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Dept. of Environmental Conservation
DIVISION OF WATER
WASTEWATER DISCHARGE PERMIT PROGRAM

May 31, 2012

DEC File No: 300.48.045

Mr. Michael J. Lidgard
Office of Water and Watersheds, Suite 900
U.S. Environmental Protection Agency, Region 10
Mail Stop OWW-130
1200 Sixth Avenue
Seattle, WA 98101

RE: Draft Section 401 Draft Certification for Eni Spy Island Drillsite Wastewater Treatment Plant National Pollutant Discharge Elimination System Permit AK0053767

Dear Mr. Lidgard:

In accordance with Section 401 of the Clean Water Act (CWA) and Alaska Administrative Code (AAC) 18 AAC 15 and 18 AAC 70 (Water Quality Standards [WQS]), the Alaska Department of Environmental Conservation (DEC or Department) issues the enclosed draft Section 401 Certificate of Reasonable Assurance, including an Antidegradation Analysis.

The draft National Pollutant Discharge Elimination System (NPDES) permit AK0053767 regulates wastewater discharges from the Eni Spy Island Drillsite into Simpson Lagoon of the Beaufort Sea. On April 27, 2012 the Environmental Protection Agency (EPA) provided a draft NDPES Permit and Fact Sheet for permit AK0053767 to DEC and requested a draft Section 401 Certification of Reasonable Assurance.

The Department reviewed the proposed discharges with respect to limits proposed in NPDES permit AK0053767 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.

By copy of this letter, DEC is advising EPA of our actions and enclosing a copy of the draft Section 401 Certificate of Reasonable Assurance for their use.

If you have any questions regarding this draft Section 401 certificate, please contact Gerry Brown via e-mail at gerry.brown@alaska.gov or by phone at (907) 269-4874.

Sincerely,

Wade Strickland

Wade Strickland
Program Manager

Enclosure: Draft Section 401 Certificate of Reasonable Assurance

cc: via e-mail

Ms. Sharon Morgan, DEC/JUN
Mr. Gerry Brown, DEC/ANC
Ms. Hanh Shaw, EPA Region 10, Seattle
Ms. Dru Keenan, EPA Region 10, Seattle
Ms. Cindi Godsey, EPA Region 10, ANC

STATE OF ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CERTIFICATE OF REASONABLE ASSURANCE
for
Eni SPY ISLAND DRILLSITE WASTEWATER TREATMENT PLANT
NPDES PERMIT AK0053767

A Certificate of Reasonable Assurance (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 AK0053767 – Eni Spy Island Drillsite Wastewater Treatment Plant (permit).

Notice of the application for a draft Section 401 certification was first made in accordance with 18 AAC 15.140 through a letter dated April 27, 2012 from EPA requesting a written determination for the draft permit provided as an attachment. 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 permit covers discharges from two outfalls (Outfall 001 and Outfall 002). Outfall 001 involves wastewater discharges from a domestic wastewater treatment plant. Outfall 002 involves wastewater discharges from a drinking water treatment system consisting of a filter/strainer and reverse osmosis. Under normal operating circumstances, these discharges are to an underground injection control (UIC) Class 1 injection well. However, this permit authorizes discharges to Simpson Lagoon of the Beaufort Sea resulting from periodic disruption of normal discharge activities to the UIC Class 1 injection well.

The Alaska Department of Environmental Conservation (DEC or the Department) reviewed the EPA draft permit and fact sheet and certifies that, upon compliance with specified permit conditions, there is reasonable assurance that the permit limitations are 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 Statue (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 the time of transfer, 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 AK0053767 as DEC transitions to take over as lead 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 the permit present dual reporting requirements to both DEC and EPA. DEC also anticipates that reissuance of this permit will be through the APDES Program. Accordingly, in addition to submitting documents to EPA as specified in the NPDES permit, reporting, including the application for reissuance, should also be sent to:

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

Conditions

1) The subject wastewater discharges are not anticipated to contain total residual chlorine (TRC). Therefore, TRC permit limits or reporting requirements are not included in the permit or this Section 401 certification. Accordingly, discharges of TRC from Outfalls 001 and 002 are prohibited.

   Rationale: Effluent permit limits in this permit were developed on the premise that chlorine would not be used for disinfection of treated wastewater, or used to prevent biofouling on drinking water intake filters. Accordingly, numeric TRC effluent limits are not included in the permit or this Section 401 certification, and the discharge of chlorine is explicitly prohibited to ensure compliance with WQS.

2) The discharge of backwash from filter units and brine rejected from the reverse osmosis system must meet water quality criteria for temperature, pH, and dissolved inorganic substances (salinity).

