NPDES PERMIT NO. TX0092827
RESPONSE TO COMMENTS

RECEIVED ON THE SUBJECT DRAFT
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
PERMIT IN ACCORDANCE WITH REGULATIONS LISTED AT 40CFR124.17

APPLICANT:

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ISSUING OFFICE: U.S. Environmental Protection Agency
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PERMIT ACTION: Final permit decision and response to comments received on the proposed NPDES permit publicly noticed on March 24, 2014.

DATE PREPARED: August 27, 2014

Introduction. For brevity, Region 6 used acronyms and abbreviated terminology in this response to comments document whenever possible. The following acronyms were used frequently in this document: Act (Clean Water Act), DOE (Department of Energy), EPA (Environmental Protection Agency), NPDES (National Pollutant Discharge Elimination System), RRC (Railroad Commission of Texas), TMDL (Total Maximum Daily Load), TCEQ (Texas Commission of Environmental Quality), and WQS (Water Quality Standards).

Unless otherwise stated, citations to 40 CFR refer to promulgated regulations listed at Title 40, Code of Federal Regulations, revised as of August 22, 2014.

CHANGES FROM DRAFT PERMIT

EPA made the following changes to the draft NPDES permit publicly noticed on March 24, 2014:

1. pH for Outfall 001, reverts to the range of 6.0 – 9.0 based on the Texas WQS approval letter.
2. Critical dilution has been changed to 2.6%, with a limitation imposed for nozzle exit velocity and discharge density.
3. Sampling frequency for pH at Outfall 009 has been changed from once per week to once per month based on typographical error.
4. Sampling location for Outfall 009 has been changed to be taken at the Gulf Intracoastal Waterway at the point of diversion.
5. For clarity, EPA included the phrase "at Outfall 008" under the footnote *3 on page 6 of Part I

STATE CERTIFICATION

In a letter from Leslie Savage, Water Quality Certification Agent (RRC) to Brent E. Larsen, Chief, NPDES & Technical Permits Section, Water Quality Protection Division (EPA) dated August 17, 2014, the RRC certified that the permitted activities will be conducted in a manner which will not violate any applicable water quality requirements. The Commission also certified the permit for compliance with applicable state water quality laws.

COMMENTS FROM TEXAS RAILROAD COMMISSION

None

COMMENTS FROM U.S. DEPARTMENT OF ENERGY (DOE), BIG HILL STRATEGIC PETROLEUM RESERVE AND FLUOR FEDERAL PETROLEUM OPERATIONS (FFPO)

Comment No. 1: The draft permit proposed a change in pH from the previous 6.0 su to 6.5 su. DOE requested that the lower limit of 6.0 su be reinstated in the permit. DOE cited that the Bryan Mound outfall 001 is located in the Gulf of Mexico in open waters offshore commencing with the first most shoreward nozzle being at more than a 30-foot depth. This location is more than 3 nautical miles from the coast. From this location, the effluent brine is pumped more than five miles within the piping before the first open diffuser port is reached offshore at depth exceeding 30 feet of water, to begin diffusion in a permit authorized mixing zone. The receiving stream is the open ocean and open ocean water is typically characterized with an ambient and basic pH of 8.2 su, also noted with a large buffering capacity. DOE also stated that samples from the vicinity of the nearby Big Hill diffuser location in a 1996 study confirm an 8.1 su value when taken and then an 8.2 su value when measured in the laboratory onshore. The permittee stated that the modeling being applied to the diffuser indicates that at the edge of the 100-meter Federal regulated mixing zone, between 1 to 4 percent of effluent is present when operating within the permitted nozzle exit velocity. The permittee further stated that the permitted mixing zone is the buffering agent for any low pH effluent that may be measured at the onshore sampling port. The permittee noted that TCEQ also recognizes and permits regulated mixing zones within their jurisdiction. The permittee also noted that with less than 4 percent of effluent present at the 100-meter limit, per modeling being used to set the Critical Dilution Factor for the outfall's WET Test, the pH would be upwardly adjusted and buffered to that of open ocean strength pH within the permitted mixing zone in all cases, both minimum and maximum observed at the onshore measuring point.

