



THE STATE
of **ALASKA**
GOVERNOR SEAN PARNELL

**Department of Environmental
Conservation**

DIVISION OF WATER
Wastewater Discharge Authorization Program

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October 29, 2012

DEC File No: 1200.48.002

Mr. Mike Lidgard, NPDES Unit Manager
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Suite 900, OWW-130
Seattle, Washington 98101

RE: Alaska Department of Environmental Conservation Draft Section 401 Certification of NPDES Permit No. AK0023248, Alyeska Pipeline Service Company, Valdez Marine Terminal

Dear Mr. Lidgard:

On October 15, 2012, the Environmental Protection Agency (EPA) requested a final Section 401 Certification of Reasonable Assurance (Section 401 Certification) for National Pollution Discharge Elimination (NPDES) Permit AK0023248 - Alyeska Pipeline Service Company (Alyeska), Valdez Maintenance Terminal (permit). The NPDES permit will regulate wastewater discharges from the Valdez Marine Terminal (VMT) to the receiving waters of Port Valdez located in Valdez, Alaska.

In accordance with Section 401 of the Clean Water Act (CWA) and Alaska Administrative Code (AAC) 18 AAC 15 (Administrative Procedures), 18 AAC 70 (Water Quality Standards[WQS]), and 18 AAC 72 (Wastewater Disposal), the Alaska Department of Environmental Conservation (DEC or the Department) has prepared the enclosed final Section 401 Certification of Reasonable Assurance, including an Antidegradation Analysis. On February 8, 2012 the EPA public noticed the draft Section 401 Certification along with the draft permit and fact sheet for a 30-day comment period. After revising the Section 401 Certification, the Department public noticed the revised draft Section 401 Certification again on August 1, 2012 for a 30-day comment period.

The Department reviewed the proposed discharges with respect to limits proposed in the permit and the antidegradation requirements of the Alaska WQS found in 18 AAC 70.015. The Department certifies that there is reasonable assurance that the discharges are in compliance with the requirements of Section 401 of the CWA, which includes the Alaska WQS codified in 18 AAC 70, provided that the terms and conditions of this certification are adhered to. DEC finds any reduction in water quality resulting from proposed discharges is in accordance with the antidegradation provisions of 18 AAC 70.015.

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

Director, Division of Water
Alaska Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501-2617

Interested persons can review 18 AAC 15.185 for the procedures and substantive requirements regarding a request for an informal review. See <http://www.dec.state.ak.us/commishiReviewGuidance.htm> for information regarding appeals 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, whichever is later. 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 must be delivered to the Commissioner at the following address:

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

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

Please be advised that, pursuant to 18 AAC 15.120(c), the certification of this NPDES permit constitutes the permit required under Alaska Statute 46.03.100. 18 AAC 15.120(c) also states, "Any rights or privileges inuring to the benefit of EPA in the NPDES permit, including any right to enter, inspect, sample, and have access to records, also inure to the benefit of the Department. Any reports or other information filed with EPA in accordance with the NPDES permit must be contemporaneously filed with the department."

By virtue of this letter, DEC is advising EPA of our actions and enclosing a copy of the final Section 401 Certification for their use.

DEC Section 401 Certification AK0023248

If you have any questions regarding this final Section 401 Certification, please contact Gerry Brown at Gerry.Brown@alaska.gov or (907) 269-4874.

Sincerely,



Wade Strickland
Program Manager

Enclosure: Final Section 401 Certificate of Reasonable Assurance

Cc via electronic transmittal:

Ms. Karen Burgess, EPA Region 10/Seattle
Ms. Hanh Shaw, EPA Region 10/Seattle
Ms. Erin Seyfried, EPA Region 10/Seattle
Ms. Sharon Morgan, DEC/Juneau
Mr. Gerry Brown, DEC/Anchorage
Mr. Marc Bentley, DEC/Anchorage

**STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DRAFT SECTION 401 CERTIFICATE OF REASONABLE ASSURANCE
AK0023248**

