ALASKA POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT FACT SHEET- FINAL

Permit Number: **AKG523000**

Offshore Seafood Processors General Permit

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Wastewater Discharge Authorization Program

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Anchorage, AK 99501

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

OFFSHORE SEAFOOD PROCESSORS GENERAL PERMIT

The Alaska Department of Environmental Conservation (the Department or DEC) proposes to reissue APDES AKG523000, the Offshore Seafood Processors General Permit (Offshore Seafood GP or permit). The permit authorizes and sets conditions on the discharge of pollutants from operators of seafood processing vessels in Alaska discharging between shore (0.0 nautical miles (nm) at mean lower low water (MLLW)) to 3.0 nm from shore as delineated by MLLW or baseline, whichever is greater. 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 seafood processors and outlines best management practices to which the seafood processors must adhere.

The Offshore Seafood GP authorizes seafood processing waste discharges to navigable waters of the U.S. located in the State of Alaska's jurisdiction, except in designated Excluded Areas. These Excluded Areas include: protected water resources such as national parks, national wildlife refuges, critical habitat areas, and sea lion haul outs. The Offshore Seafood GP also includes conditions applicable to "Excluded Area" discharges to critical habitat areas, certain waters near specified federal and state owned locations, at-risk waters, and degraded water bodies. Further, the Offshore Seafood GP establishes buffer zones around many of the Excluded Areas. DEC also proposes to continue the 2012 permit modification approved to allow coverage under the Offshore Seafood GP for the discharge of pollutants to the Excluded Areas, in accordance with the conditions, monitoring requirements, and effluent limitations of the Offshore Seafood GP and site-specific conditions and requirements listed in Permit Part 1.8.

This fact sheet explains the nature of potential discharges from offshore seafood processor operations and the development of the permit including:

- information on public comment, public hearing, and appeal procedures
- a listing of proposed effluent limitations and other conditions
- technical material supporting the conditions in the permit

- proposed monitoring requirements in the permit

Public Comment

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 20 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
555 Cordova Street
Anchorage, AK 99501

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/review-guidance/informal-reviews 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/review-guidance/adjudicatory-hearing-guidance.aspx 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/wastewater.aspx.

Alaska Department of Environmental Conservation Division of Water Wastewater Discharge Authorization Program 555 Cordova Street Anchorage, AK 99501 (907) 269-6285	Alaska Department of Environmental Conservation Division of Water Wastewater Discharge Authorization Program 410 Willoughby Avenue, Suite 303 Juneau, AK 99811 (907) 465-5180

Alaska Department of Environmental Conservation Division of Water Wastewater Discharge Authorization Program 610 University Avenue Fairbanks, AK 99709 (907) 451-2100	Alaska Department of Environmental Conservation Division of Water Wastewater Discharge Authorization Program 43335 Kalifornsky Beach Rd. – Suite 11 Soldotna, AK 99669 (907) 262-5210

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1.0 General 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. In addition, as established in Alaska Administrative Code (AAC) 18 AAC 83.015, the discharge of any pollutant to surface water designated as waters of the U.S. in Alaska is unlawful except in accordance with an Alaska Pollutant Discharge Elimination System (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.

The Department determined that it is appropriate to issue a general permit for seafood processing vessels identified in Fact Sheet Part 1.5 because sources have substantially similar operations, discharge the same types of wastes, are subject to the same water quality-based effluent limitations (WQBEL) and technology-based effluent limitations (TBEL), and have similar monitoring requirements.

1.2 Individual Permit

A permittee authorized to discharge under a general permit may request to be excluded from coverage by applying for an individual permit. This request 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 individual permit, or any interested person may petition the Department to take this action. Per 18 AAC 83.215, the Department may consider the issuance of an APDES individual permit 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.

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 2001, the Environmental Protection Agency (EPA) reissued a general permit for seafood processors operating in the State of Alaska (AKG520000). The permit authorized four categories of dischargers:

offshore processors (1.0 nautical miles [nm] to 12.0 nm), nearshore processors (0.5 nm to 1.0 nm), shore-based processors (0.0 to 0.5 nm), and "At-Sea" discharges (greater than 1.0 nm from shore). The permit expired on July 27, 2006, but was administratively continued.

In 2008, EPA proposed to issue a general permit for seafood processors discharging from one-half nm (0.5 nm) to twelve nm (12.0 nm) from shore. The AKG524000 permit proposed to authorize three of the four categories previously authorized by AKG520000: offshore processors, nearshore processors, and "At-Sea" discharges. EPA public noticed the draft permit September 26, 2008 through December 10, 2008.

On October 31, 2008, EPA approved Alaska's application to administer the National Pollutant Discharge Elimination System (NPDES) program. The administration of APDES permitting for the seafood sector transferred to DEC during the public comment period for the draft AKG524000 permit. Following close to the AKG524000 permit's public comment period and review of the comments received, DEC decided that it would issue a separate APDES Offshore Seafood Processors General Permit (AKG523000) for discharges to State jurisdictional waters. The Department used the draft AKG524000 permit and comments received during the public comment period in 2008 for the development of the AKG523000 permit.

On May 23, 2011, DEC issued APDES AKG523000 Offshore Seafood Processors General Permit (Offshore Seafood GP or permit). The permit was applicable to vessels discharging seafood processing waste 0.5 nm to 3.0 nm from shore or baseline, whichever is greater, authorizing two of the four categories previously authorized by the AKG520000 permit: offshore and nearshore processors. The Offshore Seafood GP referred to the AKG520000 permitted offshore and nearshore categories as offshore processors. The May 2011 Offshore Seafood GP stipulated that in order to approve the discharge of seafood processing waste into an Excluded Area's waters, a permittee must either apply for coverage under an individual permit or submit a permit modification to the Offshore Seafood GP. Appendix H of the May 2011 permit required an operator to submit additional information to DEC for evaluation. After review of the submitted information, DEC could propose to modify the Offshore Seafood GP to authorize a discharge to an otherwise Excluded Area.

During the comment period for a permit modification, the U.S. Fish and Wildlife Service (USFWS) provided information on potential impacts to species protected under the Endangered Species Act and recommended measures to be included in the permit to protect aquatic resources. DEC reviewed the suggested protective measures and developed site-specific requirements to protect the aquatic resources in addition to the existing May 2011 permit requirements. In response to the USFWS comments, Appendix H was modified to include additional site-specific requirements applicable to AKG523000 written authorizations in Excluded Areas. After the public comment period closed, the 2012 AKG523000 Offshore Seafood GP Modification became effective September 21, 2012.

After the 2012 AKG523000 permit became effective, DEC reviewed several AKG523000 Notices of Intent (NOI) with permit modification requests to discharge pollutants to Excluded Areas. DEC reviewed the requests and made a decision to authorize the discharge of pollutants to the Excluded Areas, in accordance with the conditions, monitoring requirements and effluent limitations of the Offshore Seafood GP and site-specific requirements listed in the Offshore Seafood GP Appendix H.

1.3.1 Inland Waters Discharge

The 2001 AKG520000 permit authorized seafood processing facilities to transport their seafood processing waste and discharge by vessel "At-Sea". These "At-Sea" discharges were authorized to occur inside and outside of baselines or closing lines, as long as the discharges were located one mile or greater from shore.

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 permit proposes to authorize in-transit vessel discharges behind baseline or closing lines, defining these discharges as inland water discharges. Inland water discharges will be authorized behind baselines between 0.25 nm from shore and 3.0 nm from shore as delineated by MLLW, except to Excluded Areas described in Fact Sheet Part 1.8. Generally, the baseline consists of the mainland low-water line and any offshore islands and additional features that are applicable to the U.S. coast, such as river mouths, bays, and enclosed harbors from which the breadth of the territorial sea is measured. An interactive map depicting Alaska's baseline plus additional boundary lines is available at Alaska DEC Seafood Processing GIS Map. The map is provided for information purposes only. The U.S. Baseline Committee makes the official determinations of baseline.

1.3.2 Limitations on Vessel Coverage

The AKG523000 permit proposes coverage for in-transit and stationary processing vessels discharging seafood processing waste between 0.25 nm from shore to 3.0 nm from shore measured at MLLW. Discharge from shore to 0.25 nm from shore will only be authorized for stationary processing vessels, and only for circumstances as described in the subsequent paragraphs. Normally, processing vessels follow the fisheries, moving from water body to water body. However, some processing vessels and moored barges provide direct support to an onshore seafood processing facility by providing processing services or additional freezing capability. Direct support vessels and moored barges remain stationary, moored to a dock, pier, or permanent anchor to prevent movement, with discharges occurring in the same location throughout the season. These direct support vessels and moored barges are provided coverage under the to-be-issued AKG521000 permit. Processing vessels that propose to discharge shore or dock side independent of a processing facility will not be covered by the AKG523000 general permit.

Vessels previously classified in the 2001 AKG520000 permit as shore-based vessels that are discharging between 0.25 nm from shore at MLLW to 0.5 nm from shore will no longer be covered under their 2001 AKG520000 permit administrative continuation letter. These vessels will be required to obtain coverage under the AKG523000 general permit.

Stationary processing vessels discharging seafood processing waste to waters of the U.S. measured from shore (0.0 nm at MLLW) to 0.25 nm from shore measured at MLLW will be covered by the AKG523000 general permit. However, while listed as an authorized category in the permit, the Department will only authorize this category of discharger if the processing vessel can demonstrate previously installed and existing permanent infrastructure is present at the time of general permit issuance to anchor at that location or can demonstrate that discharges are necessary for the protection of the vessel and crew during adverse weather or sea conditions. DEC reviewed foam and scum non-compliance notifications as well as Sea Surface Logs from the Annual Reports submitted during the 2011-2016 permit cycle. DEC found that multiple violations of mixing zone boundaries occurred for foam and scum, reporting ranges of 500-2500 feet. Thus, if anchored within 0.25 nm of the shoreline, the vessel's exceedance could reach the shoreline. During the 2011-2016 permit cycle, DEC also received a number of complaints documenting seafood processing waste washing up on shorelines adjacent to locations where seafood processing vessels were anchored within 0.5 nm of shoreline. The Department also notes that while offshore seafood processors are required to meet the same treatment requirements as onshore facilities, they have the following difference. Onshore facilities discharge through an underwater outfall pipe that must reach a depth of -60 feet MLLW or deeper, whereas seafood processing vessels are required to discharge seafood processing waste at or below the sea surface. When discharge does occur, the vessel must keep record on a vessel log, including the daily discharge coordinates, daily amount of discharge, and the circumstances requiring discharge between shore and 0.25 nm from shore. Effective 90 days from the issuance of the AKG523000 general permit, all mobile vessels with

2001 AKG520000 permit administrative continuation letters to process from shore to 0.25 nm from shore will be terminated, and these vessels will be required to apply for coverage under the AKG523000 general permit. If issued an authorization under the reissued AKG523000 general permit, the Department may place appropriate limitations in the authorization.

DEC determined that it is appropriate to issue an APDES general permit for operators of large mobile seafood processing vessels that discharge seafood processing waste between shore and 3.0 nm from shore as delineated by MLLW or baseline and that discharge more than 1,000 pounds of seafood processing waste per day and 30,000 pounds of seafood processing waste per calendar year. Operators of small processing vessels that discharge less than 1,000 pounds of waste per day and 30,000 pounds per calendar year do no operate their vessels in a similar manner as the large mobile seafood processing vessels that are authorized under the permit. The amounts of seafood processing waste produced are not similar to the amounts produced by the large mobile seafood processing vessels. A small processing vessel is not operated in a similar manner as a large, mobile seafood processing vessel authorized under the permit, nor does a small processing vessel require the same effluent conditions, operating conditions, or the same monitoring requirements as a large mobile processing vessel. Therefore, DEC determined that coverage under this general permit is not appropriate.

DEC intends to issue an APDES general permit in the future for small processors that discharge less than 1,000 pounds per day and 30,000 pounds per calendar year of seafood processing waste. The timing of this issuance will be determined as part of the DEC Continuing Planning Process (see http://www.dec.state.ak.us/water/npdes/Final_Application_2008/Application_CPP.htm) and the development of the Permit Issuance Plan (see http://dec.alaska.gov/water/wastewater/pip/). An operator of a small processor may elect to submit a notice of intent (NOI) for authorization under the AKG523000 permit while waiting for issuance of an APDES small processor general permit. Submittal of an NOI requires a permittee to comply with all conditions and requirements of the AKG523000 permit, including reducing seafood processing waste to 0.5 inch or less in any dimension prior to discharge.

If the department determines that a discharge from a small processing vessel is a significant source of pollution and that the small seafood processing vessel is operating in a manner more like a large mobile seafood processing vessel instead of a small seafood processing vessel, the department will notify the operator that APDES permit authorization under this general permit is required.

1.4 Description of Seafood Processing Facilities and Vessels

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 species of fish and marine invertebrates, 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 and vessels 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 in 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). Seafood processing can be described as the production of marketable seafood products, which can include packaging whole fresh or frozen seafood for shipment, mechanical filleting, deboning processes, and production of washed and unwashed mince and/or paste products, and other seafood byproducts. Solid and liquid wastes remaining after production may be further processed into fish meal, fish oil, fish hydrolysate, or other

by-products which converts much of the solid waste to marketable products. Additionally, since the early 1980s new seafood processing techniques have been introduced into facility and vessel production lines, such as surimi and salmon byproduct (unwashed mince and washed mince and/or paste). New techniques in recent years have further been developed to convert salmon waste to salmon hydrolysate, 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.

On any particular vessel, the quantity and character of the seafood processing 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 the majority of the pollutant discharges in the winter, early spring and autumn, and salmon processing wastes constitute the majority of discharges in the summer. On a statewide basis, groundfish constitute the largest volume of seafood waste discharged. When broken down by region the largest volume of waste comes from the Bering Sea/Aleutian Island area, and 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.

It should be noted that seafood processing operations that occur at a stationary position, such as an anchored floating processor, generally choose to operate in locations that are relatively protected so that fishing and supply vessels can easily dock and transfer catch or load finished products.

The locations of seafood processing facility and vessel operations in Alaska can be generally represented by four physical oceanographic environments:

- Protected bays or harbors with reduced wave action, but possibly significant tidal currents.
- Nearshore open coastal areas, which are affected by wave action depending on the water depth, wind, and tidally driven currents.
- River or estuary mouths with some wave action and a predominant tidal and freshwater influence.
- Open water which is affected primarily by wind-driven currents, although tidal currents may be important at some locations.

1.5 Eligibility (Permit Part 1.1)

The AKG523000 permit refers to the AKG523000 permitted offshore, nearshore, and shore-based categories (as defined by the AKG520000 general permit) collectively as offshore processors. The AKG523000 permit divides the offshore processors into two categories based on discharge location between shore (0.0 nm at MLLW) and 3.0 nm from shore as delineated by MLLW or baseline. The first category includes processors that discharge seafood processing waste between shore and 1.0 nm from shore as delineated by MLLW. The second offshore category includes processors that discharge seafood processing waste between 1.0 nm from shore and 3.0 nm from shore as delineated by MLLW or baseline. The inland water discharge category includes in-transit vessels discharging seafood processing waste generated by a seafood processing facility, with the discharge location required to be behind the baselines and between 0.25 nm from shore and 3.0 nm from shore.

1.5.1 Subject to meeting the conditions of the permit, the following categories of seafood processors are eligible for coverage to discharge the pollutants set out in Permit Part 1.2 after receiving an APDES permit authorization including an authorization number:

1.5.1.1 **Offshore Seafood Processing Vessels discharging between shore (0.0 nautical miles (nm)) and 0.25 nm from shore.** Stationary seafood processing vessels that discharge seafood processing waste and other wastewater pollutants to waters of the U.S. between shore and 0.25 nm from Alaska's shores as delineated by mean lower low water (MLLW) and are 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. This type of authorization is conditioned on the language in Fact Sheet Part 1.3.2.

1.5.1.2 **Offshore Seafood Processing Vessels discharging between 0.25 and 1.0 nautical miles (nm) from shore.** In-transit or stationary processing vessels that discharge seafood processing waste and other wastewater pollutants to waters of the U.S. between 0.25 nm and 1.0 nm from Alaska's shores as delineated by MLLW or baseline and are 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.

1.5.1.3 **Offshore Seafood Processing Vessels discharging between 1.0 nm from shore and 3.0 nm from shore or baseline.** In-transit or stationary processing vessels that discharge seafood processing waste and other wastewater pollutants to waters of the U.S. between 1.0 nm and 3.0 nm from Alaska's shores as delineated by MLLW or baseline and are engaged in the processing of fresh, frozen, canned, smoked, salted, or pickled seafood; the processing of seafood mince or paste; or the processing of meal and other secondary by-products.

1.5.1.4 **Inland Water Seafood Waste Discharge Vessels.** In-transit vessels (including inland water discharges) that discharge a seafood processor's seafood processing waste and wastewater pollutants to inland waters of the U.S. behind the baseline, between:

1.5.1.4.1 0.25 nm and 1.0 nm from Alaska's shores as delineated by MLLW. The following waste streams can be discharged by in-transit vessels: fresh, frozen, canned, smoked, salted, or pickled seafood; the processing of unwashed mince; or the processing of meal and other secondary by-products.

1.5.1.4.2 1.0 nm and 3.0 nm from Alaska's shores as delineated by MLLW. The following waste streams can be discharged by in-transit vessels: fresh, frozen, canned, smoked, salted or pickled seafood; the processing of seafood mince or paste; or the processing of meal and other secondary by-products.

1.6 Discharges Covered (Permit Part 1.2)

1.6.1 The permit authorizes the discharge of pollutants to waters of the U.S., subject to the provisions, limitations and conditions set forth herein, including:

1.6.1.1 Seafood processing waste and process wastewaters, which includes the water, waste fluids, heads, organs, flesh, fins, bones, skin, chitinous shells, and stickwater produced by the conversion of seafood from a raw form to a marketable form.

Seafood processing is any activity that modifies the physical condition of a fishery resource. As defined, processing does not include gutting, gilling, or icing fish or decapitating shrimp while on a fishing vessel, on the fishing grounds, if done solely to maintain product quality or prevent loss from decomposition.

Discharges shall be into waters with a high capacity of dilution and dispersion. It is difficult to classify the marine waters of Alaska into regionally distinct oceanographic regimes due to the wide variety of oceanographic characteristics that occur. The permit uses the term

hydrodynamically energetic waters to describe the appropriate discharge locations of seafood processing waste. Hydrodynamically energetic waters are those locations where ocean currents, tidal cycles, etc. will disperse the seafood processing waste before settling, re-suspend and disperse waste during high current events, or facilitate the decay and decomposition of the seafood processing waste.

Pollutants of concern for seafood waste and effluent, as well as disinfectants, may include: residues, pH, non-petroleum oil & grease (O&G) (polar), bio-chemical oxygen demand (BOD), settleable solids, total suspended solids (TSS), color, ammonia, and temperature. These pollutants come from the waste solids (shell, bones, skin, scales, flesh and organs), blood, body fluids, slime, stickwater, and oils and fats from cooking and rendering operations.

1.6.1.2 Wash down water, including cleaning agents used in seafood processing.

The permit authorizes the discharge of wash down water and cleaning agents, including disinfectants added to wash-down water to meet the Food and Drug Administration's sanitary conditions by facilitating waste removal while processing or sanitizing seafood processing areas where the permittee follows the manufacturer's recommended use and disposal recommendations.