The permittee cited an EPA approval document, dated June 29, 2011, from Miguel Flores, former Director, Water Quality Protection Division to Ms. L'Oreal Stepney, P.E., Deputy Director Office of Water TCEQ which contains the following statement: "under the CWA, Texas does not have jurisdiction to establish water quality standards more than three nautical miles from the coast." Further the approval cover letter noted that EPA "recognizes the state's authority under the CWA to include waters extending offshore three nautical miles in the Gulf of Mexico, but does not extend past that point." The permittee noted that the diffuser section is located beyond the three nautical mile (nm) physical limit described (3.4 nm) and is permitted to work as a regulatory mixing zone to at least a 100-meter boundary.

The permittee remarked that the Texas narrative WQS pH range of 6.5 su to 9.0 su for this segment is also accompanied by the Statement of Basis listing of primary contact recreation as a governing factor for the change being imposed. The permittee also noted that the location of the diffuser being 3.4 nm from shore does not limit routine swimming within the mixing zone; and the discharges are intermittent with fish allowed to freely swim away from the location when it is working with the toxic criteria addressed in the routine WET testing.

In addition, the permittee cited Rule 307.4, General Criteria, governing the Texas Water Quality

Standards, paragraph (m) regarding pH beyond those classified segments approved in the Implementation Plan, which states that: "consistent with 307.1 of this title, pH levels in all surface waters in the state must be maintained so as to not interfere with the reasonable use of such waters." DOE wishes to state that a pH below 6.5 temporarily occurring during an intermittent discharge within permitted submerged mixing zone more than 3 nautical miles offshore in the Gulf of Mexico should not interfere with the reasonable use of the waters.

A review of the DMR reported pH measurements from the 001 outfall for the three year period ending December 2013, reveals no exceedances for the current limited range of 6.0 su to 9.0 su. However, within that same span roughly fifteen percent of the time (5 of 34 monthly measurements) were below the newly proposed 6.5 su lower limit. The lowest measurement made in this dataset was a single value of 6.3 su and a maximum value of 7.8 su.

The DOE requested that based on the above mentioned reasons, the historic limitation range for pH of 6.0 to 9.0 su as measured at the onshore measuring point be allowed to continue with this permit renewal.

Response No. 1: Following the permittee's comments, EPA reviewed the State Water Quality Standards approval letter dated June 29, 2011, from Mr. Miguel Flores to Ms. L'Oreal Stepney and concurs with the permittee that the state's authority under the CWA include waters extending offshore three nautical miles in the Gulf of Mexico, but does not extend past that point. EPA also concurs that Big Hill outfall 001 is located in the Gulf of Mexico in open waters at a location that is more than 3 nautical miles from the coast. As a result, the final permit reverts to a pH limit of 6.0 to 9.0.

Comment No. 2: The permittee commented on the proposed Critical Dilution Factor (CDF) of 4.8 % based upon modeling performed with CORMIX version 8.0 software. The current permit has a 2.5 % CDF that has remained in place since a minor modification was authorized in 2005. The minor modification was proposed to raise the nozzle exit velocity to 30 feet per second (fps) per runs made with the CORMIX version 4.

DOE requested that the CDF be revisited and consideration be made for a 2.9 % factor based upon a single operational change; or a 2.6 % factor based upon an operational change and a correction to a density value. The permittee had requested to alter its operations to return to a flow rate of 20 fps (5.96 m/s) nozzle exit velocity, producing a 2.9% CDF per CORMIX version 8 and further with a temperature correction being made to the discharge density from 1210 kg/m3 to 1160 kg/m3, the final CDF is 2.6 percent. The permittee's request of a discharge density of 1160 kg/m3, is based on a ten-year monthly record for the Big Hill discharges (DMRs) and corrected for temperature while the 1210 kg/m3 was originally supplied to the Region 6 modeler uncorrected.

The permittee noted that the 4.8% CDF value is in error; based upon erroneous inputs made to the CORMIX model and would result in failure of the WET testing due to salt content. The permittee noted that the output inconsistencies associated with the alteration of nozzle exit velocity displayed in earlier versions of CORMIX and version 8 reveal that a "brine mode" has been developed within the CORMIX framework and this mode has evolved to better simulate the

density differences and other influences associated with a saturated salt solution being diffused in a less dense receiving stream.