A final Certificate of Reasonable Assurance (Section 401 Certification), as required by Section 401 of the Clean Water Act (CWA) was requested by the Environmental Protection Agency (EPA) Region 10 for National Pollutant Discharge Elimination System (NPDES) Permit AK0023248 - Alyeska Pipeline Service Company (Alyeska), Valdez Marine Terminal (permit). The area of coverage includes State waters at the Port of Valdez, Valdez, Alaska for the following proposed discharges:

<u>Outfall Number</u>	<u>Discharge Name</u>
001	Ballast Water Treatment Facility Effluent
002	Sewage Treatment Plant Effluent

Notice of the application for a final Section 401 certification was made in accordance with 18 Alaska Administrative Code (AAC) 15.140 through a letter from EPA dated October 15, 2012 requesting a written determination for the final permit provided as an enclosure. A Section 401 Certification is required because wastewater discharges will be authorized by an EPA-issued NPDES permit that will result in discharges to waters of the United States located in the State of Alaska.

The Alaska Department of Environmental Conservation (DEC or the Department) reviewed the EPA final permit and certifies that, upon compliance with specified permit conditions, there is reasonable assurance that the permit is in compliance with the requirements of Section 401 of the CWA, which includes the Alaska Water Quality Standards (WQS), codified in 18 AAC 70. Through this Section 401 Certification, in accordance with 18 AAC 15.120 Adoption of NPDES Permits, the final NPDES permit will constitute the permit required under Alaska Statute (AS) 46.03.100 Waste Disposal Permit, provided that the terms and conditions of the final Section 401 Certification are made part of the final NPDES Permit. The Department is specifying the following permit terms and conditions under authority of AS 46.03.110(d):

Terms

- 1) This Section 401 Certification shall become effective when the final subject permit becomes effective.
- 2) This Section 401 Certification shall be valid until such time as the permit is modified, suspended, revoked, or reissued or the applicable WQS are revised or modified. If the applicable WQS are revised or modified and the discharge activities comply with the revisions or modifications, then this Section 401 Certification shall remain valid.
- 3) All terms, requirements, limitations, and restrictions specified in this Section 401 Certification shall become part of the permit and shall be primarily enforced by EPA until EPA transfers oil and gas permitting and compliance authority to the State of Alaska. At that time, the terms, requirements, limitations and restrictions of the permit and Section 401 Certification shall be primarily enforced by DEC.

- 4) EPA proposes to issue NPDES Permit AK0023248 as DEC transitions as the oil and gas wastewater permitting authority in the State of Alaska under the Alaska Pollutant Discharge Elimination System (APDES) Program. During this transition, several conditions of this permit present dual reporting requirements to both DEC and EPA; however, post transfer of this permit to DEC on October 31, 2012, all documentation submittals required per the permit need only be submitted to DEC at the address below:

Alaska Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501

Conditions

- 1) Ballast Water Treatment Facility Effluent (Outfall 001).
 - a. DEC authorizes a 100-meter by 161-meter, rectangular chronic mixing zone that extends from the sea surface to the seafloor, excluding sediments. The chronic mixing zone has a dilution factor of 56 and applies to total aromatic hydrocarbons (TAH), total aqueous hydrocarbons (TAqH), pH, total zinc, and chronic whole effluent toxicity (WET). The chronic mixing zone is centered on a 61 meter diffuser barrel with 20 ports such that the boundary of the chronic mixing zone is 50 meters from the outfall in all directions.
 - b. An acute mixing zone with a dilution factor of 23 is also authorized for Outfall 001. The acute mixing zone extends five meters in all directions and results in an area that is 10 meters wide by 71 meters long centered above the diffuser barrel similar to the chronic mixing zone. The mixing zone extends from the sea surface to the sea floor, excluding sediments. The acute mixing zone applies to total zinc and WET.
- 2) Sewage Treatment Plant Effluent (Outfall 002). DEC authorizes a mixing zone with a 0.32-meter radius centered on the diffuser that extends from the sea surface to the seafloor, excluding sediments. The mixing zone has a dilution factor of 9.2 that applies to fecal coliform and enterococci bacteria, pH, ammonia, and total residual chlorine (TRC).
- 3) Any modifications to existing treatment systems must comply with 18 AAC 72 - Wastewater Disposal.

