

January 12, 2015

Commissioner Larry Hartig
Alaska Department of Environmental Conservation
410 Willoughby Ave., Suite 303
Juneau, AK 99811-1800

Re: Resubmitted Request for Hearing on Record of GP No. 2013DB0004

Dear Commissioner Hartig:

On December 24, 2014, the Requestors timely requested your careful review of the final remand decision issued on November 26, 2014, by Division of Water Director Hale, pursuant to 18 AAC 15.200(a). *See* Attachment 1. In that decision, the Director declined to make any further changes to the Large Commercial Passenger Vessel Wastewater Discharge General Permit (GP No. 2013DB0004), lifted the stay imposed on the effective date of the permit, and released a revised fact sheet. By accepting Division staff's updated analysis ("Fact Sheet – Revision 1" or "Revised Fact Sheet") and declining to make any substantive changes to the general permit, the Director concluded the Informal Review process. *See* Attachments 2-4. That Informal Review process began with our initial informal review request on September 17, 2014, followed with additional information as requested by the Director in our corrected revision to the request, dated October 27, 2014. *See* Attachments 5-12.

On January 5, 2015, the Department's Hearing Liaison informed us that the electronic copy of our request did not contain "the two pages of CORMIX data that was provided with the hand delivered version." The Hearing Liaison also noted that several documents referenced in the Joint Request that had been submitted previously to the Water Division as part of the informal review process, which we assumed were already part of the administrative record, needed to be provided directly with the request to you if we wished them to be considered "as part of [our] request for adjudicatory hearing." *See* Attachment 13.

In response to our inadvertent error, and to facilitate your review of this request, please accept this Resubmitted Request for a Hearing on the Record along with the requested information. *See* Information Accompanying Requestors' Resubmitted Request for Hearing on Record (attached separately). For clarity's sake, this is not a request for an adjudicatory hearing on disputed factual issues but a request for a hearing on the existing agency record and written briefs regarding disputed and significant issues of law and policy raised herein. Other than providing the requested information, along with a list of the accompanying information, a revised introduction, and clarification of the action requested, this Resubmitted Request for a Hearing on the Record does not substantively change our initial request.

We believe the general permit ultimately upheld in the Director's final decision raises serious legal and program issues regarding implementation of the State's mixing zone regulation and antidegradation policy that warrant review by the Commissioner. Most importantly, the Division staff lacked a reasonable basis to size mixing zones for large cruise ships moving at less than 6 knots in all marine waters of the State of Alaska based only upon an evaluation of the factors in 18 AAC 70.240 in Gastineau Channel or while docked in Juneau or Skagway. The arbitrary evaluation and modeling conducted for these particular waters exacerbates the problems



from this unwarranted extrapolation. In many instances, assumptions about environmental conditions used in the Division staff's mixing zone modeling err to the less conservative. This is unwarranted in light of the many vessels that currently exceed both technology-based and water-quality-based effluent limitations set by the General Permit. The inadequacies are compounded further because the required information an owner or operator of a covered cruise ship must provide in a completed Notice of Intent (NOI) is insufficient for purposes of determining whether a ship will qualify for a mixing zone. Finally, the Director's final decision fails to correct a fundamental legal flaw in the General Permit -- the lack of a public review process and analysis for each ship that applies for authorization to degrade Alaska's Tier II waters by discharging treated sewage into a mixing zone under the putative limits set by the General Permit. *See also* Attachment 14 (Director Hale's Informal Review Response, Analysis, & Discussion, Nov. 12, 2014).

I. AFFECTED INTERESTS

This request for a hearing on the administrative record and written briefs is submitted on behalf of the Southeast Alaska Conservation Council (SEACC) and Cook Inletkeeper.

Founded in 1970, SEACC is an Alaskan non-profit, member-based organization. Members of SEACC regularly use the public waters of Alaska, to satisfy a variety of interests, such as the harvest of marine resources for customary and traditional (subsistence), recreational, and commercial purposes, as well as the aesthetic enjoyment of this area and our coastal resources in general. Promoting clean water and strong water quality standards are essential components of SEACC's goal to protect our region's natural resources, including public waters and our members' use and enjoyment of those waters. SEACC's mailing address is 224 Gold Street, Juneau, AK 99801; SEACC's phone is (907) 586-6942.

Cook Inletkeeper is a 501(c)(3) community-based nonprofit organization founded in 1995 to protect the Cook Inlet watershed and the life it sustains. Inletkeeper engages in a variety of activities – including water quality monitoring, public outreach and education, and directed advocacy – to press for clean water and healthy fisheries for the many families and communities who rely on them. Inletkeeper has over 2000 members and supporters throughout south central Alaska who use and enjoy the waters and fishery resources of Cook Inlet. Inletkeeper's Headquarters mailing address is 3734 Ben Walters Lane, Homer, Alaska 99603, and it has satellite offices in Soldotna, Anchorage and Talkeetna.

The upheld General Permit and supporting documents directly and adversely affect the interests of the Requestors. In particular, Requestors share an interest in assuring that application of Alaska's water quality standards and antidegradation policy protect the high quality of Alaska's coastal waters and their value for various uses, including the multiple uses enjoyed by our members, over the long-term. Our interests are directly and substantively impaired by the lack of an opportunity for public review and analysis of each ship's request to degrade Alaska's

coastal marine waters by discharging treated sewage under the putative limits set in General Permit 2013DB0004 and the Director's final decision.

