

EPA's Response to Comments on NPDES Permit Reissuance

AK-003866-1	Endicott waterflood operations	BP Exploration (Alaska), Inc.
AK-002984-0	Prudhoe Bay waterflood operations	ARCO Alaska, Inc.
AK-004335-4	Kuparuk waterflood operations	ARCO Alaska, Inc.

1. **Comment:** The permittees request that the three facilities be characterized as "waterflood operations" in order to clarify their common function within oil field operations. Each facility has a marine bypass system to prevent the entrainment of marine organisms, a filtration and backwash system to remove suspended solids, and an associated sewage treatment plant to treat human wastewaters (one which is permitted separately). "Waterflood operations" should replace "seawater treatment" and "development project" in the case of Kuparuk and Endicott respectively.

Response: EPA acknowledges that the three facilities are functionally and operationally similar and are appropriately characterized as "waterflood operations." *EPA has revised the permits* on the authorization pages to refer to these facilities as waterflood operations.

2. **Comment:** The permittees request that EPA provide that the effluent flow can be measured by a calculation of the sum of contributing discharge streams when possible rather than direct, metered monitoring. Some facilities would need to install flow meters to measure the total flow; this installment and operation would involve time and expense with no significant improvement in accuracy or precision.

Response: EPA is persuaded that total flow can be calculated by adding up measured component flows. *EPA has revised the permits* at section I.A to authorize the determination and reporting of flow based upon either calculation or direct measurement.

3. **Comment:** The permittees request that EPA eliminate the permit's required monitoring of the difference between influent and effluent pH in the combined wastewater discharge 001. They point out that the facilities would monitor discharge 001 on a weekly basis and report the average monthly and maximum daily pH levels of the effluent rather than *the difference between* the ambient and effluent levels of pH. Influent monitoring would necessitate the modification of the facilities in order to provide monitoring of the influent streams. The permittees recall that previous effluent and environmental monitoring has demonstrated that both the permit limits and the Alaska water quality standard for pH have been met historically; this data is available and can be resubmitted upon request. In particular, the permittees emphasize that it is the pH of the estuarine receiving waters and its tundra-based runoff (range of 4.5-10.3 pH units) that determines the pH of the discharge. In point of fact, the magnitude of the natural range in pH in the receiving waters is considerably greater than the effluent instantaneous differential of less than 0.2 pH units measured during the last decade of discharges.

Response: EPA agrees that the filter-backwash and marine bypass discharges do not contribute to a significant change in the pH of influent streams of sea water and that these minor changes are overridden by naturally occurring variations of ambient pH. Furthermore, the dilution upon discharge will assure that pH is equal to background within feet of the outfall terminus. The State of Alaska has authorized mixing zones for pH. *EPA has revised the permits* at section I.A to require monitoring of the pH levels of effluent streams rather than the difference from ambient levels of pH.

4. **Comment:** The permittees request that EPA eliminate the permit limitation on the maximum difference between the influent and effluent temperature for discharge 001. Based on worst-case analysis of maximum temperature discharges, sufficient dilution occurs in the mixing zone to insure that the maximum instantaneous temperature differential as well as the average weekly temperature differential meet the Alaska water quality standard for temperature; this data is available and can be resubmitted upon request.

Response: EPA agrees that, in spite of contributions of heat from the filtration and other systems within the waterflood operations, the effluent discharges will meet the Alaska water quality standard for temperature at the edge of the mixing zone. *EPA has revised the permit* at section I.A to eliminate the limit on temperature and to measure the temperature of the combined wastewater and marine bypass discharges.

5. **Comment:** The permittees request that the permit limit on approved coagulants be relocated within the permit from section I.A to section I.B and be clarified as a dosage application rate. As presented within the draft permit, the coagulant limit appears to be an effluent concentration rather than the dosage rate which it has been historically. Currently coagulant use is reported on the Discharge Monitoring Reports as the total amount of coagulants and flocculants used and the total volume of seawater treated during a monitoring period. There appears to be a typographical error in the summary table for coagulant monitoring which should be corrected by the permittee's proposed relocation of the limit on dosage rates. In the case of some facilities, the backwash operations have been modified such that biocides have zero possibility of discharge to surface waters; rather, biocides are discharged downhole into the oil reservoir as waterflood.