In addition to the pollutants of concern listed in Part 1.6.1.1, free chlorine may be present in residual amounts from periodic use of the primary disinfectants sodium hypochlorite and ammonium chlorides used to sanitize equipment. Iodine disinfectants may also be used for sanitation and found in trace amounts.

1.6.1.3 Discharge of "Other Wastewaters" generated as part of the normal seafood processing operation, including non-process wastewaters and ice and water used to transfer seafood (catch transfer water) to the facility. "Other Wastewaters" includes cooling water, boiler water, freshwater pressure relief water, refrigeration condensate, refrigerated seawater, cooking water, scrubber water, drinking water backwash, and live tank water.

Pollutants of concern for "Other Wastewaters" discharges may include: ammonia, chlorine, residues, pH, non-petroleum O&G, BOD, Settleable Solids, TSS, color, and temperature. Further explanation of seafood waste discharge pollutants are found throughout the Fact Sheet. A specific "Other Wastewaters" pollutant discussion can be found in Fact Sheet Part 3.1.3.3.

1.6.1.4 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.

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

1.6.1.5 Vessel Fish Hold Discharges. Discharges of vessel hold water includes the discharges covered under and in compliance with the 2013 NPDES Large Vessel General Permit (VGP) (or the most current version).

An offshore seafood processing vessel often takes on fish hold water of the other small fishing vessels delivering seafood to be processed. These smaller vessel's fish hold water will also be an authorized discharge under the Offshore AKG523000 permit. Covered permittees may accept fish hold water and discharge if the wastewater is discharged in compliance with permit conditions.

1.7 Discharges Not Covered (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 any unused food additives (e.g., salts, artificial sweeteners, sugars, etc.) or seafood processing chemicals (e.g., sulfates, phosphates, acids, bases, etc.) that have not been used in the vessel's seafood processing production line.

DEC has been made aware through review of Ocean Dumping activities & "At-Sea" dumping reports that by-products, additives or other products other than raw seafood waste have been disposed of in State waters under the AKG520000 permit. The discharge or disposal of these by-products, chemicals (e.g. sodium hydroxide, hydrochloric acid, aldehydes, ketones), and food or food additives (e.g., sugars, salts) can severely alter the chemistry of the receiving water as well as result in very high BOD and COD pollutant loading. These discharges are not authorized under the permit.

If the permittee has previously discharged these materials, the permittee is required to seek permitted disposal methods. The restriction does not apply to by-product wastewaters, including stickwater, meeting the terms of the permit.

1.7.2 Expired, spoiled, interim, or finished seafood processing by-products.

1.7.3 Discharge of petroleum (e.g. diesel, kerosene, and gasoline) or hazardous substances into or upon the navigable waters of the U.S., adjoining shorelines, into or upon the waters of the contiguous zone which may affect natural resources belonging to, appertaining to, or under the exclusive management authority of the U.S., is prohibited under 33 U.S.C.A 1321(b)(3). Any person in charge of an offshore vessel shall, as soon as (s)he has knowledge of any discharge of oil or a hazardous substance from such vessel, immediately notify the U.S. Coast Guard's Command Center (1-800-478-5555).

1.7.4 Discharges resulting from a seafood processor producing seafood paste or washed minced to receiving waters within 1.0 nm of shore at MLLW. The basis for the prohibition is the high levels of BOD in these waste streams, which can depress dissolved oxygen (DO) in the water column.

1.8 Excluded Areas 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 requests to discharge 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 nm to 3.0 nm buffer zones around most Excluded Area waters to allow for the dilution of pollutants to ambient levels under worst-case conditions. The permit also excluded discharges to Wilderness Areas, State Parks and Conservation areas, at-risk waters, and certain special waters. The Excluded Areas from the 2011/2012 AKG523000 general permit are being carried forward in the permit. Refinement of the location of the Excluded Areas through GIS mapping, and updates to endangered and threatened species (ETS) lists have occurred since the AKG523000 permit was issued. Changes to ETS lists or the available resources to identify various Excluded Areas are discussed below.

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 a permittee to apply for a waiver to discharge to a water in an Excluded Area. As mentioned earlier, the 2012 AKG53000 permit modification required additional information to be submitted in the form of a special request to discharge to the Excluded Area, including the permittee providing alternatives to discharging within the Excluded Area. The permit required DEC and the agency with management

authority over the Excluded Areas to evaluate the discharge request before DEC made a decision to authorize a discharge to an Excluded Area.

The 2018 AKG523000 permit continues to provide the case-by-case requests to discharges to Excluded Areas based on conditions included in Permit Part 1.8, 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 2018 AKG523000 permit carries forward the Excluded Area's evaluation and approval process as established in the 2012 AKG523000 permit modification. There is a new requirement that DEC will now public notice the draft authorization when discharge to a new Excluded Area under the AKG523000 permit is proposed. DEC will take into consideration agency or public recommended site-specific conditions provided during the public notice period. (Note, DEC views a request to discharge to an Excluded Area and the approval process as a permit condition added to the AKG523000 permit to address issues raised during the 1994 Seafood Processors Work Group and during the 2001 AKG520000 draft permit development. DEC does not consider the approval as a "waiver" to exceed water quality standards (WQS) or a waiver to meeting established effluent limitations guidelines (ELGs). Thus, DEC is eliminating confusion by not referring to the request to discharge to these areas as a "waiver" request.)

The 2018 AKG523000 permit includes continuation of authorizing previously approved 2012 AKG523000 discharges listed in Appendix D – Table D2 for permittees discharging to Excluded Areas. The AKG523000 permit requires that a new permittee submit a request to discharge to an Excluded Area in compliance with Permit Part 1.8. DEC may require the permittee to apply for APDES individual permit coverage if the discharge to the Excluded Area causes water quality and/or habitat protection concerns. The special conditions were submitted to DEC by agencies with management authority over the Excluded Areas during the previous AKG520000 and AKG523000 permit cycles.

If a permittee that is authorized to discharge to an Excluded Area, including existing permittees and locations listed in Appendix D - Table D2, proposes a material change to the seafood processing lines or a change in location(s) (Permit Part 1.8.2.2) after the initial authorization is granted, the permittee is responsible for providing information required in Permit Part 1.8.2 to DEC to evaluate the proposed change of the discharges to the Excluded Area. As applicable, Permit Part 1.8.4 conditions will be added as Excluded Area APDES authorization requirements. The permittee shall submit copies of any special studies required by the agency with management authority over the Excluded Area, and/or respond to comments submitted by the agency to DEC.

Excluded Areas in the AKG523000 permit include:

1.8.1 One nautical mile limit (Permit Part 1.4.1)

A one nautical limit is set from State Designated Game Refuges and Sanctuaries, State Designated Critical Habitat Areas, Federal Designated Critical Habitat, National Parks, Preserves or Monuments, National Wilderness Areas, National Wildlife Refuges and nesting colonies of 1000 birds or more.

The AKG523000 permit clarifies ambiguous areas listed in the 2001 AKG520000 permit and identifies 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.

The permit removes Eastern Stellar sea lion critical habitat as previously covered under AKG520000 permit. On November 4, 2013, 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."

1.8.2 Three nautical mile limit (Permit Part 1.4.2)

A three nautical mile limit is set from critical habitat for Western Steller's sea lions and Pacific walrus haulout locations. 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.

1.8.3 Special Water Resources (Permit Part 1.4.3)

1.8.3.1 Orca Inlet. No discharge of uncooked seafood processing pollutants to Orca Inlet may occur during the months of November, December, January, February, and March. Sea Otters, which are protected under the Marine Mammal Protection Act, are attracted to the discharge and waste deposit as a food source.

1.8.3.2 Norton Sound Critical Habitat. No discharge of pollutants to waters in the Norton Sound Critical Habitat Area may occur from June 24 to October 31.

1.8.3.3 No discharge of pollutants may occur to Kodiak Harbor, St. Paul Harbor, Gibson Cove, Near Island Channel, Women's Bay, and Woody Island Channel.

Discharges to these water bodies were covered under the AKG528000 "Seafood Processors Operating Shore-based Facilities in Kodiak, Alaska", which authorized discharges from onshore seafood processors and by-product recovery facilities located in Kodiak, Alaska. DEC is unaware, at the time of writing this fact sheet, of any vessels that have ever applied for coverage under the AKG528000 permit for discharge to these water bodies. The AKG528000 permit applied 'Non-remote' location permit conditions to these water bodies and therefore are not appropriated covered under the AKG523000 permit. For more information regarding Non-remote facilities and permit requirements, see the AKG5280000 permit and accompanying fact sheet.

1.8.3.4 Within 300 feet of Living Substrates.

"Living substrates" have been identified as important marine habitat and are susceptible to impacts from human activities. Discharging seafood processing waste and possible subsequent burying of living substrate by seafood processing residues must be minimized. Living substrates include submerged aquatic vegetation, kelp, and eelgrass in shallow coastal waters (generally less than 10 fathoms (60 feet) at MLLW).

1.8.3.5 The territorial seas surrounding St. Paul Island and St. George Island (The Pribilof Islands).

1.8.3.6 The Aleutian Islands Coral Habitat Protection Areas. See https://alaskafisheries.noaa.gov/sites/default/files/aihca.pdf for more information.

1.8.4 At Risk Waterbodies (Permit Part 1.4.4)

Areas with a water depth of less than 10 fathoms (60 feet) at MLLW are excluded from permit coverage if the areas 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 3.0 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, settled within these areas, and did not decompose as quickly as modeling predicted. The 2001 AKG520000 permit listed Akun Island's Lost Harbor as an Excluded Area because of vessel 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 AKG523000 permit continues to list "At Risk Waterbodies" as Excluded Areas, defining the water bodies as "semi-enclosed water basins with

depths deeper than the bordering or enclosed sills of less than 10 fathoms." Permittees shall identify on their NOI if the permittee is proposing to discharge to an "At Risk Waterbody" and are responsible to prove adequate flushing for each proposed discharge location while stationary.

1.8.5 Degraded Water Resource (Permit Part 1.4.5)

Any discharges to a water body included in DEC's most recent EPA-approved *Final Integrated Water Quality Monitoring Assessment Report* of waters which are impaired or water quality-limited. See http://dec.alaska.gov/water/water-quality/integrated-report.htm for the most recent integrated report.

Discharges to water resources that are impaired are not authorized under the permit. Vessels are mobile and thus can be located outside degraded water bodies.

1.8.6 Areas Covered by Other APDES Permits (Permit Part 1.4.6)

The permit does not authorize the discharge of pollutants to receiving waters covered by other general or individual APDES permits.

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 Electronic 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. (Note, Discharge Monitoring Reports are already required to be submitted electronically.) A permittee wishing to apply for new coverage for a seafood processing vessel shall submit a complete NOI and required attachments 90 days prior to the start of discharge.

1.9.2 Permittees with Administratively Continued AKG520000 Permit Coverage. The AKG523000 permit supersedes the 2001 AKG520000 administratively continued general permit authorizations for vessel discharges between shore and 0.5 nm from shore. Permittees with AKG520000 administratively continued coverage and those who have been unable to obtain coverage (Appendix D – Table D1) are required to submit a complete AKG523000 NOI application by January 1, 2019, the effective date of the permit. Permittees with AKG520000 administratively continued coverage who do not submit a complete NOI application by January 1, 2019 are allowing their permit coverage(s) to expire. Permit authorization is not granted to a vessel unless the permittee has submitted a complete NOI application package, 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 this permit.

1.9.3 Permittees with Administratively Continued AKG523000 Permit Coverage. Permittees with administratively continued AKG523000 authorization listed in Appendix D are required to submit a complete NOI application by January 1, 2019, the effective date of the permit, to continue coverage under this permit. Permittees with coverage who do not submit a complete NOI application by January 1, 2019 are allowing their permit coverage(s) to expire. The AKG523000 general permit authorization will not be granted to a vessel unless the permittee has submitted a complete NOI application package, and received written authorization from DEC to discharge under this permit, or has been notified in writing by DEC that they are covered under this permit as provided for in 18 AAC 83.210(h).

1.9.4 The AKG523000 general permit does not authorize any discharges from a permittee unless a complete NOI application has been submitted as specified and the permittee has received written authorization from DEC to discharge under the permit, or has been notified in writing by DEC that the permittee is covered under the permit as provided for in 18 AAC 83.210(h). Relocation to a new site(s) will require the permittee to submit an updated NOI at least 90 days prior to commencing discharge from the new site(s).The permittee shall retain a copy of the APDES Authorization and the permit, as well as applicable inspection and monitoring records on the vessel. Records may be kept electronically if made available immediately upon request, except those requiring hard signature.

1.9.5 An operator of a processing vessel that discharges less than 1,000 pounds of seafood processing waste per day and less than 30,000 pounds of seafood processing waste per calendar year between shore and 3.0 nm from shore or baseline is not required to obtain permit coverage under the permit.

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

1.10.1 A new applicant seeking coverage under the permit shall submit a complete and timely NOI (Attachment A, A-1 and A-2, if necessary) per 18 AAC 83.210(b) to fulfill the duty to apply for a permit, at least 90 days before the anticipated date of discharge. 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, operator name and address/ location information in order to accurately maintain operator permit records.

1.10.3 Production Capacity Information. DEC requires permittee production capacity and discharge amounts to determine if the proposed discharge will fit under the permit requirements. There are two reasons the Department is requesting this type of information. First, the permit requires this information for reviewing cumulative discharges to waterbodies and approved discharge sites. Cumulative discharges to waterbodies and discharge sites increases the probability that greater than a 1.0-acre deposit of seafood waste will form on the seafloor if the total cumulative seafood waste discharge is greater than 10 million pounds to a single water body. This assumption is based on the modeling and previous seafloor surveys discussed in Fact Sheet Part 4.3.3.

The second reason DEC 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 DEC. Should the permittee request an increase in discharge allowance, the permittee shall submit the proposed increase on a NOI, and may trigger additional seafloor monitoring if there is a 25% increase in the amount of seafood waste discharged (Permit Part 1.8). Further discussion of Excluded Areas is found in Fact Sheet Part 1.8.

1.11 Department Review of the Notice of Intent and Issuance of a Permit Authorization (Permit Part 1.7)

Only permittees meeting the provisions of the permit will be provided a written authorization. The Department's evaluation will include review of the applicant's NOI and the receiving water characteristics of the proposed discharge locations as part of the decision making process.

Those permittees as listed in Permit Appendix D applying for coverage will have the standard 100 foot radius mixing zone(s) (Permit Part 2.3.1.2.2) and ZOD allowance (Permit Part 2.3.3.1).

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

1.11.1.1 Prepare and transmit a written authorization, which will include whether a mixing zone has been authorized and at what size; the location and size of the ZOD for a stationary processor; the limits on the maximum amount (pounds) of seafood processing waste that can be discharged; and, whether each vessel's single location or area(s)-of-operation are authorized.

1.11.1.2 Find the NOI incomplete and notify the permittee of needed revisions or updates to the NOI submittal; or

1.11.1.3 Deny coverage under the general permit and require a permittee to submit an APDES individual permit application.

1.11.2 In determining the appropriateness of granting an authorization, whether a mixing zone is appropriate at the proposed discharge location or area-of-operation, and whether a ZOD is appropriate at the proposed stationary discharge location, the Department will evaluate the information provided by the permittee, including whether:

1.11.2.1 The discharge is to a water in an Excluded Area (Permit Parts 1.4.1- 1.4.5);

1.11.2.2 Multiple permittees are proposing to discharge to the same or in close proximity to the same receiving water.

1.11.2.3 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:

1.11.2.3.1 The effects that the discharge might have on the uses of the receiving water;

1.11.2.3.2 The flushing and mixing characteristics of the receiving water;

1.11.2.3.3 The results of seafloor surveys indicating the location and size of seafood waste deposits, if any;

1.11.2.3.4 Available effluent monitoring results showing the proposed waste or wastewater treatment system is able to meet the requirements of the permit; and

1.11.2.3.5 Compliance with permit requirements, including receiving water monitoring results.

1.11.3 Public Notice (Permit Part 1.7.2)

1.11.3.1 The following draft authorizations under the permit will be public noticed in accordance with 18 AAC 83.120 requirements:

1.11.3.1.1 New proposed discharges into waters of Excluded Areas listed in Permit Parts 1.4.1 – 1.4.5.

1.12 Transfer of Authorization or Changes in Operations (Permit Parts 1.9 and 1.10)

The permit requires permittees to submit a Permit Transfer/Name Change form when the information regarding ownership or operator changes, and submit an updated NOI if changes to management, authorized representative or changes to the vessel discharges, production levels, treatment systems, mixing zone or ZOD requests have occurred.

As found in 18 AAC 83.150, permit coverage for a vessel may be transferred from an existing owner to a new owner as long as there are no compliance and enforcement issues. The permit authorizes a name change transfer only for the site(s) designated in the NOI, as designated on the APDES authorization.

A permittee's authorization for an existing covered vessel may not be transferred to the new permittee proposing new discharge location(s) or area(s)-of-operation without the submittal of an updated NOI. A

permit authorization is specific to the outfall(s) identified in the NOI, and a permittee's specified discharge location(s) and/or area(s)-of-operation.

1.13 Continuation of an Expired General Permit (Permit Part 1.11)

The permit expires five years after the effective date. If the AKG523000 permit is not reissued prior to the permit's specified expiration date, it will be administratively continued in accordance with 18 AAC 83.155 and remain in force and effect until the effective date of the reissued permit. In order to request continued coverage, permittees shall submit an updated NOI to the Department 90 days prior to the expiration of the permit requesting authorization for coverage under a reissued permit. The Department will determine if the NOI is complete, and issue an administrative continuation letter to permittees complying with application requirements. If the NOI submitted is incomplete, the Department may require supplemental information to be provided. The Department will provide reasonable notice if supplemental information is required.

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 complete NOI submittal and receipt of an administrative continuation letter from the Department, the permittee is covered under administrative continuation 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 continuation until such time the permit is reissued, or a Notice of Termination (NOT) is submitted by the permittee and processed by the Department.

If the permit is administratively continued 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 continuation, the permittee shall make a written re-request for the reduction in monitoring or other operating conditions with submittal of the administrative continuation NOI application.

1.14 Termination of Permit Coverage (Permit Part 1.12)

If a permittee desires to terminate coverage, the permit requires the permittee to provide a NOT form to DEC within 30 days following cessation of discharges. The notice shall include certification that the permittee 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 operators authorized by the 2011 AKG523000 permit and the 2001 AKG520000 permit were evaluated. Due to the large number of existing authorized vessels, 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 vessel covered by either permit can be found by visiting the EPA's Enforcement and Compliance History Online (ECHO) at **https://echo.epa.gov/**. Permit Appendix D provides a list of vessel permit numbers and operator/vessel names that can be used to search for summary and detailed information about a specific permittee's compliance and enforcement status and history.

3.0 Effluent 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 TBELs or WQBELs. A TBEL is set according to the level of treatment that is achievable using available technology. For industrial sources, 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 of either TBELs or WQBELs will be selected as the final permit limitations.

3.1.1 Technology-Based Effluent Limits

The CWA requires particular categories of industrial dischargers to meet TBELs established by EPA. The CWA initially focused on the control of traditional pollutants (i.e., conventional pollutants and some metals) through the use of best practicable control technology currently available (BPT). For conventional pollutants (i.e., pH, BOD, TSS, oil and grease, and fecal coliform), CWA Section 301(b)(1)(E) requires the imposition of effluent limitations based on best conventional pollutant control technology (BCT). For nonconventional and toxic pollutants, CWA Section 301(b)(2)(A), (C), and (D), require the imposition of effluent limitations based on best available technology economically achievable (BAT). CWA Section 301(b), required compliance with BCT and BAT no later than March 31, 1989. Where EPA has not yet developed guidelines for a particular industry, permit conditions may be established using Best Professional Judgment (BPJ) procedures (18 AAC 83.425 and 18 AAC 83.010).