II. ACTION REQUESTED

All of the issues presented below are questions of law and can be resolved without an adjudicatory hearing under 18 AAC 15.220(b)(1). Requestors respectfully request the Commissioner treat this review request pursuant to 18 AAC 15.220(b)(2) ("remand the permit decision to the department staff, with instructions as appropriate...[because] the department or applicant has failed to comply with a statutory or regulatory requirement") or 18 AAC 15.220(b)(3) ("grant a hearing on the existing agency record and on written briefs").

As addressed in more detail below, the General Permit does not comply with agency regulations and the Revised Fact Sheet fails to provide a rational explanation or demonstrate consideration of all relevant factors. Consequently, the Director's final decision is arbitrary. To facilitate the Commissioner's review, Requestors are submitting additional, readily available public information in support of our arguments. This information is not offered to raise a genuine issue of material fact per se, but in support of our legal claim that the mixing zone size approved under this permit violates Alaska's mixing zone regulation and the supporting analysis was arbitrary.

This request also gives the Commissioner the opportunity to independently review and correct the Director's legal conclusion that the prospective antidegradation analysis conducted for this general permit is consistent with federal and state antidegradation regulations. The Director simply failed to respond to our arguments and erroneously concluded the permit meets the federal anti-degradation requirements.

III. ISSUES PRESENTED

A. Extrapolation of Determinations about the Size of Mixing Zones for Discharges at Speeds Less Than 6 Knots in all Marine Waters of the State of Alaska from the Results of the Reasonable Potential Analyses for Juneau and Skagway Harbors is Arbitrary.

Compliance with the mixing zone regulation applied in this permitting process requires Program Staff to evaluate factors specified in 18 AAC 70.240 (2012). According to the Revised Fact Sheet, these evaluation factors "include the consideration of technology, existing uses of the waterbody, human consumption, spawning areas, human health, aquatic life, endangered species, and the necessity of the size of the mixing zone." Revised Fact Sheet, § 6.3.4 at 18; *see also* Appendix E (Reasonable Potential Analysis), Revised Fact Sheet at 50.

Staff acknowledge that mixing characteristics and available dilution of marine receiving waters are "a function of ambient conditions, effluent quality, discharge characteristics, and waterbody mixing characteristics." *Id.*, § 6.3.4.1 at 19. The Revised Fact Sheet informs the

public that: “The mixing zone boundaries, which are based upon a docked ship discharging during the 10th percentile tidal current, were used to conservatively assess whether all existing and designated uses would be met for all wastewater discharges while moving at any speed under 6 knots.” *Id.* at 23. “For the purposes of modeling DEC uses the upper and lower 10th percentiles for the current based upon the cumulative velocities in a tidal cycle.” *Id.* § F.4.5 at 58.

This 10th percentile value was based on the critical design period recommended by EPA for oceans, one of four major waterbody types described in EPA’s Technical Support Document (TSD). *See id.* Program Staff offer no explanation for why they didn’t type Juneau and Skagway Harbors as “estuaries and coastal bays” instead of ocean waters. According to the Revised Fact Sheet, “[t]he marine waters of Southeast Alaska have numerous freshwater inputs from creeks and rivers fed by rainfall, snowmelt, and continual glacial melting. Variable salinity, large tidal fluctuations, and localized sedimentation contribute to this area’s complex oceanography.” *Id.*, § 2.3.2 at 9. This statement contradicts DEC’s conclusion that Alaska marine waters covered by the General Permit are “oceans” instead of “estuaries and coastal bays.” As noted in EPA’s Technical Assistance Report for the Alaska Juneau Gold Mine Project – “Gastineau Channel is not connected directly to the open marine waters of the Pacific Ocean. Rather the channel is influenced by adjoining channels, which provide a source of freshwater to the channel.” *See* Attachment 8 at 91.

Although ocean waters are also subject to two-dimensional horizontal flows, “[b]ecause of the tidal nature of the estuaries and coastal systems and their complex circulation patterns, dilution of discharges cannot be determined simply by calculating the discharge rate and the rate of receiving water flow (i.e., the design flow).” *See* Attachment 15 at 74. Inexplicably, by considering these harbors as “oceans,” Division staff never considered the full extent of an unsteady ambient environment due to tidal action, freshwater input, wind intensity and direction for either harbor. Additionally, saline stratification for Skagway harbor was ignored altogether. When modeling Skagway Harbor, Program Staff completely ignored freshwater inputs from Pullen Creek, the only natural drainage flowing directly into Skagway Harbor, near the Broadway Dock.¹ The failure to consider and evaluate actual ambient conditions and waterbody characteristics for Juneau and Skagway harbors makes Program Staff’s determination as to the size of mixing zones in all Alaska marine water for discharges at speeds less than 6 knots arbitrary.

The ambient data used to determine density stratification for the Skagway Harbor mixing zone show that Skagway harbor is stratified due to fresh water influence. *See* Revised Fact Sheet at § F.4.3 at 58. The CORMIX User’s Manual instructs the modeler to specify:

whether the ambient density (or temperature) can be considered as **uniform** or as **non-uniform** within the water body, and in particular within the expected plume regions. As a practical guide, vertical variation in density of less than 0.1 kg/m³ or in temperature of

¹ *See* Excerpts from Total Maximum Daily Loads (TMDLs) for Metals in the Waters of Pullen Creek in Skagway, Alaska at 2 (May 2010)(available at http://dec.alaska.gov/water/tmdl/pdfs/Pullen_FinalTMDL_052110.pdf) (Attachment 16).

less than 1° C can be neglected. For uniform conditions, the **average ambient density** or **average temperature** must be specified.

