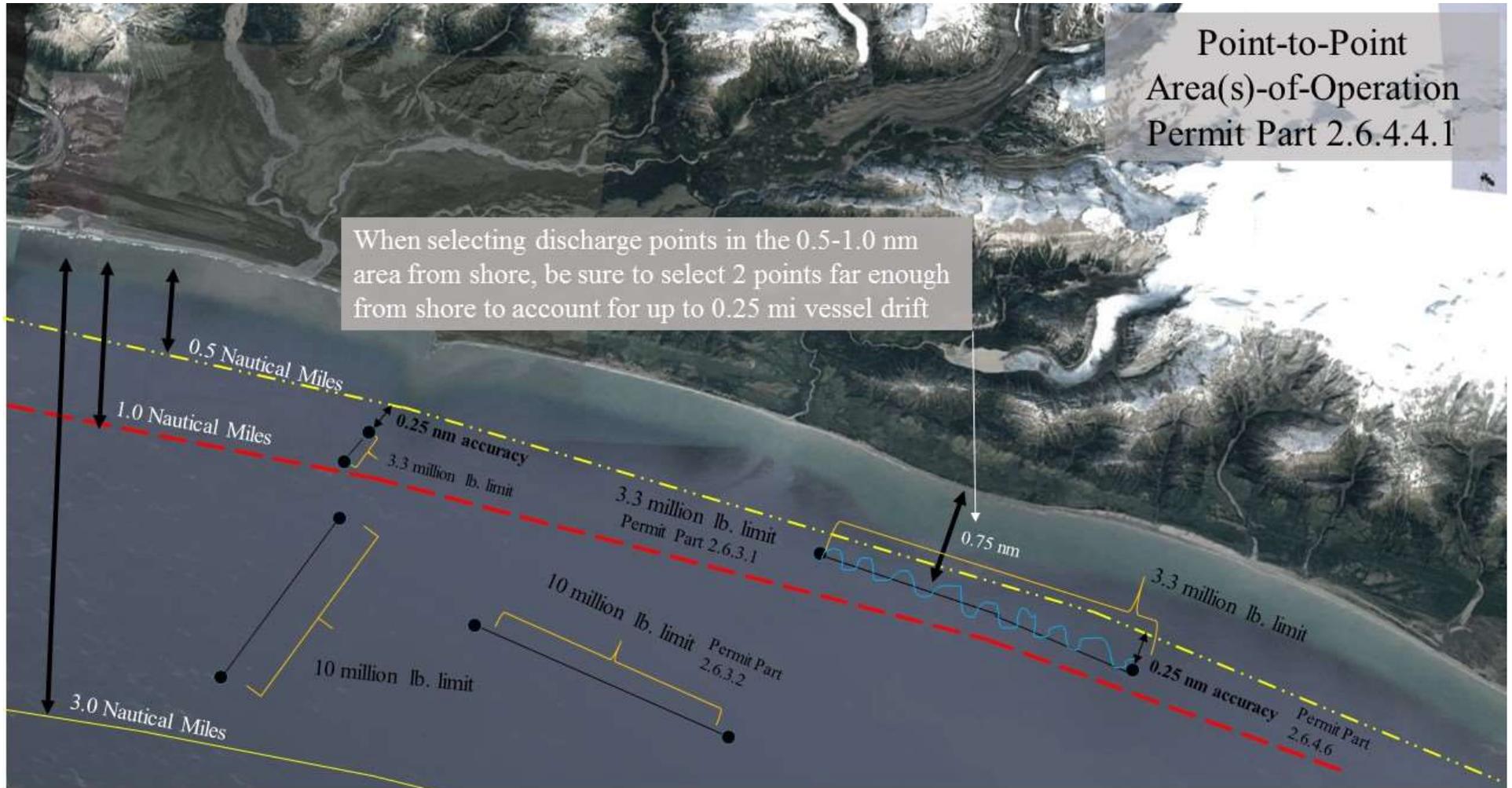
In the AKG520000 permit, seafood waste discharges from a vessel while in transit to hydrodynamically energetic waters were assumed to disperse over a large area and were not expected to produce deposits on the seafloor, and were limited to be discharged "At-Sea" 1.0 nm or greater from shore.

The AKG521000 permit provides coverage for an onshore permittee's vessel inland water (formerly "At-sea") discharge of raw, ground (0.5 inch in all dimensions) seafood waste between 0.5 – 3.0 nm from MLLW. The AKG521000 permit limits an area-of-operation's pounds of raw seafood waste discharge, located in the 0.5 – 1.0 nm from shore area, to 3.3 million pounds or less depending on the amount requested on the NOI. The area between 1.0 nm – 3.0 nm area-of-operation's pounds of seafood waste discharge is limited to 10 million lbs or less, depending on the amount requested on the NOI.

As discussed in the 1994 ODCE for Seafood Wastes for the AKG520000 permit (<http://dec.alaska.gov/water/wwdp/seafood/documents.html>), the seafood waste deposit modeling performed in 1993 demonstrated vessel's discharges result in one-acre size deposit. The one-acre size is reached when the vessel discharges approximately 4 million pounds of waste in 50 feet of water. Therefore, the permit requires that permittees choosing to discharge in the 0.5 nm – 1.09 nm area limit that discharges to 3.3 million lbs annually per area-of-operation. Further information regarding the formation of deposits can be found in Fact Sheet Part 1.1.

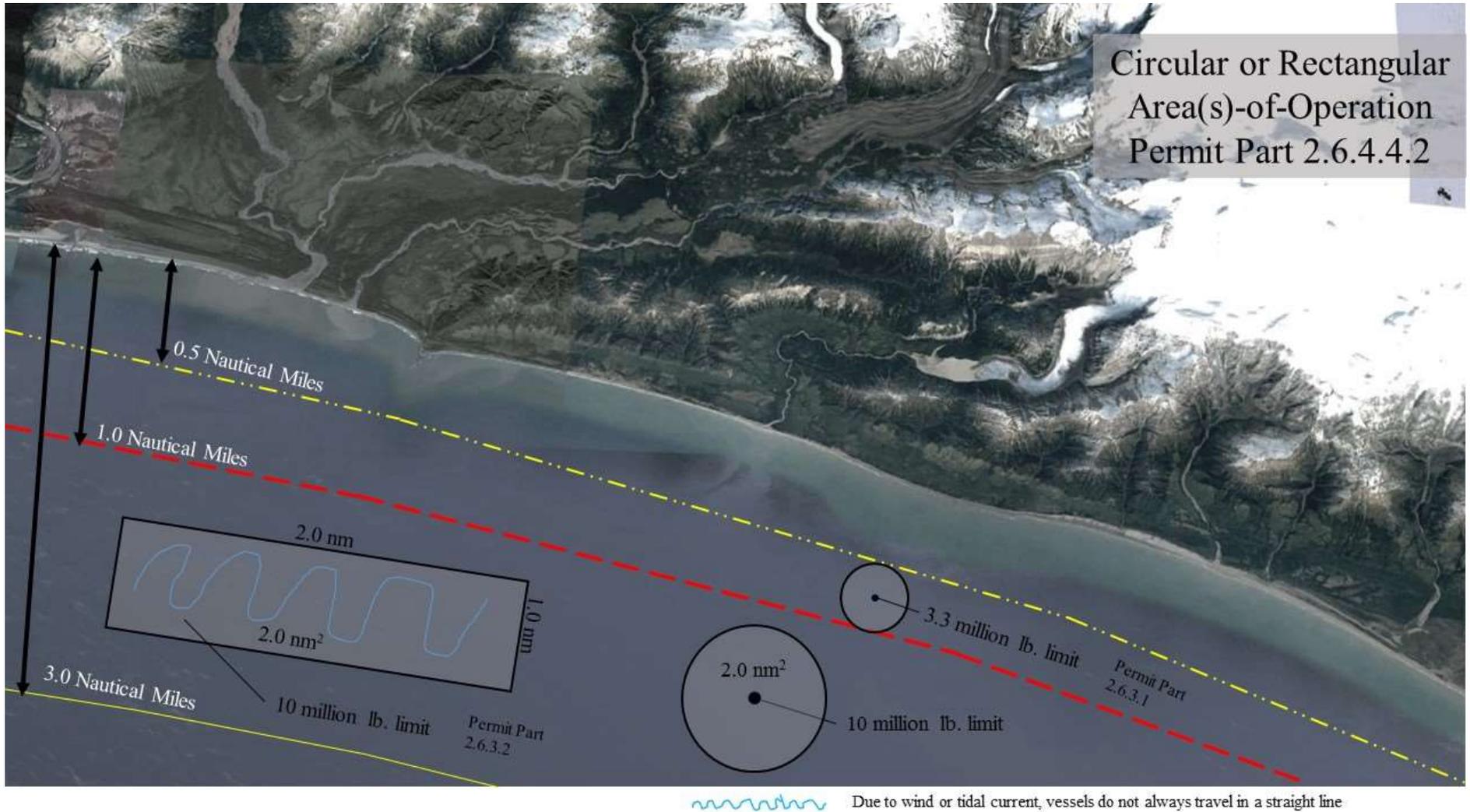
The 2001 AKG520000 permit required "At-sea" discharges to occur a minimum of 1.0 nm from shore. The AKG520000 permit allowed stickwater to be discharged, as well as the discharge of raw, ground seafood processing waste. The AKG521000 proposes to allow vessel discharges of raw, ground seafood processing waste up to 3.3 million pounds in the area of 0.5 nm to 1.0 nm measured MLLW line. The AKG521000 maintains a minimum 1.0 nm distances for a facility's vessel inland waters discharges for area(s)-of-operation with greater than 3.3 million pounds raw, ground waste proposed to be discharged. The AKG521000 maintains a minimum 1.0 nm distances for a facility's vessel inland waters discharges of by-product recovery effluent (i.e., stickwater) or washed mince / paste seafood wastewater. The BOD₅ and TSS loading strengths are much higher in stickwater and washed mince / paste wastewater, the associated 1.0 nm distance from shore is required to provide for adequate mixing. A permittee will be required to propose "area(s)-of-operation" on their NOI. The permittee must map and propose that the outer boundary of each area-of-operation's boundary to minimally located 0.5 nm or greater from shore (i.e., measured from MLLW) and in waters greater in depth than -120 ft. MLLW.

3.15.1.1. Example for Vessel's Point-to-Point Area(s)-of-operation:



Due to wind or tidal current, vessels do not always travel in a straight line

3.15.1.2. Example for Vessel's Circular or Rectangular Area(s)-of-operation



4.0 Receiving Water Body

4.1. Limits and Monitoring Requirements

Remote facility permittees and Non-Remote location facility permittees shall monitor the receiving water as indicated in Permit Tables 16 – 20 to determine compliance with WQS. The Department may require additional receiving water monitoring, which would be listed in an authorization, for site-specific purposes.

4.2. Water Quality Standards

The CWA Section 301(b)(1)(C) requires the development of limits in permits necessary to meet WQS. State regulations at 18 AAC 83.435 require that the conditions in APDES permits ensure compliance with the Alaska WQS, which are codified in 18 AAC 70. The WQS are composed of use classifications, numeric and/or narrative water quality criteria, and an antidegradation policy. The use classification system designates the beneficial uses that each water body is expected to achieve. The numeric and/or narrative water quality criteria are the criteria deemed necessary by the State to support the beneficial use classification of each water body. The antidegradation policy ensures that the beneficial uses and existing water quality are maintained.

Waterbodies in Alaska are designated for all uses unless the water has been reclassified under 18 AAC 70.230, listed under subpart 18 AAC 70.230(e). Some water bodies in Alaska can also have site-specific water quality criterion per 18 AAC 70.235, such as those listed under 18 AAC 70.236(b).

The receiving waters for the permit include fresh, estuarine and marine surface waters of Alaska, that are designated for all beneficial uses, and the most stringent of the WQS for these uses shall be met. The designated use classes are: water supply (aquaculture, seafood processing, and industrial); water recreation (contact and secondary); growth and propagation of fish, shellfish, and other aquatic life; and harvesting for consumption of raw mollusks or other raw aquatic life.

The receiving waters for the permit are the territorial seas and defined inland waters from shore to and 3.0 nm from shore as delineated by MLLW, baseline(s) or any closing lines, whichever is greatest.

The applicable WQS applied to the permit are in 18 AAC 70, as revised through April 8, 2012, with the exception of the mixing zone sections and residue standards. EPA has not approved the 2006, 2009 or 2012 mixing zone and residues standard revisions. The controlling regulations for mixing zones are 18 AAC 70.240 - 70.270, as revised through June 26, 2003 and the controlling water quality criteria for residues is 18 AAC 70.020(b)(20), as revised through June 26, 2003.

In addition, currently there are no drinking water uses (desalinization facilities) within 1.0 miles of current permitted seafood processors discharging to marine waters. Surface water uses have been identified by the Department both upstream and downstream of seafood processors discharging to fresh waters. The permit requires permittees to identify surface water uses (marine and/or fresh water) for the Department to follow up with the DEC Drinking Water Program to identify if the surface water is being used as a drinking water use or other industrial use (such as seafood processing, aquaculture or industrial).

4.3. Water Quality Status of Receiving Water

Any part of a waterbody for which the water quality does not or is not expected to meet applicable WQS is defined as a “water quality limited segment” and placed on the state’s impaired waterbody list. See State of Alaska DEC Water Quality website for the most recent integrated report (<http://www.dec.state.ak.us/water/wqsar/waterbody/integratedreport.htm>)

4.4. Discharges to Water Quality Impaired Waters

Permit Parts 1.2.1 and 1.4.7 are new requirement that provides improved guidance for new dischargers in complying with 40 CFR 122.4(i). Part 1.2.1 clarifies that, in the absence of information demonstrating otherwise, DEC expects that compliance with the permit will not adversely impact applicable water quality. DEC notes that while Part 1.2.1 is designed to specifically implement 40 CFR 122.4(i), other water quality-based requirements apply to new and existing dischargers. WQBELs are integrated into the permit and applicable to all sources that are designed to ensure that discharges from both new and existing permittees are controlled as necessary to meet WQS.

In addition, Permit Part 3.2 includes requirements that are designed to comply with 40 CFR 122.4(i) for discharger or proposed discharges to impaired waterbodies. For impaired waters designated pursuant to CWA Section 303(d), the AKG521000 permit proposes that discharges are evaluated consistent with 40 CFR 122.4(i) prior to authorization being issued.

As found in 40 CFR 122.4(i), a permit, or authorization, may not be issued to an owner or permittee of a new source or new discharger whose discharge from its construction or operation will cause or contribute to the violation of WQS. The permit requires that the facility’s discharges meet WQS. To satisfy the requirements of 40 CFR 122.4(i), Permit Part 3.2 indicates that a permittee may demonstrate that the pollutant for which the waterbody is impaired is not present at the site and retain documentation of this finding with the Authorization and BMP. The permittee may also submit data to the Department documenting that the proposed discharge will not cause or contribute to an excursion of WQS because the discharge will meet WQS at the point of discharge, or that there are sufficient remaining waste load allocations available in an approved TMDL. Permit Parts 1.2.1, 1.4.7 and 3.2 apply requirements to new dischargers, and existing dischargers, and are required to be implemented to comply with 40 CFR 122.4(i) requirements that address discharges to listed waterbodies.

When a new TMDL is developed, existing dischargers into that water quality limited segment could be subject to compliance controls designed to bring the segment into compliance with applicable WQS. These compliance controls could be provided in a permit, formal enforcement action, an approved TMDL derived waste load allocation, remediation or recovery plan. DEC may propose appropriate limitations and conditions in the authorization mirroring an approved TMDL that prohibit the permittee from discharging pollutant(s) that will result in further loading of the waterbody for which the waterbody is impaired. DEC will public notice a proposed decision to authorize the discharge to a listed impaired waterbody prior to issuing a final authorization.

If a waterbody that an existing permittee discharges to is listed as impaired during the permit cycle, the permittee may submit information to DEC that demonstrates that the discharge has not, or is not, expected to cause or contribute to an exceedance(s) of WQS. DEC will first determine based on the submittal whether the discharge is, or would cause or contribute, to an exceedance or impairment. Second, the Department will determine whether the facility may remain covered under the general permit or if an APDES IP permit is needed.

The Department finds when reviewing the most currently EPA approved 303(d) list, there are currently no facilities (See Appendix D) discharging to impaired waterbodies. Historically, facilities previously covered under the AKG520000 permit with associated discharges that caused water quality impairments have been required to apply for IP coverage. A permittee can apply for an IP, or DEC may require a permittee to apply for an IP, if a new discharge is proposed to an impaired waterbody.

4.5. Sea Surface and Shoreline Monitoring. (Permit Part 2.7.1)

A permittee that discharges seafood waste is required to conduct visual sea surface and shoreline monitoring. The permit requires visual monitoring of the receiving water at the point of discharge, the receiving water within an authorized mixing zone, and the receiving water and shoreline within 500 feet of the seaward boundaries (from the facility's parcel lines and shoreline, 500 feet seaward) of the processing facility, including docks and piers while a seafood waste discharge is occurring. The purpose of the monitoring is to record the occurrence and extent of persistent films, foam, scum or sheens (compliance water quality criteria 18 AAC 70.020(b)); to record the occurrence and numbers of Western Steller sea lions, Steller's eider, Spectacled eider, Northern Sea otter or short-tailed albatross; and record any incidents of injured or dead Steller's eiders and other listed endangered or threatened species. This monitoring is required to be conducted daily while processing is occurring. The monitoring frequency is set the same as the previous 2001 AKG520000 permit, but may be new to AKG528000 permittees.

4.6. Seafloor Surveys (Permit Part 2.7.3 and Appendix F)

Remote and Non-Remote permittees are required to perform seafloor surveys. The permit requires the survey be performed within one year of permit coverage and then subsequently, through the remainder of the permit cycle as required in Permit Table 19. Seafloor surveys are conducted to determine compliance with the Remote facility limitation for total aggregate area of continuous seafood deposits of 1.0 acre (see Fact Sheet Part 1.1), as well as other permit provisions. Permit Appendix F contains the Seafloor Survey Protocol and Guidance document, which provides the acceptable approaches for performing seafloor surveys. Seafloor survey results will be used to gather data to determine if additional authorization limitations are needed, to monitor effluent impact on receiving water quality and to inform future permit reissuance decisions. The survey methods described in Permit Appendix F, as well as the frequency, are new permit requirements.

Permittees are required to sample for Dissolved Oxygen (DO) if gasses are seen escaping from bebbiotoa mats. DO samples are required to be taken (near bottom where gas is escaping) as the formation of bebbiotoa mats cause the release of methane and sulfur gases, which can impacts WQC by reducing DO. This is due to the shallow oxygen penetration in coastal marine sediments, thus anoxic conditions prevail and sulfate is a major electron acceptor in these ecosystems. If oxygen is available near the surface of the bebbiotoa mats it will be used up first during oxidative reactions. While it has been found that DO levels in marine water column above the seafloor may be normal (8.5 or greater) the DO is effected in the water column directly above the bebbiotoa mat (Unalaska Bay, 1998 - 2004, Akutan Bay, 2011), that area less than 6 inches above the bebbiotoa mats on or near the seafood waste deposits area. The permit requires the identification of Bebbiotoa mats and their approximate coverage area(s). *Beggiatoa* and other filamentous bacteria can be found in marine or freshwater environments, and as applicable to the permit use seafood waste (a type of organic waste) as a food source. They can usually be found in habitats where the reduction of sulfur and nitrates in the sediment and waste materials is occurring. As the wastes decay, seafood wastes in this case, the nitrates and sulfur consume the oxygen molecules, thus depleting the oxygen in the water column directly above bebbiotoa mats. These environments include cold seeps,

sulfur springs, areas of where high levels of organic pollutant loading is occurring in the receiving water, mud layers of lakes, and near deep hydrothermal vents.

Additionally, as a new monitoring requirement, permittees are required to produce two maps depicting seafood waste deposits and other WQ data required to be gathered in Appendix F. The first map is to depict all areas of continuous coverage and discontinuous coverage of seafood waste deposits, along with correlate the other gathered WQ data as described in Permit Appendix F. The second map breaks out the discontinuous coverage areas into two separate discontinuous subcategories, along with mapping the continuous coverage area(s). The second map's requires mapping 11-49% discontinuous coverage and then 50-99% of discontinuous coverage areas of coverage. DEC is requiring the differentiation and mapping of these discontinuous coverage areas to assist in studying possible WQ impacts necessary to support propagation of fish and/or shellfish in the water and on the seafloor surrounding discontinuous waste deposits.

Waivers issued under AKG520000 Part VI(C)(10) from performing seafloor surveys are not continued in the AKG521000 permit. Those facility permittees who received EPA waivers issued to estuarine area in marine tidally influenced systems are required to complete the seafloor survey; however, the survey may not necessarily need to be performed using a diver. Permittees may request that observations be made at MLLW tidal times, documenting seafood waste deposits on the seafloor and/or bedlands at low tide if the seafloor survey data can be gathered without using a diver.

A permittee is required to perform the seafloor survey as soon as practicable after cessation of discharge, but no later than 60 days after cessation of discharge after the processing season. The permit requires that if surveys cannot be conducted within the 60 day timeline due to weather, availability of dive services (provided there is documented evidence that dive services were requested greater than three (3) months in advance of when the survey is due to be performed), or other adverse conditions, the circumstances which delayed the survey shall be documented in the final seafloor survey report. DEC requires the survey to be performed within 60 days after the cessation of processing to get an accurate reflection of each season's seafloor impacts.

Seafloor surveys are to be conducted to determine compliance with permit limitations applicable with in an authorized project area ZOD, or compliance with WQS. The permit requires seafloor surveys for the entire project area ZOD or Non-Remote seafloor survey areas (mapped <http://dec.alaska.gov/das/gis/apps.htm>) to begin at seafood processing facilities within one year of permit coverage and then as required in Permit Table 16 through the life of the permit.

Table 15: Receiving Water Monitoring (Permit Table 16)

Facility Type	Requirement	Sample Location	Sample Frequency	Sample Type
All Facilities	Outfall System	system	yearly	visual
All Facilities	Waste discharge system	system	daily	visual
All Facilities – sea surface in view of or above outfall /port	Sea Surface	discharge location plus 500 feet of discharge	daily	visual
All Facilities	Shoreline	all parcel’s shoreline plus 100 feet from facility’s parcel lines	daily	visual
Seafloor Surveys				
Facility in Non-Remote or Fresh Water - survey the mapped seafloor survey area (no authorized project area ZOD) ^a	Photographic Seafloor Survey	mapped seafloor survey area	within one year of obtaining permit coverage	survey
Remote Facility with a project area ZOD ^b	Photographic Seafloor Survey	project area ZOD mapped seafloor survey area	within one year of obtaining permit coverage	survey
Remote Facility with Dive Survey reporting ≤ 0.75 acres of deposits in project area ZOD ^b , or zero in the Non-Remote mapped seafloor survey area	Dive Seafloor Survey	project area ZOD mapped seafloor survey area	every other year ^b	survey
Remote Facility with Dive Survey reporting ≥ 0.75 acres of deposits project area ZOD ^b , or greater than zero in the Non-Remote mapped seafloor survey area	Dive Seafloor Survey	project area ZOD mapped seafloor survey area	annually	survey
Remote Facility– with a request to increase the seafood waste discharge amount greater than 25% from the previous NOI ^d	Repeat of Photographic Seafloor Survey	project area ZOD mapped seafloor survey area	within 60 days of the end of the season that actual increase of production occurs	survey
Installation of a new outfall location, or Facility re-starting production after not operating for more than 12 months.	Pre-Discharge Seafloor Survey ^c	proposed discharge area	prior to discharging	survey
<p><u>Notes:</u></p> <ul style="list-style-type: none"> a. If no project area ZOD is authorized and a deposit is found to be above Trace in any 3 foot by 3 foot square sample plot within the survey area, an annual surveys will be required and a Remediation Plan will be required. b. Appendix F – Seafloor Survey Protocol is set up as a two year evaluation, initially. The first survey shall be within one year of coverage. After the Year Two’s (and Subsequent) Seafloor Dive Survey of the project area ZOD is completed, the schedule of how often a Dive Survey shall be completed will be determined on the size of the seafloor deposits. c. See pre-discharge survey protocol, Appendix I d. 25% increase shall be in comparison to the past 4 years discharge reported on Annual Report. A permittee shall identify in their Annual Report if an additional seafloor survey is not performed due to production numbers not increasing as expected. 				

