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July 3, 2014

Louisiana Department of Environmental Quality
Office of Environmental Services
Water Permits Division
P.O. Box 4313
Baton Rouge, Louisiana 70821-4313

Attn: Sanford Phillips, Assistant Secretary

RE: LOOP LLC
Deepwater Port Complex
LPDES Permit No. LA00049492
Agency Interest No. 4634

Dear Mr. Phillips:

LOOP LLC (LOOP) Deepwater Port Complex hereby submits additional information relevant to the preliminary draft Louisiana Pollutant Discharge Elimination System (LPDES)/National Pollutant Discharge Elimination System (NPDES) Permit No. LA0049492 and associated fact sheet issued by the Louisiana Department of Environmental Quality (LDEQ) and U.S. Environmental Protection Agency (EPA) on June 6, 2014. LOOP submitted an LPDES/NPDES permit renewal application to the LDEQ and EPA on March 26, 2013. The LDEQ provided a working draft LPDES/NPDES permit and fact sheet for review/comment on February 7, 2014.

Problem Statement

The preliminary permit draft had significant changes in testing conditions for Outfall 004. Specifically, Whole Effluent Toxicity (WET) testing conditions were added to the preliminary draft permit to assess potential toxicity at this outfall. LOOP believes that the basis for establishment of the new WET testing conditions for Outfall 004 is faulty and not appropriate. The preliminary draft LPDES/NPDES permit and fact sheet contain several incorrect assumptions and errors in implementation:

1. Brine is not the same and does not possess the same characteristics as produced water.

2. WET testing conditions were incorrectly applied to this outfall.

3. CORMIX modeling was incorrectly performed for this outfall.

Background

LOOP operates an offshore petroleum offloading terminal and onshore pipeline and storage facilities for the transportation of crude oil. LOOP uses brine, stored in a 280-acre brine storage reservoir, to displace crude oil from the caverns into the pipelines. Brine is pumped to and from the caverns and a brine storage reservoir to support LOOP's routine transportation and storage operations. Excess brine (generated as a result of excessive rainfall, or due to high crude oil inventory) not required to support such operations is discharged through Outfall 004 to the Gulf of Mexico.

LOOP designed, constructed, and operates a multi-port diffuser at Outfall 004 to enhance mixing and minimize environmental impacts to aquatic life. The multi-port diffuser is a 30-inch pipeline (515-feet long with 26 4-inch ports and risers spaced every 20.6 feet) located approximately 2.5 miles offshore. The flow rate at Outfall 004 is intermittent. Outfall 004 typically discharges 2-4 times per year. Historical flow rate data indicates that the 30-day maximum flow rate is 11.3 MGD (when discharging).

Oil that comes in contact with brine in the caverns, is typically segregated from the brine due to its chemical properties (*i.e.*, it is not mixed) and only on rare occasions has oil reached the brine storage reservoir. If oil reaches the brine storage reservoir, routine monitoring and inspections would detect it and it is removed by mechanical separation or absorbent material immediately. LOOP monitors the brine discharge at Outfall 004 for oil and grease once per day (when discharging). Typically, the results are non-detectable. There is no data available that supports that the brine discharge from LOOP causes an impact to the ambient water quality in the Gulf of Mexico or that anti-degradation of water quality in the Gulf of Mexico will occur.

Permitting History

LOOP is the only permitted brine discharge into the Gulf of Mexico in Louisiana. LOOP began operations in the 1980s. In order for LOOP to obtain authorization to discharge brine, extensive studies and monitoring to demonstrate that environmental impacts of the brine discharge would be minimal were conducted. LOOP conducted *in situ* WET tests which demonstrated that the brine discharge did not adversely impact aquatic life. Test results were submitted to the LDEQ and EPA, who concurred in documentation and fact sheets that there was no reasonable potential for the brine discharges to cause aquatic toxicity and so did not establish WET testing conditions in previous permits. In addition, LOOP was required to perform marine/estuarine monitoring for benthos. Monitoring was conducted annually from 1979 to 1994.The results from the marine monitoring indicated that there was no measurable impact from the LOOP facilities on benthic macrofaunal assemblages at the brine diffuser site. In fact, there was an increase in production/presence of aquatic life near the diffuser in the early to mid-1980s during periods of continuous brine discharge.

Previous permits and fact sheets issued by the LDEQ and EPA consistently state that the brine discharge does not warrant WET testing conditions because of the large offshore dilution and that it will not cause degradation of the marine environment. The preliminary draft permit and fact sheet do not provide any legitimate regulatory justification to change the policy and

procedures for establishment of WET testing conditions which LDEQ and EPA have established and maintained for over 40 years.

Produced Water Applicability

The preliminary draft permit and fact sheet specifically state that the establishment of WET testing conditions are established because brine is similar to produced water. Brine is not similar to produced water. Although the oil and gas industry, at times, uses the terms interchangeably, brine and its chemical composition are not similar to produced water as referenced in the EPA fact sheet. Brine is water saturated with or containing large amounts of salt, specifically sodium chloride that results from solution mining of salt domes. Trace substances that may be found in brine include magnesium chloride, magnesium sulfate, calcium sulfate, potassium chloride, magnesium bromide, and calcium carbonate. However, brine is essentially sodium chloride and water.