For New Sources, as that term is defined in 18 AAC 83.990, CWA Section 306 requires the imposition of effluent limitations for conventional and toxic pollutants based on new source performance standards (NSPS). CWA Section 306 requires compliance with NSPS no later than the effective date of such standards.

3.1.1.1 Seafood Processing Waste

EPA has promulgated final ELGs specifying BCT, BPT, and NSPS for specific categories of Alaska seafood processing. The ELGs are codified at 40 CFR Part 408, adopted by reference at 18 AAC 83.010. The ELGs are applicable to the following seafood processing industries: crab meat processing, whole crab and crab section processing, shrimp processing, hand-butchered salmon processing, mechanized salmon processing, bottom fish processing, scallop processing, and herring fillet processing (40 CFR Part 408, Subparts E, G, J, P, Q, T, AC, AE). Offshore Alaskan seafood processors processing fresh, frozen, canned and cured fish and shellfish are covered by the ELGs established at 40 CFR Part 408 for remote Alaskan locations. Offshore Alaskan seafood processors are considered remote because the processors are not located in population or processing centers as described in 40 CFR Part 408.

BPT and BCT 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.

NSPS for remote Alaskan seafood processors is 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.

The permit does not provide specific treatment types (e.g., grinder specifications) to meet the 0.5 inch or smaller in all dimensions performance standard, rather the permit requires that seafood processing waste solids be ground or treated by other methods to 0.5 inch or smaller in any dimension prior to discharge. The grinder system or other method of treatment must be

designed to reduce seafood processing wastes to 0.5 inch or smaller in any dimension prior to discharge. The 0.5 inch treatment 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 which are neither retained nor processed.

3.1.1.2 Sanitary Wastewaters

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 2018 AKG523000 permit continues the 2011 AKG523000 permit coverage of sanitary wastewater treated prior to discharge by a Type II MSD sanitary waste system and in accordance to U.S. Coast Guard regulations [33 CFR Part 159]. A vessel's sanitary wastewater may also be disposed to an onshore domestic wastewater treatment system.

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. The regulatory performance standards for a Type II MSD are located at 33 CFR Part 159. The 2018 AKG523000 permit proposes requiring effluent sampling and analysis of sanitary effluent for suspended solids and bacteria, and that Best Management Practices (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:

3.1.1.2.1 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.

3.1.1.2.2 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.

3.1.1.2.3 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 TBEL.

3.1.1.2.4 Microbiological monitoring. For compliance purposes, microbiological samples (fecal coliform 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).

3.1.1.3 Graywater

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 2011 AKG523000 graywater control measures are modeled after the VGP

control measures, and the 2018 AKG523000 permit continues those measures. The 2018 AKG523000 permit also continues to require the development and implementation of BMPs to control or abate the discharge of graywater from seafood processing vessels, when acting as an industrial facility. The permit specifies the minimum graywater control measures that shall be incorporated in a BMP Plan, which can be incorporated into the overall BMP Plan required by the permit.

3.1.2 Water-Quality Based Effluent Limits

18 AAC 83.435 prohibits conduct that causes or contributes to a violation of WQS. 18 AAC 83.435 also requires that permits include terms and conditions to ensure criteria are met, including operating, monitoring, and reporting requirements. 18 AAC 83.435 requires DEC to make this evaluation using procedures that account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. 18 AAC 83.435 requires that permits include WQBELs on all pollutants or parameters which "are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality." The WQBELs must be stringent enough to ensure that WQS are met and must be consistent with any available wasteload allocation.

The permit requires that discharges shall meet all WQS at: the boundary of an authorized mixing zone; at every point outside an allowed ZOD; or in the receiving water at the point of discharge if neither a mixing zone nor ZOD is authorized.

The permit may authorize exceedances of the following numeric or narrative water quality criteria within an authorized mixing zone and the residues standard in an authorized ZOD. The applicable WQS are in bold, and selected portions of the water quality criteria are italicized. The complete water quality criteria is found in 18 AAC 70.

Dissolved Gas. The amount of oxygen consumed by organisms in breaking down waste is known as the biochemical oxygen demand (BOD). The amount of BOD in a waste discharge affects the dissolved gases in the receiving water, and the amount of BOD in seafood processing waste that a processor can discharge is limited by the applicable water quality criterion for dissolved gas. *Surface dissolved oxygen (DO) may not be less than 6.0 mg/l for a depth of one meter, except when natural conditions cause this value to be depressed. DO in estuaries and tidal tributaries may not be less than 5.0 mg/l, except where natural conditions cause this value to be depressed. DO may not be reduced below 4 mg/l at any point below the surface [18 AAC 70.020(b)(15)]*.

Residues. Total suspended solids and settleable solids are components of seafood processing waste and the amount of solids in seafood processing waste that can be discharged is limited by the applicable water quality criterion for residues. *Floating solids, debris, sludge, deposits, foam, scum, or other residues shall not alone or in combination with other substances or wastes cause the water to be unfit or unsafe for use; cause a film, sheen, or discoloration on the surface of the water or adjoining shorelines; cause leaching of toxic or deleterious substances; cause a sludge, solid, or emulsion to be deposited beneath or upon the surface of the water, within the water column, on the bottom, or upon adjoining shorelines [18 AAC 70.020(b)(20)]*.

Fecal coliform (FC) **bacteria**. FC bacteria are indicator organisms in sanitary and graywater discharges and the amount of FC bacteria discharged is limited by the applicable water quality criterion for FC bacteria. *Based on a 5-tube decimal dilution test, the fecal coliform median MPN (most probable number)may not exceed 14 FC/100 ml and not more than 10% of the samples may exceed a fecal coliform median MPN of 43 FC/100 ml [18 AAC 70.020(b)(14)]*.

Enterococci Bacteria. Enterococci bacteria are indicator organisms in sanitary and graywater discharges and the number of enterococci bacteria discharged is limited by the applicable water

quality criterion. *The geometric mean shall not exceed 35 enterococci CFU/100 ml and not more than 10% of the samples may exceed a statistical threshold value (STV) of 130 enterococci CFU/100 ml [18 AAC 70.020(b)(14).]*

Oil and grease. Oil and grease (polar) from animal fats are components of seafood processing waste and the amount of oil and grease (polar) in seafood processing waste that can be discharged is limited by the applicable water quality criterion for oil and grease. *The discharge may not cause a film, sheen, or discoloration on the surface or floor of the waterbody or adjoining shorelines. Surface waters must be virtually free from floating oils. There may be no concentrations of animal fats in shoreline or bottom sediments that cause deleterious effects to aquatic life. Substances shall not exceed concentrations that individually or in combination impart undesirable odor or taste to organisms as determined by either bioassay or organoleptic tests [18 AAC 70.020(b)(17)]*.

pH. Some of the wastewater associated with seafood processing waste can be slightly alkaline or acidic but should generally be within the range of the water quality criteria. This range is evidenced by monitoring data from individual seafood processing permits, which show most values within the 6.5-8.5 range between 2002 and 2005. The applicable water quality criterion for pH limits the pH of the seafood processing waste discharges. *pH shall be no less than 6.5 or greater than 8.5, and shall not vary more than 0.2 pH units from the naturally occurring range [18 AAC 70.020(b)(18)]*.

Temperature. The applicable water quality criterion for temperature limits the temperature of seafood processing waste discharges. May not exceed 15º C and may not cause the weekly average temperature to increase more than 1º C. Normal daily temperature cycles shall not be altered in amplitude or frequency [18 AAC 70.020(b)(22)].

Color. Color is a component of seafood processing waste. The applicable water quality criterion for color limits the color of seafood processing waste discharges. *Surface waters must be free of substances that produce objectionable color, and the water may not exceed 15 color units [18 AAC 70.020(b)(13)]*.

Turbidity. Turbidity is a component of seafood processing waste. The applicable water quality criterion for turbidity limits the discharge of seafood processing waste. *May not exceed 25 nephelometric turbidity units (NTU); may not reduce the depth of the compensation point for photosynthetic activity by more than 10%; and may not cause detrimental effects on established levels of water supply treatment [18 AAC 70.020(b)(24)]*.

Chlorine, total residual. Total residual chlorine may be present in residual amounts from periodic use to sanitize equipment. The applicable water quality criterion for chlorine limits the amount of chlorine in the seafood processing waste discharge. *The 1 hour average shall not exceed 13 µg/l and 4 day average shall not exceed 7.5 µg/l [December 12, 2008 Toxics Manual]*. The TRC effluent limits adopted by reference at 18 AAC 83.010 (most current version) and those found in 18 AAC 70 are not quantifiable using EPA-approved standard analytical methods found in 40 CFR Part 136 (most current version). DEC will use the minimum level (ML) of 0.1 mg/L as the compliance evaluation level for this parameter.

3.1.3 Other Effluent Limitations and Requirements

The discharge of seafood processing waste from seafood processors covered by the permit will not result in a violation of the WQS provided that the permittee complies with the limits and conditions in the permit. The permit requires the following:

3.1.3.1 Seafood Processing Waste Limitations

The permit prohibits discharges resulting from a seafood processor producing washed mince and/or paste, or stickwater, to receiving waters within 1.0 nm of shore at MLLW. Stickwater is

the effluent produced by fish meal and fish meal/fish oil production, whereas fish oil is often a by-product of meal/bone/powder production. The basis for the area restriction is process wastes and wastewaters from washed mince and/or paste and fish meal/fish oil production result in high pollutant loading of BOD. The high levels of BOD can depress dissolved oxygen in the water column and on the seafloor. Additionally, these effluents often result in pH, ammonia and temperature discharge levels beyond applicable WQS, and require further distance from shore for adequate flushing to meet WQS at the boundary of the mixing zone. In the areas of shore to 0.5 nm area from shore, the discharge of other by-product effluent (fish meal without fish oil production, unground bones from hydrolysate production), stickwater, and washed mince and/or paste is also prohibited. The AKG520000 and 2011 AKG523000 permits both prohibited these types of discharge within 1 nautical miles of shore, and the reissued AKG523000 permit continues that prohibition.

During the 2011-2016 permit cycle, the Department became concerned with overlapping discharge locations and area-of-operations, and the potential cumulative impacts to waterbodies given multiple requests to potentially discharge large volumes of waste. The 2018 permit requires permittees to identify if each requested discharge location or area-of-operation overlaps with the permittee's own applied for or previously approved discharge locations. The Department will determine if the discharge location or area-of-operation overlaps with other permittee's requested or authorized locations. If a permittee discharges at an overlapping discharge location (either with their own approved location, or another company's authorized location), the permittee will be required to perform seafloor monitoring in compliance with Permit Part 2.3.4 at the overlapping discharge location during, at a minimum, the first year of discharge. Other monitoring may be required as requested by the Department. The Department will evaluate the results to determine if modifications are required to the permit to protect the uses of the waterbody.

The maximum amount (by weight) of seafood processing waste discharge authorized may be limited by the conditions at the proposed discharge location or area-of-operation. The Department will evaluate the potential impacts of the projected maximum amount of seafood processing waste to be discharged from a permittee's AKG523000 NOI form for each discharge location or area-of-operation (Fact Sheet Parts 1.9 through 1.11 for the Notice of Intent Review and Permit Coverage Determination Process). The written authorization will include any specific limitations or conditions.

3.1.3.1.1 The permittee shall not discharge an amount (by weight) of seafood processing waste on a daily or annual basis which exceeds the projected amount on the NOI to be covered by the permit for each discharge location or area-of-operation or the amount authorized in a written authorization. The more restrictive limit will be the amount of seafood processing waste in the written authorization or as projected in the NOI.

3.1.3.1.1.1 An area-of-operation is an area where a seafood processing vessel or an inland water seafood waste discharge vessel does not anchor but processes and/or discharges while in transit. While there is no size restriction to an area-of-operation for an in-transit processing vessel, the maximum size of each area-of-operation for inland water seafood waste discharge vessels shall not be greater than 2.0 square nautical miles.

3.1.3.1.1.2 The Department requires the 2.0 nautical mile area-of-operation size restriction in order to manage where inland water discharge vessels are authorized to discharge within a water body. Often, multiple inland water discharge vessels will seek authorization to discharge into the same area of the waterbody. In order to review the cumulative impact to the waterbody and manage overlapping discharge areas between different companies and permittees, the Department restricts the discharge size area to 2.0 square nm.

3.1.3.1.1.3 The permit requires the permittee to identify if each area-of-operation overlaps with the permittee's own applied for or previously approved area-of-operation. A previously approved area-of-operation includes all area-of-operations where the permittee has had authorization to discharge under a NPDES or APDES permit, regardless if the permittee discharged at those locations.

3.1.3.1.2 The permit limits a stationary seafood processing vessel discharging between shore and 1.0 nm from shore up to a maximum of 3.3 million pounds of seafood processing waste (raw, unprocessed product minus finished, processed product) to each discharge location per calendar year. A discharge location refers to a circular area with a radius equal to 0.5 nm.

3.1.3.1.2.1 This maximum 3.3 million pound discharge limit is based on computer modeling conducted as part of the AKG520000 issuance used to predict the accumulation, persistence, and total area coverage resulting from discharged seafood waste (see Fact Sheet Part 4.3.2.1for more information on the modeling). The focus of the AKG520000 modeling was to predict the amount of seafood waste that could be discharged resulting in an area covered by a persistent (year-round) accumulation of seafood waste of no more than 1.0-acre. Based upon the model, a steady annual discharge of 4 million pounds or less of seafood waste near the surface to water greater than 50 feet in depth is predicted to create a zone of deposit of 1.0-acre in size. Based on the model's predicted seafood waste spreading at the periphery of the deposit, DEC determined that a one-sixth margin of safety was appropriate to protect water quality and not exceed permit limitations. The AKG520000 permit provides that the maximum limit for discharged seafood processing waste is equal to 5/6 X 4,000,000 = 3.3 million pounds per calendar year between shore and 1.0 nm of shore at a single discharge location while stationary.

3.1.3.1.2.2 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 seafloor within a 3 foot square sample plot. Therefore, the permit limits those stationary vessels discharging seafood waste to waters from shore to 1.0 nm, and in depths less than 120 feet to 3.3 million pounds of waste per discharge location.

3.1.3.1.3 The Department may authorize in-transit processing vessels discharging between 0.25 from shore and 3.0 nm from shore or baseline or vessels processing stationary between 1.0 from shore and 3.0 nm from shore or baseline up to the maximum amount projected on the NOI after evaluating the potential impacts of the discharge to the receiving water. If unacceptable impacts are likely to occur in a receiving water, the Department will include limits on the amount of seafood processing waste in the written authorization for that receiving water. The amount of seafood processing waste authorized will be the smaller of either the amount in the written authorization or the NOI projected amount.

3.1.3.1.3.1 The permit does not have a maximum waste load limit on the amount (in pounds) of seafood processing waste from offshore seafood processing vessels discharging stationary and more than 1.0 nm from shore, nor for in-transit seafood processing vessels discharging more than 0.25 nm from shore.

3.1.3.1.3.2 The AKG523000 permit requires discharges be to hydrodynamically energetic waters and that the total annual and daily estimated discharge amount be indicated on the NOI. Persistent waste deposits are not expected while a vessel is processing in transit, or for water depths exceeding 120 feet. When determining whether to limit the amount of discharge, the Department will consider the factors listed in Fact Sheet Part 1.11.2.3.

3.1.3.2 Seafood Processing Waste System Inspection Requirements (Permit Parts 2.1.4)

The permit requires routine daily inspection of the waste conveyance and waste treatment system whenever seafood processing occurs. 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 the vessel's waste treatment system, along with the development and implementation of a robust BMP Plan should increase permittee compliance with permit requirements.

A pre-operational check of the waste conveyance and waste treatment system shall be performed at the beginning of each processing seasons to ensure the discharge system is operable. The results of the pre-operational check shall be recorded and kept on board the processor. This record shall be submitted to DEC with the annual report.

The AKG523000 permit continues to require permittees inspect the grinder system or other treatment methods to evaluate compliance with the discharge size limitations requirement and to ensure that foreign objects (e.g., ear plugs, plastic, etc.) are not being discharged. The inspection shall evaluate the effectiveness of currently established BMPs in place for the maintenance of the waste treatment conveyance system. Logs of daily inspections shall be kept on the vessel, or be made available electronically upon request. An example *Seafood Waste Size and Waste Conveyance Inspection Log* is provided as Attachment B to the permit.

The grinder system or other methods of treatment shall be inspected daily whenever seafood processing waste discharge occurs to confirm that the grinders or other treatment methods are operating as properly designed to reduce the size of the seafood residues to 0.5 inch or smaller in all dimensions. As a new permit requirement, when ten or more seafood processing waste particles exceed the maximum size requirement in a 5-gallon bucket of wastewater, corrective action (e.g., replacement of or sharpening the grinder plates, pump speed adjustment, size of cutting plate reduced from 0.5 inch down to 0.375 inch, addition of audio grinder, etc.) is required within seven days and must be noted on the log. This requirement provides a standardization of when the corrective actions must be taken.

The inspection will require collecting a representative sample of treated discharge and monitoring the size of the ground residues in the discharge. The results of the monitoring shall be recorded daily, and the record shall be maintained on site. The daily log shall be submitted to DEC with the annual report. The permit requires that the permittee follow the standard seafood waste size sampling and analysis protocol (*Seafood Waste Size and Waste Conveyance Inspection Log*, Permit Attachment B). Protocol modifications are authorized, but require written approval from the Department prior to implementation.

Digital pictures of the grinder system or other methods of treatment in operation shall be captured at least once per calendar month while seafood processing waste discharge is occurring. Pictures shall include the sampling port while taking a daily sample and a representative discharge sample from the grinder or other method of treatment showing waste size. A measuring device such as a ruler will be included in the picture for scaling purposes. Pictures shall be of sufficient clarity and detail to support the observations, and should represent what the inspector observed. Pictures shall include a digital date and time stamp. A picture log with the name of the person taking the picture and picture description shall also be made. Pictures and the picture log shall be submitted on a CD, DVD, or USB drive with the annual report. Taking digital pictures of the grinder or other method(s) of treatment, waste and effluent on a monthly basis to document compliance with the limitations based on discharge size is a continued permit requirement. The purpose of the monitoring is to confirm permit compliance and implement operational corrections based on BMP Plan requirements and observations made by the permittee.

The permittee shall not discharge from a severed, failed, or leaking discharge system ten days past discovery of the severance, failure, or damage, unless repairs to the discharge system have been completed. Ten days of discharge post identification of a failing outfall is authorized to allow for the seafood delivered prior to the identification of the failure to be processed. Seafood

product that has been accepted after the identification of the severance, failure or damage may not be processed such that it results in a discharge from the damaged system(s).Ten days should be sufficient to allow for either a repair of the seafood waste treatment system or redirection of seafood to a different seafood processing facility/vessel. Failure of the discharge system shall be reported to DEC in accordance with Permit Appendix A. Part 3.4 (Twenty-four Hour Reporting), except reporting of grind size.