4.7. Mixing Zone (Permit Part 2.7.4 - 2.7.6)

In accordance with state regulations at 18 AAC 70.240, as amended through June 26, 2003, the Department may authorize a mixing zone in a permit.

4.7.1. Mixing Zone Applicable to Multiple Outfalls

Mixing Zones were authorized in AKG520000 401 Certification - Part I – Mixing Zones:

“The mixing zone for discharges authorized by the NPDES Permit, Part II, is a cylindrical shape with dimensions described as follows: i.) Horizontal extent determined by 100 foot radius from Outfall. Extends vertically up to the sea surface. ii.) Extends vertically down to the seabed.”

Therefore, the Department’s AKG520000 401 Certification provided a mixing zone, not only for the seafood processing wastewaters and wastes, but also other discharges listed in the AKG520000 NPDES Permit, Part II, such as wash-down water, vessel’s sanitary waste discharges, secondary treated (domestic) wastewaters, “Other Wastewaters” such as domestic graywater, seafood catch transfer water, live tank water, refrigerated seawater, cooking water, boiler water, cooling water, refrigeration condensate, freshwater pressure relief water, clean-up water, and scrubber water.

The 2001 AKG520000 permit also contained language in Sections V(A)(1)(h), V(B)(1)(h) and V(C)(1)(h):

“Wastewaters that have not had contact with seafood are not required to be discharged through the seafood process waste-handling system.”

As discussed in Fact Sheet Part 3.13, as a result of language found in the AKG5210000 permit, permittees have allowed the installation of “Other Wastewater” outfall(s), separate from the seafood processing wastewater outfalls. EPA and DEC Compliance inspections have documented numerous instances of multiple outfalls at seafood processing facilities.

The AKG521000 permit proposes to continue to apply the 100-foot radius mixing zone for Remote permittees’ seafood processing outfalls as found in the 2001 AKG520000 permit, as well as apply the standard mixing zone to facilities discharging through “Other Wastewaters” outfalls (Permit Part 2.7.4.4). The Remote permittees listed in Appendix D with administratively extended NPDES AKG520000 coverage all have been operating with 100-foot radius mixing zones. Less than 5 % of the permittees have submitted receiving water quality monitoring data resulting in permit violations and/or water quality violations. Those that did have violations were not operating within the constraints of the 2001 AKG520000 permit requirements.

4.7.2. Mixing Zones Applicable to Vessel Discharge Locations

Reviewing AKG520000 V(A)(1)(i), V(B)(1)(k) and V(C)(1)(k):

“State-authorized mixing zone [see 18 AAC 70]. The mixing zone for the discharges authorized in Part II of this permit shall be a cylindrical shape with dimensions described as follows: the horizontal extent determined by a 100-foot radius around the terminus of the outfall, extending vertically up to the sea surface and extending vertically down to the seafloor. The mixing zone is a volume of water that surrounds the discharge outfall where the effluent plume is diluted by the receiving water and within which the following specific water quality criteria may be exceeded: residues, dissolved gas, oil and grease, fecal coliform, pH, temperature, color, turbidity and total residual

chlorine. Discharges shall not violate Alaska Water Quality Standards criteria beyond the 100-foot mixing zone.”

Thus, the AKG520000 permit applied to vessel discharges, so the mixing zone followed the vessel, and was applicable to multiple vessel discharge locations, not a single location, as vessels move and discharge to different areas. For seafood waste discharge operations while in transit, the Department has conducted or participated in several studies regarding the dilution available in a receiving water from various sized cruise ships discharging while in transit. Using information available from these studies (see Permit 2009DB0026 Information Sheet), it is expected that sufficient dilution will be available at the boundary of the mixing zone when a vessel is discharging an onshore facility’s ground seafood processing waste. Thus, the permit proposes to continue issuing standard 100 foot radius mixing zone to vessels acting as support facilities to onshore seafood processors and vessels discharging under Permit Part 2.6.

A Non-Remote facility permittee may apply for a mixing zone, except for exceedances for water quality parameters controlled by end-of-pipe EPA established TBELs for O&G (O&G - polar) or exceedances of DO. As discussed in Part 3.9, EPA established TBELs applicable to end-of-pipe for O&G, TSS, and established end-of-pipe BOD limitations for certain seafood processing production lines (40 CFR Part 408).

4.7.3. **Mixing zones: Department Authorization**

Consistent with 18 AAC 70.240, the Department is exercising its discretion to issue a mixing zone in a permit. Authorizations will be issued a mixing zone for each facility that applied for or was granted a mixing zone in the previous AKG520000 permit, as well as applications for new mixing zones. Any newly proposed mixing zone authorizations will be public noticed prior to issuance.

Permit Appendix D lists the facilities with previously authorized mixing zones and the size of the authorized mixing zone sizes are being publicly noticed via the general permit’s and fact sheet’s public notice process. Permit Appendix D also public notices facilities that have applied for coverage after the AKG520000 permit expiration, but have not been able to obtain coverage who will be authorized a standard mixing zone after submitting an NOI that demonstrates the permittee can meet the requirements of the permit. The maximum mixing zone size that the Department will authorize under the permit for each outfall is a circle with a 100 foot radius centered at the outfall pipe or discharge pipe terminus extending vertically up to the surface and down to the seafloor.

The standard mixing zone is applicable to Remote seafood processing facilities/vessels, Remote community grinder waste discharge facilities and Non-Remote vessel discharges for the following parameters: dissolved gas (dissolved oxygen), non-petroleum O&G (polar), temperature, color, turbidity, residues, FC bacteria, pH and TRC. In accordance with 18 AAC 70, all WQS shall be met at the boundary of the authorized mixing zone.

For Non-Remote facilities, the AKG528000 permit required permittees to meet end-of-pipe limitations, therefore, the DEC CWA Section 401 Certification of the AKG528000 permit (AKG528000 401 Certification) did not authorize mixing zones for these facilities. The AKG521000 permit proposes monitoring for pollutants (chlorine, ammonia) other than those previously monitored for in the AKG528000 permit. If through effluent monitoring, or ambient water quality monitoring, the permittee finds the discharge is not meeting WQS, the permittee may apply to the Department for a mixing zone.

A smaller mixing zone may be authorized in the written authorization. Permittee's requests for mixing zone(s) that are larger in size than the standard mixing zone (100 foot radius) will be required to apply for an IP.

4.7.4. Reasonable Potential Analysis and Mixing Zone Modeling

If a facility proposes a mixing zone that has not been public noticed, the permit requires the permittee perform a reasonable potential analysis and the proposed mixing zone be public noticed. The regulatory conditions found in 18 AAC 70.260 requires an applicant requesting a mixing zone provide the Department all available evidence reasonably necessary for a decision, including the information and demonstrations required by

18 AAC 70.240 - 18 AAC 70.270. The burden of proof for justifying a mixing zone rests with the applicant. The AKG520000 401 Certification found that seafood waste discharges have the "reasonable potential" to cause or contribute to excursions above State WQS for residues, dissolved gas, oil and grease (polar), pH, temperature, color, turbidity and total residual chlorine. Applicants are advised to address these pollutants for any mixing zone application.

When evaluating the effluent to determine if WQBELs based on chemical-specific numeric criteria are needed, the applicant or applicants consultant will need to project the receiving water body concentration for each pollutant of concern downstream of where the effluent enters the receiving water body. The chemical-specific concentration of the effluent and receiving water body and, if appropriate, the dilution available from the receiving water body, are factors used to project the receiving water body concentration. If the projected concentration of the receiving water body exceeds the numeric criterion for a limited parameter, then there is a reasonable potential that the discharge may cause or contribute to an excursion above the applicable WQS, and a WQBEL shall be developed. In order to make a determination regarding issuing a mixing zone, the Department may require the applicant submit Form 2M.

According to 18 AAC 70.990(38), a mixing zone is an area in a water body surrounding, or downstream of, a discharge where the effluent plume is diluted by the receiving water within which specified water quality criteria may be exceeded. Water quality criteria may be exceeded within a mixing zone. A mixing zone can be authorized only when adequate receiving water body flow exists, and the concentration of the pollutant of concern in the receiving water body is below the numeric criterion necessary to protect the designated uses of the water body.

The Department has found that there is necessity to further evaluate the mixing zone size developed for onshore seafood processors in the AKG520000 401 Certification. The 2011 AKG523000 Offshore Seafood Processing permit and fact sheet also identified the need to evaluate the water body mixing characteristics for vessels.

The Department received a proposal from seafood processing industry representatives to collect necessary data and perform modeling to evaluate the appropriateness of continuing the 100-foot radius mixing zone, or if alternate mixing zone sizes may be necessary during the permit cycle. All facilities are required to perform effluent monitoring and receiving water monitoring as described in Permit Part 2.7.5, unless participating in Permit Part 2.7.6. The study is considered a special study and the data gathering and reporting requirements may not be required in the next permit cycle.

Monitoring is needed for further analysis of the pollutants being discharged in comparison to the boundary of the mixing zone water quality monitoring data. An effluent and receiving water monitoring schedule has been established in Permit Parts 2.7.5 - 2.7.6 and Permit Tables 17-20. In accordance with AS 46.03.020 (13) and Section 308 of the CWA, DEC has the authority to require the owner or permittee of a facility to undertake this type of monitoring, sampling, and reporting activities as codified in 33 U.S.C 1318. Permittees may opt out of collecting the

samples from their facility outfalls individually if they participate in the Seafood Processing Work Group Mixing Zone Study. The process as to how to participate in the study will be determined in the proposal put together by the Seafood Processors Work Group.

4.7.5. **Mixing Zone Checklist Considerations**

Fact Sheet Appendix C, Mixing Zone Analysis Checklist, outlines criteria that is considered when the Department analyzes a request for a mixing zone. These criteria include: the size of the mixing zone, treatment technology, existing uses of the water body, human consumption, spawning areas, human health, aquatic life, and endangered species. All criteria shall be met in order to authorize a mixing zone. The following summarizes the standard 100 foot radius mixing zone proposed in the permit along with the Department's regulatory analysis.

4.7.5.1. Size. In accordance with 18 AAC 70.255, and the currently available data, the Department determined that the size of the standard size mixing zone (100 foot radius) for each facility is as small as practicable. In accordance with 18 AAC 70.245, the Department finds that existing uses of the water body outside the mixing zone are maintained and fully protected so that any discharge will neither partially nor completely eliminate an existing use of the water body outside the mixing zone and will not impair the overall biological integrity of the water body. Permittees of new facilities may request and DEC may authorize a mixing zone for seafood waste discharges, domestic wastewater discharges or other wastewater discharges. Consistent with the mixing zones public noticed as part of the AKG521000 permit, the maximum mixing zone size that DEC will authorize for each outfall is a circle with a 100 foot radius extending from the surface down to the seafloor to ensure the water body as a whole is protected. DEC may decrease individual mixing zone sizes during review submitted NOIs consistent with 18 AAC 70.255.

4.7.5.2. Technology. In accordance with 18 AAC 70.240(a)(3), the most effective technological and economical methods are used to disperse, treat, remove, and reduce pollutants.

Treatment Technology for Seafood waste – In Remote locations, seafood waste is ground meeting the TBEL requirements found in 40 CFR Part 408 as the best available control technology. In Non-Remote locations, seafood processing waste effluents are also subject to 40 CFR Part 408, as well as through the application of BPJ, seafood wastes are screened with fine mesh screens or equivalent technology to meet performance-based effluent limits using methods found to be economically and technologically achievable. The ELGs are codified at 40 CFR Part 408, adopted by reference at 18 AAC 83.010. These technology-based requirements have been incorporated into the permit.

Treatment Technology for Domestic / Sanitary Wastewater – The AKG521000 permit allows for discharge of domestic /sanitary wastewater from seafood facilities and their support buildings to waters of the U.S. consistent with the 2001 AKG520000 permit. Sanitary wastewater was the term used for the discharge of shower, toilet, and sink, etc. wastewater in the 2001 AKG520000 permit, covering both onshore and vessel wastewater discharge. The AKG521000 permit uses sanitary wastewater discharge for vessel discharges, but uses the term “domestic wastewater” for onshore facility domestic wastewater discharge from the definition found in 18 AAC 72.990(23). The permit requires that onshore facilities discharging domestic wastewater to waters of the U.S. comply with 40 CFR 133 and that vessels discharging sanitary wastewater comply with 33 CFR 159 and have an adequately functioning Type II MSD.

- 4.7.5.3. Existing Use. Consistent with 18 AAC 70.245, mixing zones will only be authorized if it has been appropriately sized to fully protect the existing uses outside the mixing zone. The permit requires the applicant identify other existing uses within 1.0 nm of the discharge. DEC will review available information to determine that the existing uses and biological integrity of the water bodies as a whole will be maintained and fully protected prior to authorizing a mixing zone. Permittees must operate in compliance with the terms of the permit, as required by 18 AAC 70.245(a)(1) and (a)(2), and the permit requires compliance with water quality criteria, which serves the specific function of protecting uses. Additional receiving water monitoring will be conducting during the life of the permit to ensure that existing uses will continue to be protected.
- 4.7.5.4. Human Consumption. In accordance with 18 AAC 70.250(b)(2) and (b)(3), the pollutants discharged cannot produce objectionable color, taste, or odor in aquatic resources harvested for human consumption; nor can the discharge preclude or limit established processing activities or commercial, sport, personal use, or subsistence fish and shellfish harvesting. Mixing zones will not be authorized in areas of active seafood harvesting.
- 4.7.5.5. Spawning Areas. In accordance with 18 AAC 70.255(h), mixing zones will not be authorized in a known spawning area for anadromous fish or resident fish spawning redds.
- 4.7.5.6. Human Health. In accordance with 18 AAC 70.250 and 18 AAC 70.255, the mixing zone authorized in the permit must be protective of human health.
- Seafood waste – Seafood wastes are not expected to contain significant quantities of pollutants that may bioaccumulate in aquatic organisms. Seafood waste discharges are not expected to result in elevated levels of toxic or carcinogenic pollutants in marine organisms consumed by humans.
- 4.7.5.7. Aquatic Life and Wildlife. In accordance with 18 AAC 70.250 and 18 AAC 70.255, the mixing zone authorized in the permit shall be protective of aquatic life and wildlife.
- Seafood waste – Impacts from permittees discharging in compliance with the requirements of the permit have shown to be localized. Although benthic organisms may be smothered or community composition altered, in residues excursions authorized by a ZOD where seafood deposits are allowed to form, the benthic communities in Alaskan coastal waters would not be expected to decline noticeably. The ZOD is not authorized for the entire waterbody, just a small portion of the waterbody and benthic organisms move and repopulate to varying degrees. Deposition of the majority of discharged solids is expected to be rapid and localized, not creating a barrier to migratory species. Therefore, adverse physical effects to biota from ground seafood discharge should be limited to the nearfield vicinity of the outfall. Within this region, zooplankton and fish larvae near the discharge may experience altered respiratory or feeding ability due to stress, or clogging of gills and feeding apparatus. Phytoplankton entrained in the discharge plume may have reduced productivity due to decreased light availability. These impacts should result in negligible impacts to populations in the region, as impacts should be restricted to the immediate vicinity of the discharge. Mobile invertebrates, fish, birds, and mammals presumably will avoid the discharge plume if conditions become stressful and therefore be provided a zone of passage and prevent lethality to passing organisms. Additionally, biota may also be attracted to the discharge plume to feed on the discharged particulates, thereby increasing the biodiversity in some

areas. Infaunal or sessile organisms near the discharge are not likely to be impacted by the suspended solids and should not result in the permanent or irreparable displacement of indigenous organisms.

4.7.5.8. Endangered Species In accordance with 18 AAC 70.250(a)(2)(D), the authorized mixing zones will not cause an adverse effect on threatened or endangered species.

On July 23, 2012, DEC provided the USFWS a list of existing facilities, discharge locations, discharge amounts, and seafloor survey results of existing seafood processing facilities discharging to sensitive areas. In an August 16, 2012 response, the USFWS indicated that discharges to waters in Kodiak and Chignik harbors could present significant risk to Steller's eiders in those harbors and provided recommendations for incorporation into authorizations for those specific facilities that discharge to those areas. DEC again provided USFWS the opportunity for early draft review October 2015. No further endangered species special considerations were requested beyond using the critical habitat GIS layers in permitting, which DEC already utilizes for seafood APDES permits. DEC will continue to access the Sensitive Area Mapping when evaluating NOIs. Authorizations will incorporate site-specific water quality-based requirements where appropriate (Permit Part 3.2). The permit requires an applicant of a new facility or the permittee of an existing facility that proposes material changes to contact the agency with management authority over specific endangered species and request the agency provide any recommended water quality-based recommendations to DEC. The permit also requires the applicant to provide copies of any biological surveys, and environmental reports previously performed or required in excluded areas. If these documents do not exist, the permit requires the applicant to inform the Department and the agency management authority over the excluded area that such documents do not exist.

4.7.6. Facility Effluent Monitoring to assist in Mixing Zone and Ambient Water Quality Sample Study (Permit Part 2.7.5)

The 2001 AKG520000 permit did not require effluent monitoring of the wastewater discharge from a seafood processor to determine compliance with WQS or to validate the general permit-defined standard mixing zone size. Permit Tables 17-20 establish required effluent and receiving water monitoring. These monitoring requirements are new to the permit and are required to provide monitoring data to ensure compliance with WQS and to establish further baseline data for receiving water characteristics needed for modeling. The monitoring data is also being collected to ensure the Department has the information needed to further refine and validate the standard-size mixing zone, or whether it is appropriate to authorize other mixing zone sizes in the general permit. As previously mentioned, this study is currently proposed for a single permit cycle at this time.

(Permit Table 17) presents the effluent monitoring requirements. If a facility has not been authorized for a mixing zone, this effluent monitoring is still required for each outfall. Monitoring is required twice per year in months that seafood processing actually occurs for at least 24 hours during the month, unless a facility participates in the Seafood Processor's Work Group Mixing Zone Study (Permit Part 2.7.6). Remote and Non-Remote effluent monitoring data is required to be submitted on a DMR and submitted with the Annual Report (Permit Part 2.8). The study is designed to enable the group's planning of the study, data gap analysis, collection of data and modeling to be performed. For those facilities not participating in the Work Group Mixing Zone and Ambient Water Quality Monitoring Study, authorized permittees are required to submit the seafood wastewater discharge and receiving water monitoring data directly to the Department.

Table 16: Remote and Non-Remote Effluent Monitoring Study (Permit Table 17)

Effluent Parameter	Units	Sample Location	Sample Frequency	Sample Type	Monitoring Data ^d
Daily Flow Rate	mgd	effluent	Performed on sample day	measured or calculated	report
Dissolved Oxygen	mg/L	effluent	2 per year ^{a, b}	grab	report
Salinity	mg/L	effluent	2 per year ^{a, b}	grab	report
Total Ammonia ^c	mg-N/L	effluent	2 per year ^{a, b}	grab	report
pH ^c	SU	effluent	2 per year ^{a, b}	grab	report
Temperature ^c	°C	effluent	2 per year ^{a, b}	grab	report
Total Residual Chlorine (TRC) ^c	µg/l	effluent	2 per year ^{a, b}	grab	report
Domestic Wastewater or Vessel's Sanitary Wastewater Discharges					
Fecal Coliform (FC) Bacteria ^e	FC/100 mL	effluent	2 per year ^a	grab	report
Enterococci Bacteria ^e	#/100 mL	effluent	2 per year ^a	grab	report
<p>Notes:</p> <ul style="list-style-type: none"> a. Samples shall be taken two times a year while discharge is occurring. For facilities who primarily process salmon, sampling shall occur during highest average peak production month. b. For facilities operating during "A" Season (January – April) and "B" Season (August – December) one sample during peak discharge during Season A, and one sample during peak discharge during Processing Season B, respectively. c. The effluent ammonia, pH and temperature readings shall be collected and analyzed from the same, single grab sample. d. Effluent monitoring is required to occur on the same day receiving water monitoring (Fact Sheet Table 17, Table 18 and/or Table 19 is performed). e. Only permittees that discharge domestic wastewater directly to waters of the U.S., or discharge commingled domestic wastewater, or vessels that discharge sanitary and graywater are required to perform this effluent monitoring. 					

4.7.6.1. Remote Mixing Zone and Ambient Water Quality Study (Permit Part 2.7.5.6)

(Permit Table 18) presents the monitoring requirements for the receiving water where a mixing zone has been authorized. Monitoring is required twice per year in those months that seafood processing occurs for at least 24 hours during the month, unless a facility participates in the Seafood Processor's Work Group Mixing Zone Study (Permit Part 2.7.6).

The mixing zone and water quality monitoring set out in Permit Part 2.7.5 is to begin within one year of permit coverage begins and continue until 10 samples are collected.

Monitoring required in Permit Table 18 is to assist DEC in determining whether future ammonia permit limits are needed for these types of discharges. For more information regarding ammonia toxicity and sampling (see Fact Sheet Part 3.13).

Monitoring results will be recorded in a per-month table format and submitted with the Annual Report (Permit Part 2.8). The table shall include the outfall number, date and time of the sample, total daily flow rate for the outfall line on the monitoring date, effluent parameters sampled as well as daily and average monthly monitoring data.

Table 17: Remote Mixing Zone Study - Water Quality Monitoring (Permit Table 18)

Boundary of the Mixing Zone Sampling					
Parameter	Units	Sample Location	Sample Frequency	Sample Type	Monitoring Data ^d
Color	Color unit	As found in Part 2.7.5.5.3	2 per year ^a	grab	report
Turbidity	NTU	As found in Part 2.7.5.5.3	2 per year ^a	grab	report
Total ammonia	mg-N/L	As found in Part 2.7.5.5.3	2 per year ^a	grab	report
Dissolved Oxygen	mg/L	As found in Part 2.7.5.5.3	2 per year ^a	grab	report
pH	SU	As found in Part 2.7.5.5.3	2 per year ^a	grab	report
Temperature	° C	As found in Part 2.7.5.5.3	2 per year ^a	grab	report
Total Residual Chlorine (TRC) ^c	µg/l	As found in Part 2.7.5.5.3	2 per year ^a	grab	report
Salinity	ppt	As found in Part 2.7.5.5.3	2 per year ^a	grab	report
Alkalinity ^b	mg-CaCO3/L	As found in Part 2.7.5.5.3	2 per year ^a	grab	report
Ambient Waterbody Sampling					
Parameter	Units	Sample Location	Sample Frequency	Sample Type	Monitoring Data ^d
Color	Color unit	As found in Part 2.7.5.5.3	2 per year ^a	grab	report
Turbidity	NTU	As found in Part 2.7.5.5.3	2 per year ^a	grab	report
Total ammonia	mg-N/L	As found in Part 2.7.5.5.3	2 per year ^a	grab	report
Dissolved Oxygen	mg/L	As found in Part 2.7.5.5.3	2 per year ^a	grab	report
pH	SU	As found in Part 2.7.5.5.3	2 per year ^a	grab	report
Temperature	° C	As found in Part 2.7.5.5.3	2 per year ^a	grab	report
Salinity ^c	ppt	As found in Part 2.7.5.5.3	2 per year ^a	grab	report
Alkalinity ^b	mg-CaCO3/L	As found in Part 2.7.5.5.3	2 per year ^a	grab	report
<p><u>Notes:</u></p> <ul style="list-style-type: none"> a. Samples shall be taken two times a year while discharge is occurring. For facilities who primarily process salmon (typically May – September), sampling shall be performed during the month(s) of highest average seasonal discharge. For facilities who process pollock sampling shall be performed once during Season A (January – April) and once during Season B (August – December) during peak discharge. b. Alkalinity is only required for discharges to fresh water receiving water. c. Monitoring for chlorine is not required if chlorine is not used as a disinfectant, nor introduced elsewhere in the seafood processing area. d. Effluent monitoring required in Fact Sheet Table 16 is required to occur on the same day the receiving water monitoring is performed. 					