See Attachment 17 at 33 (excerpts from CORMIX User's Manual (emphasis in original)).²

The area of interest within the mixing zone for the effects of stratification would be “The depth of water used for dilution would always be the top 4 –8 meters depending on the depth of the discharge pipe.” Revised Fact Sheet, § F.4.4 at 58. From the data supplied by E. White on December 19, 2014, the density range in Skagway from 6.5 meters to 8.0 meters depth is 1007.38 and 1017.98, a difference of 10.6 kg/m³ (quite a bit more than 0.1). The temperature change along the mixing zone depth from the same data is 10 degrees C at 6.5 meters to 23 degrees C at 8 meters; a difference far more than 1 degree C. Inexplicably, even though the data does not match the criteria in the CORMIX User's Manual for determining whether the waterbody is stratified or uniform, Division staff modeled all ships in Skagway Harbor as discharging into a uniform (non-stratified) environment. See Attachment 17 at 33.

That Skagway Harbor is indeed under the influence of fresh water (as an estuary versus an ocean type environment). DEC's own study of cruise ship plume dilutions found that “The CORMIX plume flattened out due to “trapping” in a stratified water column (i.e. one with fresh water above denser saline water, and became thin and wide).”³

The Revised Fact Sheet states: “The ambient temperature, salinity, and density profiles, as well as ambient concentrations, for Juneau harbor were used as surrogates for all marine waters” See, Revised Fact Sheet, § F.3.2 at 56. Without explanation however, Program Staff did model the two harbors differently in ~~the~~ CORMIX for the determination of mixing zone size. All ships modelled for Juneau Harbor are described for the software as being a “Density stratified environment.” All Skagway Harbor CORMIX models use a “Uniform density environment.” For the record, we attach CORMIX 8.0 printouts for Juneau and Skagway Harbors provided Requestors by Program Staff as Attachment 19.

The assumption made by Program Staff that all Alaska marine waters are indistinguishable from Juneau and Skagway Harbors is also arbitrary because it ignores legislatively-created “Special Areas” – which includes Alaska's most prized critical habitat area, wildlife sanctuaries and fish and game refuges.⁴ It also ignores the twenty-nine (29) aquatic farms located in the marine waters of Southeast Alaska, multiple aquatic farms in Prince

² User's Manual for CORMIX: A Hydrodynamic Mixing Zone Model and Decision Support System for Pollutant Discharges into Surface Waters at ii (Attachment 17); available at <http://water.epa.gov/scitech/datait/models/upload/users.pdf>. This is the publicly available version of the CORMIX User's Manual. Although subsequent editions to the User's Manual exist, access is only allowed parties with licensing agreements. For purposes of cites herein to the User's Manual, we could find no substantive differences between the cited 1998 version and later versions.

³ DEC, Assessment of the Stationary Cruise Ship Plume Dilution Study Skagway at 30 (May 2005)(Attachment 18). Available at: http://dec.alaska.gov/water/cruise_ships/pdfs/2009_Plume_Dilution_Study.pdf.

⁴ See <http://dnr.alaska.gov/parks/units/southeast/semarineprkmap.htm> (accessed Jan. 11, 2015)(Attachment 20).

William, Sound, Resurrection Bay, and Kachemak Bay, or most environmentally sensitive areas in Southcentral, Southeast, and Southwest Alaska.⁵

The Revised Fact Sheet states that for those ships apparently do not meet the acute aquatic life water quality criteria within 15 minutes, DEC will not authorize mixing zones for those ships. *See* Revised Fact Sheet, § F.6 at 60. Unfortunately, the information an owner or operator is required to provide DEC in a NOI will not provide the critical information necessary for DEC to correctly limit permitted discharges or make this determination. The NOI does not require the vessel's owner/operator to supply the latest data on effluent concentrations. This data is especially important for vessels that have no record of discharging in Alaska waters, or have an inadequate record of effluent testing in Alaska. There is no requirement that operators/owners provide this critical information necessary for DEC to correctly limit permitted discharges.

B. Failure to Consider Cumulative Effect of Multiple Discharges on Uses of Receiving Waters.

According to the mixing zone regulation used for this permit process, Program Staff was required to study “the effects, if any, including cumulative effects of multiple discharges and diffuse, nonpoint source inputs, that the discharge will have on the uses of the receiving water.” *See* 18 AAC 70.240(b)(3). The failure to consider the cumulative effects of proposed cruise ship discharges in Gastineau Channel, Juneau and Skagway Harbor along with discharges from the Juneau Wastewater Treatment Plant, Skagway Municipal Wastewater Treatment Plan, or Pullen Creek is arbitrary and unreasonable.

The discharge for Juneau's WWTP is shown in the Google Map on the following page:

⁵ *See* Attachment 21 (ASGDC's list of Aquatic Farms and Biologically Sensitive Areas in Southeast Alaska, Prince William Sound, Resurrection Bay, and Kachemak Bay)(available at <http://www.asgdc.state.ak.us/maps/cplans/subareas.html>)(accessed Jan. 11, 2014).