The permittee noted that the receiving stream is the open ocean and ambient conditions are constantly changing. The permittee also noted that the density differences do vary primarily due to temperature and with normal salinity changes with the ocean from rain and freshwater sources and similarly also with the facility brine in storage before pumping offshore. Based upon this brief study and because the DOE and the Strategic Petroleum Reserve wish to comply with and assure protection of the offshore environs following the CORMIX 8 simulations. The permittee propose that the nozzle exit velocity be revised in the permit to that of 20 fps (5.96 m/s), which given the other inputs remaining unchanged, produces a CDF of 2.9 percent. However, the permittee also requested that EPA consider the revised input of a discharge density of 1160 kg/m3, which is based on a ten-year monthly record for the Big Hill discharges (DMRs) and corrected for temperature versus the 1210 kg/m3 originally submitted to the Region 6 modeler uncorrected. This small change applied with the revised nozzle exit velocity lowers the CDF value down to 2.6 %. The permittee does not believe that leaving the historic CDF of 2.5% in-place would be considered antibacksliding, given the 10 years of WET testing successfully performed and passed, and in consideration of the composition of the brine being diffused, which results from ambient surface water applied to ambient naturally occurring salt before being released more than 3 nautical miles (3.4 nm) from shore in the open ocean.

Response No. 2: EPA understands the permittee's concerns on the critical dilution of 4.8%. The EPA concurs and hereby grants the permittee's request of the operational change in order to change the critical dilution to 2.6 %. Based upon the critical dilution of 2.6%, a 20 fps (5.96 m/s) maximum nozzle exit velocity, an 18 fps (5.49 m/s) minimum nozzle exit velocity and a discharge density of 1160 kg/m3 limitations are established in the final permit. The limit is computed as a 3 month rolling average of the discharge events. EPA notes that the permittee must comply with the proposed nozzle exit velocity and discharge density in the final permit.

Comment No. 3: The permittee commented on imposing pH limits at Outfall 009. Outfall 009 is the recirculated ambient water from the Gulf Intracoastal Waterway (GIWW), which also discharges into the Gulf Intracoastal Waterway. The permittee is concerned about a pH limitation at this outfall and ascertained that it shall only reflect ambient conditions of the water being used (Gulf Intracoastal Waterway) as the discharge through the recirculation loop is completely non-contact and the water returned is discharged through large diameter piping to a submerged exit port located to the east of the intake structure. The DOE requested that the pH testing requirement on the outfall be revised to consist solely of the sampling and reporting of monthly pH measurements made of the ambient stream conditions. The permittee also stated that the testing frequency for pH is shown in the effluent limits page as 1/week with the flow reporting on a 1/month basis. The DOE requested that the pH measurements made for this outfall be obtained as samples of the GIWW at the point of diversion because the water is unaffected other than being pumped and because the RWIS is remote and presents certain logistical and safety issues with obtaining a sample along with the lack of an existing sampling port. The permittee also ascertained that the monthly testing frequency imposes only a single

sampling episode in a monthly monitoring period and the ambient conditions of the GIWW do change with flow

conditions. The permittee also stated that testing pH of these waters at the point of diversion would adequately assess and protect the segment from an unaffected and intermittent return flow without imposing the cost and expense for a while-recirculating grab sample potentially exposing site personnel to issues associated with access to this remote station.

Response No. 3: EPA concurs with the permittee that the discharge through recirculation loop is completely non-contact and the water returned is discharged through large diameter piping to a submerged exit port located to the east of the intake structure. EPA also concurs with the permittee that Outfall 009 is the recirculated ambient water from the Gulf Intracoastal Waterway (GIWW), which also discharges into the Gulf Intracoastal Waterway. Based on the above, EPA has changed the sampling location for Outfall 009 to be taken at the Gulf Intracoastal Waterway at the point of diversion. EPA has also changed the testing frequency for pH from 1/week to 1/month.

OTHER CHANGE FROM THE DRAFT PERMIT

1. For clarity, EPA included the phrase "at Outfall 008" under the footnote *3 on page 6 of Part I to read "Monthly monitoring requirements for Salinity at Outfall 008 and the receiving stream salinity at Outfall 008."