4.7.6.2. Non-Remote Facility Ambient Water Quality Study (Permit Part 2.7.5.7)

Table 18 (Permit Table 19) presents the water quality monitoring requirements for the receiving water of Non-Remote Facilities. Monitoring is required twice per year in those months that seafood processing occurs for at least 24 hours during the month, unless a facility participates in a Seafood Processor's Work Group Mixing Zone Study (Permit Part 2.7.6).

The mixing zone and water quality monitoring set out in Permit Part 2.7.5 is to begin within one year of permit coverage and continue until 10 samples are collected.

Monitoring required in Permit Table 19 is to assist DEC in determining whether future ammonia permit limits are needed for these types of discharges. For more information regarding ammonia toxicity and sampling (see Fact Sheet Part 3.13).

Monitoring results will be recorded in a per-month table format and submitted with the Annual Report (Permit Part 2.8). The table shall include the outfall number, date and time of the sample, total daily flow rate for the outfall line on the monitoring date, effluent parameters sampled as well as daily and average monthly monitoring data.

Monitoring shall be performed at a sampling location 100 feet from each outfall/port terminus, unless participating in the Seafood Processors' Work Group Mixing Zone Study (Permit Part 2.7.6).

Table 18: Non-Remote Ambient Water Quality Monitoring Study (Permit Table 19)

Ambient Waterbody Monitoring					
Parameter	Units	Sample Location	Sample Frequency	Sample Type	Monitoring Data
Color	Color unit	As found in Part 2.7.5.6.3	2 per year ^a	grab	report
Turbidity	NTU	As found in Part 2.7.5.6.3	2 per year ^a	grab	report
Total ammonia	mg-N/L	As found in Part 2.7.5.6.3	2 per year ^a	grab	report
Dissolved Oxygen	mg/L	As found in Part 2.7.5.6.3	2 per year ^a	grab	report
pH	SU	As found in Part 2.7.5.6.3	2 per year ^a	grab	report
Temperature	° C	As found in Part 2.7.5.6.3	2 per year ^a	grab	report
Salinity	ppt	As found in Part 2.7.5.6.3	2 per year ^a	grab	report
Total Residual Chlorine (TRC) ^c	µg/l	As found in Part 2.7.5.6.3	2 per year ^a	grab	report
Alkalinity ^b	mg-CaCO ₃ /L	As found in Part 2.7.5.6.3	2 per year ^a	grab	report

Notes:

- a. Samples shall be taken two times a year while discharge is occurring. For facilities who primarily process salmon (typically May – September), sampling shall be performed during the month(s) of highest average seasonal discharge. For facilities who process pollock sampling shall be performed once during Season A (January – April) and once during Season B (August – December) during peak discharge.
- b. Alkalinity is only required for discharges to fresh water receiving water.
- c. Monitoring for chlorine is not required if chlorine is not used as a disinfectant, nor introduced elsewhere in the seafood processing area.
- d. Effluent monitoring required in Fact Sheet Table 16 is required to occur on the **same day** receiving water monitoring is performed.

4.7.7. **Mixing Zone Study – Domestic or Sanitary Wastewater Dischargers Bacterial Pollutant Monitoring (Permit Part 2.7.5.8)**

Fact Sheet Table 19 (Permit Table 20) presents the monitoring requirements for the receiving water where commingled seafood waste and domestic/sanitary wastewater discharge is occurring, or where domestic wastewater/sanitary wastewater is discharged directly to waters of the U.S. The samples must be able to be analyzed by certified laboratory within required holding times. Commingled mixing zone samples shall be collected when both waste streams are being discharged concurrently. Samples shall be representative of the receiving water. Monitoring data shall be submitted with the Annual Report.

The mixing zone and water quality monitoring set out in Permit Part 2.7.5 is required to begin upon issuance of the authorization, and be monitored until 10 samples results are collected.

Monitoring results will be recorded in a per-month table format and submitted with the Annual Report (Permit Part 2.8). The table shall include the outfall number, date and time of the sample, total daily flow rate for the outfall line on the monitoring date, effluent parameters sampled as well as daily and average monthly monitoring data.

Table 19: Mixing Zone Study - Bacterial Pollutant Monitoring - Arriving within 8 hr. holding time (Permit Table 20)

Parameter	Units	Sample Location	Sample Frequency ^{a, b, c}	Sample Type	Monitoring ^d Data
Fecal Coliform (FC) Bacteria ^b	FC/100 mL	boundary of Mixing Zone	2 per year ^{a, c}	grab	report
Enterococci Bacteria ^b	#/100 mL	boundary of Mixing Zone	2 per year ^{a, c}	grab	report

Notes:

- Samples shall be taken two times a year while discharge is occurring. Samples should be taken at least 10 feet below the surface of the water and be performed during the month(s) of highest average seasonal discharge.
- For a commingled waste stream, monitoring is required when both waste streams are being discharged.
- Effluent monitoring required in Fact Sheet Table 18 is required to occur on the **same day** receiving water monitoring is performed.
- Only permittees that discharge domestic wastewater directly to waters of the U.S., or discharge commingled domestic wastewater, or vessels that discharge sanitary and graywater are required to perform this mixing zone monitoring.

4.7.8. Seafood Processors' Work Group Mixing Zone Study (Permit Part 2.7.6)

The permit requires permittees to perform monitoring at the boundary of the mixing zone and/or at certain locations in the ambient receiving water. Evaluating the pollutant parameters at the boundary of the mixing zone and in the ambient receiving water will assist the permittee and the Department to determine if the discharge meets the required mixing zone criteria at the compliance point (boundary of mixing zone), and further evaluate the appropriateness of the mixing zone historically authorized as part of the 2001 AKG520000 permit. This is a new specialized, likely one-time study in the permit.

In 2010, a group of Seafood Processors formed a work group and tentatively proposed a plan to conduct seafood mixing zone analyses during the AKG521000 permit cycle. As of October 2015, this work group had expressed a continued interest in performing the study. Permit Part 2.7.6 include requirements, per the Department's authority found in AS 46.03.020(5), for permittees to conduct a mixing zone monitoring survey as a required part of the permit. Permit Parts 2.7.5- 2.7.6 require that permittees either:

- 1) Individually collect effluent data and mixing zone monitoring data during the permit cycle and submit the data to DEC, or
- 2) Participate in the Seafood Processors' Work Group Mixing Zone Study and submit monitoring data to the mixing zone work group.

Results of the monitoring data are to be used for evaluation of water quality and mixing zone modeling and sizing. The Work Group's Mixing Zone Study proposal must be submitted to and approved by the Department. DEC encourages the Seafood Processors' Work Group to actively engage DEC throughout the process to ensure objectives, timelines and deliverable content is all understood. The goal of the study is to investigate effluent monitoring data, mixing zone water quality monitoring and mixing characteristics that will enable DEC to determine the standardized size(s) and shape(s) of a seafood wastewater mixing zone for the issuance of the next general permit.

4.7.8.1. The study will include achievement of the following objectives:

- 4.7.8.1.1. Development of a framework for effluent and mixing zone water quality analysis and modeling,
- 4.7.8.1.2. Data requests to permittees to acquire previous effluent and/or receiving water monitoring data collected, average flow rates, waste discharge amounts, and seafloor survey results where water quality parameters and information necessary for water quality modeling have been collected as part of the survey,
- 4.7.8.1.3. Compile existing data on the variable types of outfall configuration,
- 4.7.8.1.4. Perform effluent and receiving water monitoring of seafood processing facilities,
- 4.7.8.1.5. Development of a scientifically valid monitoring plan and Quality Assurance Project Plan (QAPP),
- 4.7.8.1.6. A detailed discussion of how data will be used to meet, test and evaluate the monitoring objectives,
- 4.7.8.1.7. Data collection of oceanographic data of current speeds, pollutants of interest including monitoring for discharge-related impacts, chemistry data and density profiles as needed to address existing data gaps, for those parameters listed in Permit Part 2.7.5.

4.7.8.1.8. Preliminary modeling conducted to evaluate various ranges of estimated dilution ratios and mixing zone sizes, including evaluation of gathered effluent and water quality data, and

4.7.8.1.9. A summary report of the results of the Mixing Zone Study.

4.7.8.2. Mixing Zone Study and Ambient Water Quality Work Plan

DEC will review and approve a work plan from the seafood processors work group prior to work implementation. The mixing zone study work plan must be submitted for DEC approval within 545 days (approximately 1.5 years) from the effective date of the permit. This will allow a minimum of two years of monitoring data to be collected during the AKG521000 permit cycle and results submitted to the work group for evaluation prior to the draft mixing zone study report due to DEC.

The required objectives, as discussed above, and the approved work plan will require the Seafood Processors' Work Group to obtain water quality monitoring data from permittees participating in the Study, where the data collected represents a range of permitted waterbodies characteristics from across the State. Waterbodies and permittees' facilities to be monitored are required to be identified in the Work Group's plan, along with reasoning of why the facility meets the specific representative waterbody representation criteria. The specific identify of the permitted facilities being studied may be submitted as business confidential. The data collected must also be reflective of multiple established discharge scenarios (e.g., low discharge pounds per year/low current; low discharge pounds per year/high current or flushing rate; high discharge pounds per year/low current, etc.). The data must be collected according to the DEC approved monitoring plan and the receiving water quality monitoring must be conducted according to the same pollutant parameters required in Permit Part 2.7.5.

4.7.8.3. Work Group's Mixing Zone and Ambient Water Quality Study's Report

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

DEC will review the draft report in accordance with the environmental monitoring objectives and evaluate it for compliance with the requirements of the permit. If DEC requests revisions to the report, the Work Study Group must complete the revisions and submit the final report to DEC within 60 days of the Department's request.

Modifications to the monitoring program may be approved if DEC determines that the modification is appropriate. The modified program may include changes in sampling stations, sampling times, and/or parameters.

4.8. Zone of Deposit (ZOD) Analysis (Permit Parts 2.7.2 thru 2.7.3)

4.8.1. Regulatory basis for authorizing a ZOD

A ZOD is defined as a limited area where substances may be allowed to be deposited on the seafloor of marine waters. In accordance with state regulations at 18 AAC 70.210, the Department may authorize a ZOD in a permit. The Department, in its discretion, may issue a permit that allows a 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) for residues and the antidegradation requirements of 18 AAC 70.015 may be exceeded in a ZOD. However, the WQS shall be met at every point outside the ZOD. The residue standard applies to any residue discharge (whether permitted or unpermitted); however, one of the most prevalent applications of the residues standard is to permitted discharges of residues in marine waters from seafood processing facilities and the authorization of ZODs for these permits.

As found in 18 AAC 70.210(b), in deciding whether to authorize a ZOD in a permit, the Department considers the following:

- 4.8.1.1. Alternatives that would eliminate, or reduce, any adverse effects of the deposit. - The Department's analysis can be found in Fact Sheet Part 4.8.5.1 and alternatives are required to be individually identified by the permittee in applying for a new project area ZOD;
- 4.8.1.2. The potential direct and indirect impacts on human health (The Department's analysis can be found in Fact Sheet Part 4.8.5.2);
- 4.8.1.3. The potential impacts on aquatic life and other wildlife, including the potential for bioaccumulation and persistence (Fact Sheet Part 4.8.5.3);
- 4.8.1.4. The potential impacts on other uses of the water body (Fact Sheet Parts 4.8.4.1, 4.8.5.4);
- 4.8.1.5. The expected duration of the deposit and any adverse effects (Fact Sheet 4.8.5.5); and
- 4.8.1.6. The potential transport of pollutants by biological, physical, and chemical processes (Fact Sheet Part 4.8.5.6).

4.8.2. Seafood ZOD History

A one-acre ZOD for seafood processing waste deposits was authorized in both the 1995 and 2001 AKG520000 permits via the AKG520000 401 Certification for shore-based (onshore) facilities discharging zero to one-half nm from shore, and near-shore vessels discharging one-half to one nm from shore. The AKG520000 401 Certification permit provided a ZOD for each shore-based processor and each single location where a near-shore (mobile or stationary) processor discharged. The AKG520000 401 Certification did not, however, authorize a single, one-acre ZOD that would be cumulatively applied to all discharge locations where shore based vessel or near-shore vessels were authorized to discharge. When EPA incorporated ZOD language into the AKG520000 permit, the following language was used:

Section V(B) Near Shore Seafood Processors (1)(l) "State-authorized zone of deposit [see 18 AAC 70]. The ADEC authorizes a zone of deposit of one (1) acre for each facility authorized by this general permit under the classification of near-shore seafood processor in marine waters (includes estuaries and coastal waters)."

And,

Section V(C)(1) Shore-based Seafood Processors(l) "State-authorized zone of deposit [see 18 AAC 70]. The ADEC authorizes a zone of deposit of one (1) acre for each

facility authorized by this general permit under the classification of shore-based seafood processors in marine waters (includes estuaries and coastal waters).

The permittee shall inform EPA and ADEC at least 60 days in advance of any planned relocation of its outfall as in Part VII.H; relocation of an outfall line does not authorize a new zone of deposit.”

DEC reviewed the administrative record and in the final AKG520000 permit, EPA did not include language from the DEC AKG520000 401 Certification Part III(B)(1), which read:

*“The waste load limit is ten million pounds per year of settleable solid processing waste residues within one nautical mile of shore at MLLW, in accordance with the preliminary final NPDES Permit. For mobile facilities, **this waste limit applies to each location at which a facility discharges.**” [Emphasis added]*

Vessels are mobile facilities that move to process seafood at the locations that the fisheries openings allow. If a facility was a vessel authorized under the AKG520000 permit, it is impractical to conclude that vessel would operate at only one location, or that a single, one-acre ZOD would be assigned to a vessel no matter where the vessel discharged. In contrast to this line of reasoning, the AKG520000 permit, however, required that all near-shore and shore-based vessels that discharge at a single location for more than seven (7) days within a year conduct a seafloor monitoring program. A "single location" was defined as outfall(s) (past and present) of an on-shore facility or the anchorage of a vessel within a circular area with a radius equal to one-half (0.5) nm.

The AKG521000 proposes discontinuing authorizing ZODs for Inland Water, in-transit discharges for area-of-operation. Seafood waste discharged from a vessel while in-transit to hydrodynamically energetic waters, farther than 1.0nm have been modeled to disperse over a large area and are not expected to produce deposits on the seafloor. Discharges to waters deeper than 120 feet are assumed to disperse and any seafood waste on the seafloor is assumed to be less than 0.5 inches thick and covering less than 10% of the bottom within a 3 foot square sample plot. Those vessels discharging raw seafood waste between 0.5nm to 1.0nm to waters 60 feet of water have been modeled to form deposits at 3.3 million pounds of waste. These assumptions based upon the modeling effort performed as part of the AKG523000 permit development are still deemed to be accurate and applicable to vessels discharging an onshore facility's ground seafood waste. Therefore, the permit limits those vessels discharging an onshore facility's seafood waste to waters 0.5nm to 1.0nm, and in depths less than 120 feet to 3.3 million pounds of waste per area-of-operation. New permit requirements include weight limits authorized to be discharged at each area-of-operation, required distances from shore, requiring the facility operator to identify location of area(s)-of-operation by Global Positioning System (GPS) location and applying Excluded Areas restrictions.

4.8.2.1. Continuous, Discontinuous and Trace Coverage

The 2001 AKG520000 permit did not clearly define what level of seafood waste coverage (continuous, discontinuous, or trace deposits) on the seafloor counted towards the maximum one-acre ZOD. This lack of clarification has led to differing agency interpretations as to what constitutes compliance with the one-acre ZOD provision. EPA has interpreted the AKG520000 401 Certification of the one-acre ZOD as a total limit applicable to all continuous, discontinuous and trace deposits. EPA has counted any cumulative, small deposits (discontinuous coverage) or floating seafood waste (trace coverage) in amounts greater than the allowed one-acre ZOD as a violation of the permit. The Department on the other hand has held a long-standing interpretation of applying the one-acre ZOD requirement to the continuous deposits only. Application of

the Department's policy regarding ZODs can be found in the EPA approved Alaska Integrated Water Quality Monitoring and Assessment Report (Integrated Report). Reviewing the Integrated Report(s) for residues or settleable solids listings corroborates the Department's long standing enforcement of the one-acre ZOD to continuous coverage only, while continuing to provide water quality protection and working toward water quality improvement.

4.8.2.2. The Integrated Report and Listing Criteria for Residues and Settleable Solids

Every two years DEC is required to report on the condition of Alaska's waters in accordance with the federal Clean Water Act (CWA). The Integrated Report categorizes waterbodies in Alaska to meet the CWA reporting requirements for the Section 305(b) report and Section 303(d) list of impaired waters. The Integrated Report helps the State prioritize waters for data gathering, watershed protection, and restoration of impaired waters. DEC collects water quality information through a public solicitation, and through a year-round waterbody nomination process. Information, including APDES permittee's monitoring data, is assessed by a multi-state agency process called Alaska Clean Water Actions (ACWA). Based on this assessment, a waterbody is categorized in the Integrated Report in one of five CWA categories:

- Categories 1 and 2 waters - where there is enough information that water quality standards are attained for all or some of their designated uses;
- Category 3 waters – where there is not enough information to determine their status;
- Category 4 (a&b) waters – waters are impaired but have waterbody recovery plans; and
- Category 5 waters – waters are impaired and do not yet have waterbody recovery plans. Category 5 waters are also known as CWA Section 303(d) impaired waters.

An authorized ZOD is a limited area permitted to temporarily exceed the residue standard in that area that does not significantly degrade the quality of the waterbody as a whole or the designated uses. As mentioned previously, ZODs are issued to permitted discharges from seafood processing facilities. Seafood processing facilities have been required to perform dive survey for permit compliance self-reporting. A waterbody is placed in the Integrated Category 4b if a dive survey reports document greater than 1.5 acres of continuous residues coverage; a determination is made that the water is impaired; and there is an approved remediation plan under a general permit or an individual permit. In Alaska's Integrated Reports, DEC reports dive survey acreages as —exceedances over the one acre ZOD threshold. For example, —the dive survey information from November 2001 demonstrates an exceedance of 2.1 acres above the permitted continuous residues coverage of 1.0 acre. This reporting approach more accurately portrays actual exceedances of the permitted threshold. Additionally, it is important to recognize that exceedance of a ZOD is not equivalent to impairment; rather, exceedance of 1.5 acres of continuous residues coverage is the impairment standard.

DEC has also uses two consecutive dive surveys reports of 1.5 acres or greater of continuous seafood waste deposits, as the method to establish if a waterbody should be placed on the Category 5 'impaired' list for residues. Two surveys are required to evaluate the total aggregate areal extent of continuous coverage. As part of the dive survey review, DEC re-calculates continuous cover based on dive survey reports. When reviewing dive survey reports, the Department has found that facilities have overstated the extent of continuous cover. Because of uncertainty about the extent of continuous

cover, and by using an impairment standard of 1.5 acres of continuous coverage, DEC is confident that impairment decisions truly reflect actual impairment. Additionally, the waterbody is placed on the impaired list if one of the following conditions is met: (1) the permittee failed to submit a remediation plan, or (2) a remediation plan has been submitted, but the permittee is failing to implement or is not meeting milestones set forth in the approved remediation plan. Once listed as Category 5, those waters require that a TMDL or other equivalent pollution controls are developed to attain WQS.

Thus, in reverse to have a waterbody be removed from the Integrated Report's Category 5 'impaired' list, the permittee must document through two consecutive dive surveys that the total aggregate area of continuous cover has been reduced to less than 1.5 acres and DEC has approved a remediation plan on a Category 5 listed waterbody, a TMDL has been developed, the facility is under consent decree or APDES permit limitation leading to further recovery or the waterbody has reached Category 1 or 2.

4.8.3. Introduction of Project Area ZODs for Seafood Waste

EPA-issued a NPDES General Permit for Log Transfer Facilities (LTFs) (AKG701000) in 2000, which authorized the discharge of bark and wood debris, under specified terms, to both near shore and offshore marine waters in Alaska within the permit's area of coverage. Permittees authorized by the 2000 LTF General Permit were required to develop and implement Remediation and Pollution Prevention Plans to restrict their discharges to inside the perimeter of a project area ZOD.

The Department certified the 2000 LTF General Permit pursuant to CWA Section 401 on August 24, 1999. DEC's certification included a new project area ZOD provision. The term "project area" meant the entire marine operating area of an LTF, either shore-based or off-shore, including the following components: shore-based log transfer devices; shore-based log transfer, rafting, and storage areas; helicopter drop areas; vessel and barge loading and unloading areas; offshore log storage areas not adjacent to a shore-based LTF; bulkheads, ramps, floating walkways, docks, pilings, dolphins, anchors, buoys and other marine appurtenances; and the marine water and ocean bottom underlying and connecting these features.

The LTF project area ZOD established a one-acre remediation threshold (not a fixed limit) for continuous bark coverage greater than 10 cm deep at any point. If the one-acre threshold was exceeded, the state certification triggered requirements for remediation planning. The project area ZOD authorization associated with the 2000 LTF permit issuance allowed for the presence of discontinuous and trace cover bark and wood waste within the project area. An important consideration was that the fixed one-acre limit for continuous cover bark and wood waste failed to acknowledge that discontinuous (10% to 99% cover) and trace (<10% cover) bark coverage and wood waste was likely to be found within the operational footprint of a facility. In the evaluation of compliance status of bark residues in the AKG701000 general permit, bark found outside a fixed one-acre ZOD would have been a violation of the Alaska WQS and potentially subject to enforcement. By adopting a project area ZOD, DEC allowed for the presence of discontinuous and trace cover bark through the application of WQS 18 AAC 70.210, which was consistent with the logic that the piles would disperse over time and water quality impacts would be mitigated by natural processes (e.g., current-induced dispersion).

Accordingly, in the AKG521000 permit the Department will be assigning a project area ZOD for each seafood processing facility or seafood waste producing facility acknowledging that seafood waste is likely to be found within the operational marine footprint of the facility and not solely isolated to the immediate vicinity of the seafood processing outfall terminus. The entire marine operating area of an onshore or over-water-onshore seafood processing facility or

seafood waste producing facility shall include, fish transfer areas (including docking areas where vessels unload their fish, anchor to wait to unload their fish, and clean fish holds), marine areas that encompass a facility's existing, in-use seafood discharge outfalls, as well as outfall lines no longer in use.

DEC recognizes that seafood deposits may be continuous, discontinuous or trace, depending on discharge amounts, the ocean currents, and in the way deposits are dispersed along the ocean floor within the project area ZOD. Ocean currents move seafood waste in a water body, sometimes in short time periods given the nature of the deposit and the ambient velocity of the receiving water. Dive surveys in Alaska have routinely documented the movement of seafood waste deposits, within as little as two months between dive surveys. In some cases, from one dive survey to the next, deposits have increased, decreased and/or disappeared.

Additionally, DEC is proposing a modification to the seafood survey reporting (monitoring and reporting applicable to deposits) requirements in the AKG521000 permit (Permit Appendix F). The proposed modification would require permittees to map and report the total aggregate area(s) of continuous seafood waste deposits coverage within the project area ZOD boundary. The first required map of coverage area(s) includes continuous coverage and is defined as 100% coverage of the seafloor by seafood waste deposits within a three foot by three foot individual sample site. Second, discontinuous seafood waste coverage ranging from 99% to 50% at individual sample sites must be measured and reported. The third required map of coverage area(s) includes discontinuous seafood waste coverage ranging from 49% to 10% at individual sample site. Coverage of less than 10 % seafood waste, or less than 0.5 inch in thickness, will not be required to be mapped and will be noted as "Trace" on the Seafloor Survey: Transect Data Form (Permit Attachment D). The seafloor survey must also determine the depth of seafood waste deposit piles.

The selection of 50% is based on research results from two studies that have been published that examined the effects of wood waste discharges from pulp mills, not seafood processing facilities. DEC acknowledges that the findings from the two studies are not directly applicable to seafood discharges since the study's subject was wood, not seafood waste. However, at this time, DEC finds the identified wood waste studies to provide the most meaningful corollary to studying seafood deposition in the marine environment until such time monitoring data (seafloor surveys) is collected during this permit cycle and analyzed for facilities operating in compliance with required permit provisions, or new studies are completed or identified that provide useful information on the effects of seafood deposition in the marine environment applicable to the amounts of seafood waste limited by the permit.