12/18/2014

58°17'02.0"N 134°23'13.0"W - Google Maps

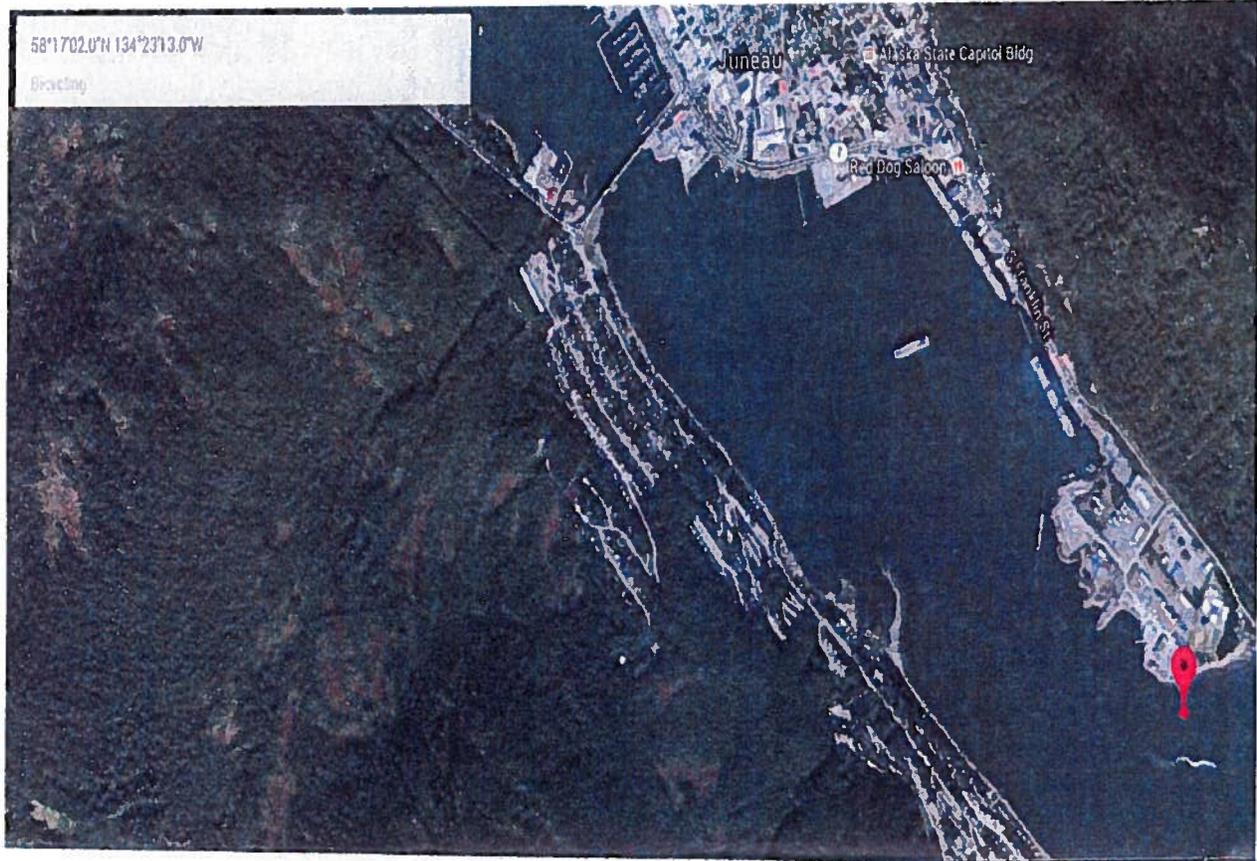


Figure 3 in the Revised Fact Sheet provides a schematic of Skagway Harbor showing the locations of the Broadway and Ore docks. Although this schematic identifies an “OutFall,” the Revised Fact Sheet does not contain any information regarding it or identify it as the outfall for the Skagway Wastewater Treatment Plant (Permit Number AK-002001-0). No information is provided regarding discharges from this outfall or the facility’s ability to cope effectively with and treat wastewater from the massive influx of visitors that arrive each summer – a thousand temporary workers and over 800,000 cruise ship passengers that disembark in Skagway.

Finally, as noted above, Pullen Creek is the only natural drainage flowing directly into Skagway Harbor. *See supra* text accompanying note 1. In response to our public records request, SEACC obtained an August 26, 2014 email from Jackie Timothy, ADF&G's Southeast Regional Supervisor for Habitat in response to the Division's request for information regarding salmon and Pullen Creek. According to Timothy, "There are no salmon life history events in the harbor that would be affected by the proposed mixing zones."⁶ This statement is inconsistent with the statements in both the Pullen Creek and Skagway Harbor TMDLs, and the NPDES Fact Sheet for the Skagway Wastewater Treatment Plant. According to the latter, "[t]he months of May through July represent the period of maximum biological activity associated with migration of juvenile salmon."⁷ Last summer, an emergency closure was ordered for the Pullen Creek king salmon fishery because of the salmon's vulnerability to anglers while they hold in wait for sufficiently high tides to pass upstream.⁸

The failure to consider the cumulative effects of multiple discharges and nonpoint sources on the uses of the receiving waters in Gastineau Channel and Skagway Harbor is arbitrary because it doesn't consider the relevant factors as required by the applicable mixing zone regulation.

C. Mixing Zones Impermissible if Discharge Forms a Barrier.

According to 18 AAC 70.240(c)(4)(G)(2012), a mixing zone must not "form a barrier to migratory species of fish passage." DEC makes no real effort to evaluate this question. Pullen Creek provides over-wintering rearing habitat for coho and Dolly varden and spawning habitat for coho, pink, and chum salmon.⁹ It is well established that salmon rely on chemical cues to return to their natal river system to spawn. Copper is a general inhibitor - i.e., it knocks out sensory pathways that are responsive to different natural odorants.¹⁰ Copper (and ammonia) are the driving parameters behind the sizing of the mixing zones. *See Revised Fact Sheet at § 6.3.4.3 at 21.* The WQBEL for these ship discharging at speeds less than 6 knots, or while docked, is 77 ppb. *See Revised Fact Sheet, § 6.3.6.3 at 25.* This amount of copper discharged into the environment within the mixing zone is 16 times the acute level for aquatic life. One of the ship berths in Skagway is directly next to the fish ladder at the mouth of Pullen Creek. DEC makes no attempt to analyze the possibility of discharges allowed under this permit in mixing zones may create a fish migration barrier at any of the 188 ports of call listed in the Revised Fact Sheet, Table 11, at 39.