Produced water is a fluid mixture brought to the surface with crude oil or natural gas. It naturally contains dispersed oil, organic acids, and polycyclic aromatic hydrocarbons such as naphthalene, carboxylic acids, ketones, alcohols, phenols, volatiles, and salt. Metals typically found in produced water include zinc, lead, manganese, iron, and barium. Well bore operations contribute additional chemicals to the produced water mixture, including biocides, corrosion inhibitors, and reverse emulsion breakers. Naturally-occurring radioactive material derived from the decay of uranium and thorium associated with certain rocks and clays in the hydrocarbon reservoir is also found in association with produced water. None of these constituents are typically associated with brine.

The brine discharge from LOOP has not and will not contain the substances found in produced water, other than salt. Therefore, the application of WET testing conditions developed for produced water is not appropriate for brine because of the difference in chemical composition.

Regulatory Precedence

The preliminary draft permit and fact sheet state that WET testing conditions are established because two brine discharges (Strategic Petroleum Reserve) in Texas currently have WET conditions. LOOP does not know whether these permit conditions are appropriate, but the brine discharge from LOOP has not been shown to have a reasonable potential to exceed water quality standards for pollutants or salinity because it is discharged on an intermittent basis and through a multi-port diffuser. Also, the LDEQ and EPA permitted a proposed brine discharge (Henry Gas Storage) in Louisiana as recently as 2009. This proposed project used CORMIX modeling to demonstrate that the brine discharge through a multi-port diffuser would enhance mixing and minimize adverse environmental impacts. The results indicated a 1.5 ppt increase in salinity above the ambient level (35 ppt) at the edge of the mixing zone. This increase was within the normal range of the natural variation of salinity in the Gulf of Mexico; therefore the increase of salinity on an intermittent basis would not present any potential impacts to aquatic life. This is similar justification for LOOP.

WET Testing

The WET testing conditions established in the preliminary draft permit are based on the General Permit for Oil & Gas Exploration, Development, and Production Facilities within Territorial Seas of Louisiana (LAG260000). As previously stated, conditions appropriate for produced waters are not appropriate for brine discharges because they are not the same. Also, the WET testing conditions were incorrectly applied.

The preliminary draft permit requires WET testing for Outfall 004 using Method 1006.0 (*Mysidopsis bahia*) and Method 1007.0 (*Menidia beryllina*), EPA-821-R-02-014. Section 13.6.13.1 of Method 1006.0 states that the salinity of the test water must be in the range of 5 to 32 ppt. Section 13.6.13.2 notes that it is important to maintain a constant salinity across all treatments. Method 1007.0, Section 14.6.11.1 specifies that the salinity of the test water must be in the range of 20 to 30 ppt. Therefore, the receiving stream water required by the draft permit for use as dilution water will have to be amended by the WET test laboratory with deionized water or freshwater to maintain the salinity of the test solutions within the method specifications. Furthermore, the dilution water will have to be prepared with a salinity gradient that offsets the salinity contribution of the effluent in order to maintain the salinity of the test solutions within the method-specified limits.

The assumed objective of this WET testing is to evaluate potential impacts from the apparent salinity increase due to the brine discharge, but the discharge samples (as well as the receiving stream samples) would be required to be diluted in order to conduct the test via the specified methods. The methods are therefore counterintuitive and the establishment of WET testing conditions using these methods on brine discharges is not appropriate.

CORMIX Modeling

EPA conducted CORMIX mixing zone modeling to justify the establishment of WET conditions for the brine discharge. EPA used site-specific information provided by LOOP; general information contained in the General Permit for Oil & Gas Exploration, Development, and Production Facilities within Territorial Seas of Louisiana (LAG260000); and other information with no verifiable references. EPA tried to use produced water information on a non-produced water discharge. This is not appropriate as indicated by the proposed relatively high critical dilution of 7.63% in the Gulf of Mexico. In combination with the incorrect model input assumptions (listed below), it is apparent that the modeling provided by EPA is not accurate, reliable, or relevant to the brine discharge. EPA made several critical errors in the CORMIX modeling, including, but not limited to:

1. Outfall 004 is located approximately 2.5 miles offshore in state waters. The State Water Quality Regulations at LAC 33:33.1115 which apply to this outfall identifies the mixing zone as 400 feet for the Gulf of Mexico. EPA used a mixing zone of 100 meters (328.1 feet) and therefore incorrectly limited the size of the mixing zone.

2. EPA used an alternating parallel diffuser type. The uni-directional diffuser category should be used.

3. EPA used a bottom density and a surface density of 1020 kg/m3. The General Permit for Oil & Gas Exploration, Development, and Production Facilities within Territorial Seas of Louisiana (LAG260000) which EPA references states that 1017 kg/m3 should be used.

4. EPA used a total discharge flow rate of 0.46 m3/s. Outfall 004 is intermittent and typically discharges 2-4 times per year. The CORMIX model does not account for intermittent discharges and therefore overstates the discharge volume because it assumes continuous discharge.

5. The EPA-conducted modeling is not verifiable because the model run provided by EPA would not successfully run and would generate several error messages. It appears that the model run was "forced."

Conclusion

It is apparent that the WET testing conditions on the brine discharge at Outfall 004 proposed by the LDEQ and EPA are not appropriate because brine is not the same as produced water and should not be permitted as such. Also, it is apparent that the WET testing conditions were incorrectly applied and that the CORMIX model used to justify these conditions was incorrectly performed. LOOP requests that the WET testing conditions at Outfall 004 be removed from the draft permit and that LOOP is provided the opportunity to review any additional changes to the permit.

If you have any questions, please feel free to contact me at (985) 276-6299.

Sincerely,

Cynthia A. Gardner-LeBlanc

Cynthia A. Gardner-LeBlanc
Manager Regulatory Affairs

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