The 1984 Kathman study (Effects of Wood Waste on the Recruitment of Potential of Marine Benthic Communities, R.D. Kathman, S.F Cross, and M. Waldichuk, Department of Fisheries and Oceans Fisheries Research Branch, West Vancouver Laboratory, June 1984) found infauna colonization in artificial mixtures of wood waste (not bark) and sediments increased up to 60% for a 20% mixture and just slightly for a 50% mixture. This study concluded that "Species richness increased at 20% but showed a dramatic reduction at 100%. Diversity and evenness were highest at 20%, with slight decrease at 0% and 50%., and a large decrease at 100%. Dominance, the reciprocal of evenness, indicated that only a few species represented the majority of the individuals at the 100% treatment, but that there were no particular species dominant at the other three concentrations."

DEC also reviewed the study titled "Effects of Wood Waste for Ocean Disposal on the Recruitment of Marine Macrobenthic Communities" by E.R. McGreer, R.D. Munday, and M. Waldichuk (Department of Fisheries and Oceans, Fisheries Research Branch, August 1985). This study evaluated the effects of wood waste depth instead of percent volume. The study

abstract concluded that “The effect of different thicknesses (1, 5, and 15 cm) of a fine wood waste material upon the recruitment of marine macrobenthic communities was experimentally assessed using in situ settlement trays. A clean marine sediment was used in the experiment as a reference substrate. Differences in species composition and abundance of macrobenthos settling to the reference and 1 cm wood waste substrate compared to the 5 and 15 cm wood substrate were found. Species richness showed a consistent decrease with increasing thickness of wood waste.”

While project area ZODs are not a new concept to APDES LTF permitting, project area ZODs and the inspection of the project area ZOD is new to APDES seafood permitting. Given the operational and discharge similarities between LTFs and seafood processors, as well as the natural consequence of tidal action dispersing deposits, the concept of a project area ZOD is a more rational regulatory scheme for seafood processors than the assignment of a simple one-acre ZOD. The permit proposes to assign a project area ZOD to each facility covering all areas where the onshore facilities seafood processing activities are occurring.

At times, due to vessels dragging anchor, poor outfall pipe corrosion protection or various harbor projects, outfall pipes are broken, replaced or even moved several hundred feet, which has resulted in a change of the location of the seafood deposits. Additionally, it is common for incoming vessels to unload their catch, and then rinse out their vessel hulls or fish holds while tied to the dock while at the dock. This is due to availability of fresh clean water from the onshore facility, thereby is an inherent part of the onshore facility’s seafood processing operations to possibly create deposits near the docks. It is DEC’s intent for the permittee to perform the seafloor survey on the entire project area ZOD to capture the “operational” deposits discussed above, as well as other areas of deposits, if any. DEC has determined that the project area ZOD approach is an effective way to survey the operational seafood marine footprint from an onshore facility, as well as to allow for seafood waste deposits to disperse without causing a violation of the residue criteria.

Consistent with how DEC interprets the ZOD provisions included in the 2001 AKG520000 permit, the AKG521000 permit is not increasing the total authorized size of seafood waste deposits from the one-acre ZOD. The permit proposes to apply count total aggregate area of continuous coverage to the one-acre of allowed deposits in the project area ZOD.

The project area ZOD approach will require the permittee to survey a greater area of the seafloor to identify possible areas where deposits may have occurred as a result of the onshore facilities operations, and provide a total areal representation of all deposits in the Seafloor Survey Report in accordance with Appendix F. The total aggregate area of continuous coverage will not include trace coverage areas (less than 10% coverage or less than 0.5 inch in deposit depth), or those discontinuous sample site areas that have less than 100% coverage in an individual sample site when determining when a permittee needs to submit a Remediation Plan. Appendix F requires the permittee to map the total areal and depth seafood waste deposits; measuring and accounting for all levels of seafood deposits coverage areas (continuous, discontinuous and trace).

DEC has initially assigned a project area ZOD for each facility located in marine water bodies (ZODs are not permitted in fresh water per 18 AAC 70.210). DEC’s initial project area ZOD mapping approach is to issue an Authorization with the project area ZOD included. This project area ZOD may be refined by the permittee as they perform the seafloor surveys. Many facilities have not performed a seafloor survey since early in the 2001 AKG520000 permit cycle. Due to ocean currents, dispersion, changes in processing, etc. over the course of the previous 14 years, DEC only reviewed those facilities Seafloor Survey Dive Reports from the past five years while performing the initial project area ZOD geospatial mapping. Where deposits were noted in

seafloor surveys, DEC has GIS mapped the deposits as close as possible (the prior permit did not require the facility permittee to submit the seafood deposits mapping as digital data) reflecting approximate deposit size and location. DEC notes that once the seafloor surveys are performed under the new seafloor survey project area ZOD Protocol Requirements found in Appendix F, a revised size and location of the project area ZOD may occur. The Seafloor Protocol and Guidance document (Appendix F) provides the acceptable protocols for performing seafloor surveys of the project area ZOD. Seafloor survey results will be used to determine if additional limits are required, to monitor potential effluent impacts on receiving water body quality and to inform future permit decisions.

The proposed seafloor survey approach is intended to gather additional information on discontinuous seafood waste coverage distribution within project area ZODs, given the lack of performance monitoring data and published studies on the effects of discontinuous seafood waste and percentages of coverage of discontinuous seafood waste deposits and their effects. During the early permit development stage of the Permit and Fact Sheet, EPA indicated that benthic studies have shown that discontinuous waste have caused negative impacts to the benthic community. To DEC's knowledge, these benthic studies have been performed during the auspices of EPA consent decrees, as part of enforcement actions where the permittee had discharged solids in excess of permit limits, or discharged seafood waste not specifically covered by the permit. For these reasons, DEC is seeking further information regarding the distribution of amounts and sizes (areal distribution) of seafood wastes and observations made of varying percent coverages (10-49% and 50-99%) of discontinuous waste and any observed short term or long term effects of permittees discharging in compliance with permit conditions.

If this data gathering efforts provide consistent results, DEC will evaluate to determine if potential modifications to current remediation planning requirements are necessary in future permits. Additionally, through more data gathering DEC will evaluate if both continuous seafood waste deposit cover greater than 1.0 acres, at any point, and; some portion of existing discontinuous seafood waste coverages, should be restricted in size or depth, or percent coverage. If by the expiration date of the permit, DEC concludes that it is not possible for permittees to consistently discern coverage percentiles and map discontinuous seafood waste deposit coverage areas, or benthic effects are not found from discontinuous seafood waste deposits, this requirement may be deleted from future permits.

All assigned project area ZODs contained in and public noticed through the issuance of the permit shall be integrated into new AKG521000 permit authorizations without additional public notice. New project area ZOD authorizations in marine waters of the U.S. after the effective date of the permit shall be public noticed for a minimum of 30 days. The Department will evaluate each application for a ZOD in accordance with DEC's Antidegradation Policy (18 AAC 70.015) and ZOD requirements found in Permit Part 1.6. The Department has determined the permittee does not have to provide all the analysis points under 18 AAC 70.210(b)(1-6) as the evaluation criteria found in 18 AAC 70.210(b)(2,3,5 and 6) have been thoroughly discussed in this Fact Sheet Parts 4.8.4 and 1.1.1.

The permittee applying for a project area ZOD will need to provide analysis of their own community waste handling systems and potential by-product markets that would eliminate, or reduce, any adverse effects of the deposit (18 AAC 70.210(b)(1)). Identify, to the extent feasible, for the use of seafood processing waste for by-product utilization, developing methods to reduce seafood/fish processing as a waste material to be discharged. Identify methods of disposal, other than discharge, for spoiled or contaminated by-products (Permit Part 1.6.11.3.2.1).

Additionally, (Permit Part 1.6.11.3.2.2) the permittee will have to provide a list of other known uses (secondary recreation, aquacultural facilities, etc.) within 1.0 nm of the proposed discharge in order for the Department to assess the potential impacts on other uses of the waterbody (Permit Part 1.6.11.3.2.2) (18 AAC 70.210(b)(4)).

4.8.4. **Authorizing a Project Area ZOD**

The permit authorizes a project area ZOD to each facility granted a ZOD in the previous AKG520000 permit, as well as those facilities who have applied for coverage up to the effective date of the permit but have been unable to obtain coverage. Permit Appendix D and the Seafood Wastewater GIS Project Area ZOD Map contains lists of facilities proposed to be issued Project area ZODs, along with new mapped seafloor survey areas.

After completing a review of a NOI, the Department may assign a project area ZOD for resulting deposits of residues from seafood waste production activities. Project area ZODs are being assigned to a facility's marine operational area – around docks, where current and previous outfall lines and outfall terminus(s) lie on the seafloor, and thus where seafood waste discharges may have occurred. In this way the applicant and the Department may more accurately evaluate cumulative totals of seafood waste deposits. Seafloor survey of the project area ZOD shall be used to determine the depth, total areal cover, including the identification of the outer boundary of continuous coverage, and the outer boundary of discontinuous coverage of seafood waste. Within an authorized project area ZOD, the water quality criteria of 18 AAC 70.020(b) for residue and the antidegradation requirement of 18 AAC 70.015 may be exceeded. However, the standards shall be met at every point outside the project area ZOD. The written general permit authorization will specify whether a project area ZOD has been authorized and the area of the authorized project Area ZOD. Additionally, the written authorization will specify whether a project area ZOD has been issued for vessel discharge areas, the written authorization will identify each area-of-operation location.

Total aggregate area of continuous seafood waste deposits authorized in project area ZOD is limited to a one-acre area (Permit Part 2.7.2.4).

When determining whether the general permit defined project area ZOD area is appropriate for a specific receiving area, the Department will include in its consideration the following:

- 4.8.4.1. The effects that the discharge might have on the uses of the receiving water. The permit proposes that permittees identify other known waterbody uses (secondary recreation, aquaculture, etc.) within 1.0 nm of the proposed discharge. Newly proposed facilities, after the effective date of the permit and those not listed in Appendix D, requesting a project area ZOD will be publically noticed, providing additional public input to uses surrounding the proposed discharge site.
- 4.8.4.2. The flushing and mixing characteristics of the receiving water. DEC will evaluate the information submitted on the NOI, as well as accessing NOAA maps and current data, and Form 2M data if submitted, to evaluate the flushing effects and mixing characteristics. Additionally, the more robust seafloor monitoring protocol found in Appendix F will provide DEC additional data regarding deposits and their effect on the seafloor.
- 4.8.4.3. The cumulative effects of multiple ZODs and other inputs affecting the receiving water. Multiple ZODs issued in receiving waters on the lower end of the flush characteristics hydrodynamically energetic waters may have cumulative effects on the seafloor and receiving water. The permit has incorporated seafloor monitoring, sea surface

monitoring and WQ monitoring to maintain and collect data regarding multiple dischargers into a single waterbody.

If through the review of a NOI, the Department determines that it has insufficient information to determine whether a project area ZOD is appropriate at a discharge location, a permittee may be required to submit additional information (see 18 AAC 70.210(b)(1)-(6)) or may be required to submit an APDES IP application. The burden of proof for providing the required information is on the applicant seeking to establish a ZOD.

If multiple permittees request coverage under the permit to discharge in the same area, the cumulative amount of seafood waste authorized to be discharged will be evaluated and when appropriate, limitations or prohibitions on the amount of waste authorized to be discharged will be placed in a written authorization for each permittee. If a written authorization has been issued that authorizes a discharge to a specific location or operational area and the Department receives a new or updated NOI requesting coverage for another permittee in the same area, the Department will determine whether circumstances have changed so that the discharges are no longer appropriately controlled under the general permit before issuing an authorization to the new permittee. If the Department determines that the discharges are significant contributors of pollutants, the Department may require that the dischargers apply for and obtain an APDES IP (see 18 AAC 83.215(a)(5) and (6)).

Consistent with 18 AAC 70.210, the Department has determined that the available information reasonably demonstrates that the authorization of a project area ZOD that limits cumulative continuous coverage areas² of seafood wastes to a total of one-acre for each discharge onshore seafood processing facility's outfall, as well as moored barges or vessel port discharges, will protect the existing uses of the receiving water body as a whole. The permit required methods of treatment and dispersal are the most appropriate and effective, when a seafood processing facility discharges in conformance with the permit requirements.

The permit does not limit the total size of the authorized project area ZOD, rather it limits the total areal size of continuous coverage of seafood residue deposits within to that project area ZOD.

² Continuous Coverage - Seafood waste deposits that are found to be 100% areal coverage as measured along a transect of the seafloor with a 3-foot by 3-foot sample plot. The sample plot of continuous coverage must also consist of greater than 0.5 inch (½") thickness of seafood waste deposits found in the sample plot location as measured with a probe. And will, at DEC's discretion, include boulders, rock outcrops, ridges, and other protrusions within an area of continuous coverage that are not covered by seafood waste.

4.8.5. Evaluation of Project Area ZODs in Comparison to 18 AAC 70.210 Requirements

This section provides the criteria and information the Department used to evaluate the appropriateness of authorizing the total aggregate area of continuous seafood waste deposits (residues in the project area ZOD in the AKG521000 permit).

4.8.5.1. Alternatives that would eliminate, or reduce, any adverse effects of the deposit (18 AAC 70(b)(1).

The Department considered other alternatives to eliminate or reduce any adverse effects of the deposit. Currently, Remote facilities are only required by TBELs to grind to ½ in all dimensions, which under some receiving water characteristics may lead to the formation of deposits (residues) on the seafloor. EPA's 1975 Rule making and subsequent industry petitions for communities to be considered Remote includes further financial analysis of the economic costs of having to screen seafood wastes and delivering the screened solids to a by-product facility (Fish Meal, Oil, Hydrolysate, etc.). Alternatives considered by the Department include the barging of waste to ocean waters, barging by vessel, or conversion of seafood waste product to fish meal, fish oil, and by-product recovery. Given EPA Remote designations, these alternatives were determined infeasible. The permit, however, requires that permittees discharge seafood ensure that waste is not discharged into poor flushing areas, and requires discharge to hydro-dynamically energetic waters that will ensure dispersion and natural attenuation of the seafood wastes and minimize long term accumulation of these deposits in one area.

The permit also requires that a permittee identify and develop markets, to the extent feasible, for the use of seafood waste as a product, and not as a waste material to be discharged. This requirement is part of the permit-required BMPs.

Disposal of seafood waste solids will have the greatest impact on less mobile benthic organisms such as polychaetes and bivalves, and on demersal fish eggs that cannot move away from the accumulating waste. The following section discusses the nature of the solid waste deposition and potential impacts to benthos and demersal eggs.

Settling of seafood discharges on the seafloor occurs at varying rates according to the size of the particles. Once settled, these particles can form organic mats or thick waste piles that can smother the underlying substrate and benthic communities within it. Some waste piles have been recorded to rise 40 feet or more above the seafloor (ADEC, 1998). The degradation of this organic material occurs at varying rates according to different characteristics of the discharge area (i.e. biological, physical, and chemical factors). In one study where salmon waste was widely distributed, the waste was completely absent within 33 days following discharge and no adverse effects on DO concentrations noted (Stevens and Haaga 1994). The accumulation of these deposits in some areas indicates that the rate of discharge exceeds the assimilation capacity of some water bodies and more specifically, the assimilation capacity of the benthic community and other aquatic life that metabolize this material. The permit requires that discharge seafood waste in areas with high tidal activity that will ensure dispersion and dilution of the seafood wastes and minimize accumulation of these deposits in one area. If discharge limits are adhered to, the effects on aquatic biota in areas of seafood waste discharge should be minimal.

The following represents the outcomes of some research DEC initiated to evaluate seafood solid waste impacts on the benthos (Germano and Associates, 2004).

The intent of this study was to see what the impacts are to the surrounding benthos and benthic community from seafood solid wastes deposited in a ZOD. The impacts were evaluated using a Sediment Profile Imaging (SPI) camera. The SPI camera takes an image of the top few inches of sediment. Aquatic life within the sediments was also collected for analysis using a Van Veen grab device. The SPI camera showed where seafood wastes made the sediments anoxic and methane producing with the presence of sulfur-producing bacteria, *Beggiatoa*, indicating anoxic conditions.

For two adjacent processors with relatively small, active discharges located approximately 600 feet apart, the visual ZODs were 0.34 and 0.21 acres. However, the area of *Beggiatoa* was approximately 6.0 to 7.4 acres. The presence of *Beggiatoa* indicates reduced oxygen in the sediments and an adverse effect to the benthos and benthic community outside of the ZOD. Other measures for adverse effects include numbers and kinds of species present.

Immediately adjacent to the smaller active piles both fish and crab forage. The diversity of benthic species was less within the first 200 feet of the periphery of the ZOD compared to the diversity observed in a distant control site. However, the few opportunistic species that existed in the vicinity of the ZOD occurred in great numbers. At approximately 500 feet or more from the periphery of the active piles more of the normal resident species were recorded and the overall abundance of the opportunistic species was less. The study determined that normal resident species population levels and diversity did not occur until 1,500 feet or more down-current of the periphery of the waste piles.

Two other seafood processors evaluated had larger discharges and inactive waste piles greater than 1 acre in size. Very little to no solid waste discharges had occurred for the 2 years preceding the study. These discharges occurred approximately 1,000 feet apart. In this case, the *Beggiatoa* mats were observed in 2.8 and 0.5 acres around each waste pile respectively. The areas of reduced oxygen due to *Beggiatoa* were significantly smaller for the inactive waste piles than for the active waste piles. From these results, the authors of the study conclude that biota in sediments will revert to natural conditions within 5-10 years after the cessation of seafood waste disposal (Germano and Associates, 2004).

As stated above, seafood wastes can form organic mats within the ZOD, depending on the amount discharged and the biological, chemical, and physical factors affecting decomposition and dispersion of the waste. Depending on the depth of burial, deposits can make the substrate inhospitable, or influence the species composition favoring opportunistic organisms that may out-compete the normal fauna. Algal blooms caused by high nitrogen concentrations can also alter habitat by smothering benthic substrates when they die, and by reducing the available water column or surface aquatic habitat for visual predators, including birds. However, these biological effects appear to be largely localized to the discharge area and are expected to be mitigated in relatively short timeframes based on the natural processes. Further information regarding adverse impacts of deposits is found below in Fact Sheet Part 4.8.5.3

4.8.5.2. The potential direct and indirect impacts on human health (18 AAC 70(b)(2)).

Seafood processing discharges are not expected to result in elevated levels of toxic or carcinogenic pollutants in marine organisms consumed by humans.

Eutrophication of marine waters may indirectly result in enhancement of phytoplankton species that are toxic to marine organisms and humans. A separate unrelated toxicity that

occurs is Paralytic Shellfish Poisoning (PSP) which is caused by the consumption of shellfish that have concentrated toxins from microscopic algae blooms, composed of such as algae as dinoflagellates, diatoms, and cyanobacteria. Dinoflagellates of the genus *Alexandrium* (genus) are the most numerous and widespread saxitoxin producers and are responsible for PSP blooms in subarctic, temperate, and tropical locations. The majority of PSP toxic blooms have been caused by the *A. tamarense* species complex, however, direct links between the occurrence of PSP and eutrophication have not been established. Therefore, the linkage between PSP and seafood processing discharges, while possible, is tenuous. Alterations in phytoplankton species composition is another potential impact of nutrient rich discharges on marine phytoplankton. Concerns regarding alterations in phytoplankton community composition are related to indirect effects resulting from increasing the populations of phytoplankton species that may produce adverse effects on marine organisms and humans. Effects produced by some phytoplankton species include physical damage to marine organisms (e.g., diatom species of *Chaetoceros* that have caused mortality of penned salmon), toxic effects to marine organisms (e.g., a raphidophyte flagellate species of *Hererosigma*), and toxic effects to humans due to the concentration of algal toxins in marine fish and shellfish [e.g., PSP, Diarrhetic Shellfish Poisoning (DSP), Neurotoxic Shellfish Poisoning (NSP), Amnesic Shellfish Poisoning (ASP), and ciguatera] (Taylor 1990; Haigh and Taylor 1990). Concerns regarding toxic phytoplankton have been heightened in recent years due to suspicions that the frequency of toxic phytoplankton blooms has increased due to human activities, especially due to agricultural runoff and the discharge of municipal and industrial wastewater to marine coastal areas (Smayda 1990; Smayda and White 1990; United Nations 1990; Anderson 1989).

Although there have been several reports linking mortalities of relatively large numbers of marine mammals (e.g., O'Shea et al. 1991; Anderson and White 1989; Geraci 1989; Geraci et al. 1989; Gilmartin et al. 1980), fish and shellfish (e.g., Cosper et al. 1990; Harper and Guillen 1989; Smayda and Fofonoff 1989), and aquatic plants (e.g., Cosper et al. 1990) to the occurrence of toxic phytoplankton in other parts of the U.S., only very recently, 2015, were such episodes of marine mammal deaths directly tied to increase toxic phytoplankton blooms on the coastal waters of Alaska. The occurrence of human intoxication due to PSP has been recorded at locations in southeast and the Aleutian Islands in Alaska (Sundstrom et al. 1990). PSP is caused by the consumption of shellfish that have concentrated toxins from an algae of the species *Protogonyaulax* (Shimizu 1989). However, direct links between the occurrence of PSP and eutrophication have not been established (Anderson 1989). Therefore, the linkage between PSP and seafood processing discharges, while possible, is tenuous.

Although there is a potential for the discharge of seafood waste to cause localized changes in phytoplankton species composition, there are no known studies to verify that discharges of seafood wastes have produced toxic or harmful phytoplankton blooms. Similarly, while PSP has been documented in Southeast Alaska, there is currently no evidence suggesting a linkage with seafood processing discharges.

- 4.8.5.3. The potential impacts on aquatic life and other wildlife, including the potential for bioaccumulation and persistence (18 AAC 70(b)(3)).

The potential adverse effects of seafood waste include direct and indirect impacts of the solid and liquid waste discharges to marine organisms. Potential direct impacts of solid waste discharges, including burial of benthic communities, alteration of the sediment texture, and chemical changes within the sediments as a result of decaying organic

matter accumulations, are expected to be minimal. The permit limits discharges into areas of poor flushing, those areas with average currents of less than one-third of a knot at any point in the receiving water within 300 feet of the outfall, including the requirement that discharges occur into hydrodynamically energetic waters to minimize the potential of accumulation of seafood wastes. The decay of accumulated solid waste may reduce concentrations of DO in the overlying water column and release potentially toxic decay byproducts like unionized ammonia and un-dissociated hydrogen sulfide. Permitted discharges of seafood waste to oxygenated well-flushed areas at rates consistent with permit limitations are not generally expected to cause levels of DO or toxic substances that could have an adverse effect on marine organisms.

The attraction of marine mammals and birds to seafood waste discharges has the potential to create indirect impacts. Prohibition for Excluded areas and required monitoring in the permit are intended to reduce, eliminate and monitoring for these types of potential impacts. In some cases, project area ZODs will extend to the shoreline. It is not the Department's intent that seafood waste be allowed to wash up on the shoreline exposing more marine mammals and birds to seafood waste through the project area ZOD. Rather the intent of the project area ZOD is to allow seafood wastes to naturally attenuate *at depth*, identify existing areas of seafood waste deposits, for facilities to address the formation of total aggregate areas of continuous deposits beyond the one-acre limit in a project Area ZOD, as well as remediation plan and updates to their BMP plan. Facilities whose shoreline monitoring reveals deposits forming or landing on the shoreline should take proactive action on investigating the cause of deposits, including outfall inspection and /or replacement, or lengthening; and making changes to facility discharge practices by altering BMP in order to control these types of deposits.

4.8.5.4. The potential impacts on other uses of the water body (18 AAC 70(b)(4).

Impacts from any individual seafood processing facility discharging in compliance with the requirements of the permit are likely to be localized. Although benthic organisms may be smothered or community composition altered in localized areas of seafood deposits, the benthic communities in Alaskan coastal waters would not be expected to alter significantly. The AKG521000 permit proposes to require the permittee to identify other water uses within one (1) nautical mile.

Impacts from toxicity due to anoxic conditions and changes in benthic community structure could be cumulative spatially and over time. Although more complete knowledge would be of value in assessing the magnitude and significance of cumulative environmental impact, available data indicate that unreasonable degradation is not likely to occur in areas of adequate dispersion and dilution. Receiving water body monitoring has been included in the permit cycle to evaluate water body impacts.