Response: EPA intended to simplify the permit by compiling the effluent limits within a single table and inadvertently confused the nature of the permit limit on clarifying agents. *EPA has revised the permits* to retain the dosage rate limit within section I.B rather than within the table of section I.A.

6. **Comment:** The permittees request that the sampling frequency for sampling fecal coliform bacteria (FC), five-day biochemical oxygen demand (BOD5), and total suspended solids (TSS) in sanitary discharge 001A be reduced from five times per month to four times per month on a 1/week basis. This reduction to a weekly basis will provide significant benefits for scheduling monitoring and assuring that samples are collected in accordance with permit requirements. Four samples per month can provide the necessary basis for determining maximum daily and average monthly concentrations of these pollutants.

Response: EPA agrees that weekly monitoring is practical and sufficient to support permit limits on average monthly and maximum daily discharges of pollutants. Additionally, the permittees have good records of permit compliance. *EPA has revised the permits* at section I.A in the Endicott and Prudhoe Bay permits to require weekly monitoring of treated sanitary wastewaters for TSS, BOD5 and fecal coliformes.

7. **Comment:** The permittees request that the permit language at section I.B.2 pertaining to strainer/filter backwash conditions be revised so as to list the coagulants and flocculants which have been tested and approved for use historically among all three facilities as follows: "The coagulants Nalco 7606, Nalco 2332, and Chemlink 4835, the flocculent

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Nalco 7768, and other clarifying agents currently approved by EPA are approved for use in individual or combined applications of no more than 1 ppm at the facility."

Response: EPA agrees that it is useful to compile and authorize the water clarifying agents which have been tested and approved across all three waterflood operations. *EPA has revised the permits* to authorize the use of any and all water clarifying agents which have been tested and approved at the Endicott, Kuparuk and Prudhoe Bay waterflood operations.

- 8. **Comment:** The permittees request that fecal coliform bacteria, color and sediments be added to the list of discharged pollutants at section I.C.5 which are permitted to exceed the Alaska water quality criteria within the State-authorized mixing zones at the facilities.

Response: ADEC has certified these permits and authorized that fecal coliform bacteria, pH, turbidity, temperature, sediments, residues, color, and total residual chlorine may violate Alaska water quality standards within 100 meter mixing zones. Accordingly, *EPA has revised the permits* at section I.C.5 to include all of these pollutants.

- 9. **Comment:** The permittees request that the characterization of filter backwash effluent be changed from "backwash" to "residues" in order to clearly separate the effluent from the process in this phase of the waterflood operation.

Response: EPA appreciates the suggestion to clarify the terminology for the waterflood effluent in accordance with the vocabulary of waterflood operators so as to characterize the effluent substance rather than effluent process. *EPA has revised the permits* at I.B.1 and III.E to replace the term "backwash" with "residues."

- 10. **Comment:** The permittees request that modifications to the BMP Plan shall be reviewed and approved by the facility manager, or his designee. This change will facilitate the upgrading of the BMP while assuring appropriate management accountability.

Response: EPA recognizes that a facility manager may designate another qualified member of the facility's engineering staff to review modifications to the BMP Plan. *EPA has revised the permits* at section II.C.1 to permit for the review and certification of a modification of the BMP Plan by a designee of the facility manager.

- 11. **Comment:** The permittees request that EPA combine redundant sections V.G.1 and 2.

Response: EPA appreciates the editorial comment. *EPA has revised the permits* at section V.G.1 to eliminate the redundancy of the draft permit language.

The terms and conditions of Alaska's Clean Water Act § 401 certifications and Coastal Zone Management Act consistency determinations have been incorporated into these permits. EPA revised the designations of the Prudhoe Bay waterflood operation's combined discharge 001 to 001A and sewage discharge 003 to 001B in order to accurately represent their commingled discharge through outfall 001 on those intermittent and rare occasions when sewage wastewater will be discharged to the coastal receiving waters rather than injected downhole. The State's decisions for this facility refer to the earlier designations of the draft permit.