ANTIDegradation ANALYSIS UNDER 18 AAC 70.015

The Antidegradation Policy of the WQS at 18 AAC 70.015 states that the existing water uses and the level of water quality necessary to protect existing uses must be maintained and protected. This analysis provides rationale for DEC decisions required under Section 401 of the CWA with respect to the Antidegradation Policy.

The permit covers discharges from Valdez Maine Terminal (VMT) Outfall 001 and Outfall 002 to Port Valdez. The portion of Port Valdez located in the vicinity of Jackson Point, Alaska is considered State waters subject to 18 AAC 70 WQS. Relevant information from environmental studies designed to determine the effects of VMT discharges to the Port of Valdez conducted by the Institute of Marine Science, School of Fisheries and Ocean Sciences and the University of Alaska, Fairbanks (Blanchard, et.al., 2011) were reviewed to aide in the antidegradation determination for Outfalls 001 and 002.

Antidegradation determination:

The Department's approach to implementing the Antidegradation Policy is based on the requirements in 18 AAC 70 and the Department's July 14, 2010, *Policy and Procedure Guidance for Interim Antidegradation Implementation Methods (Interim Methods)*. Using these requirements and policies, the Department determines whether a water body or portion of a water body is classified as Tier 1, Tier 2, or Tier 3. Tier 3 water bodies are those high quality waters that constitute an outstanding national resource, and the Department states that the quality of such waters shall be maintained and protected (18 AAC 70.015(a)(3)). This is consistent with the *Interim Methods* recommendations. Alaska has not identified any Tier 3 water bodies.

Tier 1 protection (18 AAC 70.015(a)(1)) applies to water bodies whose existing quality is no better than the CWA "Fishable/Swimmable" uses, and existing water uses and the level of water quality necessary to protect such uses must be maintained and protected (18 AAC 70.020(a)(1)(C) and 18 AAC 70.020(a)(1)(B)(i)). Port Valdez water quality, as a whole, is of a higher quality than Tier 1 as it has not been listed on the Department's 2010 *Integrated Water Quality Monitoring and Assessment Report* as impaired, nor is the Department aware of other baseline data documenting water body impairment.

The Department determined that Tier 2 applies to the receiving waters in Port Valdez using the DEC *Interim Methods* and knowledge of the water body associated with the permit. The Department also determined that the antidegradation analysis under 18 AAC 70.015(a)(2) is applied to permit limits. The fact sheet for the permit describes the derivation of those limits.

The Antidegradation Policy of the WQS (18 AAC 70.015(a)(2)) states that, if the quality exceeds levels necessary to support propagation of fish, shellfish, and wildlife in and on the water, that quality shall be maintained and protected, unless the department makes five specific findings, which are documented as follows:

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

The Alyeska Pipeline Bulk Petroleum Storage Terminal and its related industries have been important to the economy of the Valdez-Cordova Borough for over 40 years and comprise the first five in the top ten major industries in the area. Direct impact of the facility and related oil and gas industry was reported by the Alaska Department of Labor and Workforce Development, Research and Analysis (May 2011) to account for 1,147 jobs out of a population of 3,475 in 2009, making up 33% of total employment for major industries in the borough. In addition, this facility and other directly related industries accounted for 70% of the City of Valdez's budget and 90% of all property taxes generated for the City of Valdez (Alaska Oil and Gas Association, 2011).

The Department finds that the lowering of water quality is necessary to accommodate important economic or social developments and finds the requirement is met.