4.8.5.5. The expected duration of the deposit and any adverse effect (18 AAC 70(b)(5).

The extent of bottom waste accumulation over the long-term depends primarily on the amount of waste discharged, the decay rate of the waste organic matter and the degree of resuspension and transport of the deposited waste.

Settling of seafood discharges on the seafloor occurs at varying rates according to the size of the particles. Once settled, these particles can form organic mats or thick waste piles that can smother the underlying substrate and benthic communities within it. The degradation of this organic material occurs at varying rates according to different characteristics of the discharge area (i.e., biological, physical, and chemical factors). In one study where salmon waste was widely distributed, the waste was completely absent within 33 days following discharge and no adverse effects on DO concentrations noted. The accumulation of these deposits in some water body areas with different flushing characteristics indicates that the rate of discharge exceeds the assimilation capacity of some water bodies and more specifically, the assimilation capacity of the benthic community and other aquatic life that metabolize this material. The permit requires that processors discharge seafood waste in hydro-dynamically energetic waters to assist in dispersion, dilution and assimilation of the seafood wastes and minimize accumulation of these deposits. If discharge limits are adhered to, the effects on aquatic biota in areas of seafood waste discharge should be minimal.

DEC initiated a research project to evaluate ground up seafood solid waste impacts on the benthos in 2004. The study looked at the impacts to the sea floor from four seafood processors' waste discharge along the coast of Ketchikan, Alaska, from the ZODs out to distances of approximately 500 meters down current and 180 meters perpendicular to the prevailing current from the point of discharge.

A total of four seafood waste deposits were examined. Two of the deposits were not actively receiving solid wastes at time of the study, nor had they been for the two years prior to the study. When they had been discharging, the annual amount discharged was between 7-11 million pounds. Two other deposits were receiving waste at the time of the study, approximately 2-3.5 million pounds of waste annually. Maximum currents around the inactive piles were 3-4 knots, while the maximum current near the active piles were lower and approached two knots. The presence of seafood waste on the bottom was readily apparent from all four areas surveyed. The largest area of bottom affected was at the active discharge sites, where the waste piles merged. A more thorough assessment of the area of seafloor actually affected by the waste discharge was determined from looking at the extent of sulfur-reducing bacterial colonies (*Beggiatoa*) that had formed around the waste deposits. These colonies were chosen as indicators of low oxygen conditions and representative of areas of stress from organic loading. The area of bottom experiencing adverse effects from excess loading around the two active facilities was cumulatively about 7 acres.

The benthic infaunal community was responding to the seafood waste discharge with predictable patterns of successional recovery; there have been numerous studies documenting the response of benthic infauna to organic loading, and both the sediment profile images as well as the results from the bottom grab analysis showed the classic pattern of high densities of opportunistic species nearest to the source of the organic loading. As one moves away from the waste deposits, evidence appears of more mature infaunal communities with a higher frequency of deposit-feeding infauna. The study

documented enhanced secondary production and their ready availability as prey items for higher trophic levels.

The study concluded that the strong tidal currents of Tongass Narrows prevents any significant accumulation of fine-grained deposits and that there was little chance of organic material from seafood waste accumulating to the point of causing severe sediment oxygen demand and causing either hypoxia or anoxia in the overlying waters. While the sampling stations right under the active discharge points were clearly impacted, there were dense assemblages of opportunistic fauna within 50-100 meters of the discharge deposit centers, following the classic pattern of benthic community response to organic enrichment.

The study also concluded that given the rapid recovery of the benthic community as one moves out from the active piles, it is assumed that the areas of the seafloor closest to the active discharge points that are currently showing adverse effects would readily recover if seafood waste discharge was discontinued in the future. The study estimated that if the fish processing operations ceased operations, the effects caused by the waste discharge would disappear over time and the benthic community would recover within 5-10 years with few adverse effects remaining from the point sources of organic loading. (Germano 2004, pg 81).

4.8.5.6. The potential transport of pollutants by biological, physical, and chemical processes (18 AAC 70(b)(6)).

The extent of the initial accumulation of solid waste on the bottom depends on the height of the discharge above the seafloor, current speed, and the settling velocities of the waste particles. Soluble wastes from these discharges are expected to be rapidly diluted or degraded by biological, physical, and chemical processes.

Once discharged to the receiving water, the rate at which the liquid and solid wastes are dispersed, and advect away, from the point of discharge will depend on the physical and chemical properties of the discharged waste and the physical oceanographic characteristics of the receiving water. These oceanographic characteristics include the location of the discharge in the water column, the presence or absence of density stratification, water depth and bottom topography, and prevailing directions and speeds of wind- and tidally-forced currents. The solid waste particles will settle to the bottom at a rate that depends on the shape, density, and size of the individual particles. Once deposited on the bottom, periods of high currents or storm wave-induced bottom turbulence can result in the resuspension and transport of deposited seafood waste solids away from the point of discharge.

Currently, few studies have been identified that have adequately characterized the particle size distribution of ground seafood waste or the characteristic settling velocities of these particles. One study of the open water disposal of ground seafood waste conducted in Chiniak Bay, Kodiak Island, Alaska, provides a first-approximation of the settling velocities of seafood waste particles. Unground particles (primarily gills, skin, fins, and viscera 2-10 inches in diameter) required approximately 0.5 hr to settle to the bottom at depths of 400 to 500 feet. Smaller particles (less than 0.5 inch diameter) required more than 1 hr. to settle to the bottom. These ranges in settling times and water depths provide approximate bounds for the settling speeds of typical seafood waste particles of 0.098-0.262 foot/sec.

The settling velocity of the solid waste particles (and the height of the discharge above the bottom) affects the initial areal extent of the deposit of solid waste on the bottom in

the vicinity of the discharge. However, in regions that experience high currents it is important to consider the potential for the solid waste particles to be resuspended and disperse following deposition. If solid waste is resuspended and transported away from the vicinity of the discharge, the accumulation of solid waste would be less than that predicted based on the settling velocity and decay rate of the waste solids, which is why the discharge of seafood waste to energetic waters is important. The potential adverse localized impacts to benthic communities would also be reduced.

Following discharge to the receiving water, the particulate and soluble wastes are subjected to chemical and biological transformations that result in the decomposition of the waste materials and the production of bacteria and chemical compounds. The decomposition of the soluble and particulate organic matter consumes DO and results in the production of varying quantities of soluble compounds including carbon dioxide, methane, ammonia, soluble phosphorus, and hydrogen sulfide. Scavenging organisms including sharks, fish, crabs, and polychaete worms may also feed on the particulate waste that is suspended in the water column or fresh waste that has accumulated on the bottom.

A number of biological, chemical, and physical factors control the fate of the discharged wastes. Biological factors include microbial decay and scavenging of the waste by organisms. Chemical factors include the chemical composition of the waste, particularly the content of protein and soluble organic compounds, fats and carbohydrates, and skeletal and connective tissue. Each of these components has a characteristic chemical composition and decay rate. Physical factors that control the fate, transport, and persistence of the waste include density stratification, storm-, tidal-, and wind-induced currents, and water temperature. Current speed direction and duration strongly influences the transport and dispersion of the waste and critical current speeds can resuspend and transport waste solids deposited on the bottom.

Computer modeling effort was developed in 1993 to predict the accumulation, persistence, and areal coverage of discharged seafood waste. Multiple computer modeling programs were used to determine the areal extent of the waste pile, WASP5, SURFER™ and DECAL. The focus of the transport, fate and persistence analysis was to predict the area covered by a persistent (year-round) accumulation of seafood waste of no more than one-acre and the depth of the deposited solids as a function of distance from the discharge point. The WASP5 seafood waste accumulation model was run iteratively to predict the steady-state solid waste discharge rate that would produce a bottom accumulation of seafood waste with a depth of 0.4 inch or greater over an area of one-acre. This iterative process was conducted for twelve case scenarios, six for onshore processors discharging near the seafloor and six scenarios for floating processors discharging near the surface in open water within 1.0 mile of shore. The model predictions are based upon the assumption that the resuspension and transport of deposited solids may occur at some discharge locations if bottom current speeds exceed the critical current speeds required to re-suspend bottom waste accumulations. With the assumption that resuspension and transport is negligible, the model predictions may be considered conservative estimates of the potential for waste accumulation under the conditions described in the model for the twelve case scenarios.

Two current speeds (5 and 15 cm/sec, 0.10 and 0.29 knots respectively) and three bottom slopes (0.0, 12.5 and 25 percent) were simulated. For the simulations of the onshore facilities the water depth was varied which resulted in six case scenarios. The model was used to provide a first-approximation of the amount of waste solids discharge

that would result in an approximately one-acre bottom deposit of seafood waste. The scenario included six simulations for discharges from shore-based facilities with discharge outfall pipe located 6.6 feet above the bottom in 50 feet of water. Six case scenarios were also selected to evaluate the effect of varying current speed and water depth on the model-predicted accumulation of seafood waste solids due to surface discharges from stationary. The scenarios were selected to evaluate the effects of varying slope and current velocities on the mode-predicted accumulation of seafood waste solids from shore-based facilities.

Model predictions were based on decay rates of 0.02 /day and various particle sizes settling velocities of 0.28 ft./sec, 0.15 ft./sec and 0.072 ft./sec, respectively.

A first areal coverage estimate was developed based on interpolation of the WASP model-estimated waste deposit depths in each modeling cell using the computer program SURFER™. This program creates contour plots of the depth of the waste pile based on the model-estimated waste deposit depths in each WASP5 modeling cell and calculates the area covered by waste deposits 0.4 inch deep or greater.

The second estimate of the areal extent of the waste pile was based on summing the areas of the WASP5 modeling cells that contain accumulations of seafood waste solids 0.4 inch deep or greater.

4.8.5.7. One-Acre Size of Continuous Deposits within Project Area ZOD based on Modeling Seafood Residues Coverage Areas

The 10 million pound limit. The 2001 AKG520000 permit had a 10 million pound limit on the amount of seafood waste that could be discharged from an onshore or near shore facility. The 10 million pound limit was based upon modeling performed in the 1994 ODCE. The ODCE provided discussion on the modeling performed and basis for the 10 million pound limit for an outfall located approximately six feet above the seafloor forming a 1.0 acre of continuous coverage (ZOD). The first-approximation of the annual near-bottom discharges shore-based solids discharge that would result in deposits greater than one-acre was current speed of 0.16 ft./sec, depth of 50 ft. and a flat bottom discharges of 16 million pounds (wet weight) of waste solids. Next, the current speed increased to 0.49 ft./sec, the other factors remaining the same only allowed 12 million pounds (wet weight) of waste solids discharged. Further modeling was performed with the varying slope to the bottom, with both modeling results concluding that with higher current speeds serves to spread the waste over a larger area. Thus, conservatively the EPA and the Department chose to limit the total seafood waste discharges to per outfall to 10 million pounds annually.

The 3.3 million pound vessel limit. The first-approximation of the annual near-surface open water seafood waste solids discharge that would result in a waste accumulation greater than 1 acre in waters with a net-drift current speed of 0.16 feet/sec a depth of 50 feet, and a flat bottom is 8 million pounds (wet weight) of waste solids. The maximum accumulated solids depth of this pile is predicted to be 2.1 feet. The first-approximation of the amount of seafood waste solids discharge that would result in the accumulation of greater than 1 acre of seafood waste on the bottom in waters with a net-drift current speed of 0.49 feet/sec, a depth of 50 feet, and a flat bottom is 4 million pounds of waste solids. The maximum accumulated solids depth of this pile is predicted to be 2.1 feet. The first-approximation of the annual near-surface open water seafood waste solids discharge that would result in a waste accumulation greater than 1.0 acre in waters with a net-drift current speed of 0.16 or 0.49 feet/sec, depths of 100 or 150 feet, and a flat

bottom is approximately 4 million pounds (wet weight) or less of waste solids. The maximum accumulated solids depth of these piles are predicted to be 0.3-0.8 feet.

The model predicts that discharges to near-surface waters will result in areal coverage of 1.0 acre of the bottom with significantly less seafood waste discharged than the near-bottom discharge model cases. These results can be explained by the fact that seafood waste discharges to the near-surface waters are exposed to the currents during settling for a longer time than the near-bottom discharges, and consequently, are dispersed over a larger area. As can be seen from the predictions of the maximum waste accumulation depths, the volume of material that accounts for the 1 acre coverage is much less than for the near-bottom discharges. More information can be found regarding these studies in the 1994 ODCE. Thus, conservatively the Department has chosen to limit vessels discharging between 0.5nm and 1.0nm under Permit Part 2.6 to total seafood waste discharges to 3.3 million pounds annually.

The model predictions discussed above are considered conservative estimates of bottom waste accumulation because the WASP5 model did not consider the resuspension and transport of the deposited wastes. With future ZOD modeling efforts combining WASP8 with a hydro-dynamic computer modeling system such as the Environmental Fluid Dynamics Code (EFDC Hydro) which is a model that can be used to simulate aquatic systems in one, two, and three dimensions it is DEC goal during the permit cycle to further refine ZOD modeling efforts and compare to data collected during the permittees seafloor survey reports.

In early 2014, DEC contracted to have available modeling software evaluated and compared to further gather further information on the formation of ZODs. During the permit cycle, DEC will likely contract to have further modeling performed and staff trained to complete the newest ZOD formation modeling. Accordingly, during the permit cycle, DEC will continue to rely on the 1993 modeling and the concept of a project area ZOD similar to log transfer/storage ZODs in order to authorize ZODs in the subject permit.

4.8.6. **Project Area ZOD (Permit Parts 1.6.11.3, 2.7.2 – 2.7.3 and Permit Appendix F, Attachment - D)**

The permit requires that seafloor surveys be performed to verify permit compliance by analyzing the extent of the seafood deposits. In the 2001 AKG520000 permit, seafloor surveys were required for onshore (shore-based) facilities to depths of -120ft MLLW; and for near shore facilities if a permittee discharged at a single location for more than seven consecutive days in waters less than -120 feet at MLLW. The EPA's RTC document provided this depth was chosen due to diver safety issues and lack of practical survey methods that do not involve divers performing a seafloor survey in deep water. New technologies have been introduced in recent years to make surveying at deeper depths possible. One of these technologies include underwater Remotely Operated Vehicles (ROVs). ROVs are linked to a host ship by a neutrally buoyant tether or, often when working in rough conditions or in deeper water, a load-carrying umbilical cable is used along with a tether management system (TMS). Most ROVs are equipped with at least a video camera and lights. Additional equipment is commonly added to expand the vehicle's capabilities. These may include [sonars](#), [magnetometers](#), a still camera, a manipulator or cutting arm, water samplers, and instruments that measure water clarity, water temperature, water density, sound velocity, light penetration, and temperature.

The AKG521000 permit proposes to require seafloor survey's in depths beyond -120 feet MLLW due to changes in survey method technology.

Using data from Seafloor Surveys performed during the permit cycle, and further modeling as discussed in the previous section, the Department will refine the authorized project area ZODs area during the permit cycle and at permit reissuance.

5.0 Other Permit Requirements

5.1. Quality Assurance Project Plan (QAPP)

The permittee is required to develop QAPP sampling and other monitoring procedures to ensure that the monitoring data submitted is accurate and explains data anomalies if they occur. The permittee is required to develop and implement the QAPP within 60 days of authorization to discharge under the permit. A previously permitted permittee shall review and update the BMP Plan and submit written re-certification with an updated NOI. The re-certification shall state that the BMP Plan has been reviewed and revised as needed, and that that the BMP Plan has been implemented. The QAPP shall consist of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples; laboratory analysis; and data reporting. The QAPP shall be retained on site and made available to the Department upon request.

5.2. Best Management Practices (BMPs) Plan

In accordance with AS 46.03.110 (d), the Department may specify in a permit the terms and conditions under which waste material may be disposed or discharged. The permit requires the permittee to develop a BMP Plan in order to prevent or minimize the potential for the release of pollutants to waters of the U.S. and lands of the State of Alaska through plant site runoff, spillage or leaks, or erosion. The permit contains certain BMP conditions that must be included in the BMP Plan. The BMP Plan must be kept on site and made available to the Department upon request.

A new permittee shall develop and implement a BMP Plan within 60 days of authorization to discharge under the permit. A previously permitted permittee shall review and update the BMP Plan and submit written re-certification with an updated NOI. The re-certification shall state that the BMP Plan has been reviewed and revised as needed, and that that the BMP Plan has been implemented. Re-certification should also be provided by permittees implementing investigational BMPs applicable to source control of washed and unwashed mince / paste processing discharges.

BMPs, in addition to numerical effluent limitations, may be required to control or abate the discharge of pollutants in accordance with 18 AAC 83.475. National policy requires that, whenever feasible, pollution should be prevented or reduced at the source, that pollution which cannot be prevented should be recycled in an environmentally safe manner, and that discharge or release of the pollution into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner. EPA's reassessment of the ELGs for seafood processors (Jordan 1979; EPA 1980b) recommended in-plant management directed towards total utilization of the raw materials and by-product recovery as a fundamental and central element of waste reduction. Materials accounting, audits of in-plant utilization of water and materials, and BMPs were repeatedly recommended as the profitable approach to waste management in seafood processing plants at the "Wastewater Technology Conference and Exhibition for Seafood Processors" convened by the Fisheries Council of British Columbia in Vancouver, Canada in February 1994 (Ismond 1994).

The National Pollutant Discharge Elimination System (NPDES) Program is based on the premise of permittee self-monitoring and reporting based on specific performance objectives described in the permit (See Clean Water Act Section 308). As such, APDES permits often are crafted with stated performance objectives that must be met by the permittee, and as discussed in the Fact Sheet Part 3.7.4 NPDES regulations at 40 CFR Part 122.44(k) allow for use of BMPs when numeric limits are infeasible. The permit requires Remote facilities processing washed or unwashed mince / paste to implement pollution control technologies (waste treatment systems) based on investigational BMPs developed to control TSS, O&G and BOD₅ associated with this type of production line. Existing and new source permittees shall submit (postmark) written notice to DEC's Permitting Program that

investigational BMP Plan has been developed within six months and implemented within eighteen months of the effective date of general permit authorization. Any existing BMP Plan may be modified for compliance with this Part (Permit Parts 2.2.3.2 and 2.10.6.9).

The permit provides the permittee with flexibility to formulate a site-specific plan consisting of pollution control measures to meet the stated performance objectives while still providing instructive guidance on minimum, permit mandated requirements. The Investigational BMPs are intended to demonstrate whether any additional controls and procedures are necessary and feasible. The BMP Plan should be continually updated to reflect any future operational and design modifications or monitoring practices that are found to control or minimize the potential discharges of washed and unwashed mince / paste pollutants.

The permit requires the development and implementation of BMPs that prevent or minimize the generation and release of pollutants to receiving waters.

EPA developed a general handbook to assist industry in identifying and using BMPs and in developing and implementing materials accounting and BMP Plans (EPA 1993). EPA also developed an industry-specific handbook to assist seafood processors in identifying and using BMPs and in developing and implementing materials accounting and BMP Plans (EPA and Bottomline Performance 1994). These documents are still available for permittees' during facility specific BMP Plan development.

The BMP Plan must be amended whenever a change in the seafood processor or in the operation of the seafood processor occurs that materially increases the potential for an increased discharge of pollutants.

5.3. Annual Report (Permit Part 2.8)

The purpose of the annual report is to document the status of implementation of the permit's limitations and permit requirement, including:

- 5.3.1. A self-assessment review of compliance with the permit conditions, including specific reports due to other agencies with management authority for discharges to Excluded Areas,
- 5.3.2. An assessment of the progress towards achieving the measurable goals,
- 5.3.3. A summary of results of monitoring information that has been collected and analyzed,
- 5.3.4. A discussion of proposed process changes or improvements for the next permit year and submittal of a updated NOI, if needed,
- 5.3.5. An assessment of the appropriateness of the selected BMPs along with a discussion of any changes to the BMPs or measurable goals, and
- 5.3.6. Reference to any reliance on another entity (e.g. a fish meal plant for reducing seafood waste discharges) for achieving any measurable goal.
- 5.3.7. The permit includes a new requirement in the Annual Report to provide the total pounds of ammonia or Freon used, and a summary of any occurrences of leaks or breaks, in the refrigerator condenser system. The permit also requires the permittee to provide a list of chemicals, disinfectants, cleaners, biocide, food processing additives (salts, acids, bases, enzymes, etc.) used or discharged during the annual reporting period. Included should be the total annual amounts, dilution ratio during use and what the product is used for (e.g., 55 lbs of NaOH for Chitin production, 55 3-gallon containers of 12% HCl used as 1% solution disinfectant and 3% solution for washed mince bleaching). Permittees that do not use chemicals in their seafood processing operations, (e.g. hand or mechanical filleting only) where

disinfectants and cleaners are used in a manner consistent with the manufactures recommended usage, are not required to submit this list.

With the increase of seafood processing by-products, and thus the increased use of the chemicals in production (Fact Sheet Parts 3.7 and 3.8) DEC is requiring the permittee submit this information with the Annual Report. Extremes of pH or rapid pH changes (includes by improper discharge of these chemicals) can exert stress conditions or cause mortality to aquatic life (EPA, 1975). This information may be submitted as business confidential. Facility permittees that do not use chemicals in their seafood processing operations, (e.g., hand or mechanical filleting only) where disinfectants and cleaners are used in a manner consistent with the manufactures recommended usage are not required to submit this list.

During the 10-day industry permit review period, industry members commented that requiring reporting of industrial chemicals (i.e. for ammonia amounts used in refrigeration or freezer units, for cleaning and disinfecting, or food product/ food preservation use) used in their seafood processing facilities was duplicative of other DEC reporting requirements. Industry comments included that requiring reporting of ammonia and Freon was duplicative of hazardous waste and/or solid waste reporting. The permit is not trying to address the separate requirements of hazardous waste or solid waste reporting. As discussed in Fact Sheet Parts 3.7, 3.8, 3.11, 3.12 and 3.13, many chemicals and food processing additives can be used in various seafood processing production lines. These chemicals have not been included on operator's NOIs, nor in previous permits, thus not tested for in waste streams. The chemicals do not need to be found in wastewater discharge streams as justification for requiring inventory. Requiring industrial facilities to identify chemicals used in their processing wastewater discharges is an integral part of the CWA, even if the discharge is considered 'de minimis' NPDES regulation or under EPA Hazardous Waste regulations. Requiring identification of pollutants discharged on APDES applications is referenced in Hazardous Wastes regulations found in 40 CFR Part 261.4(a)(2)). Facilities are only exempted from Hazardous Waste reporting if

The permit is requiring the permittee to perform an inventory of chemicals used on site to inform their next NOI (permit) application. Additionally, as found in 40 CFR Part 261.3(a)(2)(iv) a mixture of solid waste and hazardous wastes listed in subpart D of this part [of 40 CFR 261] is not a hazardous waste... if the generator can demonstrate that the mixture consists of wastewater, the discharge of which is subject to regulation under either section 402 or section 307(b) of the Clean Water Act. As found in 40 CFR 261.3 (D), any manufacturing facility that claims an exemption for de minimis quantities of wastes listed in Part 261.31 through 261.32, or any nonmanufacturing facility that claims an exemption for de minimis quantities of wastes listed in subpart D of this part must either have eliminated the discharge of wastewaters or have it included in its Clean Water Act permit application (i.e., NOI in this case). As found in 40 CFR 261.3, a facility is only eligible to claim the exemption once the permit writer or control authority has been notified of possible de minimis releases via the Clean Water Act permit application submission. A copy of the Clean Water permit application ... must be placed in the facility's on-site files.

Meaning a permittee that is proposing discharges of de minimis amounts of chemicals, or identifies pollutants while monitoring need update their AKG521000 NOI (permit application. In 40 CFR 361(a)(2)(iv)(D), de minimis losses are defined as inadvertent releases to a wastewater treatment system, including those from normal material handling operations (e.g., spills from the unloading or transfer of materials from bins or other containers, leaks from pipes, valves or other devices used to transfer materials); minor leaks of process equipment, storage tanks or containers; leaks from well-maintained pump packings and seals; sample purgings; relief device discharges; discharges from safety showers and rinsing and cleaning of

personal safety equipment; and rinsate from empty containers or from containers that are rendered empty by that rinsing. Industrial wastewater discharges that are point source discharges subject to regulation under section 402 of the CWA, as amended. In document titled 'De Minimis Discharges Study Report to Congress' found that "a positive consensus was received from EPA Regional and State permitting authorities on the applicability of general permits on regulating 'de minimis' discharges (EPA, 1991).