3.1.3.3 "Other Wastewaters" Discharges

3.1.3.3.1 Historical discussion of "Other Wastewaters"

The 2018 AKG523000 permit proposes requirements applicable to the discharge of "Other Wastewaters" for vessel discharges. Historically "Other Wastewaters" were regulated similarly between permits AKG520000 and AKG523000.

The 2001 AKG520000 permit states:

> AKG520000 (V)(A, B & C)(1)(h) "A permittee shall not discharge any other wastewaters that contain foam, floating solids, grease or oily wastes which produce a scum or sheen on the water surface, not wastes that deposit residues which accumulate on the seafloor or shoreline. The incidental foam and scum produced by discharge of seafood catch transfer water must be minimized to the extent practicable as described in the best management practices plan of Part VI.A. Wastewaters that have not had contact with seafood are not required to be discharged through the seafood process waste-handling system."

"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 2011 AKG523000 requirements for "Other Wastewaters" states:

> AKG523000 (Part 5.1.11) "An operator shall not discharge any wastewaters that exceed WQS (see Part 5.1.6), except in compliance with a mixing zone authorized in Part 1.2. Any incidental foam and scum produced by discharge of seafood catch transfer water must be minimized to the extent practicable, as described in the BMP Plan required in Part 6.1.5.2.5.11. Wastewaters that do not come in contact with seafood (for example, non-contact cooling water) are not required to be discharged through the seafood processing waste-handling system."

The 2011 AKG523000 permit carried over the requirements and list of "Other Wastewaters" from the AKG520000 permit, however the AKG523000 permit removed domestic graywater and storm water from the "Other Wastewaters" definition. The 2018 AKG523000 permit continues authorizing these "Other Wastewaters" as previously defined, with the addition of drinking water backwash, and requires that "Other Wastewaters" are discharged through an authorized outfall from a vessel discharging to required marine water depths and that the permittee performs monitoring to ensure WQS are met.

3.1.3.3.2 "Other Wastewaters" Pollutant Loading

Similar to most food processing industries, effluents from seafood processing facilities are characterized by high concentrations of nutrients, high levels of nitrogen content as ammonia (NH3-N; 29 to 35 mg/L), high total suspended solids (0.26 to 125,000 mg/L), increased biological oxygen demand (10 to 110,000 mg/L) and chemical oxygen demand (496 to 140,000 mg/L), and by the presence of sanitizers (Theriault, et al., 2007). 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.

3.1.3.3.3 "Other Wastewaters" Outfall(s) Monitoring

The permit includes new requirements to clarify what standards apply to "Other Wastewaters" and requires the development of BMPs to assist in pollution reduction and meeting permit requirements. The permit contains the requirement that all vessel 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." To meet the 1.27 cm size TBEL, most vessels 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 as designed when large hydraulic loads (such as catch transfer flows) are forced through the pump systems. Sending the "Other Wastewaters" waste stream that comes into contact with seafood waste through the seafood waste-handling system (grinding) is not the only way to meet the 1.27 cm (0.5 inch) size TBEL. As an alternative to meet the grind size TBEL, the "Other Wastewaters" could potentially 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 waste streams is a new permit requirement.

If commingled "Other Wastewaters" are discharged through outfalls to waters of the U.S., the monitoring requirements found in Permit Table 2 are required. This monitoring information is being collected for future potential permit limit development and for potential future mixing zone modeling efforts. Permittees are required to sample "Other Wastewater" outfalls that are commingled with seafood processing waste monthly, as found in Permit Table 2. During the first calendar year of the permit (January 1 through December 31, 2019) non-commingled "Other Wastewater" discharges are required to be monitored monthly during an annual monitoring study, as found in Permit Table 6. The discharge of non-contact cooling water, retort water, and boiler water may have the potential to affect the temperature of the receiving water as well.

3.1.3.3.3.1 All "Other Wastewaters" Outfall(s) to be identified on the NOI. If more than one outfall is used to discharge "Other Wastewaters", these "Other Wastewaters" outfalls are required to be identified on the NOI.

3.2 Effluent Monitoring and Analysis Requirements

In accordance with AS 46.03.110(d), the Department may specify 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.

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 vessel'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. The use of approved sampling and test methods as found in 40 CFR Part 136 is required.

The permit contains new sample labeling requirements for analysis and reporting purposes. The previous permit did not supply detailed instructions on sample naming conventions and location identification for reporting results to the Department. Thus, the permittee's previous monitoring report data could not always easily be interpreted by the Department. The 2018 permit provides detailed labeling and reporting information for effluent and receiving water sampling locations and results.

Monitoring for the parameters in Table 2, Table 3 and Table 4 (Permit Table 3, Table 4, and Table 5) is required when the vessel has the equipment and trained staff to perform the sample analysis onboard, or where the discharge is located within 20 nautical miles of:

- A town with a lab able to perform the sample analysis, or
- A town with an airport with regular air service to transport to a lab able to perform the analyses within required holding times.

Twenty nautical miles should allow a transport vessel to reach an airport with regular air service within three hours of sample collection.

Effluent samples shall be collected at a time that is within twelve hours of receiving water monitoring performed meeting the requirements found in Permit Part 2.3 for the parameters found in Permit Tables 7 – 9. The effluent and receiving water samples shall be collected during times of comparative production rates and flow.

New to the permit, DEC may grant a waiver from required monitoring in Table 2, Table 3 and Table 4 (Permit Table 3, Table 4, and Table 5) if the permittee can demonstrate that the permittee has historically been unable to perform sampling onboard, including documenting multiple (three or more) shipping attempts where the samples did not arrive within required hold times. Waivers from monitoring require an annual reapplication to provide for changes in operations or if DEC is able to determine that similar vessels are able to conduct monitoring. The Quality Assurance Project Plant (QAPP)-monitoring plan shall address when samples should be taken and shipped so that the samples can be analyzed by a laboratory within required hold times, including requiring procedures for re-scheduling sampling in case of flight delay.

Monitoring results shall be recorded on a monthly DMR and submitted electronically quarterly (Quarters shall be defined as January – March, April – June, July – September, October – December). Copies shall be kept on the vessel and made available upon request. A summary report of pollutants monitored and monitoring data shall be submitted with the Annual Report (Permit Part 3.3). This summary report has been included in the permit for ease of future permit issuance and the data review process, and to ensure that all required pollutants are being monitored. For each discharge location identified in the Annual Report, the permittee is required to identify if the vessel was able to perform the sampling. This requirement was added to create a tracking mechanism in the Annual Report to determine if and when sampling is performed as data collected during the previous permit cycle showed problems in permittees' varying methodology of sample collection.

3.2.1 Seafood Processing Waste, Wastewaters, and Commingled "Other Wastewaters" Monitoring

Fact Sheet Tables 1 (Permit Table 2) and 2 (Permit Table 3) summarize the monitoring requirements for a permittee that discharges seafood processing waste and wastewaters and /or commingled "Other Wastewaters". Samples shall be collected while seafood processing and

discharge is occurring. Samples shall be representative of the effluent being discharged before entering the receiving water.

Some permittees have historically interpreted the “Other Wastewaters” language found in the AKG520000 and AKG52300 permits to allow the discharges of “Other Wastewaters” from multiple outfall configurations. The seafood processing ELGs make no differentiation for these “Other wastewaters” discharges from seafood processing facilities and vessels. Thus, the AKG523000 permit requires monitoring for each “Other Wastewaters” outfall for the same pollutant parameters as seafood processing waste outfall discharges. Monitoring “Other Wastewaters” discharges not commingled with seafood processing waste will be require monthly during a one-year monitoring study to be conducted during the second year of the permit cycle (January 1 through December 31, 2020). This will allow the Department to build an industry-wide dataset to evaluate potential impacts. If DEC finds no impact during the review of the “Other Wastewater” monitoring data, this monitoring may be dropped from future permit issuances. “Other Wastewaters” monitoring is only required when seafood processing is occurring on the vessel. “Other Wastewaters” not being commingled with seafood processing waste and/or wastewaters shall be sampled according to Table 5 (Permit Table 6). Commingled “Other Wastewaters” shall be sampled as required in Table 1 (Permit Table 2) and Table 2 (Permit Table 4).

Sample labeling required under Permit Part 2.2.7.3 is required as follows:

Outfall 001- Seafood Waste and Wastewaters (WW) and/or “Other Wastewaters”. If multiple discharge outfalls exist under this category the outfalls shall be labeled as: Outfall 001A – Seafood WW; Outfall 001B – Seafood WW2; Outfall 001C – Commingled “Other Wastewaters”, etc.

The permit retains the monitoring requirements established in the previous permit for Outfall 001, and establishes ammonia monitoring as a new requirement. Ammonia was documented as a pollutant in the 1975 Development Document for Seafood Processing Effluent Limit Guidelines (Part 408). Ammonia has been found in every species of fish being processed, entrained in fish parts and wastes, a fraction of which, depending on the pH of the receiving water, is in the un-ionized toxic form (EPA, 2010). Since Outfall 001 is the main seafood processing discharge line, DEC is requiring monitoring for ammonia to determine if ammonia is a pollutant of concern in this waste stream.

The parameters listed in Fact Sheet Table 1 (Permit Table 2) will require analysis on-board the processing vessel or sample collection vessel, excluding ammonia samples if properly preserved. These parameters, excepting ammonia, require analysis as soon as reasonably possible after sample collection, within 15 minutes at the latest according to method holding times. DEC estimates that the on-board testing equipment for the parameters in Fact Sheet Table 1 (Permit Table 2) will cost approximately $4,000 to $6,000 dollars. This cost estimate does not include the staff time cost of analysis and sample collection.

Fact Sheet Table 2 (Permit Table 3) summarizes the list of sampling parameters that will likely require analysis at a contract laboratory instead of on-board analysis.

Table 1: Outfall(s) 001 Seafood Processing Waste and/or Commingled "Other Wastewaters" Effluent Monitoring							
Parameter	**Units**	**Average Monthly Limit**	**Minimum Daily Limit**	**Maximum Daily Limit**	**Sample Location**	**Sample Frequency**	**Sample Type**
Flow Rate - Daily Discharge for each discharge outfall on the day sampled	million gallons per day (mgd)	report	---	---	effluent	daily	measured/estimated
Amount of waste discharged [a]	pounds/day	report	---	---	n/a	daily	calculated
Hours of Seafood Processing	hours/day	report	---	---	n/a	daily	calculated
Size of Seafood Waste Discharged [a]	cm	report	---	1.27 cm (0.5 inch)	effluent	daily	grab
Total Residual Chlorine (TRC) [b, c]	mg/L	report	---	---	effluent	monthly	grab
pH	S.U.	report	---	---	effluent	monthly	grab
Temperature	°C	report	---	---	effluent	monthly	grab
Total Ammonia	mg-N/L	report	---	---	effluent	monthly	grab
Color	Color unit	report	---	---	effluent	monthly	grab
Dissolved Oxygen	mg/L	report	---	---	effluent	monthly	grab

Notes

a) Amount of waste discharged = raw product minus finished product

b) Monitoring for chlorine is not required if chlorine is not used as a disinfectant nor introduced elsewhere in the seafood processing area.

c) Effluent limits for total residual chlorine are not quantifiable using EPA-approved standard analytical methods. The permittee will be in compliance with the effluent limits for chlorine provided the TRC levels are below the compliance evaluation level of 0.10 mg/L.

Table 2: Outfall(s) 001 Seafood Processing Waste and/or Commingled "Other Wastewaters" Conventional Pollutant Effluent Monitoring				
Parameter	**Units**	**Sample Location**	**Sample Frequency**	**Sample Type**
Oil and grease	mg/L	effluent	monthly	grab
BOD_5	mg/L	effluent	monthly	grab
Total Suspended Solids	mg/L	effluent	monthly	grab

3.2.2 Sanitary Wastes and Graywater Discharges (Outfall(s) 002 and 003)

The 2018 AKG523000 permit provides coverage for vessel discharges of sanitary (i.e., treated sewage) and graywater wastewater.

If discharged by the vessel, a vessel's sanitary waste must be treated 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 disposed to a permitted onshore facility's domestic wastewater discharge system.

Fact Sheet Table 3 presents the monitoring requirements for each MSD device outfall when sanitary effluent is discharged. Fact Sheet Table 4 presents the monitoring requirements for each vessel's graywater outfall when graywater is discharged.

The parameters listed in Fact Sheet Tables 3 (Permit Table 4) and 4 (Permit Table 5) will require both analysis on-board the processing vessel or sample collection vessel, and parameters that will likely require analysis at a contract laboratory.

Table 3: Outfall 002 MSD System Effluent Monitoring				
Parameter	**Units**	**Sample Location**	**Sample Frequency**	**Sample Type**
Flow Rate	gallons per day (gpd)	effluent	monthly	measured or estimated
Total Residual Chlorine [a, b]	mg/L	effluent	monthly	grab
Fecal Coliform (FC) Bacteria	FC/100 mL	effluent	monthly	grab
Enterococci Bacteria	#/100 mL	effluent	monthly	grab

Notes

a) Monitoring for chlorine is not required if chlorine is not used as a disinfectant, nor introduced elsewhere in the seafood processing area.

b) Effluent limits for total residual chlorine are not quantifiable using EPA-approved standard analytical methods. The permittee will be in compliance with the effluent limits for chlorine provided the TRC levels are below the compliance evaluation level of 0.10 mg/L.

Table 4: Outfall 003 Graywater System Effluent Monitoring				
Parameter	**Units**	**Sample Location**	**Sample Frequency**	**Sample Type**
Flow Rate	gallons per day (gpd)	effluent	monthly	measured or estimated
Fecal Coliform (FC) Bacteria	FC/100 mL	effluent	monthly	grab
Enterococci Bacteria	#/100 mL	effluent	monthly	grab
Total Residual Chlorine [a, b]	mg/L	effluent	monthly	grab
pH	S.U.	effluent	monthly	grab
Temperature	°C	effluent	monthly	grab

Notes

a) Monitoring for chlorine is not required if chlorine is not used as a disinfectant, nor introduced elsewhere in the seafood processing area.

b) Effluent limits for total residual chlorine are not quantifiable using EPA-approved standard analytical methods. The permittee will be in compliance with the effluent limits for chlorine provided the TRC levels are below the compliance evaluation level of 0.10 mg/L.

3.2.3 Non-commingled "Other Wastewaters" Discharges (Outfall(s) 004)

During the second calendar year of the permit, January 1 through December 31, 2020, a permittee shall conduct a monitoring study of non-commingled "Other Wastewaters" discharge. The permittee shall monitor "Other Wastewaters" not being commingled with seafood processing waste and/or wastewaters as specified in Table 5. Each outfall that discharges non-commingled "Other Wastewaters" shall be monitored separately.

The monitoring study results shall be compiled per Permit Part 2.1.1.6.6 and submitted with the Annual Report (Permit Part 3.3).

A permittee shall have sufficient laboratory analysis equipment on the processing vessel.

Sample Labeling. Samples required under this Part shall be labeled as follows:

Outfall 004 – "Other Wastewaters". If multiple discharge outfalls exist under this category the samples shall be labeled as: Outfall 004A – Cooling Water WW1; Outfall 004B – Scrubber Water WW2; Outfall 004C – Boiler Water WW3, etc.

Table 5: Outfall(s) 004 Non-commingled "Other Wastewaters" Effluent Monitoring

Parameter [c]	Units	Average Monthly Limit	Sample Location	Sample Frequency	Sample Type
Flow Rate - Daily Discharge for each discharge outfall on the day sampled	million gallons per day (mgd)	report	effluent	monthly	measured/ estimated
Total Residual Chlorine (TRC) [a, b]	mg/L	report	effluent	monthly	grab
pH	S.U.	report	effluent	monthly	grab
Temperature	°C	report	effluent	monthly	grab
Total Ammonia	mg-N/L	report	effluent	monthly	grab
Color	Color unit	report	effluent	monthly	grab
Dissolved Oxygen	mg/L	report	effluent	monthly	grab

Notes

a) Monitoring for chlorine is not required if chlorine is not used as a disinfectant, nor introduced elsewhere in the seafood processing area.

b) Effluent limits for total residual chlorine are not quantifiable using EPA-approved standard analytical methods. The permittee will be in compliance with the effluent limits for chlorine provided the TRC levels are below the compliance evaluation level of 0.10 mg/L.

4.0 Receiving Water Requirements

4.1 Applicable Water Quality Standards

CWA Section 301(b)(1)(C) requires the development of limitations 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 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 designated use classification of each water body. The Antidegradation Policy ensures that the designated 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 and marine surface waters of Alaska that are designated for all 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. Any existing uses (e.g., fresh water withdrawal location(s), set net or aquaculture locations) within a one mile distance of the proposed discharge is now required to be identified on the NOI.

The receiving waters for the permit are the territorial seas and defined inland waters between shore (0.0 nm at MLLW) 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 February 5, 2017, 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.

4.2 Mixing Zone (Permit Part 2.3.1- 2.3.2)

In accordance with state regulations at 18 AAC 70.240-270, as amended through June 26, 2003, the Department may authorize a mixing zone in a permit. 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. A discharge can neither partially nor completely eliminate an existing use of the waterbody outside the mixing zone and shall not impair the overall biological integrity of the waterbody.

The Department reviewed the available data submitted by permitted vessels and is authorizing a mixing zone consistent with 18 AAC 70.240. The Department has determined that the available information reasonably demonstrates that a mixing zone, with a 100 foot radius centered on the outfall terminus, extending vertically up to the surface and down to the seafloor is as small as practicable and will protect the existing uses of the receiving water. The methods of treatment and

dispersal are the most effective and are technologically and economically feasible when a seafood processing vessel discharges in conformance with the permit requirements.

Part 4.2.3 provides the information the Department used to determine the size of the general permit defined standard mixing zone.

4.2.1 Mixing Zones: Department Authorization and Regulatory Basis (Permit Part 2.3.1)

4.2.1.1 Consistent with 18 AAC 70.240, the Department is authorizing a mixing zone in the permit. Authorizations will include a mixing zone for each existing stationary vessel discharge location as listed in Appendix D (permittees with administrative continuations – Table D1) as well as applications for new mixing zones.

4.2.1.2 After completing a review of a NOI, the Department may authorize a mixing zone for each outfall from a seafood processing vessel. The maximum mixing zone size the Department will authorize under the permit is the general permit defined standard mixing zone, which is a circle with a 100 foot radius around the outfall terminus extending vertically up to the surface and down to the seafloor.

4.2.1.2.1 The proposed permit will issue a mixing zone to every authorized vessel in waters where the Department determines available assimilative capacity exists, and require monitoring at the boundary of the mixing zone and in the ambient water.

4.2.1.3 When determining whether the general permit defined standard mixing zone size is appropriate or whether a smaller mixing zone size is more appropriate for a specific receiving area, the Department included in its consideration the following (see 18 AAC 70.245(b)(1-7) for the list in its entirety) :

- The effects that the discharge might have on the uses of the receiving water,
- The flushing and mixing characteristics of the receiving water, and
- The cumulative effects of multiple mixing zones and other inputs affecting the receiving water.

4.2.1.4 Within the authorized mixing zone, the water quality criteria of 18 AAC 70.020(b) may be exceeded for dissolved gas, non-petroleum oil and grease (polar), pH, temperature, color, turbidity, residues, fecal coliform and enterococci bacteria, and total residual chlorine.

4.2.1.5 All water quality criteria shall be met at the boundary of the mixing zone. The written authorization will specify whether a mixing zone has been authorized, the size of the authorized mixing zone, and the water quality criteria that may be exceeded within the authorized mixing zone.