⁶ Attachment 22.

⁷ *See Attachment 23* (Excerpts from NPDES Fact Sheet for the Skagway Wastewater Treatment Plant, AK-002001-01) at 10. (couldn't access cited link)

⁸ *See Attachment 24* (June 24, 2014 ADF&G Press Release announcing emergency king salmon fishery closure)(<http://www.adfg.alaska.gov/sf/eonr/index.cfm?adfg=region.nr&nrid=1973>).

⁹ *See supra* note 1, Attachment 16 at 6.

¹⁰ *See Attachment 25* (Impacts of Copper on the Sensory Biology and Behavior of Salmon at 24 (available at http://dec.alaska.gov/water/wqsar/wqs/pdfs/AFE_2_9_10_Collier.pdf).

D. Values Applied for Ambient Ammonia Data Used in Modeling are Arbitrary.

CORMIX modeling conducted for the recent draft permit for the Juneau/Douglas Wastewater Treatment Facility calculated ambient ammonia in the waterbody at 0.25mg/L based on 15% of the most stringent WQ criterion applicable. *See* Attachment 26 (NPDES Fact Sheet for AK 0023213 at 14).¹¹ This results in an ambient concentration for ammonia of 0.25 mg/L to determine the size of the mixing zone – a far more conservative approach than used for this General Permit.

Interestingly, unlike the mixing zone modelers for the draft Juneau/Douglas Wastewater Treatment permit, the General Permit modelers used both the Echo Bay data for ambient copper and copper data collected 40 miles away from Hawk Inlet that show a smaller concentration of dissolved copper. By averaging both data sets, modelers applied an ambient copper estimate of 0.61 ppb for the General Permit versus the 0.5 ppb level used in the Juneau/Douglas WWTF. This averaging with data far from the effected waterbody leads to a 20% relative percent decrease in the levels of ambient copper used in the models.

Modelers for the draft Juneau/Douglas Wastewater Treatment Plant permit also used a lower ambient tide velocity of 0.1 knots (0.05m/s). *See* Attachment 26, Table 6 at 15. Notably, this ambient tidal velocity is less conservative than the 0.12 knots (0.06m/s) velocity used for the Cruise Ship General Permit. The Revised Fact Sheet offers no explanation for these differences.

E. CORMIX Modeling Errors Dooms DEC's Mixing Zone Determinations.

DEC relied on CORMIX as “basis for determining mixing zone modelling.” Revised Fact Sheet § F.1 at 55. Given the reasonable potential for ships to exceed Alaska water quality standards (AWQS) for ammonia, fecal coliform, BOD, TSS, dissolved copper, and dissolved nickel when discharging at speeds of under 6 knots (or when moored or docked), DEC used CORMIX to analyze and predict behavior of cruise ship wastewater discharge plumes when they mix with receiving waters. Revised Fact Sheet, §§ 6.3.2, 6.3.4.1. “The computer models are sensitive and relatively small differences in the input parameters have a significant impact on the model results.”¹² The multiple errors committed by DEC when using the model makes DEC's reliance on the CORMIX Modeling for this General Permit arbitrary.

1. DEC selected wrong type of waterbody for modelling purposes.

As noted above, *supra* text accompanying notes 1 - 3, DEC arbitrarily selected an inappropriate waterbody type upon which to base its mixing zone modeling. DEC failed to account for the fact that the concentration of pollutants in the mixing zone fluctuates over the tidal cycle. Gastineau Channel, Juneau and Skagway Harbor are both tidally influenced estuaries. Tidal reversal conditions create highly unsteady environments in which transient

¹¹ Available at: http://dec.alaska.gov/Water/WPSDocs/AK0023213_factsheet.pdf.

¹² *See* Attachment 18 (available at http://dec.alaska.gov/water/cruise_ships/pdfs/2009_Plume_Dilution_Study.pdf).

recirculation and pollutant build-up effects can occur. Consideration of tidal reversal in designing a mixing zone is critical to account for the concentration build up in the transient discharge plume, as tidal reversals will reduce the effective dilution of a discharge by re-entraining the discharge plume remaining from the previous tidal cycle. *See* CORMIX User's Manual, *supra* note 3, § 4.3.3 at 32. This re-entrainment tends to increase the size of the acute and chronic mixing areas. The Division did not use the available tidal (unsteady ambient) feature in the CORMIX 8.0 modelling for mixing zones under the General Permit. Instead, the Division used a single steady velocity of 0.06 m/s for CORMIX modeling runs for Juneau harbor (and 0.05 m/s for Skagway Harbor) based on the 10th percentile of tidal movement, and only in one direction. *See* Revised Fact Sheet, § F.4.5 at pp. 58-59. Simply modelling the mixing zone as 83 meters either side of the discharge port only accounts for the direction of tidal change, not the subsequent re-entrainment of the historical plume. "In highly **unsteady tidal reversing flows** the assumption is no longer valid and significant concentration build-up can occur." *See* Attachment 17 at 26 (emphasis in original).

This approach is problematic:

[b]ecause of the tidal nature of the estuaries and coastal systems and their complex circulation patterns, dilution of discharges cannot be determined simply by calculating the discharge rate and the rate of receiving water flow (i.e., the design flow). For example, tidal frequency and amplitude vary significantly in different coastal regions of the United States. Furthermore, tidal influences at any specific location have daily and monthly cycles. These and additional factors require that direct, empirical steps be taken to ensure that basic dilution characteristics of a discharge to salt water are determined.