Additionally, the submission of the chemicals used should not place an additional burden on facility permittees as these chemical lists are a requirement of both OSHA law and DEC Environmental Health.

5.4. Standard Conditions

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

6.0 Antibacksliding

6.1. Impaired water bodies and CWA 305(b) lists

The 2001 AKG520000 permit section (III) contained the following language:

“This Permit does not authorize the discharge of pollutants into any waterbody included in ADEC’s 1998 (or subsequent revisions) CWA 305(b) report or CWA subpart 303(d) list of waters which are “impaired” or “water quality-limited” for dissolved gas or residues (i.e., *floating solids, debris, sludge, deposits, foam or scum*).”

The AKG521000 Permit Part 1.4.7 states:

Impaired Waterbodies. Permit coverage for facilities in or near listed impaired water bodies, those listed on the State 303(d) list, may be considered only if the proposed discharge will not cause or contribute to an exceedance(s) of WQS for that water body listed area and subject pollutant, and the permittee meets requirements set out in Permit Part 3.2. Facility permittees proposing to discharge to impaired waterbodies where the permittee applies to the Department with revisions to a TMDL for a specified water body, changes to the water use classes and subclasses, revisions to water quality criteria, adoption of site-specific criteria, and / or the reclassification of waters will be required to apply for an individual permit.

The 2001 AKG520000 permit Appendix B listed all waters on the 305(b) and 303(d) waters by entire waterbody name, without distinction as to whether entire waterbody was in fact listed, or just a specific area of the waterbody. Additionally, 2001 AKG520000 Appendix B didn’t identify what pollutants the waterbodies were specifically listed for.

The AKG520000 Appendix B list presents several distinct problems, the first problem of identifying entire waterbody as being listed. For example, 2001 AKG520000 permit language specified waters on the 305(b) or 303(d) list “*which are impaired for dissolved gas or residues*” yet, the 1998 Integrated Water Quality Monitoring and Assessment Report (Integrated Report) lists Thorne Bay for ‘debris’. Then in the 2002/2003 DEC Integrated Report for Thorne Bay is listed for residues. Further, the DEC 2007 Thorne Bay TMDL identifies: “*These (LTF) facilities ceased operation in 2000 ...the State’s 2004 303(d) list (issued in 2006) removed the former log storage area from the impaired list but maintained listing of the former log transfer marine area at the head of the bay (ADEC, 2006).*” Following a time sequence, it becomes apparent that an entire bay being listed in 1998 was decreased in area consecutively throughout the years through further refinement.

An additional problem is the 2001 AKG520000 Appendix B list as presented did not identify the pollutant the waterbody was listed for, nor allow an applicant to provide site-specific water quality studies. As has been demonstrated above, a site’s 303(d) listing status changes, as well as the pollutant(s) the waterbody was initially listed for (see delisting information for Thorne Bay Hydrogen sulfide in the 1998 Integrated Report). The 2007 Thorne Bay states: “*no future permits to authorize discharge of bark and wood debris in the LTF marine area may be issued by EPA and ADEC, until WQS are met or the TMDL is revised. However, establishment of LTFs at other locations in Thorne Bay is not precluded by the TMDL. An LTF at another location would have to be established through required State and federal permitting processes.*” To completely preclude an applicant from discharging pollutants to a whole waterbody on a 305(b) or 303(d) list does not acknowledge that the water quality may not be affected in every area of the waterbody as a whole, nor if list status has changed. Additionally, the language “This Permit does not authorize the discharge of pollutants into any waterbody ... which are “impaired” or “water quality-limited” for dissolved gas or residues (i.e., *floating solids, debris, sludge, deposits, foam or scum*)”, limiting the discharge of any pollutants to waterbodies impaired or water quality limited for dissolved gas or residues errors in two ways. First, it errors in not allowing the applicant to propose wastewater

treatment technologies so that the discharge will not contain the pollutant causing the impairment, or other pollutant source reductions that will offset the discharge. Such example of this EPA policy can be found at: <http://www.epa.gov/nutrient-policy-data/frequent-questions-nutrient-criteria-implementation>.

DEC finds that the AKG521000 permit condition Permit Part 1.4.7 is consistent with 18 AAC 83.480. Removal of the 2001 AKG520000 permit condition was reviewed consistent with application of CWA 402(o)(2)(B)(ii), which allows that if technical mistakes or mistaken interpretations of law were made in issuing the (condition in the) permit under subsection 402(a)(1)(B) are an allowance or cause for modification of a permit condition. Additionally, CWA Section 402(o) is silent on the issue of permit conditions and only addresses backsliding in permit limitations. The 1987 revisions to the CWA Section 402(o) that implement the backsliding evaluation requirements are meant to be used when consideration to revise TBELs based on BPJ to reflect a subsequently promulgated effluent guideline which is less stringent. The Department is not proposing a revision to the TBELs in the AKG521000 permit. The second situation where backsliding applies is in respect to relaxation of an effluent limitation based on a State standard or WQS. When a general permit applicant seeks authorization from DEC to discharge to a waterbody that may have been previously listed as impaired or water-quality limited, the permit language found in Permit Part 1.4.6 will allow DEC the ability to make a determination if the entire waterbody is listed, or only a small part of the waterbody is listed. DEC will be able to make a decision, if the waterbody was listed for the same type of pollutant for which the applicant is applying and to decide if the permittee's proposed discharge will further contribute to listed pollutant loading, or impairment. DEC will evaluate current information from within the Department, other agencies, or information supplied by the applicant, to make a decision regarding the applicable discharge. The permit requirements, along with required DEC technical review will ensure the applicant is not seeking relaxation of a State WQS, nor that DEC relaxing a WQS, rather the permit change ensures DEC is able to make an accurate application of EPA policy and WQS applicable to the discharge being proposed.

6.2. Washed Mince / Paste Seafood Wastewater Discharge Allowance

During early agency draft permit review, EPA requested the Department perform an antibacksliding analysis on the proposed permit condition of allowing washed mince / paste effluent discharge from Remote facilities. The Department disagrees that antibacksliding analysis is necessary and offers the following explanation.

EPA's rational on requesting the anti-backsliding analysis was based on the following final AKG520000 permit conditions:

Permit Section (I)(A) "Subject to the restrictions of this Permit, the following categories of dischargers are authorized...

1. Operators of off-shore vessels engaged in the processing of fresh, frozen, canned, smoked, salted or pickled seafood or the processing of seafood mince, paste or meal;
2. Operators of near-shore vessels engaged in the processing of fresh, frozen, canned, smoked, salted or pickled seafood, the processing of unwashed mince, or the processing of meal and other secondary by-products; and
3. Operators of shore-based facilities engaged in the processing of fresh, frozen, canned, smoked, salted or pickled seafood, the processing of unwashed mince, or the processing of meal and other secondary by-products.

Shore-based and near-shore seafood processors discharging seafood washed mince or paste process wastes to receiving waters within one (1) nautical mile of shore are not authorized to discharge under this general NPDES permit. These facilities are required to apply for and receive individual NPDES permits.”

The 2001 AKG520000 Fact Sheet contained the following:

Fact Sheet Section (II)(A) “The Permit will authorize discharges from facilities engaged in the processing of fresh, frozen, canned, smoked, salted or pickled seafoods to surface waters of the United States within and continuous to the State of Alaska (the "receiving waters" or "waters of the United States"). The Permit will also authorize discharges from offshore facilities engaged in the processing of seafood paste, mince or meal to waters of the United States more than one (1) nautical mile from the shore of the State of Alaska at mean lower low water (MLLW).”

Fact Sheet Section (II)(B) “The Permit does not authorize discharges resulting from seafood processors producing seafood paste, mince or meal and discharging associate process wastes to receiving waters within one (1) nautical mile of the Alaskan shore at MLLW. Applications for individual NPDES permits will be accepted from these facilities and assigned a high priority for issuance.”

EPA’s AKG520000 RTC document contained the following:

RTC Comment #1: “Trident Seafoods and Pacific Seafood Processors Association comment that EPA should distinguish between the unwashed and pressed fish mince used to produce frozen blocks of fish mince and the washed and pressed mince used to produce surimi in Part I of the permit. There are significant differences in the amounts and concentrations of pollutants (esp. BOD, biochemical oxygen demand) in the associated wastewaters generated in the production of these two products. The organic pollutants contained in the wastewater of unwashed mince is comparable to that of fish filleting and canning operations and should be covered under the Permit.”

“Response: EPA acknowledges that there is a difference in the unwashed fish mince product which is pressed and frozen into blocks and the washed, pressed fish mince product which may be used to produce surimi. There is a concomitant difference in the pollutant levels of their respective wastewater: washed mince releases much greater amounts of pollutants than unwashed mince due to the extensive and intimate contact of the wash-water with fish flesh. *EPA has revised the permit at Part X* to include definitions of mince, washed mince, and unwashed mince. *EPA has revised the permit at Part I.B* to clarify that its prohibition of the discharge of mince effluents by near-shore and shore-based processors refers to "washed mince" rather than to unwashed mince. The basis for the prohibition of the discharge of effluents from washed mince is that the high levels of biochemical oxygen demand (BOD) that characterizes this wastewater can depress dissolved oxygen in the water column; this impact makes such dischargers strong candidates for individual permits.”

The Department reviewed the above conditions and discussion and it became clear that the initial publicly noticed 2001 AKG520000 draft permit and fact sheet prohibited the discharge of all minced seafood product. Only through public comment were changes made to the AKG520000 permit, yet no effluent limits or monitoring of these types unwashed mince seafood discharges were required in the final AKG520000 permit. Additionally, WQBELs for unwashed mince or washed mince were not established, nor were BPJ TBELS applied. No other effluent limits beyond half-inch grind were applied to the unwashed mince in the final AKG520000 permit. Compliance with State WQS was required in the 2001 AKG520000 permit as is WQS compliance required in the proposed AKG521000.

The AKG521000 permit proposes to provide discharge coverage for Remote washed and unwashed mince / paste seafood permittees and proposes required the permittees develop BMP to reduce pollutant loading and implement the identified reduction strategies within 1.5 years. Additionally, on-going monitoring is being required to evaluate the effectiveness of the pollution reduction techniques being applied to the proposed washed mince / paste seafood wastewater discharge.

The CWA Section 402(o) states:

(o) Anti-backsliding (1) General prohibition

In the case of effluent limitations established on the basis of subsection (a)(1)(B) of this section, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 1314(b) of this title subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit.

The AKG520000 permit did not establish effluent limitations for unwashed or washed minced seafood. Rather the prohibition of the discharge was simply a condition of the permit. However, anti-backsliding rules are not necessarily applicable to this change in regulating the discharge of washed and unwashed mince / paste seafood, as the previous permit used a discharge prohibition, not an effluent limitation. The Department therefore concludes backsliding, as defined by CWA Section 401(o) “effluent limits which are less stringent”, is not occurring due to the Department’s application of investigational BMPs to this discharge, and requiring internal outfall monitoring to identify facility-specific, feasible source control technologies and then evaluating the effectiveness of the implemented BMPs and chosen source control technologies in their effectiveness in pollution reduction.

CWA Section 402(o)(1) also cross-references CWA Section 303(d)(4), which identifies further requirements for backsliding for water quality-based permits concerning water standards attainment. Importantly, Section 402(o)(3) states that a revised BPJ or water quality-based permit may not violate either applicable national technology-based guidelines or state WQS. The proposed AKG521000 permit does not propose to violate national technology-based guidelines or WQS. Additionally, the proposed permit contains specific 303(d) listed waterbody analysis where during authorization process the Department must ensure that receiving water is not listed for the pollutant proposed to be discharged, and that WQS for that waterbody are attained.

7.0 Antidegradation

The Antidegradation Policy of the WQS (18 AAC 70.015) states that the existing water uses and the level of water quality necessary to protect existing uses shall be maintained and protected. This section analyzes and provides rationale for Department decisions in the permit issuance with respect to the Antidegradation Policy.

The approach used by the Department to implement the Antidegradation Policy is based on the requirements in 18 AAC 70.015 and the Department's July 2010 Interim Antidegradation Implementation Methods (Interim Methods). Using these requirements and policies, the Department determines whether a waterbody or portion of a waterbody is classified as Tier 1, Tier 2, or Tier 3. A higher numbered tier indicates a greater level of water quality protection. At this time, no Tier 3 waters have been designated in Alaska. Accordingly, this antidegradation analysis conservatively assumes that all discharges under the permit will be to Tier 2 waters, which is the next highest level of protection and is more rigorous than a Tier 1 analysis. As a result, any discharges that contribute to degradation to Tier 1 water bodies listed for a pollutant present in the proposed discharge are not eligible for coverage under the permit and would require IP APDES coverage.

The Department will allow a reduction in water quality, in its discretion, for a ZOD under 18 AAC 70.210, a mixing zone under 18 AAC 70.240, or another purpose as authorized in a Department permit. Before allowing a reduction in water quality, the Department must determine that five criteria are satisfied [18 AAC 70.015(a)(2)(A-E)]. The Department's findings are as follows.

7.1. 18 AAC 70.015 (a)(2)(A).

7.1.1. **Allowing lower water quality is necessary to accommodate important economic or social development in the area where the water is located.**

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

According to a report released by the 2013 Alaska Seafood Marketing Institute, seafood processing jobs in Alaska contributed a combined value of seafood exports and the retail value of Alaska seafood sold in the U.S. totaled of an estimated \$6.4 billion. The Alaska seafood industry directly employed 63,100 workers in Alaska in 2011 making it the state's largest private sector employer. Total direct and secondary economic output in the U.S. stemming from the Alaska seafood industry was estimated at \$15.7 billion. Seafood processing facilities provide a service to communities throughout the areas where they are located. Many subsistence fishers are also commercial fishers, and their commercial catch provides income adequate for subsistence fishing: gas, nets, boats, and other gear. Fishing and fish processing are the economic backbone of many villages, towns, and communities in Alaska. Many fishing vessels from outside Alaska fish within Alaska waters and sell their catch to processors located in Alaska. These local processors provide jobs for local workers. Seafood production in Alaska is also important to interstate commerce as seafood caught in Alaska is sold to buyers from the lower 48 states, as well as international commerce as it is sold to other countries.

Over half of the nation's commercially harvested fish come from Alaska, nearly four times the amount than the next largest seafood producing state, without increased or continued Alaska seafood processing prices for seafood will continue to increase.

Eight of Alaska's ports consistently rate in the top 30 U.S. ports in terms of volume or value of seafood delivered. The City of Unalaska – Port of Dutch Harbor has ranked as the top port in

the nation for 22 years in terms of seafood pounds harvested, landing 706 million pounds in 2011 and was second in the nation in terms of value at \$207 million.

Approximately 5.35 billion pounds of fish and shellfish worth over \$3.0 billion were harvested in Alaska waters in 2011, putting Alaska in first place for value of landings.

Bristol Bay's sockeye fishery typically supplies almost half of the world's wild sockeye salmon. Bristol Bay's 2010 sockeye salmon harvest of 28.6 million fish was the 11th largest since 1959. The ex-vessel value was worth \$165 million, greater than the total value of fish harvests in a combined 41 states.

In terms of value of landings nationwide in 2011, Alaska led with \$2.3 billion, distantly followed by Maine with \$527 million.

Fishing is the core economy for much of coastal Alaska where fish harvesting and processing often provide the only significant opportunities for private sector employment and where fisheries support sector businesses provide property and sales tax as the largest source of local government revenues. Seafood harvesting and processing jobs provide more than 50 percent of the private sector employment in coastal Alaska.

Issuance of the permit will allow existing seafood processing facilities to continue to operate, allow new seafood processing facilities to begin operations, and regulate seafood processing and seafood waste discharges to protect water quality. The localized lowering of water quality is temporary and limited due to natural attenuation and dispersion of seafood waste.

The Department concludes that the operation of the facilities and their discharges authorized by the permit accommodates important economic and social development for the State of Alaska. The Department finds that the requirements of this part of the antidegradation analysis have been met.

7.2. 18 AAC 70.015 (a)(2)(B).

7.2.1. Except as allowed under this subsection, reducing water quality will not violate the applicable criteria of 18 AAC 70.020, or 18 AAC 70.235, or the whole effluent toxicity limit in 18 AAC 70.030.

Pollutants of concern in seafood waste are primarily the biological wastes generated by processing raw seafood into a marketable form, chemicals used for cleaning processing equipment and fish containment structures to maintain sanitary conditions, and refrigerants that leak from refrigeration systems used to preserve seafood. Biological wastes are primarily seafood parts: heads, fins, bones, entrails, and shells. The chemicals used for cleaning are primarily disinfectants, which shall be used in accordance with EPA specifications. Refrigerants used are usually ammonia and Freon. Monitoring for ammonia is a new permit requirement to ensure WQS are being met.

The permit requires seafood processing operations to establish BMP Plans to minimize the production of waste and minimize the discharge of pollutants to waters of the U.S. The permit places limits and conditions on the discharge of pollutants to waters of the U.S. The permit limits and conditions are established after comparing and applying TBELs and WQBELs, and applying the more restrictive of these limits in the permit to ensure WQS are met.

Discharges from a seafood processing facility and seafood waste producing source shall meet all water quality criteria at the boundary of an authorized mixing zone. Within this mixing zone the water quality criteria may be exceeded for dissolved gas, non-petroleum O&G (polar), pH, temperature, color, turbidity, residues, FC bacteria and TRC. The discharge of seafood waste shall meet water quality criteria at the boundary of a project area ZOD. Within each project area

ZOD the water quality criteria and antidegradation requirements for residues may be exceeded. The discharge of wastewater from permitted facilities is not characteristically toxic. The Department will review monitoring information submitted by permittees during the permit cycle to ensure water quality criteria are being met.

The Department concludes that the reduction in water quality will not violate the WQS of 18 AAC 70.020, 18 AAC 70.235, or 18 AAC 70.030 outside of the authorized mixing zone or project area ZOD; therefore, the Department finds that the requirements of this part of the antidegradation analysis have been met.

7.3. 18 AAC 70.015(a)(2)(C).

7.3.1. The resulting water quality will be adequate to fully protect existing uses of the water.

The permit places limits and conditions on the discharge of pollutants to waters of the U.S under the jurisdiction of the State of Alaska. The limits and conditions are established after comparing TBELs and WQBELs and applying the more restrictive of these limits in the permit to ensure the existing uses of the waterbody as a whole are maintained and protected. The permit requires monitoring of the waste discharge, the receiving water, and the seafloor. The results of the monitoring, must be submitted to the Department. The Department will perform permit compliance inspections of permitted facilities to meet Department goals.

To ensure that seafood process facilities and seafood waste producing facilities provide for the protection or attainment of existing and designated uses in State waters, facilities shall implement BMP Plans. The permit requires permittees to establish BMPs to minimize the production of waste and to minimize the discharge of pollutants to waters of the U.S.

In compliance with 18 AAC 70.210, the water quality criteria of 18 AAC 70.020(b) and the antidegradation requirement of 18 AAC 70.015 may be exceeded within an authorized ZOD. However, the standards must be met at every point outside the boundary of the ZOD or mixing zone (18 AAC 70.210 and 18 AAC 70.240-270). The project area ZODs and mixing zones are sized to ensure that the existing uses of the waterbody as a whole are maintained and protected.

The Department concludes that the discharges authorized under the terms and conditions of the permit will be adequate to fully protect the existing uses of the water. The Department finds that the requirements of this part of the antidegradation analysis have been met.

7.4. 18 AAC 70.015(a)(2)(D).

7.4.1. The methods of pollution prevention, control, and treatment found by the Department to be most effective and reasonable will be applied to all wastes and other substances to be discharged.

The permit requires permittees of seafood processing facilities to follow prescribed BMPs minimize pollutant discharges as well as to comply with 40 CFR Part 408, Canned and Preserved Seafood Processing Point Source Category. The ELGs found in 40 CFR Part 408 requires Remote seafood processors to meet the following: “No pollutants may be discharged which exceed 1.27 cm (0.5 inch) in any dimension.” This limitation is included as a permit condition. As part of the ELG process, EPA prepared a report in support of 40 CFR Part 408, titled ‘Development Document for the Seafood Processing Industry Point Source Category.’ EPA concluded in the development document in Section IX (page 438), “There is substantial evidence that processors in isolated and remote areas of Alaska are at a comparative economic disadvantage to the processors located in population or processing centers regarding attempts to meet the effluent limitations (screening of waste). The isolated location of some Alaskan seafood processing plants eliminates almost all waste water treatment alternatives because of

undependable access to ocean, land, or commercial transportation disposal methods during extended severe sea or weather conditions, high fuel and energy costs, and the high costs of eliminating the engineering obstacles due to adverse climatic and geologic conditions.” (EPA 1975).

The ELGs found in 40 CFR Part 408 requires Non-Remote facilities seafood waste to meet the mass-based effluent limitations for TSS, O&G, BOD₅ and an allowable range for pH. Non-Remote facilities are those located in “processing centers.” The Non-Remote ELGs provide a non-exclusive list of locations that the Non-Remote ELGs apply, which through several iterations of regulatory suspensions, or court actions, currently only include processing areas in Kodiak; however, it is possible that additional Non-Remote designations will be made during the permit cycle. The 1998 AKG528000 permit incorporated these Non-Remote TBELs, as does the AKG521000 permit.

“Other Wastewaters” authorized by the 2001 AKG520000 permit generated in the seafood processing operations included: domestic graywater, seafood catch transfer water, live tank water, refrigerated seawater, cooking water, boiler water, cooling water, refrigeration condensate, freshwater pressure relief water, clean-up water, storm water and scrubber water. The AKG521000 permit continues authorizing these other wastewaters as long as they are discharged through an authorized outfall meeting permit depth requirements and the permittee performs monitoring to ensure WQS are met.

Domestic Wastewater covered in the AKG521000 permit allows for the discharge of onshore domestic and vessel’s sanitary wastewater from seafood facilities and their support buildings, support vessels, as was found in the 2001 AKG520000 permit. Sanitary wastewater was the term used for the discharge of shower, toilet, and sink, etc. wastewater in the AKG520000 permit, covering both onshore and vessel wastewater discharge. The AKG521000 permit uses sanitary wastewater discharge for vessel discharges, but uses the term “domestic wastewater” for onshore facility domestic wastewater discharge from the definition found in 18 AAC 72.990(23). The options for sanitary or domestic wastewater discharge are: 1) discharge of secondary treated domestic wastewater to waters of the U.S. meeting the standards in 40 CFR 133; or 2) sanitary waste discharges from a vessel treated prior to discharge by a Type II MSD sanitary waste system that meets the applicable Coast Guard pollution control standards in effect [33 CFR Part 159: “Marine sanitation devices”], or a vessel’s sanitary wastewater may be discharged to an onshore facility domestic wastewater handling system.

The methods of prevention, control, and treatment DEC finds to be most effective are the practices and requirements set out in the permit; the Department finds that the requirements of this part of the antidegradation analysis have been met.

7.5. 18 AAC 70.015(a)(2)(E).

7.5.1. All wastes and other substances discharged will be treated and controlled to achieve (i) for new and existing point sources, the highest statutory and regulatory requirements; and (ii) for nonpoint sources, all cost-effective and reasonable BMPs.

The applicable “highest statutory and regulatory treatment requirements” are defined in 18 AAC 70.990(30) (as amended June 26, 2003) and in the July 14, 2010, DEC guidance titled Interim Antidegradation Implementation Methods. Accordingly, there are three parts to the definition, which are:

Any federal technology-based ELG identified in 40 CFR subpart 125.3 and 40 CFR subpart 122.29, as amended through August 15, 1997, adopted by reference;

Minimum treatment standards in 18 AAC 72.040; and

Any treatment requirements imposed under another state law that is more stringent than a requirement of this chapter.

The first part of the definition includes all federal technology-based ELGs. The permit requires permittees of seafood processing facilities to comply with 40 CFR Part 408, Canned and Preserved Seafood Processing Point Source Category. The ELG sets standards of performance for existing and new sources.