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

The permit limits established for Outfalls 001 and 002 will ensure that water quality criteria will not be exceeded at or beyond the boundary of the revised chronic and acute mixing zones. The revised mixing zones for Outfall 001 are based on Visual Plumes UM3 (Frick, W.E., et.al., 2003), which is an updated version of UMERGE (UM) with a Visual Plumes interface modeling (Baumgartner, et.al., 1993). Mixing zones were reevaluated for Outfall 001 to include a new water-quality based effluent limit recently added to the permit for TAH and to account for a significant reduction in discharge volume. The result is a substantially smaller mixing zone than previously authorized.

The mixing zones for Outfall 002 were also reassessed to account for future upgrades that include disinfection, which is necessary to meet bacteria water quality criteria during this permit cycle. Cornell Mixing Zone Expert System (CORMIX, 2007) was used to evaluate mixing zones and dilution for Outfall 002 based on the assumption that TRC will be eventually used for disinfection. The size of the mixing zone is significantly reduced from the previously authorized mixing zone. All mixing zones are specifically authorized in accordance with 18 AAC 70.240 – 18 AAC 70.270 and have been sized to ensure that all applicable water quality criteria are met at the boundary of and at all points outside of the mixing zones, including WET per 18 AAC 70.030. Lastly, since site-specific criterion per 18 AAC 70.235 has not been established, it is not of concern in this permitting action.

DEC finds that reducing water quality will not violate the applicable criteria found in 18 AAC 70.020, 18 AAC 70.235 and 18 AAC 70.030 and that this requirement has been met.

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

The waters in Port Valdez are protected for the following uses, per 18 AAC 70.020(a)(2)(A) – (D): water supply for aquaculture, seafood processing, and industrial activities; water recreation, both contact and

secondary recreation; growth and propagation of fish, shellfish, other aquatic life, and wildlife; and harvesting for consumption of raw mollusks or other raw aquatic life. The permit limits will ensure that water quality criteria will not be exceeded at or beyond the mixing zone boundaries of Outfalls 001 and 002. The previous permits issued to the facility included a monitoring program for Port Valdez to address the fate and transport of pollutants in the water column and sediments. These studies provided detailed site-specific information on water quality, sediment quality, and physical and biological parameters for Port of Valdez waters. The studies demonstrated that there are only minimal effects to biota in the immediate area of the diffuser, within the boundaries of the mixing zones, and that overall water quality was maintained and the existing uses protected in the water body as a whole.

DEC finds that water quality will be adequate to fully protect the existing uses of the water and that this requirement has been met.

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

Wastewater associated with Outfall 001 includes ballast water, storm water, crude and diesel storage tank water draws, boiler blowdown, service vessel bilges and slops, process water, air pollution scrubber blowdown, potable water, and utility water. Treatment methods for these combined waste streams include primary oil-water solids separation and equalization in covered, air emission-controlled tanks, dissolved air flotation for secondary oil-solids separation with vapors being ducted to a new regenerative thermal oxidizer for destruction of volatile organic compounds. Dissolved air flotation treatment is followed by tertiary treatment in new seven-tray (shallow tray) air strippers. The air strippers remove essentially all highly volatile organic compounds from the wastewater with associated exhaust being sent to the regenerative thermal oxidizer to destroy volatile organic compounds stripped from the wastewater. Tertiary treatment is in turn followed by quaternary biological treatment in one of the two existing biological treatment tanks (BTT) to remove any poorly strippable organic compounds that may be present following shallow-tray air strippers. Polishing treatment for volatile organic compounds, if required, will be accomplished by way of an existing packed-tower air stripper that follows the BTTs (Conner, D. 2011).

The sewage treatment system for Outfall 002 is comprised of a series of sequencing batch reactors (SBRs). SBRs operate on a fill and draw principle. That is, raw wastewater is mixed with settled microorganisms from the last batch, aerated to biodegrade organics, and then allowed to settle without aeration. Clear liquid is then decanted to the outfall, and the process repeated with more raw sewage introduced to the remaining settled microorganisms. SBRs are an effective treatment for five-day biological oxygen demand (BOD₅) and total suspended solids (TSS) but have limited removal efficiencies for fecal coliform or enterococci bacteria unless disinfection is included prior to discharge. Therefore, the permit requires construction of a disinfection system by end of a three-year compliance schedule. While there are several effective disinfection technologies available, chlorination with or without dechlorination is most common and has been assumed in the permit. The permittee is required to conduct a study to determine which disinfection technology is the most effective and reasonable process for the upgrade within 18 months of

the effective date of the permit. Once the permittee upgrades the treatment system to include disinfection under the compliance schedule, effective disinfection treatment measures will be in place at the facility.