   Rationale:
   In accordance with 18 AAC 70.020(b):

Temperature - May not cause the weekly average temperature to increase more than 1°C. The maximum rate of change may not exceed 0.5°C per hour. Normal daily temperature cycles may not be altered in amplitude or frequency. The temperature may not exceed 15°C.

pH - May not be less than 6.5 or greater than 8.5 standard units, and may not vary more than 0.2 standard units outside of the naturally occurring range.

Dissolved Inorganic Substances - Maximum allowable variation above natural salinity are illustrated in the table below.

Natural Salinity (parts per thousand(ppt))	*Human-Induced Salinity (ppt)*
0.0 to 3.5	*1*
Greater than 3.5 to 13.5	*2*
Greater than 13.5 to 35.0	*4*

Antidegradation Determination

DEC's approach to implementing the Antidegradation Policy, found in 18 AAC 70.015, 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 Policy)*. Using these requirements and the Interim Methods Policy, the Department determines whether a water body, or portion of a water body, is classified as Tier 1, Tier 2, or Tier 3, with Tier 3 being the highest level of water quality protection. Currently, Alaska has not classified any water bodies as Tier 3.

Tier 1 protection (18 AAC 70.015(a)(1)) applies to water bodies whose existing quality is no better than the CWA's "fishable/swimmable" uses, and existing water uses and the level of water quality necessary to protect such uses must be maintained and protected (see 18 AAC 70.020(a)(1)(C) and 18 AAC 70.020(a)(1)(B)(i). The Department has determined that the Beaufort Sea, specifically the locations of the proposed discharges, is of higher quality than Tier 1.

The permit covers intermittent discharges to Simpson Lagoon of the Beaufort Sea, located three miles north of Oliktok Point. Applicable information on the water body was reviewed for the Tier determination. From this review, the Department has conservatively classified the subject water body to be a Tier 2 water body.

The Antidegradation Policy of the Alaska WQS (18 AAC 70.015(a)(2)) also states, if the water 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, in its discretion, makes five specific findings. The following documents the Department's five findings:

- *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.*

Normally, wastewater is discharged to a Class I injection well as specified in UIC permit AK-I1011-A (2010DB0001-0019). However, at a minimum, the UIC well is shutdown annually for planned maintenance and inspection. In addition, unforeseen conditions could result in additional injection well downtime for repairs. Permitting treated wastewater discharges to Simpson Lagoon of the Beaufort Sea provides for an alternative discharge location while allowing the facility to continue operating during maintenance or repairs. In this case, the intermittent lowering of water quality is necessary while required preventative maintenance and repairs are conducted that will allow for uninterrupted hydrocarbon production from the facility.

At full production, the Eni Spy Island Drillsite is expected to contribute 28,000 barrels per day to North Slope oil production. This contribution represents approximately 4.5 percent of the current total flow of oil in the Trans-Alaska Pipeline. On a national scale, according to the Alaska Oil and Gas Association, Alaska's oil and gas industry accounts for an average of 20 percent of the United States domestic production. The industry also makes significant investments, over $50 billion, in facilities and infrastructure throughout the state, including the North Slope.

The Alaska Department of Natural Resources (DNR) tracks oil and gas activity statewide and has reported the following economic information on the oil and gas industry. The petroleum industry is Alaska's largest industry, annually spending $2.1 billion, including $422 million on payroll and $1.7 billion on goods and services. Overall, this spending generates 33,600 jobs, $1.4 billion in payroll, and value added to the Alaska economy of $1.8 billion for a total output of $3.1 billion. The oil and gas industry accounts for 12 percent of private sector jobs and 20 percent of private sector payroll. The oil and gas industry has the highest monthly wage in Alaska, averaging $7,754, which is 2.8 times higher than the statewide average of $2,798.

In summary, oil and gas exploration, development, and production activities on the North Slope of Alaska, including the Eni Spy Island Drillsite, have important social and economic significance. Accordingly, DEC finds that the lowering of water quality is necessary to accommodate important economic development, and that this criterion in 18 AAC 70.015 (a)(2)(A) 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.*

Due to anticipated high-quality, treated wastewater effluent, the discharges from Outfalls 001 and 002 at the Eni Spy Island Drillsite will not result in violations of water quality criteria. Accordingly, no short-term water quality variance (e.g. a mixing zone) is included as part of this Section 401certification.

The pollutants of concern are associated with domestic wastewater that has been treated to a tertiary level for the discharge associated with outfall 001; and naturally occurring parameters that have been concentrated during extraction of drinking water in the reverse osmosis treatment system for the discharge associated with Outfall 002. The level of wastewater treatment afforded by the submerged membrane bioreactor produces exceptional effluent quality that is typically appropriate for secondary reuse. In addition, the performance of the treatment system is expected to produce a discharge that is near the existing water quality of the receiving water. Because the limits are established as water quality criteria at the end of pipe, the discharge will not violate the applicable WQS.