See, Attachment 15 at 74.

Instead of using available data, and taking advantage of recent updates to CORMIX that allow for the model's application to highly unsteady environments,¹³ the Division ignored evidence of a complex mixing pattern, including tidal reversals, and instead assumed a steady tidal current velocity of 0.06 m/s as the worst case scenario.:

To represent a low ambient velocity, the 10th percentile value from the cumulative [tidal] frequency curve was used; 0.06 m/s was used in Juneau models and 0.05 m/s was used in Skagway models. However, the tidal velocity would not remain at this low velocity for longer than about 60 minutes. That would include a time period prior to a slack tide, slack tide, and time period after slack tide. As the tidal current increases, mixing also increases and the time to meet WQS would decrease.

See Revised Fact Sheet, § F.9.1 at 64.

¹³ *Id.* at 1.

DEC's selection of an inappropriate waterbody type prevented it from modeling the correct design criteria for marine waters covered by this permit. This arbitrary choice makes all the subsequent mixing zone determinations for this permit arbitrary as well.

2. DEC's conclusion that it lacked sufficient data to run unsteady state modelling flows is incorrect.

DEC's conclusion that it "did not have the data needed to modify CORMIX to run as an unsteady state model" is arbitrary. *See id.* This information was readily available for Gastineau Channel and Juneau Harbor, and was also submitted with our Initial Statement in Support. *See* Attachments 6-8.

According to EPA's 1994 Technical Assistance Report for the Alaska Juneau Gold Mine Project, "[f]rom the above physical description of the Gastineau Channel system, the primary mixing mechanisms at work are the *tides*, the seaward transport of fresh water, and the wind-driven advection at the surface." *See* Attachment 8 at 99 (emphasis added) EPA's analysis also pointed out that the mixing ability of the estuary is reduced during the summer months due to increased fresh water run-off creating partially stratified conditions. *Id.* at 98. This occurs at the very time that the discharges authorized under this General Permit will occur in the waterbody. Relevant tidal information is available at figure 27 at 4-21 and Tables 18, 19 and 20 at 95-97 in EPA's Technical Assistance Report for the Alaska Juneau Gold Mine Project. *See* Attachment 7.

For the record, we also note that substantial tidal data for Skagway harbor and surrounding waters was available to DEC. The Cruise Ship Plume Dilution Study in Skagway Harbor was conducted by DEC in collaboration with EPA in 2008. *See* Attachment 18. Current measurements are available in Appendix D of this report.¹⁴

3. DEC wrongly concluded that discharge of sewage while docked occurs in an unbounded environment.

DEC concedes that wastewater discharges from a docked ship "towards shore are intermittently constrained by both the ship and the shoreline rather than only by the ship" and "[a]s a result of this additional boundary, the rate of mixing can be restricted for certain discharges." Revised Fact Sheet, § F.9 at 64. DEC declines to treat this as a "bounded" discharge because the plume "has the potential to completely traverse across the across the waterbody" and "[t]he constrained volume . . . is still capable of mixing at either end of the ship. DEC's strained reasoning misses the point and its approach conflicts with CORMIX's User's Manual, *supra* note 3. According to Manual, "CORMIX requires that the actual cross-section of the ambient water body be described by a rectangular channel that may be bounded laterally or unbounded." Attachment 17, § 4.3 at p.28. Division Staff ignored the requirement to describe the cross section of the receiving water between ship and shore. The key factor is not whether

¹⁴ Attachment 27 (available at: http://water.epa.gov/polwaste/vwd/upload/2009_03_18_oceans_cruise_ships_compiled_ser_appendices.pdf. Last accessed 12/24/2014.

the discharge plume is “still capable of mixing at either end of the ship,” but whether the lateral movement of the plume is constrained. Given the natural buoyancy of the plume, and that plumes discharged from unidentified ships with slow exit velocity will hug the side of the ship,¹⁵ it is possible for a ship’s side to constrain the plume’s lateral movement and the discharge must be considered bounded for modelling purposes. Constraining the discharge plume laterally would result in less dilution at either end of the ship. By modelling all ship scenarios under unbounded conditions, even if discharge toward shore, the Fact Sheet does not accurately represent the “the worst case” or “conservative” approach.” as it claims to do. See Revised Fact Sheet, § F.4.1 at 57. Instead, DEC arbitrarily limited its analysis to less likely scenarios.

4. DEC under predicts wind speed.

DEC explains that it used CORMIX’s default value for wind speeds, 2 m/s (a breeze), to model a “worst case scenario.” Revised Fact Sheet, § F.3.1 at 55. The selected default, however, does not represent actual conditions in Gastineau Channel, Juneau harbor:

Surface winds are strongly channeled by the steep terrain. Gastineau Channel is oriented northwest-southwest, the same direction as surface winds. Wind observations from the downstream station indicate that southeast winds occur 65 percent of the time and northwest winds occur 15 percent of the time. The mean annual wind speed from the airport station records indicate an annual mean wind speed of 3.7 metres/second. The monthly means range from 3.3 m/s in August to 4.3 m/s in October. There is less channelization of wind at the airport (northeast of town) than downtown (near the channel).