4.2.1.6 If through the review of a NOI the Department determines that it has insufficient information to determine whether a mixing zone is appropriate to ensure compliance with 18 AAC 70.240-270, a permittee may be required to submit additional information or may be required to submit an individual permit application and mixing zone application. The burden of proof for providing the required information is on the applicant seeking a mixing zone.

4.2.2 Mixing Zone History

4.2.2.1 Historical Mixing Zone Site Applicability

The 2001 AKG520000 Permit Parts V(A)(1)(i), V(B)(1)(k) and V(C)(1)(k) indicate:

> "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."

The AKG520000 permit accordingly 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 in-transit. Accordingly, the permit proposes to continue issuing standard 100 foot radius mixing zone to vessels.

4.2.2.2 Historical Mixing Zone Modeling

In the 1995 issuance of the AKG520000 permit, three mixing zones sizes were authorized: a 300-foot radius mixing zone for offshore processors, a 200-foot radius mixing zone for nearshore processors, and a 100-foot radius mixing zone for shore-based processors. The 2001 issuance of the AKG520000 permit estimated that a 100-foot radius mixing zone would provide a minimum dilution of 30:1 at the boundary of the mixing zone and would be authorized for all three categories of dischargers. However, upon review of the EPA and DEC administrative record for the 2001 AKG520000 permit reissuance, no record was found of any modeling performed to determine the basis of the 30:1 dilution factor or 100 foot size determination. Also, the 2001 AKG520000 permit did not require receiving water sampling or end of pipe sampling to determine whether the 100-foot radius mixing zone was sized appropriately or that a 30:1 dilution was available at the boundary of the mixing zone.

Due to the lack of information available for mixing zone verification DEC found that further effluent data, as well as ambient receiving water information, was needed to refine the size of the general permit defined standard mixing zone for receiving waters within the coverage area of the permit. During the 2011 – 2016 AKG523000 permit cycle, permittees were required to conduct additional effluent and receiving water monitoring in an attempt to assist the Department to evaluate the general permit-defined standard mixing zone size determination.

4.2.2.3 The 2011 – 2016 AKG523000 Permit Cycle Monitoring Requirements and Evaluation

The Department implemented a mixing zone study and ambient water quality study in the 2011 AKG523000 permit. The following provides a discussion of commitments found in Part 6.0 of the 2011 AKG523000 Fact Sheet.

4.2.2.3.1 2011 AKG523000 Fact Sheet Part 6.3.3

<u>Finding:</u> The Department performed a full review and analysis of all permittee's monitoring data submitted during the permit cycle. Monitoring data submitted by processors was analyzed per the commitments made in 2011 AKG523000 Fact Sheet Part 6.3.3.6.1. The Department found of the 12 permittees that reported discharging under the permit, only eight permittees submitted monitoring results. Four vessels failed to submit any monitoring data during the permit cycle, yet reported processing under their permit authorization. The Department also found that during the previous

permit cycle some permittees indicated on their NOI that the permittee was not requesting a mixing zone. If a permittee was not assigned a mixing zone, then according to the 2011 AKG523000 permit language, the permittee was not required to perform the receiving water monitoring. However, through a review of the limited data submitted, the Department found there were instances where the discharges were not meeting WQS at the end of pipe.

The Department's review of the submitted receiving water monitoring data submitted under the 2011-2016 AKG523000 permit cycle found numerous discrepancies and reporting errors. Permittees did not follow the permit's monitoring schedules, nor reporting requirements according to 2011 AKG523000 Permit Parts 5.1.3 and 5.1.4. The review further revealed inconsistencies in the distance from the vessels and actual locations of where monitoring was performed (e.g., boundary of the mixing zone vs ambient receiving water, and/or depth). Most processing vessels discharge from multiple outfalls, in varying locations around the outside of the vessel. The permit lacked detailed instructions on sample-site naming conventions and location identification for Annual Report writing. Thus, the permittees' reporting did not provide detailed, accurate labeling and reporting information about receiving water sample-site locations. The Department could not determine if the samples were collected at the "boundary of an authorized mixing zone, down current or likely influenced by an effluent discharge", or "at a representative location of the receiving water not influence by an effluent discharge" (2011 AKG523000 Permit Part 5.1.4.3).

Additionally, permittees often reported monitoring results that were sampled using incorrect settings on their data meters, or used analysis methods that could not meet minimum detection limits (40 CFR Part 136, 2011 AKG523000 Permit Part 1.11.4). Inaccurate pollutant monitoring results failed to provide DEC with the needed information to determine if the permittee was in compliance with permit limits, or if the permittee was meeting WQS in the receiving water. Several permittees reported collecting their effluent and receiving water samples several days apart, which is inconsistent with 2011 AKG523000 Permit Part 5.1.4.2. The permit required receiving water samples be collected on the same day as, and at a time that is reasonably close to the time of sampling of the seafood processing water discharge collected in accordance with 2011 AKG523000 Permit Part 5.1.3. The permit requirements could have been better defined in this regard as the language was not clear if "day" simply meant within 24-hours or on the same date.

The Department made note of the questionable monitoring results but did not use the data for further monitoring data analysis. After DEC's monitoring data analysis, only one collection event appeared to establish a causal relationship between pollutants from the effluent wastewater discharge and the receiving water sample locations. However, it was only a single sampling event, and the demonstrated relationship was for only one parameter, temperature, for a singular vessel. The reported temperature values identified a violation with respect to the temperature water quality criterion in all the receiving water sample locations as well as the corresponding effluent sample that was collected during the same sampling event. The remaining violations showed water quality violations in either the effluent (but a mixing zone exists) or violations in the receiving water only, but no definitive trends between permittee's effluent and receiving water sample violations.

Because of the inconsistency of the quality of monitoring data, the limited size of the data set, and the lack of demonstrated pollutant trends between effluent and receiving water samples, this dataset does not provide reliable, repeatable data to perform

modeling for any parameter with permit limits or to establish broader trends within the regulated industry. The Department has also determined that the limited monitoring data does not provide enough information to demonstrate adverse environmental effect from the discharge of seafood processing waste at processing locations. Since the Department again does not have sufficient data to model the near-field and far-field mixing of the effluent at this time, the permit will continue to require monitoring data be collected during the next permit cycle. Additionally, the Department is clarifying permit sampling procedures and reporting requirements in the 2018 permit to reduce the likelihood of the collection of questionable and ultimately unusable data.

4.2.2.3.2 2011 AKG523000 Fact Sheet Part 6.3.4 General Permit Defined Standard Mixing Zone Size

Finding: This finding is addressed by the response to 2011 AKG523000 Fact Sheet Part 6.3.3 immediately above. The Department did not find available evidence that reasonably demonstrated that the general permit defined mixing zone size authorized by the Department had a significant unforeseen adverse environmental effect. Additionally, without adequate monitoring data, DEC is unable to meaningfully reassess the general permit defined mixing zone size.

4.2.2.3.3 2011 AKG523000 Fact Sheet Part 6.3.6 Mixing Zone Evaluation for the Next Permit Cycle

Finding: This finding is addressed by the response to 2011 AKG523000 Fact Sheet Part 6.3.3 above. During monitoring data analysis, the Department compiled data reported from annual reports, including discharge volume amounts, monitoring data spreadsheet attachments, lab reports, GIS analysis of discharge locations, hours and dates processed, and proximity to the shore. This compiled data was analyzed and used to determine whether the Department could validate the current general permit-defined standard mixing zone, as well as document compliance with WQS.

During the monitoring data analysis, the Department observed water quality violations in effluent and/or receiving water samples. However, as previously mentioned only one of the parameters, temperature, was associated with a causal relationship between the effluent and receiving water quality violations and only from one sampling event. A single sample set is not enough information to perform new mixing zone modeling or a broader industry analysis. The remaining violations depicted various pollutant parameters exceeding limitations in either the effluent or the receiving water monitoring results, but no demonstrated trends pointing to a causal relationship between the sampled effluent and the associated receiving water sampling. There were also large inconsistencies in permittee's reported receiving water sample-site locations, making it difficult to determine where the sample was collected in proximity to the point of discharge, mixing zone and/or ambient-site collection locations.

Due to the reported inconsistencies and final results of the monitoring data, the Department determined that permittees should continue to be required to conduct effluent and receiving water monitoring to gather data in order for the Department to validate a general permit-defined standard mixing zone and document compliance with WQS during the next permit cycle. Additionally, clarifying edits were made to the proposed 2018 AKG523000 permit, clarifying sample labeling, and the timing of effluent and receiving water quality monitoring.

4.2.2.3.4 2011 AKG523000 Fact Sheet Part 6.3.6.2 Water bodies of Concern

Finding: The Department compiled a list of AKG523000 permittees, including those that previously had coverage and those that continue to have authorization to discharge

under the permit. A data compilation was put together using annual reports submitted by the permittees including information regarding whether the permittee processed under the permit authorization, reported discharge dates, volumes and locations, and whether effluent and/or receiving water samples were collected. A separate data compilation contains all of the monitoring data submitted by past and present AKG523000 permittees during 2011-2015. No annual report data from the 2016 calendar year were used in this data analysis, as the reports were not due until after the review.

The permit required the submittal of the latitude and longitude coordinates for each discharge location, effluent and receiving water sample-site locations. Based on this information, the Department created a geodatabase in ArcGIS containing all of the discharge and monitoring locations reported for 2012-2015. This geodatabase spatially displays where processing vessels discharged, as well as where and when monitoring data was collected.

Based on this information, the Department evaluated whether there were certain receiving water bodies that may warrant an area-specific mixing zone size instead of the general permit defined standard mixing zone (water bodies of concern).

Using the spatially projected geodatabase, the Department was able to calculate cumulative amounts discharged into each water body, and to specific discharge locations within water bodies. The Department was also able to observe locations where multiple processors operate. The Department calculated stationary vessel seafood processing waste volumes at or near the permit maximum of 3.3 million pound limit and also observed seafood waste discharges occurring at a single location for multiple years. Additionally, 100-foot mixing zones were spatially displayed in ArcGIS for each permitted vessel at their approved discharge locations, as well as overlaid and compared with their actual discharge locations. This allowed the Department to visually assess how the reported discharge locations overlap during discharge periods between vessels, including those authorized vessels from different companies. It also displayed where the reported discharge locations were located in reference to their authorized discharge sites.

After compiling and analyzing the above data, the Department determined that there were no conclusive water bodies of concern that would warrant an area-specific mixing zone. Only five vessels reporting processing within 0.5 and 1.0 nm of shore, and none of these vessels reported discharging amounts near the 3.3 million pound discharge limit when processing at the nearshore locations. Only seven nearshore discharge locations were reported during the 2011-2015 timeframe. Water quality monitoring was performed at only three of the seven nearshore locations (0.5 to 1.0 nm). Monitoring data results showed no causal relationship in water quality violations between the effluent and receiving water samples collected. Seafloor surveys performed at the nearshore locations (0.5 to 1.0 nm) also showed no deposits of seafood processing waste, which supported adequate dispersion of waste at their respective locations and no exceedance in the allowable amount of seafood processing waste discharged.

4.2.3 Mixing Zone Evaluation

This section provides the criteria and information the Department used to evaluate the appropriateness of authorizing a general permit defined standard mixing zone.

4.2.3.1 The physical, biological, and chemical characteristics of the receiving water, including volume and flow rate.

Although it is difficult to classify the marine waters of Alaska into regionally distinct oceanographic regimes, some generalizations were made from the available data on tide ranges and maximum tidal currents. Tide ranges and hence tidal currents are generally highest in the areas of Southeast Alaska, Prince William Sound, Cook Inlet, and Bristol Bay. Diurnal tides range between 10.1 and 28.8 feet at Yakutat and Anchorage, respectively. Maximum tidal current speeds in these areas range from 0.1 to 4.0 miles an hour (mi/hr) at Juneau and Anchorage, respectively. The highest tide ranges and tidal currents occur in Cook Inlet, an estuary with one of the greatest tidal amplitudes and currents known. In the area of the Alaska Peninsula and Aleutian Islands, including the Pribilof Islands and the island of Kodiak, and in the northern portion of the Bering Sea in the vicinity of Kuskokwim Bay, Norton and Kotzebue Sound, the tide range and tidal currents are generally lower. Diurnal tides in these areas range between 2.9 and 10.8 feet at Nome and Port Moller, respectively. The predicted maximum tidal current speed at Port Moller is 1.9 mi/hr.

There are numerous areas in the Alaskan coastal waters that are important areas for a variety of species, ranging from phytoplankton to marine mammals. These areas are used by a variety of marine mammals for migration and feeding, and are also important areas for many species including crab species, many commercial fish species, and many marine birds and mammals. Certain key species present in these waters are important from an ecological and economic standpoint, or for subsistence harvesting. Significant interspecies relationships, essential environmental requirements, seasonal distribution and abundance, and prominent areas or habitats where these species occur are also relevant. The biological communities present include plankton, benthic invertebrates, fishes, marine birds and waterfowl, and marine mammals.

4.2.3.2 The effects that the discharge might have on the uses of the receiving water.

Impacts from any individual seafood processing vessel 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, the benthic communities in Alaskan coastal waters would not be expected to decline significantly. However, multiple vessels discharging into the same receiving water, which the Department regulates closely, or even a single vessel operating outside the terms of the permit, have the potential to cause water quality impacts attributed to settleable solids deposition and dissolved oxygen.

Impacts from toxicity due to anoxic conditions and changes in community structure could be cumulative spatially over time. Although more complete knowledge would be of value in assessing the magnitude and significance of cumulative environmental impact, available data indicate that significant degradation is not likely to occur in areas of adequate dispersion and dilution (i.e., hydrodynamically energetic waters).

The quantity of benthic organisms preyed upon by other species could be reduced in the area of the discharge if benthos migrate from the area, or experience increased mortality or decreased recruitment, through smothering, toxicity, or alteration of sediment grain size characteristics. The degree of food supply reduction caused by discharges of seafood waste is unknown, as the size of the affected area and severity of impacts are by necessity speculative.

Initial deposition of the majority of discharged solids is expected to be rapid and highly localized. Therefore, adverse physical effects to biota from ground seafood discharge should be limited to the nearfield vicinity of the seafood waste deposits. 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. However, such potential impacts may be offset in the farfield by increases in nutrient concentrations. 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. However, biota may also be attracted to the discharge plume to feed on the discharged particulates. Infaunal or sessile organisms near the discharge are not likely to be impacted by the suspended solids.

In addition to potential chemical and physical alterations of the water column and benthos, seafood processing residues can cause some aesthetic and physical effects on the water surface and shorelines that could impair existing uses. For example, depending on water currents, presence and severity of storms, and other factors, residue material may wash up on nearby shorelines impairing aesthetic quality as well as creating an undesirable attraction of nuisance species and predators; however, the Department has taken steps to mitigate the potential for seafood waste to wash on to shore with new nearshore area restrictions. In addition, seafood processing residues can form a surface layer of scum, foam, or fine particles that could present a physical barrier preventing dissolved oxygen re-aeration, block light to the water column, deter avian feeding, and create an aesthetically undesirable condition. Such effects could also attract nuisance species and unwanted predators that would impair designated uses. The permit requires permittees to comply with WQS at the boundary an authorized mixing zone.

Although a number of potential impacts to marine organisms are outlined above, few studies specific to seafood processing waste discharges have been conducted to assess the importance of the direct and indirect impacts. Most studies conducted to date have focused on the direct effects of solid waste accumulations on benthic organisms, the effect of decaying waste on water column dissolved oxygen concentrations, and the potential toxic effect of waste decay byproducts (i.e., unionized ammonia and undissociated sulfide) on marine organisms. Literature relevant to potential impacts associated with eutrophication and residual chlorine are necessarily from studies conducted on other types of waste discharges (e.g., municipal wastewater facilities).

Seafood processing wastes are not expected to contain significant quantities of pollutants that may bioaccumulate in aquatic organisms. Seafood processing discharges are not expected to result in elevated levels of toxic or carcinogenic pollutants in marine organisms consumed by humans.

Seafood waste discharges may potentially adversely impact commercial groundfish fisheries in areas proximal to the discharges by decreasing fish stocks of walleye pollock and Pacific cod. Walleye pollock and Pacific cod eggs have the potential to be smothered by the deposition of solids and larvae may be affected by increased predation from the attraction of fish and waterfowl to the discharges. The extent of potential impacts is dependent upon the type of wastes, the amount of waste generated, and the location of the discharge. Offshore seafood operations are unlikely to affect these species however since spawning grounds are more commonly found in near-shore waters. The likelihood of impacts to these species is strongly dependent on the timing, composition, quantity, and location of discharges, although the overall impact is assumed to be minimal. Other species commercially harvested are also assumed to not be impacted.

Near-shore habitats used for recreational and subsistence fisheries can be impacted by seafood processing waste discharges. For example, in some instances, the presence of a processing vessel and its associated vessel activity and dominance of the shoreline displaces recreational and subsistence fishers. However, in other instances, the presence of

seafood waste discharges attracts fish that are then harvested by subsistence and recreational fishers. The positive or negative benefits vary on a case by case basis.

In 2016, the National Marine Fisheries Service identified 14 DPS of humpback whales, three of which are found in waters off the coast of Alaska: Western North Pacific DPS (endangered), Mexico DPS (threatened), and Hawaii DPS (not listed under the ESA). Additional cetaceans found in Alaskan waters currently identified as endangered species pursuant to the ESA include the following: blue, bowhead, fin, gray, humpback, North Pacific right, sei, and sperm whales. The Western DPS of the Steller sea lion has been listed as an endangered species since 1997 and the southwest Alaska DPS of northern sea otters are listed as a threatened species pursuant to the ESA. Both sea lions and sea otters occur from southeast Alaska to the Bering Strait. The short-tailed albatross is a marine bird identified as endangered while Steller's eider and spectacled eider are waterfowl presently identified as threatened. Several salmonid species originating from streams in Washington, Oregon, Idaho, and California are listed under the ESA; these species' ranges may include marine waters off Alaska during their salt water phase. The discharge of offshore seafood processing wastes are not likely to adversely affect the following species: blue, bowhead, gray, fin, humpback, North Pacific right, sei and sperm whales, short-tailed albatross, and ESA-listed salmonids. The Steller sea lion and northern sea otter may be impacted by attraction to seafood waste discharges putting them at risk for parasites or predation by other species, however, the dispersion of the wastes by offshore seafood processors should minimize these impacts and therefore Steller sea lion and northern sea otters are not likely to be adversely affected. The Steller's and spectacled eider have the potential to be impacted from increased localized populations of gulls and parasitic birds which may adversely affect breeding success, however, the dispersion of seafood wastes by offshore processors should minimize this impact and therefore Steller's and spectacled eiders are not likely to be adversely affected.

4.2.3.3 The flushing and mixing characteristics of the receiving water.

Significant physical oceanographic characteristics to consider include water temperature, density stratification, and water circulation in the vicinity of seafood processing discharges. Significant seasonal variation in water temperature and density structure occur in the Gulf of Alaska and the Bering Sea, especially in coastal waters in the vicinity of large freshwater inputs during winter and spring. Elevated surface water temperatures lower the saturation concentration of dissolved oxygen. Warmer surface waters overlying colder water also result in greater density stratification. Warmer surface waters occur in late summer. Density stratification of the water column can result in the trapping of waste discharges well below the water surface which may result in lowered dilution of the wastewater discharge, but prevent the appearance of the wastewater plume on the water surface. Water circulation results in the advection or transport of discharged wastewater, and when seafloor currents (or wind-induced waves) are strong enough, solid wastes that have settled on the seafloor may be resuspended and transported away from the discharge. Water circulation occurs through wind- and tidally-driven currents. The amount of wind- and tidally-induced circulation will vary seasonally, and tidally-induced currents will vary over the course of the day in many coastal areas of Alaska which experience semidiurnal tides. Wind-driven circulation most strongly influences circulation patterns during winter storms that frequent the Gulf of Alaska and Bering Sea.