The discharge of backwash water and reject water from desalination in Outfall 002 is essentially concentrated sea water remaining after extraction of drinking water. Due to the nature of the physical process, temperature, TSS, and salinity can be expected to increase above natural conditions in the receiving water if mitigation measures aren't put in place. However, through implementation of best management practices (BMPs), the process can be controlled to limit the extent of these increases such that the discharge will not result in violation of applicable water quality criteria for these pollutants.

In addition, given the nature of the discharges and the pollution controls employed, discharge of pollutants in toxic amounts is not expected in either Outfall 001 or 002. Therefore, the permit does not include limits, or monitoring requirements, for whole effluent toxicity.

DEC finds that the reduced water quality will not violate applicable water quality criteria and that the criterion in 18 AAC 70.015(a)(2)(B) is met.

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

The receiving water in Simpson Lagoon of the Beaufort Sea 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 proposed limits for Outfalls 001 and 002 are based on the most stringent water quality criteria applicable to the protected water use class in the WQS. The ability to meet, and often exceed, these criteria in the authorized discharges will ensure that water quality criteria will not be exceeded anywhere in the water body.

DEC finds that the resulting water quality will be adequate to fully protect existing uses and that the criteria in 18 AAC 70.015(a)(2)(C) is met.

- *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 wastes and other substances to be discharged.*

Pollution prevention, control, and treatment methods at the Eni Spy Island Drillsite include high-efficiency treatment systems, effective BMPs, and discharge to a UIC Class 1 injection well as much as practicable. Only when use of the UIC Class 1 injection well is not permissible will discharges be directed to Outfalls 001 and 002.

The treatment performance attained by the submerged membrane bioreactor is above that required to meet the permit limits for Outfall 001. The treatment system is expected to produce high-quality effluent that is typically suitable for secondary reuse. The membranes provide a positive barrier to suspended solids and microorganisms, including fecal coliform and enterococci bacteria. Essentially the effluent meets bacterial water quality criteria prior to ultraviolet disinfection. The bioreactor is also a high-rate, high-efficiency treatment for five-day biochemical oxygen demand (BOD_5) and total suspended solids (TSS). Removal efficiencies for BOD_5 and TSS greater than 95 percent are common when the system is properly operated.

The discharge from Outfall 002 consists of backwash and reject water remaining after extracting drinking water during desalination of saline well water. Given the nature of the discharge, treatment prior to discharge is not necessary to meet limits. However, developing and implementing standard operation procedures as part of the BMP Plan will establish process controls for temperature and feed rates to ensure permit compliance. The permittee is required to develop and implement a BMP Plan to manage and minimize to the extent practicable the discharge of pollutants.

DEC finds that the methods of pollution prevention, control, and treatment included in the permit are the most effective and reasonable and that the criterion in 18 AAC 70.015(a)(2)(D) 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 highest statutory and regulatory requirements are defined in 18 AAC 70.990(30) as:

- (A) any federal technology-based effluent limitation identified in 40 C.F.R. 125.3 and 40 C.F.R. 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 that is more stringent than a requirement of this chapter.

(A) Federal technology-based effluent limitations

EPA has not established national effluent guidelines for seawater treatment facilities. However, EPA has established a technology-based limit for TSS for this permit using best professional judgment. The TSS limit is equivalent to limits for treatment of domestic wastewater and is 30 milligrams per liter (mg/L) average monthly and 60 mg/L maximum daily.

(B) Minimum treatment standards in 18 AAC 72.040

18 AAC 70.990(30)(B) (2003 version) appears to be in error, as 18 AAC 72.040 describes discharge to sewers and not minimum treatment. The correct reference appears to be 18 AAC 72.050, Minimum treatment. Furthermore, 18 AAC 72.990(59) defines secondary treatment as a method of treatment resulting in effluent with the following characteristics:

- BOD_5 – average monthly of 30 mg/L, average weekly of 45 mg/L, and maximum daily of 60 mg/L.
- TSS - average monthly of 30 mg/L, average weekly of 45 mg/L, and maximum daily of 60 mg/L.
- pH – greater than 6 but less than 9 standard units.

Note that the requirement for pH in 18 AAC 72 is less stringent than requirements in 18 AAC 70, which is a pH greater than 6.5 but less than 8.5 standard units. These limits are included in the draft NPDES permit.

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

Other regulations beyond 18 AAC 70 that apply to this permitting action include 18 AAC 15 and 72. Neither the regulations in 18 AAC 15 and 72 (withstanding the 18 AAC 72.050 reference above, which is satisfied) nor another state law that DEC is aware of impose more stringent treatment requirements than those found in 18 AAC 70.

DEC determined for the subject discharges under antidegradation review that treatment of the discharges conforms to the highest statutory and regulatory requirements and that the criteria in 18 AAC 70.015(a)(2)(E) is met.

DRAFT

Date

Wade Strickland, Program Manager