Final National Pollutant Discharge Elimination System (NPDES) General Permit No. GEG460000 For Offshore Oil and Gas Activities in the Eastern Gulf of Mexico

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NOTICE OF FINAL NPDES GENERAL PERMIT

Final NPDES General Permit for New and Existing Sources in the Offshore Subcategory of the Oil and Gas Extraction Category for the Eastern Portion of the Outer Continental Shelf (OCS)[1] of the Gulf of Mexico (GEG460000)

SUMMARY: Today, the EPA Region 4 is reissuing the National Pollutant Discharge Elimination System (NPDES) general permit for the eastern portion of the OCS of the Gulf of Mexico (Permit No. GEG460000) for discharges from new sources, existing sources, and new dischargers, in the Offshore Subcategory of the Oil and Gas Extraction Point Source Category (40 Code of Federal Regulations (CFR) Part 435, Subpart A). When issued, this proposed general permit will replace the previous permit issued on December 21, 2017, which became effective on January 20, 2018, and expired on January 19, 2023. The general permit authorizes discharges from oil and gas facilities and supporting pipeline facilities, engaged in exploration, development, and production operations located in and discharging to Federal waters of the Gulf of Mexico seaward of the 200 meter depth contour (the 200 meter isobath is shown on Appendix B) offshore Alabama and Florida, and seaward of the Clean

[1] This EPA Region 4 Offshore Oil and Gas NPDES General Permit has been historically referred to as an "Outer Continental Shelf (OCS) Permit." However, the OCS reference is used only as a naming convention for the permit; the geographical scope of the permit includes areas seaward of the "territorial seas" as defined in the CWA Section 502(8), 33 USC 1362(8), and that scope is not affected by narrower definitions of the "Outer Continental Shelf" under any other authority.

Water Act 3-mile territorial seas offshore Mississippi and Alabama in the Mobile and Viosca Knoll lease blocks. The term of the permit will be five years from the effective date of the permit.

FOR FURTHER INFORMATION CONTACT: Ms. Bridget Staples, EPA Region 4, Water Division, 61 Forsyth Street, Atlanta, Georgia 30303, Telephone: (404) 562- 9783, or via email to the following address: staples.bridget@epa.gov.

Authorization To Discharge Under the National Pollutant Discharge Elimination System

In compliance with the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et. seq.), operators of new and existing sources and new dischargers from offshore oil and gas development, production, and exploration facilities in lease blocks located in OCS Federal waters in the eastern portion of the Gulf of Mexico seaward of the 200 meter depth contour offshore Alabama and Florida, and seaward of the Clean Water Act 3-mile territorial seas offshore Mississippi and Alabama in the Mobile and Viosca Knoll lease blocks, are authorized to discharge to receiving waters in accordance with effluent limitations, monitoring requirements, and other conditions set forth in Parts I, II, III, IV and V, and appendices thereof.

Operators of facilities within the NPDES general permit coverage area must submit a Notice of Intent (NOI) to the Regional Administrator, prior to discharge, that they intend to be covered by the general permit (See Part I.A.4). NOIs are submitted electronically. The effective date of coverage will be the certification date of the electronic NOI NeT GEG eReporting tool.

This permit shall become effective at midnight, Eastern Standard Time, on 30 days after the publication in the Federal Register. Administratively continued coverage under the previous NPDES

general permit will cease for operators 30 days after the effective date of this permit. Therefore, such operators must submit a new NOI to be covered under this general permit within 30 days after the effective date of this permit. If a permit application for an individual permit is filed, the coverage under the previous general permit terminates when a final action is taken on the application for an individual permit.

This permit and the authorization to discharge shall expire at midnight, Eastern Standard Time 5 years from the effective date.

Signed this day of _____.

Butler, Kathlene

Digitally signed by Butler, Kathlene
Date: 2024.02.12 16:01:27 -05'00'

Kathlene Butler
Director
Water Division

Part I. Requirements for NPDES Permits

A. Permit Applicability and Coverage Conditions

1. Operations Covered

This permit establishes effluent limitations, prohibitions, reporting requirements and other conditions for discharges from oil and gas facilities, and supporting pipeline facilities, engaged in production, field exploration, drilling, well completion, and well treatment operations from potential new sources, existing sources, and new dischargers

The permit coverage area includes Federal waters in the Gulf of Mexico seaward of the 200- meter depth contour offshore Alabama and Florida, and seaward of the Clean Water Act 3-mile territorial seas offshore Mississippi and Alabama in the Mobile and Viosca Knoll lease blocks. This permit is available to facilities located in, and discharging to, the Federal waters listed above and does not authorize discharges from facilities in or discharging to the territorial sea (within three miles of shore) of the Gulf coastal states or from facilities defined as “coastal” or "onshore”. See 40 CFR Part 435, subparts C and D at: https://www.epa.gov/eg/oil-and-gas-extraction-effluent-guidelines.

2. Types of Operators and Operations Excluded

Any operator seeking to discharge drill fluids, drill cuttings, well completion, well treatment or well workover fluids or produced water within 1000 meters of an Area of Biological Concern (ABC) or within 1000 meters of a Federally Designated Dredged Material Disposal Site is ineligible for coverage under this general permit and must apply for an individual permit. Any leases which are currently under moratorium are excluded from inclusion under this general permit.