The permit only authorizes discharges to hydrodynamically energetic waters with a high capacity of dilution and dispersion for both stationary processing operations and in transit processing operations.

4.2.3.4 Effluent treatment technology requirements under federal or state law

EPA has promulgated final ELGs, treatment technology requirements, specifying the minimum treatment standards for specific methods of processing Alaska seafood, such as mechanical butchering of salmon. The ELGs are codified at 40 CFR Part 408, adopted by reference at 18 AAC 83.010. The ELGs are applicable to the following seafood processing industries: crab meat processing, whole crab and crab section processing, shrimp processing, hand-butchered salmon processing, mechanized salmon processing, bottom fish processing, scallop processing, and herring fillet processing (40 CFR Part 408, Subparts E, G, J, P, Q, T, AC, AE). The TBELs from the ELGs have been incorporated into the permit.

4.2.3.5 The characteristics of the effluent including volume, flow rate, dispersion, and quality after treatment

The AKG523000 permit requires monitoring of the effluent and of the receiving water for a number of parameters. See Permit Parts 2.2 and 2.3 for identified parameters and monitoring frequency. The monitoring program in the permit has been designed to ensure that the Department will have the information needed to further refine and validate the general permit-defined standard mixing zone size.

4.2.3.6 Methods to analyze and model near-field and far-field mixing

The Department did not have sufficient data to model the near-field and far-field mixing of the effluent for a stationary processor at time of permit issuance. The permit requires monitoring data be collected during the permit cycle. The monitoring data will be used by the Department to analyze and model the near-field and far-field mixing characteristic of seafood processing waste discharge to receiving waters within the coverage area of the permit. See Part 4.2.5 for more information regarding the general permit defined standard mixing zone size evaluation for the next permit.

For processing operations while in transit, the Department has conducted or participated in several studies regarding the dilution available in a receiving water from a cruise ship discharge while in transit. Using information available from these studies (see Permit 2013DB0004 Information Sheet), it is expected that sufficient dilution is available at the boundary of the mixing zone when a seafood processing vessel is underway.

4.2.3.7 The cumulative effects of multiple mixing zones and diffuse, nonpoint source inputs located within, or affecting the receiving water

The permit covers both stationary and in-transit seafood processing vessels that operate in various waters throughout the state. Some stationary vessels will anchor at a single location for a time period before relocating nearby or to a completely different area of the state. A vessel may process seafood while stationary or in transit. Some areas will have multiple processors at the same time or at different times while other areas will only have a single processor during the operating season. These and other factors all contribute to the difficulty in evaluating and determining an appropriate general permit defined standard mixing zone size for the eligible offshore seafood processing vessels discharging seafood processing waste to receiving waters within the coverage area of the permit.

Impacts from any individual seafood processing vessel 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, the benthic communities in Alaskan coastal waters would not be expected to decline significantly. However, multiple vessels discharging into the same receiving water, and even a single discharger operating outside the terms of the permit, have the potential to cause water quality impacts attributed to settleable solids deposition and dissolved oxygen. Impacts from toxicity due to anoxic conditions and changes in 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 significant degradation is not likely to occur in areas of adequate dispersion and dilution.

The receiving waters within the coverage area of the permit begin from shore at MLLW. The cumulative effects of diffuse, nonpoint source inputs in receiving waters, many of which are located far from areas of population density, within the permit coverage area is assumed to be minimal.

4.2.4 Mixing Zone and Ambient Receiving Water Quality Monitoring (Permit Part 2.3.2)

The Department has found through a review of the data that no seafood processing vessels are meeting all water quality criteria at the point of discharge. Therefore all permittees will be issued a mixing zone after a determination by the Department that the waterbody has available assimilative capacity. If assimilative capacity is not available, a vessel is not eligible for coverage under the permit. The Department has also found that continued monitoring is needed for further analysis of the pollutants being discharged in comparison to the mixing zone water quality monitoring data. A mixing zone and ambient receiving water monitoring schedule has been established in Permit Parts 2.3.2 and Permit Tables 7-9. 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 vessel to undertake this type of monitoring, sampling, and reporting activities.

The frequency of the monitoring during this permit cycle is consistent with the frequency stipulated in the 2011 AKG523000 general permit to allow the collection of monitoring data to be used for the next permit reissuance. The monitoring frequency may change during the next permit cycle, including a reduction of monitoring for certain parameters if appropriate. Such a reduction in monitoring at the next permit reissuance will not be considered backsliding.

Samples shall be collected, analyzed, recorded, and reported in accordance with Fact Sheet Part 3.2, Effluent Monitoring and Analysis Requirements. If samples cannot be collected due to weather or other adverse conditions, the circumstances which delayed the sample collection shall be documented and submitted with the monitoring data.

Monitoring for the parameters in Fact Sheet Table 7 and Table 8 (Permit Tables 8 and 9) is required when the vessel has the equipment and trained staff to perform the sample analysis onboard, or where the discharge location is located within 20 nautical miles of:

- A town with a lab able to perform the sample analysis, or
- A town with an airport with regular air service to transport to a lab able to perform the analyses within required holding times.

Twenty nautical miles should allow a transport vessel to reach an airport with regular air service within three hours of sample collection.

Receiving water monitoring samples shall be collected at a time that is within twelve hours of effluent monitoring performed meeting the requirements found in Permit Part 2.2 for the parameters found in Permit Tables 2 – 6. The effluent and receiving water samples shall be collected during times of comparative production rates and flow. Receiving water monitoring for parameters found in Fact Sheet Table 6 - 8 (Permit Tables 7-9) is required quarterly and samples are required to be collected at two depths per sampling location and at two sampling locations per event. For each quarterly sampling date, a minimum of four samples shall be collected and analyzed. If the permittee does not operate in all four quarters, a minimum of two receiving water monitoring events as found in Fact Sheet Table 6 are required to be collected per year. These sampling events shall be collected a minimum of four weeks apart.

Samples shall be collected and labeled according to Permit Part 2.3.2.3, outlined below.

Boundary of the Mixing Zone Sample (BMZ) – The first location shall be at the 100 foot mixing zone boundary or at the boundary of a smaller authorized mixing zone, down current or likely influenced by an effluent discharge. This sample shall be labeled **"BMZ"** referencing the sample was taken at the boundary of the mixing zone.

Ambient Receiving Water Sample (ARW) – The second location shall be at a representative location in the ambient receiving water not under the influence of the vessel's discharge (outside and beyond the 100 foot or smaller authorized mixing zone boundary). This sample shall be labeled **"ARW"** referencing the sample was taken in the ambient receiving water.

At each of the sampling locations identified in Permit Parts 2.3.2.3.2.1 - 2.3.2.3.2.2, samples will be collected at two depths.

Surface Sample. The first samples shall be at a depth of approximately three feet. This sample shall be labeled either **"BMZ - Surface"** or **"ARW - Surface"** referencing both the location and depth the sample was taken. The depth the sample was taken shall be recorded.

Mid-Depth Sample. The second samples shall be collected at mid-depth. This mid-depth sample shall be labeled either **"BMZ - Mid-Depth"** or **"ARW - Mid-Depth"** at MLLW. The depth the sample was taken shall be recorded. For example, if the anchoring location water depth is -120 feet, the mid-depth sample would be taken at -60 feet.

The monitoring discharge location and sampling locations shall be marked on a map, clearly identified by coordinates in decimal degrees (Permit Part 2.3.2.4). The accuracy of coordinates should be at least within ±50 feet.

Fact Sheet Table 6 - 8 (Permit Tables 7-9) present the monitoring requirements for a stationary vessel permittee for the receiving water where a mixing zone has been authorized. In-transit processing vessels and inland water seafood waste discharge vessels are not required to perform receiving water monitoring, except Sea Surface monitoring (Permit Part 2.3.5).

The parameters listed in Table 6 (Permit Table 7) will require analysis as soon as possible, likely on-board the processing vessel or sample collection vessel, except the parameters ammonia, salinity, and settleable solids samples if properly preserved. These parameters, except ammonia, salinity, and settleable solids, require analysis as soon as reasonably possible after sample collection, within 15 minutes at the latest according to method holding time. DEC estimates that the on-board testing equipment for the parameters in Table 6 (Permit Table 7) will cost approximately $4,000 to $6,000 dollars. This cost estimate does not include the staff time cost of analysis and sample collection.

Fact Sheet Table 7 and Table 8 (Permit Tables 8 and 9) summarize the list of sampling parameters that will likely require analysis at a contract laboratory instead of on-board analysis.

Fact Sheet Table 8 (Permit Table 9) 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.

Table 6: Receiving Water Monitoring				
Parameter	**Units**	**Sample Location**	**Sample Frequency [b]**	**Sample Type**
pH	S.U.	Per Permit Part 2.3.2.3	1/Quarter [a]	Grab
Temperature	°C	Per Permit Part 2.3.2.3	1/Quarter [a]	Grab
Total Ammonia	mg-N/L	Per Permit Part 2.3.2.3	1/Quarter [a]	Grab
Color	Color unit	Per Permit Part 2.3.2.3	1/Quarter [a]	Grab
Turbidity	NTU	Per Permit Part 2.3.2.3	1/Quarter [a]	Grab
Settleable Solids	ml/L	Per Permit Part 2.3.2.3	1/Quarter [a]	Grab
Dissolved Oxygen	mg/L	Per Permit Part 2.3.2.3	1/Quarter [a]	Grab
Salinity	parts per thousand	Per Permit Part 2.3.2.3	1/Quarter [a]	Grab

Notes:

a. Quarter shall be defined as Jan. – March, April – June, July – Sept, Oct. – Dec. If the permittee does not operate in all four quarters, a minimum of two receiving water samples are required to be collected per year when seafood waste discharging occurs.

b. Effluent samples are required to be collected within twelve hours of the mixing zone and ambient water quality samples (Permit Part 2.2).

Table 7: Conventional Pollutant Receiving Water Monitoring				
Parameter	**Units**	**Sample Location**	**Sample Frequency [b]**	**Sample Type**
BOD_5	mg/L	Per Permit Part 2.3.2.3	1/Quarter [a]	Grab
Total Suspended Solids	mg/L	Per Permit Part 2.3.2.3	1/Quarter [a]	Grab
Oil and grease	mg/L	Per Permit Part 2.3.2.3	1/Quarter [a]	Grab

Notes:

a. Quarter shall be defined as Jan. – March, April – June, July – Sept, Oct. – Dec. If the permittee does not operate in all four quarters, a minimum of two receiving water samples are required to be collected per year when seafood waste discharging occurs.

b. Effluent samples are required to be collected within twelve hours of the receiving water quality samples (Permit Part 2.2).

Table 8: Bacterial Receiving Water Monitoring				
Parameter	**Units**	**Sample Location**	**Sample Frequency [b]**	**Sample Type**
Fecal Coliform (FC) Bacteria	FC/100 mL	Per Permit Part 2.3.2.3	1/Quarter [a]	Grab
Enterococci Bacteria	#/100 mL	Per Permit Part 2.3.2.3	1/Quarter [a]	Grab

Notes:

a. Quarter shall be defined as Jan. – March, April – June, July – Sept, Oct. – Dec. If the permittee does not operate in all four quarters, a minimum of two receiving water samples are required to be collected per year when seafood waste discharging occurs.

b. Effluent samples are required to be collected within twelve hours of the receiving water quality samples (Permit Part 2.2).

4.2.5 Mixing Zone Issues for the Next Permit Cycle

4.2.5.1 The Department will analyze data collected during this permit cycle, including but not limited to: data reported on annual reports, monitoring data from similar seafood processing facilities covered under individual permits or other general permits, and other available data to refine the size of the general permit defined standard mixing zone for receiving waters within the coverage area of the permit. The next permit may further require permittees to conduct additional effluent and/or receiving water monitoring to validate a general permit-defined standard mixing zone size determination or to document compliance with WQS.

4.2.5.2 During the analysis and size determination of the general permit defined standard mixing zone the Department may find that there are certain receiving water bodies of concern that warrant an area-specific mixing zone size instead of the general permit defined standard mixing zone size.

4.2.5.2.1 A receiving water of concern may be, for example, a water body where multiple processors normally operate during the same time period or processing season, where a stationary vessel discharges a volume of seafood processing waste at or near the permit maximum of 3.3 million pounds at a single discharge location for multiple consecutive years, or a receiving water with average currents near or below 0.33 knots.

4.2.5.3 The next permit may require permittees to conduct additional effluent and receiving water monitoring to validate and/or refine the area-specific mixing zone size determinations or to further define the operational conditions that a permittee will be required to comply with in order to be eligible for permit coverage in a receiving water of concern.

4.3 Zone of Deposit (ZOD) (Permit Part 2.3.3)

A ZOD is defined as a limited area where substances may be authorized to be deposited on the seafloor of marine waters. Pursuant to 18 AAC 70.210, the Department reviewed available information and has determined that the available information reasonably demonstrates that a general permit defined ZOD of 1.0-acre or less for each marine and estuarine discharge location from a stationary processor will protect the existing uses of the receiving water. The methods of treatment and dispersal are the most effective and are technologically and economically feasible when a seafood processing facility discharges in conformance with the permit requirements, limitations, and conditions.

If the Department finds that available evidence reasonably demonstrates that the general permit defined standard ZOD area authorized by the Department has a significant unforeseen adverse environmental effect, the Department will reassess the general permit defined ZOD and modify the ZOD authorization of the permit in accordance with applicable regulations.

The following Parts provide the regulatory basis, criteria and information the Department used to evaluate the appropriateness of authorizing a general permit defined standard ZOD.

4.3.1 Zone of Deposit: Department Authorization and Regulatory Basis

4.3.1.1 After completing a review of a NOI, the Department may authorize a ZOD of seafood processing waste up to 1.0-acre on the seafloor for each stationary vessel's authorized marine discharge locations discharging between shore and 3.0 nm from shore.

4.3.1.1.1 The 2018 AKG523000 general permit does not include authorizations of ZODs for in-transit vessels discharging seafood waste. Seafood waste discharged from a vessel while in-transit to hydrodynamically energetic waters have been modeled to disperse over a large area and are not expected to produce deposits on the seafloor.

4.3.1.1.2 The 2018 AKG523000 general permit does not authorize a ZOD for any freshwater discharge locations (e.g. fresh water rivers or streams above tidally-influence reaches), as restricted in 18 AAC 70.210.

4.3.1.2 The permit does not limit the total number of ZODs for a stationary vessel. Rather, the permit will limit the amount of waste that can be discharged to a discharge location in a specific receiving water when appropriate. A stationary vessel's discharge location refers to a circular area with a radius equal to 0.5 nm. The area of this circle is approximately 665 acres (28,995,153 square feet). A 1.0-acre ZOD is 0.15% of the total area of the circle.

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

4.3.1.3.1 The effects that the discharge might have on the uses of the receiving water.

4.3.1.3.2 The flushing and mixing characteristics of the receiving water.

4.3.1.3.3 The cumulative effects of multiple ZODs and other inputs affecting the receiving water.

4.3.1.4 Within an authorized ZOD, the water quality criteria of 18 AAC 70.020(b) for residues and the antidegradation requirement of 18 AAC 70.015 may be exceeded. However, the WQS shall be met at every point outside the authorized ZOD area. In no case shall the WQS be violated in the water column outside the ZOD by any action, including leaching from, or suspension of, deposited materials. The written authorization will specify whether a ZOD has been authorized and the area of the authorized ZOD for each discharge location.

4.3.1.5 If through the review of a NOI the Department determines that it has insufficient information to determine whether a 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 individual permit application. The burden of proof for providing the required information is on the person requesting a ZOD.

4.3.1.6 If multiple permittees request coverage under the permit to discharge in the same area, the cumulative amount of seafood processing 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 discharge location or area-of-operation 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 such that the existing authorization requires modification or if 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 individual permits (see 18 AAC 83.215(a)(5) and (6)).

4.3.2 Waste Weight Requirements

Fact Sheet Part 4.3.4.6 provides a summary of the 1993 conceptual modeling effort that is still deemed applicable for the 1.0-acre general permit defined standard ZOD. The following waste weight requirements were developed based on the 1993 effort that modeled seafood residues coverage areas and continue in the 2018 AKG5230000 general permit. DEC continues to rely on the 1993 modeling in order to authorize ZODs in the subject permit.

4.3.2.1 The 3.3 Million Pound Requirement

The 2018 permit reissuance continues to limit stationary vessels discharging between shore and 1.0 nm to a total seafood waste discharge amount of 3.3 million pounds annually per discharge location.

4.3.2.1.1 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 feet/sec a depth of 50 feet, and a flat seafloor 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 1.0-acre of seafood waste on the seafloor in waters with a net-drift current speed of 0.49 feet/sec, a depth of 50 feet, and a flat seafloor 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 l.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 seafloor 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.

4.3.2.1.2 The model predicted that discharges to near-surface waters would result in total areal coverage of 1.0-acre of the seafloor with significantly less seafood waste discharged than the near-seafloor discharge model cases. These results suggest that seafood waste discharges to the near-surface waters are exposed to the currents during settling for a longer time than the near-seafloor 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 1.0-acre coverage is much less than for the near-seafloor discharges.

4.3.2.1.3 The model predictions discussed above are considered conservative estimates of seafloor waste accumulation because the WASP5 model did not consider the resuspension and transport of the deposited wastes. 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, funding dependent, DEC will likely contract to have further modeling performed and staff trained to complete the newest ZOD formation modeling. 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's goal to further refine ZOD modeling efforts for comparison to permittees' seafloor survey reports.

4.3.2.2 The 10 Million Pound Requirement

The 2018 permit reissuance uses the 10 million pound limitation as a basis for requiring stationary vessels discharging to a single discharge location within a waterbody to conduct seafloor surveys.

4.3.2.2.1 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 for the issuance of the 1996 AKG520000 general permit. The modeling performed was the basis for the 10 million pound limit for an outfall approximately six feet above the seafloor forming a 1.0-acre ZOD.

4.3.2.2.2 The model's first-approximation of when shore-based discharges would result in coverage greater than 1.0-acre was at a current speed of 0.16 feet per second, a depth of 50 feet, and a flat bottom with an amount of 16 million pounds (wet weight) of seafood processing waste solids. Next, the model's current speed was set to 0.49 feet per second, the other factors remaining the same. This resulted in a 1.0-acre ZOD forming from only 12 million pounds (wet weight) seafood 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 solids discharges to per outfall / stationary discharge location to 10 million pounds annually.

4.3.3 Zone of Deposit History

A 1.0-acre ZOD for seafood processing waste deposits was authorized in both the 1995 and 2001 AKG520000 permits via the State's CWA Section 401 Certification for shore-based (onshore) processors discharging zero to 0.5 nm from shore, and near-shore processors (vessels) discharging 0.5 to 1.0 nm from shore. The Section 401 Certification also provided a ZOD for each shore-based processor and each single discharge location where a near-shore processor discharged. The Section 401 Certification did not authorize a single, 1.0-acre ZOD that would be cumulatively applied to all discharge locations where a near-shore processor was 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 CWA Section 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]

The 2001 AKG520000 permit, however, did not incorporate the state authorized ZOD approval for each discharge location for mobile facilities as provided in the July 12, 2001 DEC Section 401 Final Certification of AKG520000. The previous AKG520000 permit also did not clearly define what level of seafood processing waste coverage (continuous, discontinuous, or trace) on the seafloor counted towards the maximum 1.0-acre ZOD. Seafloor surveys were only required for shore-based and near-shore facilities if a permittee discharged at a single location for more than 7 days in water less than -120 feet at MLLW. A "single location" was defined as an 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 0.5 nm.