The second part of the definition in 18 AAC 70.990(B) (2003) appears to be an error, as 18 AAC 72.040 describes discharges to sewers and not minimum treatment. The correct reference appears to be the minimum treatment standards found at 18 AAC 72.050, which refers to domestic wastewater discharges only. The authorized domestic wastewater discharge is in compliance with the minimum treatment standards found in 18 AAC 72.050 as reflected by the permit limits specifying secondary treatment standards for discharges to receiving waters.

The third part of the definition includes any more stringent treatment required by state law, including 18 AAC 70 and 18 AAC 72. The correct operation of equipment, visual monitoring, and implementing BMPs, as well as other permit monitoring requirements, will control the discharge and satisfy all applicable federal and state requirements.

The Department concludes that all wastes and other substances discharged will be treated and controlled to achieve the highest statutory and regulatory requirements and the Department therefore finds that the requirements of this part of the antidegradation analysis have been met.

8.0 Other Legal Requirements

8.1. Ocean Discharge Criteria Evaluation

The Ocean Discharge Criteria establish guidelines for permitting discharges into the territorial seas, the contiguous zone, and the ocean.

EPA regulations, 40 CFR 125.122(b) and adopted by reference at 18 AAC 83.010(C)(8), state that discharges found to be in compliance with CWA section 303 WQS will be presumed to also be in compliance with CWA section 403 ocean discharge criteria. As such, EPA itself equated ocean discharge criteria with WQS, a fact it emphasized when promulgating ocean discharge criteria rules in 1980: “the similarity between the objectives and requirements of [state WQS] and those of CWA section 403 warrants a presumption that discharges in compliance with these [standards] also satisfy CWA section 403.” (Ocean Discharge Criteria, 45 Fed. Reg. 65,943 (proposed Oct. 3, 1980) (codified at 40 CFR Part 125).) As with any permit, the CWA requires the general permit to contain any applicable TBELs, as well as limits and conditions necessary to meet applicable state WQS. State WQS apply in the territorial seas, defined in the CWA section 502(8) as extending three miles from the baseline (*Pacific Legal Foundation v. Costle*, 586 F.2d 650, 655-656 (9th Cir. 1978); *Natural Resources Defense Council, Inc. v. U.S. EPA*, 863 F.2d 1420, 1435 (9th Cir. 1988)). Unlike ocean discharge criteria, however, state WQS trigger additional requirements under the CWA, including QBELs requirements under section 302. Specifically, state WQS established pursuant to CWA section 303 are designed to preserve the quality of waters under State jurisdiction, including the territorial seas, and compliance with these standards should ensure protection of the uses for which the waters are designated with respect to pollutants for which standards have been established. The State of Alaska WQS protect all uses, and the permit requires authorized discharges to be in compliance with WQS. Therefore discharges in compliance with the permit shall be presumed not to cause unreasonable degradation of the marine environment, for any of the pollutants or conditions specified.

8.2. Endangered Species Act

The Endangered Species Act (ESA) requires federal agencies to consult with NOAA’s NMFS and the USFWS if their actions could beneficially or adversely affect any threatened or endangered species. As a state agency, DEC is not required to consult with these federal agencies regarding permitting actions, yet voluntarily engages these agencies during both permit development stage as well as actively solicits public comment from the Services. The permit has integrated specific monitoring and permit requirements (Permit Part 3.1 and 3.2) for those seafood processing facilities located near CHAs. The permit requires an applicant of a new source/facility or the permittee of an existing facility that proposes material changes to a facility located in or near Excluded Areas that includes endangered and threaten species CHAs (1.0-3.0 nm, as applicable) to contact the agency with management authority over an endangered species and provide any recommended water quality based recommendations from the agency to DEC. Permit Appendices J and K go into further details regarding lists of the endangered, threatened, proposed and candidate species in Alaska.

8.3. Marine Mammal Protection Act

Section 2 of the Marine Mammal Protection Act finds marine mammals to be resources of great international significance, aesthetic, recreational and economic value and should be protected, conserved, and encouraged to develop optimum populations. In particular, efforts should be made to protect the rookeries, mating grounds, and areas of similar significance for each species of marine mammal from the adverse effect of man’s actions. With the exception of subsistence use for

Alaska Natives, a moratorium has been placed on the taking (harass or kill) of marine mammals in Alaska. The permit establishes buffer zones around the rookeries and haul outs of Western Steller's sea lions and walrus.

The permit prohibits discharge of uncooked seafood waste during the months of November, December, January, February, and March in Orca Inlet where sea otters, which are protected under the Marine Mammal Protection Act, in which some studies suggest are attracted to the discharge and waste deposit as a food source.

8.4. Essential Fish Habitat

Essential fish habitat (EFH) includes the waters and substrate (sediments, etc.) necessary for fish from commercially-fished species to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) does require a state agency to determine if there is an adverse effect or consult with NMFS regarding EFH, however, DEC voluntarily engages with NMFS to secure a listing of EFH as part of the permitting process. During permitting under the AKG523000 Offshore seafood permit, NMFS and the ADF&G provided comment that anchoring and discharge of seafood waste should not occur onto "living substrates" such as submerged aquatic vegetation, kelp, or eelgrass. This recommendation has been directly incorporated into Permit Part 3.1. Additionally a pre-discharge survey has been required in Permit Part 2.2.1 and 2.3.1, respectively, and the protocol can be found in Permit Appendix I to assist the permittee and DEC in determining that the permit requirements are being met. Appendix I survey provides information to DEC regarding the existing benthos prior to the installation of the outfall, and/or prior to restarting up a preexisting outfall that hasn't operated in greater than 12 months. The Appendix I survey is due with submittal of NOI prior to installation of outfall. Additionally, the permit, fact sheet, and any other supporting documents will be provided to NMFS and the ADF&G during the public notice period. DEC will review any recommendations provided by NMFS and ADF&G and consider recommendations for incorporation in the permit if applicable.

EFH is identified in Alaska in fishery management plans developed by the North Pacific Fishery Management Council and approved by the Secretary of Commerce. EFH descriptions are comprised of text and maps, with textual descriptions being the ultimate determination of the limits of EFH. EFH is the general distribution of a species described by life stage. General distribution is a subset of a species population and is 95 percent of the population for a particular life stage. General distribution is used to describe EFH for all stock conditions because the available higher level data are not sufficiently comprehensive to account for changes in stock distribution over time. DEC has determined that seafood waste discharges could occur to the following EFH areas:

- Bering Sea and Aleutian Island (BSAI) Groundfish
- Gulf of Alaska (GOA) Groundfish
- Bering Sea and Aleutian Island King and Tanner (BSAI) Crab
- Alaska Scallops
- Alaska Stocks of Pacific Salmon

8.5. Permit Expiration

The permit will expire five years from the effective date of the permit, but may be administratively extended.

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Appendix A

EPA 2006 Existing and New Source Memorandum



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

MEMORANDUM

September 28, 2006

OFFICE OF
WATER

SUBJECT: New Source Dates for Direct and Indirect Dischargers

**FROM: Linda Boornazian, Director /s/
Water Permits Division, Office of Wastewater Management
Office of Water**

**Mary Smith /s/
Engineering & Analysis Division, Office of Science & Technology
Office of Water**

TO: Regional Water Division Directors

The Clean Water Act (CWA) requires the U.S. Environmental Protection Agency (EPA) to establish Federal standards of performance for new sources from which there are or may be discharges of pollutants for specified categories of sources. 33 U.S.C. § 1316 (Section 306). Section 306 requires a new source to meet a standard that reflects the greatest degree of effluent reduction that EPA determines can be achieved by application of the best available demonstrated technology, processes, operating methods, or other alternatives. 33 U.S.C. §1316. New facilities have the opportunity to install the best and most efficient production processes and wastewater treatment technologies. As a result, standards of performance for new sources should represent the most stringent controls attainable through the application of the best available control technology for all pollutants (i.e., conventional, non-conventional, and priority pollutants).

This memorandum summarizes EPA regulatory requirements for determining what sources are new sources. Specifically, this document provides a summary of relevant regulatory criteria for consideration in this determination as well as a listing of applicable new source dates used in making new source determinations.

The statutory provisions and EPA regulations contain legally binding requirements. This memorandum does not impose any new legally binding requirements on EPA, States or the regulated community. This memorandum does not confer legal rights or impose legal obligations upon any member of the public. In the event of a conflict between the discussion in this document and any statute or regulation, this document would not be controlling.

The general descriptions provided here may not apply to particular situations based upon the circumstances. Interested parties are free to raise questions and objections about the substance of this memorandum and the appropriateness of the application of this memorandum to a particular situation. EPA and other decision makers retain the discretion to adopt approaches on a case-by-case basis that differ from those described in this memorandum where appropriate.

Mention of trade names or commercial products does not constitute an endorsement or recommendation for their use.

1. What Are the Practical Effects of a New Source Determination?

After the effective date of any applicable new source standard of performance, the CWA prohibits the owner or operator of any new source from operating the source in violation of that standard. 33 U.S.C. §1316(e), §1317(d). The CWA requires EPA to establish new source performance standards (NSPS) in the case of “direct dischargers”, or sources that discharge directly to waters of the United States. 33 U.S.C. §1316. For “indirect dischargers”, or sources that introduce pollutants to POTWs, EPA must establish pretreatment standards for new sources (PSNS). The promulgation of NSPS should represent the most stringent controls attainable through the application of the best available demonstrated control technology for all pollutants. PSNS represent the most stringent controls attainable for pollutants that pass through, interfere with, or are otherwise incompatible with the operation of POTWs. 67 Fed. Reg. 64219 (October 17, 2002). PSNS are generally issued at the same time as NSPS. 33 U.S.C. §1317(c). Both PSNS and NSPS are referred to individually or collectively as “new source standards” in this memorandum.

New sources face more immediate compliance deadlines than existing sources. When EPA establishes new technology-based effluent limitations, existing direct dischargers must comply with such standards when their NPDES permits are issued, reissued, or modified. In practice, this means, in the case of a direct discharger whose permit is reissued just before EPA promulgates new limitations, that the discharger may not be required to comply for up to five years. In the case of existing indirect dischargers, EPA generally requires compliance with new pretreatment standards within three years of publication of the standard. In comparison, after the effective date of a new source standard, the CWA stipulates that it is unlawful for any owner or operator to operate such a source in violation of those standards. 33 U.S.C. 1316(e) and 1317(d). For both direct and indirect dischargers, the regulations specify that new sources “shall install and have in operating condition, and shall ‘start up’ all pollution control equipment” required to meet applicable standards prior to commencing discharge. The regulations also indicate that the owner or operator of a new source must meet all applicable standards within “the shortest feasible time (not to exceed 90 days).” 40 CFR 122.29(d)(4), 40 CFR 403.6(b).

If construction results in a new source, the discharger will be affected differently depending on what changes occurred at the site. The discharger's entire facility may be subject to new source standards, or, if the new source is a new installation of process equipment at an existing facility, part of the facility may be subject to existing source standards and other parts of the facility subject to new source standards.

Additionally, it should be noted that EPA-issued NPDES permits for new sources are deemed major Federal actions subject to the National Environmental Policy Act's (NEPA's) requirements, 33 U.S.C. §1371(c)(1). See also, 40 CFR Part 6, Subpart F at 6.600 et seq.

2. New Source Dates - Regulatory Background

Under the CWA, any source, the construction of which is commenced after promulgation of NSPS or publication of proposed PSNS for most indirect dischargers applicable to the source, is a new source. 33 U.S.C. §1316(a)(2). The term "source" means any building, structure, facility or installation from which there is or may be a discharge of pollutants. Because the statute broadly defines "construction" as "any placement, assembly, or installation of facilities or equipment (including contractual obligations to purchase such facilities or equipment) at the premises where such equipment will be used, including preparation work at such premises" (see Section 306(a) of the CWA), a number of activities may give rise to new source status. EPA's regulations provide specific criteria for determining when construction of a source is a new source. The new source criteria for direct dischargers, at 40 CFR 122.29(b), and for indirect dischargers, at 40 CFR 403.3(m), use essentially the same language. See Appendix A for the full regulatory text for both direct and indirect dischargers.

Perhaps the most fundamental step in determining whether a particular source is a new source is to determine whether its construction commenced after the applicable new source date. This step corresponds to the statutory definition of "new source" which includes within its scope "sources, the construction of which *commenced after the publication of proposed regulations*¹ *prescribing a standard of performance ... if such standard is thereafter promulgated.*" (italics added) 33 U.S.C. §1316(a)(2). This step can be broken down into three separate questions: (a) did *construction* occur; (b) did construction *commence*; and (c) did construction commence *after the new source date*? The applicable new source date is the critical frame of reference in this step of the new source determination. New source dates are generally either the dates of the proposal of an applicable new source standard in the case of indirect dischargers, or the dates of promulgation in the case of direct dischargers. Appendix B includes a comprehensive listing of the applicable new source dates for each effluent guideline category.

¹ In practice, the new source dates are different depending on whether the source is a direct or indirect discharger. See Section 2.c for further discussion.

2.a. Did *construction* occur?

As previously noted, the CWA defines new sources as those *constructed* after the new source date (see, also, discussion below in 2.c). EPA emphasizes that a source, whether it is a direct or indirect discharger, may be either something as large-scale as a facility or something as small as a piece of equipment installed as part of an existing operation. The CWA defines “source” to include “any building, structure, facility, or installation” and defines construction to include “any placement, assembly, or installation of facilities and equipment.” Thus, under the CWA, “construction” refers both to the construction of any building, structure, or facility, and to the installation of equipment. A “new source,” then, is the placement, assembly or installation of facilities or equipment which commenced after the new source date and which satisfies the other regulatory criteria discussed below. As a consequence, a wide range of activities may potentially result in a new source classification. Throughout the remaining portions of this memorandum document, the words “facilities or equipment” will be used interchangeably with the term “source”, and “building, structure, facility, or installation.”

In addition, it is important to recognize that the “source” of a discharge from an industrial operation is the facility generating the discharge, not the system treating it. Mahelona v. Hawaiian Electric Company, Inc., 418 F. Supp 1328 (Aug. 27, 1976), 49 Fed. Reg. 38044 (Sept. 26, 1984). More specifically, the source of the discharge is the production or wastewater generating processes of the operation. The treatment system used to reduce pollutants in the waste stream, on the other hand, is not the source of the discharge. This distinction is significant for making new source determinations, especially for new construction at existing sites. Applying this approach, EPA has previously determined that a newly constructed facility is a new source even if its discharge is conveyed through an existing waste treatment system. 49 Fed. Reg. 38044 (Sept. 26, 1984). Similarly, in EPA’s view, where an owner or operator makes changes only to its wastewater treatment systems, and no changes occur in the production or wastewater generating processes of the plant, the source should not be reclassified as a new source. Dischargers in the Centralized Waste Treatment (CWT) category are generally the exception to this principle. Unlike other industrial categories, because waste treatment *is* the industrial process for CWT facilities, new changes in treatment may very well trigger new source requirements.

EPA also points out that certain types of changes to the operation of a source are not considered construction for new source purposes, and therefore should not require that the source be reclassified as a new source. For instance, where the only change made is in the ownership or management of a source, without any associated changes to the internal processes of the operation, there is no new construction and, therefore, there is no new source.

2.b. Did construction *commence*?

The new source regulations explain that construction commences if an entity either undertakes or begins certain work as part of a continuous on-site construction program, or enters into contractual obligations to purchase facilities or equipment. 40 CFR 122.29(b)(4), 40 CFR 403.3(m)(3). EPA notes that the regulations recognize that construction commences not only after the traditional physical aspects of construction have begun, but also after the associated purchase orders or contracts have been agreed upon (see further discussion below). The initiation of either one of these activities represents triggering events for the new source analysis.

Physical Commencement of Construction

The new source regulations clarify what types of actual physical construction may signal the commencement of construction. One type of activity is the “placement, assembly, or installation of facilities or equipment.” 40 CFR 122.29(b)(4)(i)(A), 40 CFR 403.3(m)(3)(i)(A). The other type of activity is “significant site preparation work, including clearing, excavation, or removal of existing buildings, structures, or facilities” related to the placement, assembly, or installation of facilities or equipment. The scope of the activities covered highlights the fact that the regulations capture not only the construction of a new or renovated building, structure, or facility, but also smaller scale activities, such as the installation of equipment (e.g., a new process tank).

It is also noteworthy that the new source regulations *do not* specify *new* facilities or *new* equipment being placed, assembled, or installed. Therefore, construction may commence if an entity reassembles old equipment or relocates it in a new location. For example, in certain circumstances, EPA has concluded that construction of a new source would commence when moving existing equipment into an existing building that did not previously have an industrial discharge to the sewer. 53 FR 40562 at 40602 (October 17, 1988).

Commencement of Construction by Purchase Contract

As noted previously, construction can sometimes commence at a point prior to the initiation of any placement, assembly, or installation of facilities or equipment, or of any related site preparation work. The new source regulations provide that construction may begin when the owner or operator has entered into a binding contractual obligation to purchase facilities or equipment intended to be used for operational purposes within a reasonable period of time. 40 CFR 122.29(b)(4)(ii), 40 CFR 403.3(m)(3)(ii). The initiation of a binding purchase contract is included as a triggering event because it may indicate the owner’s or operator’s intent to construct a source, represent a critical time in the commitment of resources towards construction, and, therefore, signal an opportunity to install more effective treatment or processes to meet a higher standard of performance.

There are some notable exceptions to this contract formation provision. The following types of contractual obligations do not cause the commencement of construction for new source purposes: options to purchase; contracts which can be terminated or modified without substantial loss; and contracts for feasibility, engineering, and design studies. 40 CFR 122.29(b)(4)(ii), 40 CFR 403.3(m)(3)(ii).

EPA emphasizes that the important moment in time for the discharger is the date construction commenced, and not the date on which the discharge of pollutants first occurs. (Note: The discharger is generally required to comply with the standards upon commencement of discharge.) This distinction is important, since the date construction commences occurs at a point in time prior to the date the discharge begins, and is consistent with the purpose of the new source requirements to incorporate new treatment technologies when the owner or operator has the opportunity to do so.

2.c. Did construction commence *after the new source date*?

To be considered a new source, the construction must have commenced after the applicable new source date. The new source dates are critical to the new source analysis. If construction commenced after the new source date, there is a possibility that the source could be considered a new source if it meets the regulatory criteria on 40 CFR 122.29(b) or 403.3(m)(1). However, if the construction begins before the new source date, the source will generally be considered an existing source, not subject to new source standards, unless there was other construction after the new source date which constitutes a “total replacement” or is “substantially independent from the existing source” (see 40 CFR 122.29(b)(ii) and (iii) and 40 CFR 403.3(m)(1)(ii) and (iii)). Similarly, if construction commenced before the new source date, and ends after the new source date, the source would generally be considered an existing source, unless there was other construction after the new source date which constitutes a total replacement or is substantially independent from the existing source.

New source dates are either the dates of proposal of an applicable new source standard in the case of indirect dischargers or the dates of promulgation in the case of direct dischargers. The statute provides that the date for purposes of determining whether a source is a new source is the date of publication of a proposed standard for all dischargers, as long as the standard is thereafter promulgated in accordance with section 306 (33 U.S.C. §1316(a)(2)). These dates may differ from the proposal date, however, depending on whether the source is a direct or indirect discharger. The new source date for direct dischargers is the date on which an applicable new source standard is promulgated.² EPA notes that the regulations specify the new source date is the date of *proposal* only if the standard is promulgated within 120 days. Because

² EPA regulations promulgated in 1985 provide that, for the purpose of judicial review, the time and date of EPA action in promulgation of a Federal Register notice is the date two weeks after the notice appears in the Federal Register (see 40 CFR 23.2). For that reason, EPA has added two weeks to the publication date for new source dates for direct discharge categories which have been promulgated since 1985.

EPA has rarely finalized these standards in fewer than 120 days, this provision has not often come into play. In comparison, EPA regulations provide that the new source date for indirect dischargers is the date on which the pretreatment standard for new sources is *proposed*. 40 CFR 403.3(m)(1). In addition, EPA has varied from this general rule of thumb in some instances when establishing new source dates for either direct or indirect dischargers for certain new or revised effluent guidelines. Refer to Appendix B.

If you have any questions, please feel free to contact Greg Schaner at (202) 564-0721 or Jan Pickrel at (202) 564-7904.

cc: Water Division Directors
Regions 1 - 10

APPENDIX A New Source Regulatory Text

APPENDIX B New Source Dates by Effluent Guideline Category

Appendix A New Source Regulatory Text

1. Regulatory Definitions Applicable to Direct Dischargers

40 CFR 122.2

“New source means 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.”

40 CFR 122.29

“(a) *Definitions.* (1) *New source* and *new discharger* are defined in §122.2. [See Note 2.]

(2) *Source* means any building, structure, facility, or installation from which there is or may be a discharge of pollutants.

(3) *Existing source* means any source which is not a new source or a new discharger.

(4) *Site* is defined in §122.2;

(5) *Facilities or equipment* means buildings, structures, process or production equipment or machinery which form a permanent part of the new source and which will be used in its operation, if these facilities or equipment are of such value as to represent a substantial commitment to construct. It excludes facilities or equipment used in connection with feasibility, engineering, and design studies regarding the source or water pollution treatment for the source.

(b) *Criteria for new source determination.* (1) Except as otherwise provided in an applicable new source performance standard, a source is a “new source” if it meets the definition of “new source” in §122.2, and

(i) It is constructed at a site at which no other source is located; or

(ii) It totally replaces the process or production equipment that causes the discharge of pollutants at an existing source; or

(iii) Its processes are substantially independent of an existing source at the same site. In determining whether these processes are substantially independent, the Director shall consider

such factors as the extent to which the new facility is integrated with the existing plant; and the extent to which the new facility is engaged in the same general type of activity as the existing source.

(2) A source meeting the requirements of paragraphs (b)(1) (i), (ii), or (iii) of this section is a new source only if a new source performance standard is independently applicable to it. If there is no such independently applicable standard, the source is a new discharger. See §122.2.

(3) Construction on a site at which an existing source is located results in a modification subject to §122.62 rather than a new source (or a new discharger) if the construction does not create a new building, structure, facility, or installation meeting the criteria of paragraph (b)(1) (ii) or (iii) of this section but otherwise alters, replaces, or adds to existing process or production equipment.

(4) Construction of a new source as defined under §122.2 has commenced if the owner or operator has:

(i) Begun, or caused to begin as part of a continuous on-site construction program:

(A) Any placement, assembly, or installation of facilities or equipment; or

(B) Significant site preparation work including clearing, excavation or removal of existing buildings, structures, or facilities which is necessary for the placement, assembly, or installation of new source facilities or equipment; or

(ii) Entered into a binding contractual obligation for the purchase of facilities or equipment which are intended to be used in its operation with a reasonable time. Options to purchase or contracts which can be terminated or modified without substantial loss, and contracts for feasibility engineering, and design studies do not constitute a contractual obligation under the paragraph.

(c) *Requirement for an environmental impact statement.* (1) The issuance of an NPDES permit to 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 §122.21(l) (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.

(2) An EIS prepared under this paragraph shall include a recommendation either to issue or deny the permit.

(i) If the recommendation is to deny the permit, the final EIS shall contain the reasons for the recommendation and list those measures, if any, which the applicant could take to cause the recommendation to be changed;

(ii) If the recommendation is to issue the permit, the final EIS shall recommend the actions, if any, which the permittee should take to prevent or minimize any adverse environmental impacts;

(3) The Regional Administrator, to the extent allowed by law, shall issue, condition (other than imposing effluent limitations), or deny the new source NPDES permit following a complete evaluation of any significant beneficial and adverse impacts of the proposed action and a review of the recommendations contained in the EIS or finding of no significant impact.

(d) *Effect of compliance with new source performance standards.* (The provisions of this paragraph do not apply to existing sources which modify their pollution control facilities or construct new pollution control facilities and achieve performance standards, but which are neither new sources or new dischargers or otherwise do not meet the requirements of this paragraph.)

(1) Except as provided in paragraph (d)(2) of this section, any new discharger, the construction of which commenced after October 18, 1972, or new source which meets the applicable promulgated new source performance standards before the commencement of discharge, may not be subject to any more stringent new source performance standards or to any more stringent technology-based standards under section 301(b)(2) of CWA for the soonest ending of the following periods:

(i) Ten years from the date that construction is completed;

(ii) Ten years from the date the source begins to discharge process or other nonconstruction related wastewater; or

(iii) The period of depreciation or amortization of the facility for the purposes of section 167 or 169 (or both) of the Internal Revenue Code of 1954.