DEC finds that the methods of pollution prevention, control, and treatment included in the permit are the most effective and reasonable and that this requirement is met.

18 AAC 70.015(a)(2)(E). All wastes and other substances discharged will be treated and controlled to achieve (i) for new and existing point sources, the highest statutory and regulatory requirements; and (ii) for nonpoint sources, all cost-effective and reasonable best management practices.

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

- (A) any federal technology-based effluent limitation identified in 40 CFR §125.3 and 40 CFR §122.29, as amended through August 15, 1997, adopted by reference;
- (B) minimum treatment standards in 18 AAC 72.040; and
- (C) any treatment requirement imposed under another state law (i.e. Alaska) that is more stringent than a requirement of this chapter.

(A) Federal technology-based effluent limitations

The first part of the definition includes all federal technology-based Effluent Limitations Guidelines (ELGs). EPA has published ELGs for shore reception facilities, but none have been published specifically for discharges from ballast water treatment facilities, such as the wastewater discharged through Outfall 001. Where EPA has not yet developed guidelines for a particular industry, permit conditions can be established using Best Professional Judgment (BPJ) procedures (40 CFR §122.43, §122.44, and §125.3). In the 1989 permit, EPA established technology-based limits for TSS and BTEX as a surrogate to control TAH. EPA determined that the best available technology for the removal of BTEX, and by extension TAH, is a combination of biological treatment system and air stripping. In 1996, EPA developed limits for TSS that accounted for operation of packed air stripping towers that slough biomass during periods of high BTEX concentrations. These TSS limits are carried forward in this permit. Recent addition of seven-tray strippers has increased treatment performance and reliability beyond the minimum technology requirements developed through BPJ.

Technology-based effluent limits based on BPJ have also been applied to the discharge from Outfall 002. In this case, secondary treatment requirements (40 CFR Part 133 adopted by reference in 18 AAC 83.010) for publicly-owned treatment works have been applied to the privately-owned sanitary treatment system for Outfall 002. Previously, EPA did not require disinfection prior to discharge as part of the BPJ technology standard for the permit. However, based on new BPJ evaluation contained in the permit, disinfection will be required within three years of the effective date of the permit as stipulated by a compliance schedule therein. Once disinfection is online, the treatment technology will be consistent with best available technology determined by BPJ applied at similar facilities.

(B) Minimum treatment standards 18 AAC 72.040

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

(C) Any treatment requirement imposed under another state law that is more stringent than 18 AAC 70.

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 requirements, will control the discharge and satisfy all applicable federal and state requirements.

DEC has determined that the treatment of discharges from Outfalls 001 and 002 conform to the highest statutory and regulatory requirements and the requirement is met.

Oct. 29, 2012

Date

Wade Strickland

Wade Strickland,
Program Manager

REFERENCES

Alaska Department of Environmental Conservation. July 14, 2010. *Policy and Procedure Number 05.03.103. Interim Antidegradation Implementation Methods.*

Alaska Oil and Gas Association Website, 2011. <http://www.aoga.org/facts-and-figures/economic-impact-reports-2/2011-valdez/>

Robert L. Doneker and Gerhard H. Jirka, December 2007. *CORMIX User Manual – A Hydrodynamic Mixing Zone Model and Decision Support System for Pollutant Discharges into Surface Waters.*

Frick, W.E.; Roberts, P.J.W.; Davis, L.R.; Keyes, J.; Baumgartner, D.J.; George, K.P., March 2003. *Dilution Models for Effluent Discharges – Visual Plumes 4th Edition.*