See Attachment 8, at 90. DEC’s selection of the CORMIX default is contrary to the information before the agency and, therefore, arbitrary. This makes DEC’s mixing zone determinations unreasonable. For the record, wind speeds are readily available for Juneau from the airport observation station. See Attachment 28 (Juneau Airport Wind Speed System Observations).¹⁶

5. DEC treated density distribution of ambient receiving waters in Skagway Harbor differently than for Juneau Harbor.

DEC deemed the Juneau and Skagway harbors “representative of the range of discharge scenarios for ships moving at speeds under 6 knots.” Revised Fact Sheet, § F.4.1 at 57. DEC goes on to note differences between the harbors for ambient tidal current (§ F.4.5), pollutants of concern (§ F.4.6) and size of mixing zones. No comparable differences were noted in the other 16 ports-of-call noted in the Revised Fact Sheet, Table 11 at 39. Without explanation, DEC failed to inform the public or decision makers that for at least three ships it modeled Skagway Harbor at a “uniform density environment,” whereas Juneau was modeled as a “density stratified

¹⁵ See Revised Fact Sheet, § F.8.3 at 64.

¹⁶ Available at <http://pajk.arh.noaa.gov/jaws/jaws.php>.

environment.”¹⁷ According to the CORMIX Users’ Manual, “The role of ambient **density stratification** is to counteract the vertical acceleration within the buoyant jet leading ultimately to the trapping of the flow at a certain level. Attachment 17, § 2.1.1 at 4 (emphasis in original). DEC staff erred by modelling Skagway Harbor as a uniform density environment by only using the average density of the water column. The CORMIX User’s Manual gives explicit instructions on determining the stratification of the waterbody. The stratification can only be ignored if the “vertical variation in density of less than 0.1 kg/m³ or in temperature of less than 1 °C.” *Id.* at § 2.1.1 at 33.

Data on Skagway Harbor released in support of the General Permit demonstrates that Skagway Harbor does not fit the criteria to be considered a uniform density environment.¹⁸ The data shows that the density range in Skagway from 6.5 meters to 8.0 meters depth is from 1007.38 to 1017.98; a difference 10.6 kg/m³ (quite a bit more than 0.1). The temperature change along the mixing zone depth from the same data is 11 degrees C at 6.5 meters to 7 degrees C at 8 meters; a difference more than 1 degree C. Skagway Harbor should have been modelled as a density stratified environment.

F. Allowing Large Cruise Ships to Degrade Tier II Waters without Notifying the Public about the Nature and Location of Specific Discharges Violates Alaska’s Antidegradation Policy.

General permits and antidegradation are fundamentally irreconcilable. *See also Ohio Valley Envtl. Coal. v. Horinko*, 279 F. Supp. 2d 732 (W. Va. 2003). EPA has recognized that conducting an antidegradation analysis at the time of issuance of a general permit is difficult. Final Reissuance of NPDES Storm Water Multi-Sector General Permit for Industrial Activities, 65 Fed. Reg. 64,746, 64793-94 (Oct. 30, 2000)(Attachment 29). EPA’s reconsideration of its approach to Tier 2 review at the general permit issuance stage was articulated in its approval of regulatory changes to the State of Washington’s antidegradation provisions contained in Washington’s revised 2003 Water Quality Standard regulations. There, EPA’s approval hinged on the Department of Ecology’s commitment to provide an opportunity for public review, comment, and challenge each time a facility applies for coverage under a general permit that would result in the lowering of water quality in a Tier II water.

The approach to Tier II taken by DEC for this General Permit is fundamentally different than the minimum required by EPA post-*Horinko* and previous DEC precedent requiring site-specific public review and comment before permitting the lowering of water quality in Alaska’s Tier II waters under a general permit.¹⁹ Unlike the approach approved by EPA for Washington’s Department of Ecology, there will be no site-specific evaluation and no public review at the time

¹⁷ For the record, Requestors attach a CORMIX model run for the Statendam in both Juneau and Skagway. We received this data from DEC in response to our public records request. *See* Attachment 18.

¹⁸ *See* http://dec.alaska.gov/water/cruise_ships/gp/2014/Port_Ambient_Data_2013.pdf. Excerpts provided in Attachment 27.

¹⁹ *See* Hearing Officer’s Final Decision in Adjudication of EPA General Permits AK-G70-1000 and AK-G70-0000 38-43 (May 10, 2002)(Attachment 30).

that a ship submits an NOI to DEC and seeks permission to degrade Alaska's Tier II waters. EPA specifically concluded the State of Washington's provision allowing Tier II review to occur at the time it develops and approves a general permit was consistent with 40 C.F.R. §131.12(a)(2) because Washington also provides public notice and opportunity to comment "each time a facility applies for coverage under the general permit." *See Attachment 33.*²⁰ DEC cannot apply Alaska's antidegradation policy in a way inconsistent with the federal Clean Water Act and its implementing regulations.

In contrast, section 4.3.3.3 of the 2014 Large Cruise Ship General Permit reserves to DEC the authority to deny coverage under the permit and require submission of an individual permit action. Apparently, there is also the possibility "[f]or a small number of ships . . . there is a reasonable potential to exceed the acute ammonia criterion outside the smaller initial mixing zone" which might result in the "the Department requiring compliance with more stringent terms and conditions as part of the authorization . . ." Revised Fact Sheet, § 6.3.2 at 17. This General Permit does not provide the same opportunity for public notice, review, and possible challenge as do the implementation procedures adopted by the State of Washington and approved by EPA. The approach approved by DEC for this General Permit violates the federal antidegradation policy.

IV. CONCLUSION

For the reasons discussed above, we respectfully request the Commissioner remand the general permit the Division and direct the Division to correct the serious flaws in the permit and comply with all statutory and regulatory requirements.

Best Regards,



Buck Lindekugel
SEACC Grassroots Attorney
On behalf of Joint Requestors

²⁰ Excerpts from EPA's Review of antidegradation provisions in 2003 Washington water quality standards (May 2, 2007)(full document available at http://www.ecy.wa.gov/programs/wq/swqs/epa-antideg_policy_approval.pdf).