(2) The protection from more stringent standards of performance afforded by paragraph (d)(1) of this section does not apply to:

(i) Additional or more stringent permit conditions which are not technology based; for example, conditions based on water quality standards, or toxic effluent standards or prohibitions under section 307(a) of CWA; or

(ii) Additional permit conditions in accordance with §125.3 controlling toxic pollutants or hazardous substances which are not controlled by new source performance standards. This includes permit conditions controlling pollutants other than those identified as toxic pollutants or hazardous substances when control of these pollutants has been specifically identified as the method to control the toxic pollutants or hazardous substances.

(3) When an NPDES permit issued to a source with a “protection period” under paragraph (d)(1) of this section will expire on or after the expiration of the protection period, that permit shall require the owner or operator of the source to comply with the requirements of section 301 and any other then applicable requirements of CWA immediately upon the expiration of the protection period. No additional period for achieving compliance with these requirements may be allowed except when necessary to achieve compliance with requirements promulgated less than 3 years before the expiration of the protection period.

(4) The owner or operator of a new source, a new discharger which commenced discharge after August 13, 1979, or a recommencing discharger shall install and have in operating condition, and shall “start-up” all pollution control equipment required to meet the conditions of its permits before beginning to discharge. Within the shortest feasible time (not to exceed 90 days), the owner or operator must meet all permit conditions. The requirements of this paragraph do not apply if the owner or operator is issued a permit containing a compliance schedule under §122.47(a)(2).

(5) After the effective date of new source performance standards, it shall be unlawful for any owner or operator of any new source to operate the source in violation of those standards applicable to the source.”

2. Regulatory Definitions Applicable to Indirect Dischargers

40 CFR 403.3(m)

(1) The term New Source means any building, structure, facility or installation from which there is or may be a Discharge of pollutants, the construction of which commenced after the publication of proposed Pretreatment Standards under section 307(c) of the Act which will be applicable to such source if such Standards are thereafter promulgated in accordance with that section, provided that:

(i) The building, structure, facility or installation is constructed at a site at which no other source is located; or

(ii) The building, structure, facility or installation totally replaces the process or production equipment that causes the discharge of pollutants at an existing source; or

(iii) The production or wastewater generating processes of the building, structure, facility or installation are substantially independent of an existing source at the same site. In determining whether these are substantially independent, factors such as the extent to which the new facility is integrated with the existing plant, and the extent to which the new facility is engaged in the same general type of activity as the existing source should be considered.

(2) Construction on a site at which an existing source is located results in a modification rather than a New Source if the construction does not create a new building, structure, facility or installation meeting the criteria of paragraphs (m)(1)(ii) or (m)(1)(iii) of this section, but otherwise alters, replaces, or adds to existing process or production equipment.

(3) Construction of a new source as defined under this paragraph has commenced if the owner or operator has:

(i) Begun, or caused to begin as part of a continuous onsite construction program:

(A) Any placement, assembly, or installation of facilities or equipment; or

(B) Significant site preparation work including clearing, excavation, or removal of existing buildings, structures, or facilities which is necessary for the placement, assembly, or installation of new source facilities or equipment; or

(ii) Entered into a binding contractual obligation for the purchase of facilities or equipment which are intended to be used in its operation within a reasonable time. Options to purchase or contracts which can be terminated or modified without substantial loss, and contracts for feasibility, engineering, and design studies do not constitute a contractual obligation under this paragraph.” [40 CFR § 403.3(m)]

Appendix B New Source Dates by Effluent Guideline Category

EPA has promulgated regulations under the Clean Water Act (CWA) that establish effluent limitations guidelines for existing sources, standards of performance for new sources and pretreatment standards for new and existing sources. EPA has codified these regulations at 40 CFR, Subchapter N. EPA has published effluent guidelines for 56 major industrial categories (over 450 subcategories) since the passage of the 1972 CWA. These regulations limit the discharge of pollutants to surface waters by point source dischargers (“direct dischargers”). These regulations also limit the introduction of pollutants into publicly owned treatment works (POTWs) by industrial users (“indirect dischargers”). The CWA and EPA regulations define when a source is a “new source.” A discharger is defined as a “new source” in CWA sections 306(a)(2) and 307(c) and 40 CFR 122.2 (for direct dischargers) and 403.3(m) (for indirect dischargers). In general, a facility is a “new source” if it commences construction after either the date of promulgation of pretreatment standards for new sources applicable to an indirect discharger or the date of publication of a proposed pretreatment standards for new sources applicable to an indirect discharger.

The table below lists new source dates for direct or indirect dischargers based on regulatory definitions. In some cases, effluent guidelines in 40 CFR Chapter I, Subchapter N, specify New Source Dates, and these dates are reported in the table below. If dates are not specified in the rule language, EPA relied on the regulatory definitions of “New Source,” which are cited above. Pretreatment regulations state that the New Source date for indirect dischargers is the date on which EPA publishes the proposed rule, as long as the proposed standard is later finalized (40 CFR 403.3(m)). For direct dischargers, 40 CFR 122.2 states that the New Source date is the proposal date if the standard is finalized within 120 days after its proposal; otherwise, the New Source date is the “promulgation date.” According to February 1985 EPA regulations, the “promulgation date” is the date on which the rule is promulgated for the purposes of judicial review, which is two weeks after the rule appears in the Federal Register (see 40 CFR 23.2). Prior to February 1985, the date on which the final rule was published was considered the promulgation date.

This document is not a regulation itself, nor does it substitute for any requirements under the CWA or EPA’s regulations. Thus, it does not impose legally binding requirements on EPA, states or the regulated community. While EPA has made every effort to ensure the accuracy of this table, dischargers’ obligations are determined, in the case of direct dischargers, by the terms of their NPDES permit and the CWA and EPA’s regulations, and, in the case of indirect dischargers, by permits or equivalent control mechanisms issued to POTW industrial users and the CWA and EPA regulations. Nothing in this document changes any statutory or regulatory requirement. In the event of a conflict between the discussion in this memorandum and any permit or regulation, this document would not be controlling.

40 CFR Part	Category	New Source Date for Direct Dischargers	New Source Date for Indirect Dischargers
467	Aluminum Forming	Subparts A-F: 10/24/83	Subparts A-F: 11/22/82
427	Asbestos Manufacturing	Subparts A-K: 10/30/73 ¹	Not Applicable
461	Battery Manufacturing	Subparts A-G: 3/9/84	Subparts A-G 11/10/82
407	Canned and Preserved Fruits and Vegetables Processing	Subparts A-H: 3/21/74	Not Applicable

¹ The rule was finalized within 120 days of its October 30, 1973, proposal (38 FR 22606).

40 CFR Part	Category	New Source Date for Direct Dischargers	New Source Date for Indirect Dischargers
408	Canned and Preserved Seafood Processing	Subparts A-J, N: 6/26/74 Subparts O-AG: 12/1/75	Not Applicable
458	Carbon Black Manufacturing	Subparts A-D: 1/9/78	Subparts A-D: 5/18/76
411	Cement Manufacturing	Subparts A-C: 2/20/74	Not Applicable
437	Centralized Waste Treatment (CWT)	Subparts A-D: 1/5/01	Subparts A-D: 1/13/99
434	Coal Mining	Subparts B-E, H 5/4/84 ² Subpart G 2/22/02 ³	Not Applicable
465	Coil Coating	Subparts A-C: 12/1/82 Subpart D: 11/17/83	Subparts A-C: 1/12/81 Subpart D: 2/10/83
412	Concentrated Animal Feeding Operations (CAFO)	Subparts A-B: 2/14/74 Subparts C-D: 4/14/03 ⁴	Subpart B: 9/7/73
451	Concentrated Aquatic Animal Production	Subparts A-B: 9/7/04	Not Applicable
468	Copper Forming	Subpart A: 8/15/83	Subpart A: 11/12/82
405	Dairy Products Processing	Subparts A-L: 5/28/74	Not Applicable
469	Electrical and Electronic Components	Subparts A-B: 4/8/83 Subparts C-D: 12/14/83	Subparts A-B: 8/24/82 Subparts C-D: 3/9/83
413	Electroplating	Not Applicable ⁵	See Metal Finishing ⁶
457	Explosives Manufacturing	Not Applicable	Not Applicable
424	Ferroalloy Manufacturing	Subparts A-C: 2/22/74	Not Applicable
418	Fertilizer Manufacturing	Subparts A-D: 4/8/74 Subpart E: 1/16/76 Subparts F-G: 10/7/74 ⁷	Subparts A-D: ⁸ 12/7/73 Subpart E: 1/16/76 Subparts F-G: 10/7/74

² The New Source date is specified in 40 CFR 434.11(j)(1).

³ The New Source date is specified in 40 CFR 434.11(j)(1).

⁴ New Source date derived from the 10-year protection period (see 40 CFR 412.35(d) and 412.43(d)).

⁵ Direct dischargers formerly regulated under Part 413 are now regulated under Part 433 (metal finishing).

⁶ Pretreatment categorical standards in Part 413 currently apply only to job shop electroplaters and independent printed circuit board manufacturers that were in existence before the New Source date for Part 433 (metal finishing). Job shop electroplaters and independent printed circuit board manufacturers that are "New Sources" must comply with PSNS in Part 433. Except for these "existing" job shop electroplaters and independent printed circuit board manufacturers, all other operations formerly subject to Part 413 are now subject to Part 433.

40 CFR Part	Category	New Source Date for Direct Dischargers	New Source Date for Indirect Dischargers
426	Glass Manufacturing	Subpart A: 1/22/74 Subparts B-D: 2/14/74 Subparts E-G: 2/14/74 Subparts H, J-M: 1/16/75	Subparts H, K-M: 8/21/74
406	Grain Mills	Subparts A-J: 12/4/73 ⁹	Subparts A: 12/4/73
454	Gum and Wood Chemicals	Not Applicable	Not Applicable
460	Hospitals	Not Applicable	Not Applicable
447	Ink Formulating	Subpart A: 7/28/75	Subpart A: 2/26/75
415	Inorganic Chemicals	Subparts B-F, H, K-N, P, Q, T, V, W, AJ [CuSO ₄ manufacturing], AH, AP, AU [NiSO ₄ manufacturing], BB: 6/29/82 Subparts AJ [except CuSO ₄ manufacturing], AU [except NiSO ₄ manufacturing], BL - BO: 8/22/84	Subparts B - F, H, K-N, P, Q, V, AH, AJ [CuSO ₄ manufacturing], AP, AU [NiSO ₄ manufacturing], BB: 7/24/80 Subparts T, AA, AC, AE, AI, AJ [except CuSO ₄ manufacturing], AL, AN, AQ, AR, AU [except NiSO ₄ manufacturing], AX, BC, BH, BK-BO: 10/25/83
420	Iron and Steel Manufacturing	Subparts A & B: 11/18/02 ¹⁰ Subpart C: 5/27/82 Subpart D, Semi-Wet: 10/31/02 Subpart D, Other: 5/27/82 Subparts E-L: 5/27/82 Subpart M: 10/31/02	Subparts A & B: 11/18/02 ¹¹ Subpart C: 1/7/81 Subpart D, Semi-Wet: 12/27/00 Subpart D, Other: 1/7/81 Subparts E-F,H-J,L: 1/7/81 Subpart M: 12/27/00
445	Landfills	Subparts A-B: 2/2/00	Not Applicable

⁷ The rule was finalized within 120 days of its October 7, 1974, proposal.

⁸ Section 41 8.46 (the PSNS under Subpart D) was suspended until further notice, at 40 FR 26275, June 23, 1975, effective July 20, 1975.

⁹ The rule was finalized within 120 days of its December 4, 1973, proposal (38 FR 33438).

¹⁰ Date specified in 40 CFR 420.14(a)(2), 420.16(a)(2), 420.24(b), and 420.26(a)(2).

¹¹ See previous footnote.

40 CFR Part	Category	New Source Date for Direct Dischargers	New Source Date for Indirect Dischargers
425	Leather Tanning and Finishing	Subparts A, B, D-I: 11/23/82 Subpart C: 4/4/88	Subpart A, B, D-I: 7/2/79 Subpart C: 1/21/87
432	Meat and Poultry Products	Subparts A-D: Small Facilities: 2/28/74 ¹² Others: 9/22/04 Subparts E-I: Small Facilities: 1/3/75 ¹³ Others: 9/22/04 Subpart J-L: 9/22/04	Not Applicable
433	Metal Finishing	Subpart A: 7/15/83	Subpart A: 8/31/82
464	Metal Molding and Casting	Subparts A-D: 11/13/85	Subparts A-D: 11/15/82
438	Metal Products and Machinery	Subpart A: 6/12/03 ¹⁴	Not Applicable
436	Mineral Mining and Processing	Not Applicable	Not Applicable
471	Nonferrous Metals Forming and Metal Powders	Subparts A-J: 9/6/85	Subparts A-J: 3/5/84
421	Nonferrous Metal Manufacturing	Subparts B-I (except molybdenum acid plants), K-M: 3/8/84 Subparts N-AE, molybdenum acid plants in subpart I: 10/4/85 Subpart J: 2/4/88	Subparts B-I (except molybdenum acid plants), K-M: 2/17/83 Subparts N-AE, molybdenum acid plants in subpart I: 6/27/84 Subpart J: 1/22/87
435	Oil and Gas Extraction ¹⁵	Subparts C (Onshore), D (Coastal), and E (Agriculture & Wildlife): 3/4/93 Subparts A and D (Synthetic-Based Drilling Fluids): 2/5/01	Subpart D: 2/17/95

¹² The 2004 Amendment did not revise NSPSs for small meat products facilities in Subparts A-I, so the 2004 New Source date does not affect these facilities.

¹³ See previous footnote.

¹⁴ Date specified in 40 CFR 438.15.

¹⁵ See promulgated standards at 40 CFR 58 FR 12505 and 66 FR 6850 for complete information on the applicability of New Source standards.

40 CFR Part	Category	New Source Date for Direct Dischargers	New Source Date for Indirect Dischargers
440	Ore Mining and Dressing	Subparts A-F, J, M 12/3/82	Not Applicable
414	Organic Chemicals, Plastics, and Synthetic Fibers	Subparts B-H: 11/19/87	Subparts B-H: 3/21/83
446	Paint Formulating	Subpart A: 7/28/75	Subpart A: 2/26/75
443	Paving and Roofing Materials (Tars and Asphalt)	Subparts A-D: 7/28/75	Subparts A-D: 1/10/75
455	Pesticide Chemicals	Subparts A-B: 10/12/93 Subparts C, E: 11/20/96	Subparts A-B: 4/10/92 Subparts C, E: 4/14/94
419	Petroleum Refining	Subparts A-E: 10/18/82	Subparts A-E: 12/21/79
439	Pharmaceutical Manufacturing	Subparts A-D: 11/20/98 ¹⁶	Subparts A-D: 5/2/95
422	Phosphate Manufacturing	Subparts D-F: 6/23/76	Not Applicable
459	Photographic	Not Applicable	Not Applicable
463	Plastics Molding and Forming	Subparts A-C: 12/17/84	Not Applicable
466	Porcelain Enameling	Subparts A-D: 11/24/82	Subparts A-D: 1/27/81
430	Pulp, Paper, and Paperboard	Subparts B, E: 6/15/98 ¹⁷ Subparts A, C, D, F, G, I-L: 11/18/82	Subparts B, E: 12/17/93 Subparts A, C, D, F, G, I-L: 1/6/81
428	Rubber Manufacturing	Subparts A-D: 2/21/74 Subparts E-J: 1/10/75	Subparts E-K: 8/23/74
417	Soap and Detergents Manufacturing	Subparts A-S: 4/12/74	Subpart Q: 12/26/73 Subparts O,P,R: 2/20/75
423	Steam Electric Power Generation	11/19/82 ¹⁸	10/14/80
409	Sugar Processing	Subpart A: 1/31/74 Subparts B, C: 12/7/73 ¹⁹	Not Applicable

¹⁶ New Source date derived from the 10-year protection period (see 40 CFR 439.15(c), 439.35(c), and 439.45(b)).

¹⁷ Date specified in 40 CFR 430.25(b) and 430.55(b). Refer to these sections for additional information regarding the applicability of NSPSs.

¹⁸ NSPS promulgated were not removed via the 1982 regulation; therefore wastewaters generated by Part 423-applicable sources that were New Sources under the 1974 regulations are subject to the 1974 NSPS. The New Source date for the 1974 regulations was 10/8/1974.

¹⁹ The rule was finalized within 120 days of its December 7, 1973, proposal (38 FR 33846).

40 CFR Part	Category	New Source Date for Direct Dischargers		New Source Date for Indirect Dischargers
410	Textile Mills	Subparts A-I:	9/2/82	Not Applicable
429	Timber Products Processing	Subparts A-P:	1/26/81	Subparts F-H: 10/31/79
442	Transportation Equipment Cleaning	Subparts A-D:	8/28/00	Subparts A-C: 6/25/98
444	Waste Combustors	Subpart A:	2/10/00	Subpart A: 2/6/98

Appendix B

Mixing Zone Authorization Checklist

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

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

Criteria	Description	Resources	Regulation	Mixing Zone Approved Y/N
Size	<p>Is the mixing zone as small as practicable?</p> <ul style="list-style-type: none"> - Applicant collects and submits water quality ambient data for the discharge and receiving water body (e.g. flow and flushing rates) - Permit writer performs modeling exercise and documents analysis in Fact Sheet Appendix C – Table C-2 Reasonable Potential Determination at in this <p>Part 5.2.3 Mixing Zone Analysis - describe what was done to reduce size.</p>	<p>Yes, See Technical Support Document for Water Quality Based Toxics Control</p> <ul style="list-style-type: none"> • Fact Sheet, Appendix C <p>Fact Sheet 4.7</p> <ul style="list-style-type: none"> • EPA Permit Writers' Manual 	<p>18 AAC 70.240(a)(2)</p> <p>18 AAC 70.245(b)(1) - (b)(7)</p> <p>18 AAC 70.255(e) (3)</p> <p>18 AAC 70.255(d)</p>	Y
Technology	<p>Were the most effective technological and economical methods used to disperse, treat, remove, and reduce pollutants?</p>	<p>Yes, See Fact Sheet 4.7.5.2</p>	<p>18 AAC 70.240(a)(3)</p>	Y

	If yes , describe methods used in Fact Sheet at Part 4.7 Mixing Zone Analysis.			
Low Flow Rate Design	For river, streams, and other flowing fresh waters. - Determine low flow rate calculations or documentation for the applicable parameters. Justify in Fact Sheet	Fact Sheet Part 4.7.3, Permit Part 1.6, Form 2M if other than standard selected	18 AAC 70.255(f)	Y
Existing use	Does the mixing zone...			
	(1) partially or completely eliminate an existing use of the water body outside the mixing zone? If yes, mixing zone prohibited.	No, Fact Sheet Part 4.7.5.3	18 AAC 70.245(a)(1)	Y
	(2) impair overall biological integrity of the water body? If yes, mixing zone prohibited.	No, Fact Sheet Part 4.7.5.7	18 AAC 70.245(a)(2)	Y
	(3) provide for adequate flushing of the water body to ensure full protection of uses of the water body outside the proposed mixing zone? If no, then mixing zone prohibited.	Yes, Fact Sheet Part 4.7.4 and Permit 1.6	18 AAC 70.250(a)(3)	Y
	(4) cause an environmental effect or damage to the ecosystem that the Department considers to be so adverse that a mixing zone is not appropriate?	No, Fact Sheet Part 4.7.5.5, 4.7.5.7	18 AAC 70.250(a)(4)	Y

	If yes, then mixing zone prohibited.			
Human consumption	Does the mixing zone...			
	(1) produce objectionable color, taste, or odor in aquatic resources harvested for human consumption? If yes, mixing zone may be reduced in size or prohibited.	No, Fact Sheet Part 4.2, Permit Part 2.7.1	18 AAC 70.250(b)(2)	Y
	(2) preclude or limit established processing activities of commercial, sport, personal use, or subsistence shellfish harvesting? If yes, mixing zone may be reduced in size or prohibited.	No, Fact Sheet Part 4.7.5.3	18 AAC 70.250(b)(3)	Y
Spawning Areas	Does the mixing zone...			
	(1) discharge in a spawning area for anadromous fish or Arctic grayling, northern pike, rainbow trout, lake trout, brook trout, cutthroat trout, whitefish, sheefish, Arctic char (Dolly Varden), burbot, and landlocked coho, king, and sockeye salmon? If yes, mixing zone prohibited.	No, Fact Sheet Part 4.7.5.5	18 AAC 70.255(h)	Y
Human Health	Does the mixing zone...			

	(1) contain bioaccumulating, bioconcentrating, or persistent chemical above natural or significantly adverse levels? If yes, mixing zone prohibited.	No, Fact Sheet Part 4.7.5.4, Permit Part 3.2 Special Conditions	18 AAC 70.250(a)(1)	Y
	(2) contain chemicals expected to cause carcinogenic, mutagenic, tetragenic, or otherwise harmful effects to human health? If yes, mixing zone prohibited.	No, Fact Sheet Part 4.7.5.4		Y
	(3) Create a public health hazard through encroachment on water supply or through contact recreation? If yes, mixing zone prohibited.	No, Fact Sheet Parts 4.7.5.4	18 AAC 70.250(a)(1)(C)	Y
	(4) meet human health and aquatic life quality criteria at the boundary of the mixing zone? If no, mixing zone prohibited.	Yes, Fact Sheet Parts 4.7.5, 4.8.1.2, 4.8.5.2	18 AAC 70.255 (b),(c)	Y
	(5) occur in a location where the Department determines that a public health hazard reasonably could be expected? If yes, mixing zone prohibited.	No, Fact Sheet Part 3.3, Permit Part 1.4	18 AAC 70.255(e)(3)(B)	Y
Aquatic Life	Does the mixing zone...			
	(1) create a significant adverse effect to anadromous, resident, or shellfish spawning or rearing? If yes, mixing zone prohibited.	No, Fact Sheet Part 4.7.5.5	18 AAC 70.250(a)(2)(A-C)	Y

(2) form a barrier to migratory species? If yes, mixing zone prohibited.	No, Fact Sheet Parts 4.7.5.5, 8.2, 8.4		Y
(3) fail to provide a zone of passage? If yes, mixing zone prohibited.	No, Fact Sheet Part 4.7.5.5, 8.2, 8.4		Y
(4) result in undesirable or nuisance aquatic life? If yes, mixing zone prohibited.	No, Fact Sheet Part 4.7.5.5, 8.2, 8.4	18 AAC 70.250(b)(1)	Y
(5) result in permanent or irreparable displacement of indigenous organisms? If yes, mixing zone prohibited.	No, Fact Sheet Part 4.7.5.5, 8.2, 8.4	18 AAC 70.255(g)(1)	Y
(6) result in a reduction in fish or shellfish population levels? If yes, mixing zone prohibited.	No, Fact Sheet Part 4.7.5.5, 8.2, 8.4	18 AAC 70.255(g)(2)	Y
(7) prevent lethality to passing organisms by reducing the size of the acute zone? If no, mixing zone prohibited.	Yes, Fact Sheet 4.7.5.5, 8.2, 8.4	18 AAC 70.255(b)(1)	Y
(8) cause a toxic effect in the water column, sediments, or biota outside the boundaries of the mixing zone? If yes, mixing zone prohibited.	No, Fact Sheet Parts, 4.7.5.5, 8.2, 8.4, Permit 1.4.1	18 AAC 70.255(b)(2)	Y

Endangered Species	Are there threatened or endangered species (T/E sp) at the location of the mixing zone? If yes, are there likely to be adverse effects to T/E spp based on comments received from USFWS or NOAA. If yes, will conservation measures be included in the permit to avoid adverse effects? If yes, explain conservation measures in Fact Sheet. If no, mixing zone prohibited.	Applicant or permit writer requests list of T/E species from USFWS prior to drafting permit conditions. Response received from USFWS dated Aug. 16, 2012 and October 2015.	Program Description, 6.4.1 #5 18 AAC 70.250(a)(2)(D)	Y
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