A majority of the permittees in the AKG520000 coverage area moved to a different location within the 7 day period in order to avoid the need to perform a seafloor survey or applied for a waiver under the AKG520000 permit from performing a seafloor survey. Due to diver safety issues and lack of survey methods that do not involve divers performing a seafloor survey in deep water, the AKG520000 permit did not require seafloor monitoring in waters exceeding -120 feet deep at MLLW. There was also a limited number of divers that could perform seafloor surveys.

The AKG520000 permit established a 10 million pound limit on the amount of seafood processing waste that could be discharged from a shore-based or near-shore facility. The 10 million pound limit was based upon modeling performed for an outfall located approximately 6 feet above the seafloor. There were no limits on the seafood processing waste discharge amounts for offshore processing vessels (vessels that processed more than 1.0 nm from shore) nor were there ZODs authorized for these vessels.

Continued from the AKG520000 permit, the 2011 AKG523000 general permit did not limit the amount of seafood processing waste discharged from offshore processing vessels (vessels that processed more than 1.0 nm from shore) nor were there ZODs authorized. The permit did limit stationary vessels discharging between 0.5 nm and 1.0 nm to a total seafood waste discharge amount of 3.3 million pounds annually per single discharge location. Those stationary vessels discharging seafood waste between 0.5 nm and 1.0 nm were allowed up to a 1.0-acre ZOD as authorized by DEC in individual authorizations. The 2011 AKG523000 general permit did not authorize a ZOD for in-transit processing vessels, regardless of the processing distance from shore.

4.3.3.1 The 2011 – 2016 AKG523000 Permit Cycle Monitoring Requirements and Evaluation

The Department implemented a ZOD study and ambient water quality study in the 2011 AKG523000 permit. The following provides a discussion of commitments found in Part 6.0 of the 2011 AKG523000 Fact Sheet.

4.3.3.1.1 2011 AKG523000 Fact Sheet 6.4.3 Zone of Deposit Evaluation, 6.4.4 General Permit Defined Standard Zone of Deposit Area Determination, 6.4.6 Issues for the Next Permit Cycle

Findings: In the May 23, 2011 AKG523000 Final Fact Sheet, the Department committed to validating and refining the standard ZOD during permit reissuance to verify that the ZOD was accurate and applicable to the permit.

The Department reviewed the 1993 conceptual model of the transport, fate, and persistence of discharges from seafood processing facilities in Alaska used for the general permit defined standard ZOD area determination. While this modeling effort is still deemed complete, DEC made previous commitments to verify that the modeling continued to be applicable and accurate. DEC hired a consultant in 2014 to evaluate the current modeling software available and recommend a preferred modeling program for updated ZOD modeling and evaluation. However, after a review of submitted seafloor surveys during the 2011 - 2016 permit cycle, the Department determined an updated conceptual model (further solids modeling) was not warranted. This determination was two-fold, as the number of seafloor surveys submitted during the permit cycle was minimal (two), and the results of those surveys demonstrated no accumulation of seafloor deposits.

The permit requires that processors discharge seafood waste in hydrodynamically energetic waters that will ensure dispersion and dilution of the seafood wastes and minimize accumulation of these deposits. The permit also requires that a permittee identify and develop markets, to the extent feasible, for the use of seafood processing waste as a raw product and not as a waste material to be discharged. This requirement is part of the permit-required BMP Plan ((18 AAC 70.210(b)(1) (2011 AKG523000 Permit Part 6.1.5)). The data provided by permittees' NOIs, annual reports and seafloor surveys demonstrated that permittees discharging in compliance with permit conditions, including meeting the permit limitation of no greater than one-acre ZOD:

- Have not created direct or indirect impacts on human health (18 AAC 70.210(b)(2));
- Have not created impacts to aquatic life another wildlife (including bioaccumulation and persistence) (18 AAC 70.210(b)(3));
- Have not had impacts to other uses of the waterbody (18 AAC 70.210(b)(4));
- Have not had unforeseen extension to the expected duration of the deposit, nor adverse environmental effect on the seafloor or waterbody (18 AAC 70.210(b)(5)); and,
- Have not had discharges resulting in unforeseen transport of pollutants by biological, physical or chemical processes (18 AAC 70.210(b)(6)).

Therefore, the permit continues to allow seafood processing waste discharges to hydrodynamically energetic waters, while setting permit conditions to ensure dispersion of seafood waste over large areas. Vessels dispersing seafood wastes are not expected to, nor have been shown to produce, measurable deposits on the seafloor.

The Department used the GIS database created from annual report data to identify if there were any areas with a documented basis of concern, such as an area where

multiple processors normally operate during the same time period or processing season, where a stationary vessel discharges a volume of seafood processing waste at or near the permit maximum of 3.3 million pounds at a single location for multiple consecutive years, or a vessel discharges to a receiving water with average currents near or below 0.33 knots. Many permittees received authorization to discharge to areas closer to shore than 1.0 nm, but processed and discharged 1.0 nm or further from shore and, as a result, did not trigger a seafloor survey. The Department used the created GIS database and NOAA current tables to identify receiving waters that have sufficient currents to disperse seafood processing waste so that the waste does not create deposits on the seafloor, to the best that data was available.

During analysis of the general permit defined standard ZOD, the Department did not find that there are any specific receiving waters of concern that warranted area specialized ZODs. Of the five vessels that reported processing within 0.5 and 1.0 nm of shore during the permit cycle, only two vessels performed a seafloor survey per the requirements in the general permit (Part 6.3). The results of the two surveys that were conducted found no waste of any kind at any of the sample stations during the seafloor surveys. Given the extreme currents and large tidal fluctuations in the surveyed water bodies, waste accumulation of any type would be extremely unlikely in both discharge locations. The other vessels that reported discharging between 0.5 and 1.0 nm did not trigger survey requirements, either reporting discharging at depths greater than 120 feet, or not processing for seven or more days (168 hours) at a single location. As previously mentioned, from 2011 – 2015 there were only seven nearshore (0.5 to 1.0 nm) discharge sites reported under the AKG523000 general permit.

Because no receiving waters of concern were identified during the review of the permitting files and data collected during the permit cycle, no supplemental information was requested from any permit applicants to assess site-specific ZODs.

The permit did not previously contain a discharge amount (pound) trigger for performing a seafloor survey, only a time period of processing operations at a single location as the trigger. The Department evaluated discharge information and seafloor surveys conducted during the permit cycle in order to evaluate whether to include a discharge amount trigger in the next permit. Instead of a seafloor survey being required to be performed based on distance from shore (the former permit only required surveys in the 0.5 - 1.0 nm range), the permit proposes changing the permit's seafloor survey trigger to require a seafloor survey for all discharges to less than -120 feet MLLW in depth. Additionally, a seafloor survey will be required when a company's vessel(s) discharge greater than 10.0 million pounds at a single anchorage site (actual discharge site).

The Department may require additional receiving water monitoring, which would be listed in an authorization, for site-specific purposes. In-transit vessels, including those discharging to inland waters, are not required to perform receiving water monitoring, except Sea Surface monitoring (Permit Part 2.3.2).

4.3.4 Evaluation of 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 a general permit defined standard ZOD.

4.3.4.1 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, vessels are required by TBELs to grind to ½ inch in all dimensions,

which under some receiving water characteristics may lead to the formation of deposits (residues) on the seafloor. EPA's 1975 Rulemaking and subsequent industry petitions for communities to be considered includes further financial analysis of the economic costs of having to screen seafood wastes and delivering the screened solids to a by-product facility / line (Fish Meal, Oil, Hydrolysate, etc.). Alternatives to discharging nearshore or shore-based vessels considered by the Department include the barging of waste to ocean waters or conversion of fish waste product to fish meal, fish oil, and by-product recovery. Given EPA's Remote designations, requiring these alternatives were determined infeasible. The permit, however, requires that permittees 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. Additionally, vessels are mobile and can discharge their waste in varying locations, thereby altering the discharge location over time.

Some vessels processing in Alaska have by-product lines directly on their vessel and can reduce waste and wastewater discharges by requiring the use of the by-product production line whenever feasible. The permit requires that a permittee identify and develop markets, to the extent feasible, for the use of seafood processing waste as a raw product and not as a waste material to be discharged. This requirement is part of the permit-required Best Management Practices plan.

4.3.4.2 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, Diarrheic 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.

4.3.4.3 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 processing 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 discharge pipe, including the requirement that discharges occur in hydrodynamically energetic waters to minimize the potential of accumulation of seafood wastes. Following the requirement to discharge in hydrodynamically energetic waters, seafood processing waste is not expected to pose a risk of bioaccumulation on aquatic life and other wildlife, as currents should be sufficient to disperse seafood processing wastes and minimize consumption of wastes. The decay of accumulated solid waste may reduce concentrations of dissolved oxygen 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 dissolved oxygen or toxic substances that could have an adverse effect on marine organisms.

The attraction of marine mammals and birds to seafood processing 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 monitor for these types of potential impacts. It is not the Department’s intent that seafood waste be authorized to wash up on the shoreline exposing more marine mammals and birds to seafood waste through the ZOD. Rather the intent of the ZOD is to allow seafood wastes to naturally attenuate at depth. Vessels whose shoreline monitoring reveals deposits forming or landing on the shoreline should take proactive action on investigating the cause of deposits, including discharge inspection and /or relocation, or deepening; and making changes to vessel discharge practices by altering BMP in order to control these types of deposits. In addition, the general prohibition from discharging within 0.25 nm of shore, excepting those

stationary processing vessels that can demonstrate previously existing infrastructure exists to anchor at that location or demonstrates safety concerns with anchoring at other locations, should mitigate shoreline deposits.

4.3.4.4 The potential impacts on other uses of the waterbody (18 AAC 70(b)(4)).

Impacts from any individual seafood processing vessel 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 decline significantly. The AKG523000 permit proposes to require the permittee to identify other water uses within one (1) nm.

Impacts from toxicity due to anoxic conditions and changes in benthic community structure could be cumulative spatially and over time; however, impacts are expected to be localized. 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 any water body impacts.

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

The extent of seafloor seafood processing 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 and velocity of tidal movement and wave action. 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 dissolved oxygen concentrations noted. The accumulation of these deposits in some areas indicates that the rate of discharge exceeds the assimilative capacity of some water bodies and more specifically, the assimilative capacity of the benthic community and other aquatic life that metabolize this material. The permit requires that processors discharge seafood waste in hydrodynamically 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 and localized.

DEC initiated a research project to evaluate ground 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 the deposits been for the two years prior to the study. When the seafood processors 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 was 3-4 knots, while the maximum current near the active piles was lower and approached two knots. The presence of seafood waste

on the seafloor was readily apparent from all four areas surveyed. The largest area of seafloor 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 seafloor experiencing adverse effects from excess loading around the two active facilities was almost 7 acres.

The benthic infaunal community was responding to the fish 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 seafloor 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 fish 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 fish waste discharge was ever discontinued in the future. The study estimated that if the fish processing operations ever 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).

4.3.4.6 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 seafloor 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 advected 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 seafloor topography, and prevailing directions and speeds of wind- and tidally-forced currents. The solid waste particles will settle to the seafloor at a rate that depends on the shape, density, and size of the individual particles. Once deposited on the seafloor, periods of high currents or storm wave-induced seafloor turbulence can result in the resuspension and transport of deposited seafood waste solids away from the point of discharge.

Currently, no studies have been identified that have adequately characterized the particle size distribution of ground seafood waste or the characteristic settling velocities of these particles. However, 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 hour to settle to the seafloor at depths of 400 to 500 feet. Smaller particles (less than 0.5 inch diameter) required more than 1 hour to settle to the seafloor. 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 seafloor) affects the initial areal extent where seafood processing waste deposit covers the seafloor 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 following deposition. If seafood processing waste is resuspended and transported away from the vicinity of the discharge, the accumulation of seafood processing waste would be less than that predicted based on the settling velocity and decay rate. The potential adverse impacts to benthic communities may also then 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 dissolved oxygen and results in the production of varying quantities of soluble compounds including carbon dioxide, methane, ammonia, soluble phosphorus, and hydrogen sulfide. Scavenging organisms including 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 seafloor.

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 re-suspend and transport waste solids deposited on the seafloor.

A computer modeling effort was developed in 1993 to predict the accumulation, persistence, and areal coverage of discharged seafood waste from seafood processing facilities in Alaska and the potential adverse effects resulting from these discharges. The modeling effort was performed in support of the initial 1994 NPDES general permit for seafood processing facilities. Multiple computer modeling programs were used to determine the total areal extent of the seafood processing 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 1.0-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 seafloor accumulation of seafood waste with a depth of 0.4 inch or greater over an area of 1.0-acre. This iterative process was conducted for twelve case scenarios, six for shore-based 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 waste is negligible. Resuspension and transport of deposited solids may occur at some discharge locations if seafloor current speeds exceed the critical current speeds required to re-suspend seafloor 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. Actual seafloor accumulations from vessels where current speeds are sufficient to re-suspend and transport significant amounts of deposited wastes will tend to be much less than those predicted by the model. A first-approximation of the likelihood that resuspension and transport of deposited seafood wastes may occur can be made by estimating or measuring current speeds in the vicinity of individual vessels and comparing the current speeds to the estimated resuspension current speeds of updated modeling.

Two current speeds (0.5 and 0.15 cm/sec, 0.097 and 0.29 knots, respectively) were simulated. For the simulations of the floating vessels 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 1.0-acre seafloor deposit of seafood waste. The modeling results indicated that for a stationary, near surface discharge in 50 foot water depth a steady annual discharge of approximately 8 million pounds would be required to produce a 1.0-acre deposit. In water depths greater than 50 feet, seafood waste discharges of 4 million pounds or less are predicted to create waste deposits of 1.0-acre in the absence of significant resuspension and transport of the deposited waste (See Fact Sheet Appendix B for specific effluent limitations for seafood processing waste discharges).

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.

Two programs were used to determine the total areal extent of the waste pile, WASP and SURFER™. Table 9 provides estimates of the total areal extent of coverage.

Table 9: Summary of WASP modeling case scenarios

Net velocity (cm/sec)	Total depth (m)	Seafloor slope (%)	Waste solids discharge rate (lb/yr wet weight)	Maximum waste accumulation depth (cm)	Areal Coverage (acres)	
					S[b]	W[c]
Near-surface discharges in open ocean						
5	15.24	0.0	8,000,000	63.4	1.0	0.8
15	15.24	0.0	4,000,000	19.2	1.2	0.6
5	30.48	0.0	4,000,000	24.2	1.1	0.9
15	30.48	0.0	4,000,000	12.3	1.3	1.0
5	45.72	0.0	4,000,000	18.5	1.2	1.2
15	45.72	0.0	4,000,000	8.0	1.3	1.0

[b] Areal coverage of solid waste estimated by SURFER™
[c] Areal coverage of solid waste estimated using WASP output

A first areal coverage estimate is 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 total areal extent of the waste pile is based on summing the areas of the WASP5 modeling cells that contain accumulations of seafood waste solids 0.4 inch deep or greater.

The modeling results suggest the complexity of the regulation of seafood waste discharges. Tradeoffs are evident between the desire to minimize the appearance of wastewater and waste solids at the water surface, the transport of the waste onshore, and the accumulation of waste solids on the seafloor, while also trying to maximize the dispersion and dilution of the waste. The WASP seafood waste accumulation model of near-surface discharges from floating facilities predicts relatively shallow deposits (approximately 0.3-0.8 feet deep) for the low and medium (5 and 15 cm/sec respectively) current speeds modeled. Under these conditions the areal extent of the waste deposit greater than 0.4 inches deep is controlled primarily by the discharge rate. Greater total area coverage of the waste from near-surface discharges is predicted for lower discharge rates than from near-seafloor discharges.

Seafood processing waste discharges from a processor while in transit to hydrodynamically energetic waters are assumed to disperse over a large area and are not expected to produce deposits on the seafloor. Discharges to waters deeper than 45 meters 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 seafloor within a 3 foot square sample plot. These assumptions based upon the current modeling effort are still deemed to be applicable to this ZOD evaluation; however, the Department will review seafloor surveys submitted this permit cycle to verify that the modeling results are still applicable and accurate.

4.3.5 ZOD Issues for the Next Permit Cycle

In preparation for the next permit cycle the Department will:

4.3.5.1 Funding dependent, perform conceptual modeling to determine the fate, transport, and persistence of discharges from seafood processing vessels in Alaska.

4.3.5.1.1 Additional data is needed to revise and update the conceptual model. The Department is expanding the seafloor survey requirement to all discharge sites where discharge occurs for greater than seven days in depths less than 120 feet. Additionally, the Department will require the permittee to perform seafloor surveys if greater than ten million pounds is discharged to a water body from multiple discharges by the same responsible party. This includes multiple discharges by a single vessel, or multiple discharges by different vessels from the same responsible party. The Department will notify a permittee covered by the permit if additional data needs to be collected by a permittee to facilitate the update of the conceptual model.

4.3.5.2 The Department will analyze data collected during this permit cycle, including but not limited to, data reported on annual reports, monitoring data from seafood processing vessels covered under the general permit, and other available data to identify if a limited number of receiving waters warrant additional study to determine if there are areas with a documented basis of concern.

4.4 Seafloor Surveys (Permit Part 2.3.4 and Appendix E)

The requirements for the seafloor survey and reporting requirements can be found in Permit Part 2.3.4. Permit Appendix E contains the Seafloor Survey Protocol and Guidance document, which provides the acceptable approaches for performing seafloor surveys. A permittee can use the example *Seafloor Survey Summary Report Form* and the *Seafloor Survey Transect Form* (Permit Attachment D). 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 E are

previously established permit requirements being carried forward. The seafloor monitoring schedule as established in Table 10 below is new.

The 2011 AKG523000 permit only required permittees discharging to locations from 0.5 nm to 1.0 nm from shore to perform seafloor surveys if the permittees met certain requirements. The 2018 permit carries forward the previous seafloor survey trigger thresholds and requires that any stationary vessel permittee discharging seafood processing waste to depths of less than -120 feet MLLW conduct a seafloor survey whenever seafood processing occurs at a discharge location for seven or more consecutive days in a calendar year, or greater than 168 hours cumulatively in a calendar year. The proposed permit requires seafloor surveys for stationary vessel discharge locations between shore to 3.0 nm from shore in depths of less than -120 feet at MLLW. Additionally, stationary vessel(s) (associated with one responsible party) discharging seafood processing waste to depths of less than -120 feet MLLW and discharging in excess of 10 million pounds of seafood waste to a water body are required to conduct a seafloor survey if discharging to an overlapping location. 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, covering less than 10% of the seafloor within a 3 foot square sample plot.

A permittee shall determine if a seafloor survey is necessary by recording the following information (Permit Attachment D):

- The date and hour of arrival and departure from each discharge location;
- The daily Latitude and Longitude (in decimal degrees) of each discharge location;
- The total number of hours of seafood processing that occurs while processing at each discharge location per processing vessel;
- The total number of pounds of seafood processing waste discharged at each discharge location per processing vessel; and,
- The total number of pounds of seafood processing waste discharged by all the permittee's vessels per discharge location and per water body.