AFFIDAVIT OF SERVICE

I hereby attest that the Resubmitted Request for a Hearing on Record, GP No. 2013DB0004, and a list of the accompanying information, was served as follows:

On the permit applicant: not applicable

On the issuing department office on January 12, 2015 via hand delivery and electronic mail (except for the accompanying material) to:

Ed White, Acting Program Manager
Large Passenger Vessel Environmental Compliance Program
Dept. of Environmental Conservation, Division of Water
410 Willoughby, Ste. 303
Juneau, AK
edward.white@alaska.gov

On the Department of Environmental Conservation Commissioner on January 12, 2015 via hand delivery and electronic mail (except for the accompanying material) to:

Commissioner Larry Hartig
Alaska Department of Environmental Conservation
410 Willoughby, Ste. 303
Juneau, AK 99811-1800
larry.hartig@alaska.gov



Buck Lindekugel, on behalf of Requestors

**INFORMATION ACCOMPANYING REQUESTORS'
RESUBMITTED REQUEST FOR HEARING ON RECORD
OF GP NO. 2013DB0004 -- JANUARY 12, 2015**

1. Joint Formal Adjudicatory Request for GP No. 2013DB0004 (Dec. 24, 2014).
2. Email from Director Hale (Nov. 26, 2014)(with referenced decision to lift the stay of the effective date of general permit 2013DB0004).
3. Large Commercial Passenger Vessel Wastewater Discharge General Permit No. 2013DB0004 (August 29, 2014).
4. Large Commercial Passenger Vessel Wastewater Discharge Fact Sheet for GP No. 2013DB0004 – Revision 1 (Nov. 26, 2014).
5. Request to Informally Review Large Commercial Passenger Vessel Wastewater Discharge General Permit No. 2013DB0004 (sent via email on Sept. 17, 2014).
6. Requestors' Statement in Support of Request for Informal Review of the Large Commercial Passenger Vessel Wastewater Discharge General Permit 2013DB0004 (accompanying Request for Informal Review dated Sept. 17, 2014).
7. EPA 910/B-94-007, Technical Assistance Report for the Alaska Juneau Gold Mine Project, Appendix D2: Tidal Information & Input Flows (Dec. 1994)(submitted with the Sept. 17, 2014 Informal Review Request).
8. EPA Technical Assistance Report (EPA 910/B-94-007, Dec. 1994)(excerpts from Chapter VII on potential effects of discharge from proposed Alaska Juneau Gold Mine Project on water quality in Gastineau Channel which was submitted with Sept. 17, 2014 Informal Review Request).
9. Letter from Director Hale to Requestors (Sept. 24, 2014)(requesting additional information "based on your review of the Response to Comments document.").

10. Revised Informal Review Request for GP No. 2013DB0004 (with accompanying Revised Statement in Support and (Oct. 13, 2014)
11. Letter from Director Hale to Requestors (Oct. 21, 2014)(requesting clarification about the availability of the Response to Comments document).
12. Corrected Revised Informal Review Request (Oct. 27, 2014)(same request submitted on October 13th with erroneous reference to availability of Response to Comments document deleted).

13. Letter from Mendivil, DEC Hearing Liaison on Missing Attachments Cruise Ship Permit Appeal (Jan. 5, 2015).
14. Email from Director Hale's (Nov. 12, 2014) (with "Informal Review response letter 2013DB0004" and "Informal Review Analysis and Discussion 2013DB0004" attached).
15. Cited excerpts from EPA's Technical Support Document For Water Quality-based Toxics Control (March 1991)
16. Excerpt from Total Maximum Daily Loads (TMDLs) for Metals in the Waters of Pullen Creek in Skagway, Alaska (May 2010)
17. Cited excerpts from User's Manual for CORMIX: A Hydrodynamic Mixing Zone Model and Decision Support System for Pollutant Discharges into Surface Waters.
18. Cited excerpts from DEC, Assessment of the Stationary Cruise Ship Plume Dilution Study Skagway (May 2005).
19. CORMIX 8.0 printouts for Juneau and Skagway Harbors (Dec. 17, 2013)
20. Southeast State Marine Park Map (Jan. 11, 2015)
21. ASGDC's list of Aquatic Farms and Biologically Sensitive Areas in Southeast Alaska, Prince William Sound, Resurrection Bay, and Kachemak Bay.
22. August 26, 2014 email from Jackie Timothy, ADF&G's Southeast Regional Supervisor for Habitat.
23. Excerpts from NPDES Fact Sheet for the Skagway Wastewater Treatment Plant, AK-002001-01.
24. ADF&G Press Release announcing emergency king salmon fishery closure at mouth of Pullen Creek (June 24, 2014).
25. Excerpts from Impacts of Copper on the Sensory Biology and Behavior of Salmon
26. Excerpts from Draft NPDES Fact Sheet for Juneau Douglas Wastewater Treatment Facility AK 0023213 (Dec. 5, 2014).
27. CORMIX model run for the Statendam in both Juneau and Skagway
28. Juneau Airport Wind Speed System Observations

29. Excerpts from Final Reissuance of NPDES Storm Water Multi-Sector General Permit for Industrial Activities, 65 Fed. Reg. 64,746, 64793-94 (Oct. 30, 2000).
30. Hearing Officer's Final Decision in Adjudication of EPA General Permits AK-G70-1000 and AK-G70-0000 38-43 (May 10, 2002).
31. Cited excerpts from EPA's Review of antidegradation provisions in 2003 Washington water quality standards (May 2, 2007).