The 2018 AKG523000 permit requires that a seafloor survey determine the area of continuous coverage (100%) and discontinuous coverage (10%-99%) of seafood processing waste at a single location. The seafloor survey uses a seafood processing waste deposition which is 0.5 inches or thicker on the seafloor and coverage of greater than 10% of the seafloor within a 3 foot square sample plot as the minimum detection level.

Waivers issued under AKG520000 Part VI(C)(10) from performing seafloor surveys are not continued in the 2018 AKG523000 permit. Those permittees who received EPA or DEC seafloor waivers from having to perform surveys in estuarine areas or 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 objectives can be met without using a diver. The 2018 AKG523000 permit also does continue that a permittee may apply for modification in the frequency of submitting seafloor surveys with the submittal of two seafloor surveys performed during the permit cycle. New to the permit, both seafloor surveys must demonstrate that seafood waste has not accumulated to pile sizes greater than or equal to 0.75 acres from year to year.

Table 10 (Permit Table 10) below depicts the required seafloor survey monitoring schedule.

Table 10: Seafloor Monitoring Schedule

Type of Survey	Survey Results	Area to be surveyed	Frequency
Dive Seafloor Survey	Dive Survey reporting ≤ 0.75 acres of deposits per discharge location [1]	Actual Discharge Location	Every other year within 60 days of the end of processing season at the same location the following season
Dive Seafloor Survey	Dive Survey reporting ≥ 0.75 acres of deposits per discharge location [1]	Actual Discharge Location	Annually within 60 days of the end of processing season until less than 0.75 acres
Repeat of Seafloor Survey	Survey modification request and authorized to discharge a 125% increase of seafood waste	Actual Discharge Location	Annually [2]

Notes:
1) The 0.75-acre amount is only applicable to each individual discharge location (Permit Part 2.3.4.1).
2) Survey is only required if the actual amount discharged is equal to or greater than 125% of the previously authorized discharge amount.

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 at the processing location. 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.

Upon submission of seafloor survey results, the Department may alter existing authorization requirements or deny continued coverage for certain discharge locations with persistent accumulation greater than or equal to 0.75 acres and require the permittee to propose new discharge locations. The presence of persistent accumulation greater than or equal to 0.75 acres at a single discharge location demonstrates that seafood processing wastes are not being discharged into hydrodynamically energetic waters that ensure the proper dispersal of seafood processing waste and the permittee shall minimize the accumulation of deposits to that single discharge location. The permittee may be required to perform continued annual monitoring for those discharge locations found to have greater than 1.0-acre of seafood processing waste deposits even if the permittee has ceased discharging at that location.

In identifying the area's where seafood waste deposits may be located, it is important to understand that the NOI identified discharge location(s) may not represent the actual location(s) of where a permittee anchored and discharged waste during the season. This disconnect between the NOI proposed discharge locations vs actual discharge locations may be due to a number of factors. First, the accuracy of the geographic information system used by the permittee to propose the discharge location points for the NOI. Second, the accuracy of the vessel's global positioning system (GPS) unit and how many satellites were within view of the boat while discharging. Third, the proposed discharge location size has been identified as a circle with a 0.5 mile radius, meaning the vessel could anchor anywhere in 1.0 mile wide diameter circle and still be meeting permit limits. Fourth, during the previous permit cycle, language in the permit "*ADEC acknowledges that the coordinates*

provided are estimates and actual coordinates will not be known until the facility arrives at the proposed location" did not require the permittee to discharge at the location identified on the NOI with an identified accuracy. Lastly, anchor drag and anchor swing (the way a vessel moves around its anchor) during normal ocean conditions and storms may also impact where the seafood waste is deposited. These deposits may be outside of the NOI's proposed discharge location, but it should be noted the authorized ZOD still limits the areal coverage of seafood waste deposits to 1.0-acre. During this permit cycle permittees are required to discharge within 0.5 nm of the NOI's proposed discharge location.

4.5 Sea Surface Monitoring (Permit Part 2.3.5)

All permittees are required to conduct visual sea surface. The permit requires visual monitoring of the receiving water at the point of discharge and the receiving water within an authorized mixing zone. The observation site selected shall allow the observer to see the surface of water directly above the outfall terminus. The purpose of the monitoring is to record the occurrence and extent of persistent films, foam, scum or sheens (compliance with 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 shall be conducted daily while seafood processing waste discharge occurs, and the monitoring frequency is retained from the previous 2011 AKG523000 permit. The permittee shall develop vessel specific QAPP monitoring instructions for the observer.

5.0 Other Requirements

5.1 Standard Permit Provisions

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.

5.2 Quality Assurance Project Plan (QAPP)

The permittee is required to develop QAPP sampling and monitoring procedures to ensure that the monitoring data submitted is accurate and explains data anomalies if anomalies occur. A new permittee shall develop and implement the QAPP within 60 days of authorization to discharge under the permit and submit a certification letter to the Department. A previously permitted permittee shall annually review and update the QAPP as necessary, including whenever process changes or changes in monitoring plans occur, and submit written re-certification with an updated NOI. The re-certification shall state that the QAPP has been reviewed and revised as needed, and that the QAPP 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.

5.3 Best Management Practices (BMP)

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. through 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 and submit a certification letter to the Department. A previously permitted permittee shall review and update the BMP Plan annually 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.

BMPs, in addition to narrative and numerical WQBELs, 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 facility 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 on-vessel utilization of water and materials, and BMPs were repeatedly recommended as the profitable approach to waste management in seafood processing 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).

In addition to generalized BMP development and implementation to prevent or minimize the generation and release of pollutants to waters of the U.S., the permit requires some specific BMPs as well. The 2011 permit did not require the recording method and schedule to be written down

when performing the daily visual inspection(s) of the waste conveyance system. The 2018 AKG523000 permit requires that the recording method, form and schedule of the required inspection shall be incorporated in the BMP Plan.

This proposed permit also requires the following new updates be added to the BMP Plan:

- Description of the practices and training staff will receive to ensure that "Other Wastewaters" are properly routed through the seafood processing waste treatment system (if required), or how they will apply other treatments to comply with WQS.
- If a permittee is planning on discharging potentially toxic (ammonia, chlorine) and other deleterious organic or inorganic waste streams through "Other Wastewater" outfall(s), the permittee's BMP Plan shall discuss where on the vessel the chemicals or pollutants are found, and the vessel 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 permit conditions. Note, the permit does not authorize the discharge of spills or other non-monitored, uncontrolled releases.
- Identify pollutants discharged during the seafood processing by-product production. Identify and develop methods to prevent, treat or minimize the generation and discharge of pollutants in stickwater at the source to the greatest extent practicable. Stickwater shall be recycled and treated to the greatest extent practicable, in an environmentally safe manner, whenever feasible.

The BMPs shall include a description of how ammonia and Freon repairs, as well as maintenance and purging practices, are to be performed on board to mitigate any accidental releases. 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 available for permittees during facility and vessel 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.

5.4 Annual Report (Permit Part 3.3)

5.4.1 **Purpose.** The purpose of the annual report is to document the status of implementation of select permit requirements, including:

5.4.1.1 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,

5.4.1.2 An assessment of the progress towards achieving the measurable goals,

5.4.1.3 A summary of results of monitoring information that has been collected and analyzed,

5.4.1.4 A discussion of proposed process changes or improvements for the next permit year and submittal of an updated NOI, if needed,

5.4.1.5 An assessment of the appropriateness of the selected BMPs along with a discussion of any changes to the BMPs or measurable goals, and

5.4.1.6 Reference to any reliance on another entity (e.g., a fish meal plant for reducing seafood waste discharges) for achieving any measurable goal.

5.4.2 **New Requirements.** The 2018 permit requires the permittee to record and report the following new requirements:

5.4.2.1 A record of each discharge location (stationary) or area-of-operation (in-transit) site authorized and a report for each site of Discharged or No Discharge, including the following:

5.4.2.1.1 Daily Depth of Discharge

5.4.2.1.2 One daily Latitude and Longitude location determination of the processor in decimal degrees while processing. Accuracy of coordinates shall be at least within ±50 feet (reporting to 5 decimals).

5.4.2.1.3 A copy of the vessel's log documenting if discharge occurred between shore and 0.25 nm from shore, and the circumstances requiring the discharge in this area.

5.4.2.2 Total amount of discharged seafood processing waste per discharge location or area-of operation, and number of hours and days per location.

5.4.2.3 Pounds of product produced on that date is required whether or not the product is in a finished state or just final state for the vessel (e.g., mince and/or paste Pollock is often shipped to another facility to be finished into processed Surimi).

5.4.2.4 Permittee must account for seafood processing waste discharged due to mince paste production (during washing or other).

5.4.2.5 The estimated or measured volume of wastewater discharged (in mgd) for each outfall:

5.4.2.5.1 Seafood processing waste and wastewaters;

5.4.2.5.2 Sanitary wastewater;

5.4.2.5.3 Graywater; and

5.4.2.5.4 "Other Wastewaters".

5.4.2.6 A summary report of waste size and seafood waste system inspections violations need to be reported with the Annual Report.

5.5 Antibacksliding

18 AAC 83.480 requires that "effluent limitations, standards, or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit." 18 AAC 83.480(c) also states that a permit may not be reissued "to contain an effluent limitation that is less stringent than required by effluent guidelines in effect at the time the permit is renewed or reissued." The effluent limitations in this permit reissuance are consistent with 18 AAC 83.430. This reissued permit does not contain effluent limitations that are less stringent than the previous permit, therefore, further antibacksliding analysis is unwarranted.

5.6 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 Department's approach to implementing the Antidegradation Policy, found in 18 AAC 70.015, is currently based on the Department's *Policy and Procedure Guidance for Interim Antidegradation Implementation Methods (Interim Methods)*, dated July 14, 2010. Note that the Lieutenant Governor signed and filed Antidegradation Implementation Methods regulations on March 7, 2018 with an effective date of April 6, 2018. The regulations were subsequently submitted to EPA on March 9, 2018 for review and approval. The new regulations may not be used for CWA purposes (e.g. APDES permits) until EPA approves the regulations for use in such purposes. As such, until the new regulations are approved by EPA for use in ADPES permitting, the existing *Interim Methods* will be used in conjunction with the application of the Antidegradation Policy. 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 individual permit coverage.)

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.

5.6.1 **18 AAC 70.015 (a)(2)(A).** Allowing lower water quality is necessary to accommodate important economic or social development in the area where the water is located.

Based on the evaluation required per 18 AAC 70.015(a)(2)(D), 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 the facilities 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 vessels to continue to operate, allow new seafood processing vessels 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 vessels 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.

5.6.2 **18 AAC 70.015 (a)(2)(B).** Except as allowed under this subsection, reducing water quality will not violate the applicable criteria of 18 AAC 70.020, or 18 AAC 70.235, or the whole effluent toxicity limit in 18 AAC 70.030.

Pollutants of concern in seafood processing wastewater 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 to a much lesser amount, refrigerants that leak from refrigeration systems used to preserve seafood. Biological wastes are primarily fish parts: heads, fins, bones, and entrails. The chemicals used for cleaning are primarily disinfectants which must be used in accordance with EPA specifications. Refrigerants used are usually ammonia and Freon.

The permit requires seafood processing operations to establish BMP Plans to minimize the production of waste and to 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 TBELs and WQBELs and applying the more restrictive of these limits in the permit.

Discharges from a seafood processing vessel 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, bacteria and TRC. Seafood waste residues shall meet water quality criteria at the boundary of a ZOD. Within each ZOD, the water quality criteria and antidegradation requirements for residues may be exceeded.

The discharge of wastewater from permitted operators is not characteristically toxic so violation of 18 AAC 70.030 should not occur. In addition, further analysis of 18 AAC 70.235 is unnecessary as eligible waters have not been reclassified.

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

5.6.3 **18 AAC 70.015 (a)(2)(C).** 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. This ensures that water quality criteria are met in the waterbodies, which by extension, ensures that existing uses are fully protected subject to compliance with permit terms.

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 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.

5.6.4 **18 AAC 70.015 (a)(2)(D).** The methods of pollution prevention, control, and treatment found by the Department to be most effective and reasonable will be applied to all waste and other substances to be discharged.

The permit requires operators of seafood processing vessels to follow prescribed BMPs to 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 vessels 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 and the high

costs of eliminating the engineering obstacles due to adverse climatic and geologic conditions." (EPA 1975).

"Other Wastewaters" authorized by the 2011 AKG523000 permit generated in the seafood processing operations included: 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 2018 AKG523000 permit continues authorizing these "Other Wastewaters" as long as the other wastewaters are discharged through an authorized discharge port meeting permit requirements.

The 2018 AKG523000 permit continues coverage of sanitary wastewater 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"]. Conversely, a vessel's sanitary wastewater may be disposed to an onshore domestic wastewater treatment 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.

5.6.5 **18 AAC 70.015 (a)(2)(E).** All waste 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 non-point 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 *Interim 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 ELG 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.

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 18 AAC 72.

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

5.7 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 WQBELs 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.

5.8 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 1.8) for those seafood processing operators located near CHAs. The permit requires an applicant of a new source/vessel or the permittee of an existing vessel that proposes material changes to a vessel 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 F and G go into further details regarding lists of the endangered and threatened species in Alaska.

5.9 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 not 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 1.8. Additionally, the permit, fact sheet, and any other supporting documents will be provided to NMFS and the ADF&G during the applicant and public notice periods. 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 from seafood processing vessels 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

NMFS maintains the following information link for EFH text descriptions and maps:

http://www.habitat.noaa.gov/protection/efh/newInv/index.html

5.10 Permit Expiration

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

6.0 References

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Appendix A

Mixing Zone Analysis Check List
based on
Alaska Water Quality Standards (2003)

The purpose of the Mixing Zone Check List 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, and to provide justification to establish a mixing zone in an APDES permit. In order to establish a mixing zone, all criteria must be met. The permit writer must document all conclusions in the permit Fact Sheet; however, if the permit writer determines that one criterion cannot be met, then a mixing zone is prohibited, and the permit writer need not include in the Fact Sheet the conclusions for when other criteria were met.

CRITERIA	DESCRIPTION	ANSWER & RESOURCES	REGULATIONS	MIXING ZONE APPROVED Y/N
Size	Is the mixing zone as small as practicable? Section 4.2.1, 4.2.3	**Answer: Yes,** mixing zone as small as practicable. •Technical Support Document for Water Quality Based Toxics Control •Fact Sheet, Section 4.2 •Fact Sheet, Section 4.2.1, 4.2.3 • DEC's RPA Guidance • EPA Permit Writers' Manual	18 AAC 70.240 (a)(2) 18 AAC 70.245 (b)(1) - (b)(7) 18 AAC 70.255 (e)(3) 18 AAC 70.255 (d)	Y
Technology	Were the most effective technological and economical methods used to disperse, treat, remove, and reduce pollutants?	**Answer: Yes** Fact Sheet Section 3.1.1	18 AAC 70.240 (a)(3)	Y
Low Flow Rate Design	**For river, streams, and other flowing fresh waters.** -Determine low flow calculations or documentation for the applicable parameters.	**Answer:** Fact Sheet Section 4.2.1 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.**	**Answer: No** Fact Sheet Section 4.2.3.2	18 AAC 70.245(a)(1)	Y

CRITERIA	DESCRIPTION	ANSWER & RESOURCES	REGULATIONS	MIXING ZONE APPROVED Y/N
	(2) Impair overall biological integrity of the water body? **If yes, mixing zone prohibited.**	**Answer: No** Fact Sheet Section 4.2.3.1	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.**	**Answer: Yes** Fact Sheet Section 4.2.3.3	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? **If yes, then mixing zone prohibited.**	**Answer: No** Fact Sheet Section 4.2.3.2	18 AAC 70.250(a)(4)	Y
Human consumption	Does the mixing zone…			
	(1) Produce objectionable color, taste, or odor in aquatic resources harvested for human consumption? **If yes, mixing zone may be reduced in size or prohibited.**	**Answer: No** Fact Sheet Section 4.2.3.2	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.**		18 AAC 70.250(b)(3)	Y
Spawning Areas	Does the mixing zone…			
	(1) Discharge in a spawning area for anadramous fish or Arctic grayling, northern pike, rainbow trout, lake trout, brook trout, cutthroat trout, whitefish, sheefish, Arctic char (Dolly Varden), burbot, and landlocked coho, king, and sockeye salmon? **If yes, mixing zone prohibited**.	**Answer: No** Fact Sheet Section 4.2.3.1	18 AAC 70.255 (h)	Y

CRITERIA	DESCRIPTION	ANSWER & RESOURCES	REGULATIONS	MIXING ZONE APPROVED Y/N
Human Health	Does the mixing zone…			
	(1) Contain bioaccumulating, bioconcentrating, or persistent chemical above natural or significantly adverse levels? **If yes, mixing zone may be reduced in size or prohibited**.	**Answer: No** Fact Sheet Section 4.2.3.2	18 AAC 70.250 (a)(1)	Y
	(2) Contain chemicals expected to cause carcinogenic, mutagenic, teratogenic, or otherwise harmful effects to human health? **If yes, mixing zone prohibited**.	**Answer: No** Fact Sheet Section 4.2.3.2	18 AAC 70.250 (a)(1)	Y
	(3) Create a public health hazard through encroachment on water supply or through contact recreation? **If yes, mixing zone prohibited.**	**Answer: No** Fact Sheet Section 4.2.3.7	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.**	**Answer: Yes** Fact Sheet Section 4.2.1.4	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 prohibite**d.	**Answer: No** Fact Sheet Section 4.2.1.6	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.**	**Answer: No** Fact Sheet Section 4.2.3.2	18 AAC 70.250(a)(2)(A-C)	Y
	(2) Form a barrier to migratory species? **If yes, mixing zone prohibited.**			Y

CRITERIA	DESCRIPTION	ANSWER & RESOURCES	REGULATIONS	MIXING ZONE APPROVED Y/N
	(3) Fail to provide a zone of passage? **If yes, mixing zone prohibited**.			Y
	(4) Result in undesirable or nuisance aquatic life? **If yes, mixing zone prohibited.**	**Answer: No** Fact Sheet Section 4.2.3.2	18 AAC 70.250(b)(1)	Y
	(5) Result in permanent or irreparable displacement of indigenous organisms? **If yes, mixing zone prohibited.**	**Answer: No** Fact Sheet Section 4.2.3.2	18 AAC 70.255(g)(1)	Y
	(6) Result in a reduction in fish or shellfish population levels? **If yes, mixing zone prohibited.**	**Answer: No** Fact Sheet Section 4.2.3.2	18 AAC 70.255(g)(2)	Y
	(7) Prevent lethality to passing organisms by reducing the size of the acute zone? **If yes, mixing zone prohibited.**	**Answer: No** Fact Sheet Section 4.2.3.2	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.**	**Answer: No** Fact Sheet Section 4.2.3.2	18 AAC 70.255(b)(2)	Y
Endangered Species	Are threatened or endangered species located within or near the mixing zone? If yes, are effects to threatened or endangered species likely to be adverse based on comments received from USFWS or NOAA? If yes, will conservation measures be included in the permit to avoid adverse effects?	**Answer: Yes** Fact Sheet Section 4.2.3.2, Section 5.8	Program Description, 6.4.1 #5 18 AAC 70.250(a)(2)(D)	Y