For the purpose of this permit, "Operator" means any party that meets either of the following criteria and pertains only in the context of discharges associated with oil and gas exploration, development, and production activities covered under this permit:

a. Primary Operator – The party possesses the lease of the block where the exploration, development, or production activity will take place and has operational control over exploration, development, or production activities, including the ability to hire or fire contractors who conduct the actual work that results in discharges regulated by the permit (i.e., the lease holder) or designated operator who registers with the U.S. Department of Interior Bureau of Ocean Energy Management (BOEM); or
b. Day-to-day Operator - The party has a day-to-day operational control of those activities at an exploration, development, or production project which are necessary to ensure compliance with the permit (i.e., designated operator or contractor); or
c. Vessel Operator – The party has operational control over all vessels or other mobile facility with cooling water intake structures subject to Clean Water Act (CWA) Section 316(b).

Note: A vessel or mobile facility which engages in an exploration, development, or production activity is subject to this permit even if it is not subject to CWA Section 316(b).

The primary operator must file an NOI for discharges to be covered by this permit. Other operators or vessel operators must file an NOI to cover discharges directly under their control but beyond primary operator's control, if such discharges are not covered by the NOI filed by the primary operator.

Permit coverage will not be extended to non-operational facilities, planned facilities, or planned wells, i.e., those on which no production and no discharges have taken place in the two years prior to the effective date of this general permit, until such time that documentation is submitted to the EPA that an Exploration Plan (EP), Development Operational Coordination Document (DOCD) or Development Production Plan (DPP) has been submitted to BOEM or approved by BOEM.

3. General Permit Applicability

In accordance with 40 CFR § 122.28(b)(3) and 122.28(c), the Regional Administrator may require any person authorized by this permit to apply for and obtain an individual NPDES permit when:

a. The discharge(s) is a significant contributor of pollution;

b. The discharger is not in compliance with the conditions of this permit;

c. A change has occurred in the availability of the demonstrated technology or practices for the control or abatement of pollutants applicable to the point sources;

d. Effluent limitation guidelines are promulgated for point sources covered by this permit, which were not already subject to an effluent guideline;

e. A Water Quality Management Plan containing requirements applicable to such point source is approved;

f. It is determined that the facility is located in an ABC;

g. Circumstances have changed since the time of the request to be covered so that the discharge is no longer appropriately controlled under the general permit, or either temporary or permanent reductions or elimination of the authorized discharge is necessary;

h. Other relevant factors (i.e., permittee was in non-compliance status with an individual NPDES permit for offshore oil and gas operations).

The Regional Administrator may require any operator authorized by this permit to apply for an individual NPDES permit only if the operator has been notified in writing that an individual permit is required.

Any operator authorized by this permit may request to be excluded from the coverage of this general permit at any time by applying for an individual permit. Such operator shall submit the appropriate application forms to the Regional Administrator. When an individual NPDES permit is issued to an operator otherwise subject to this permit, the applicability of this permit to the owner or operator is automatically terminated on the effective date of the individual permit.

A source excluded from coverage under this general permit solely because it already has an individual permit may request that its individual permit be revoked, and that it be considered for coverage by this general permit. Revocation of the individual permit will occur upon approval of coverage (see Part I.A.4, below) under this permit.

4. Notification Requirements (Existing Sources and New Sources)

A NOI requesting coverage in accordance with the general permit requirements shall state whether the permittee is requesting coverage under the requirements for an existing source or requirements for new source, as well as all the following information. Please indicate "N/A" for those items that are not applicable to the coverage:

a. the legal name and address of the owner or operator;

b. type of operator – primary operator, day-to-day operator, or vessel operator (see Part I.A.2);

c. the facility name, OCS number location, including the lease block assigned by BOEM, or if none, the name commonly assigned to the lease area;

d. the number and type of facilities and activities proposed within the lease block;

e. a map with longitude and latitude of the facility location and of the expected discharges identified by the nomenclature used in Part I.B.1 - 11. Additional information may be requested by the Director regarding miscellaneous discharges;

f. the date on which the owner/operator commenced/will commence on-site construction, including:

    i). any placement assembly or installation of facilities or equipment; or

    ii). the clearing or removal of existing structures or facilities.

g. the date on which the facility plans to commence exploration activities at the site, if applicable;

h. the date on which the owner/operator entered into a binding contract for the purchase of facilities or equipment intended to be used in its operation within a reasonable time (if applicable);

i. the date on which the owner/operator plans to commence development;

j. the date on which the owner/operator plans to commence production;

k. technical information on the characteristics of the sea bottom in accordance with the Department of Interior Bureau of Safety and Enforcement (BSEE) Notice to Lessees (NTL) no. 2008-G05, *Shallow Hazards Program*, or the most current BSEE guidelines for shallow hazard investigation and analysis within 300 meters (965 feet) of the discharge point. For those facilities that submitted this information to the EPA Region 4 as part of the previous NPDES general permit (GEG460000), only indicate the previous submittal date of the information to meet the requirement of this NOI element;

l. for facilities in less than 100 meters water depth for offshore Mississippi and Alabama in the Mobile and Viosca Knoll lease blocks, permittees must submit a Live-Bottom Survey using either digital high-resolution acoustic data (sidescan sonar) or photo documentation. The

acoustic data may be either new data acquired for this purpose or data obtained by the permittee for lease or site-specific surveys in compliance with BSEE requirements, as per NTL No. 2008-G04 *Information Requirements for Exploration Plans and Development Operations Coordination Documents,* or most current BSEE guidelines. Digital (or digitized analog data) sidescan sonar data obtained by survey methods described in NTL No. 2008-G05 *Shallow Hazard Program,* or most current BSEE guidelines, if sufficient, may be used as the source of acoustic data for preparation of a Live-Bottom Survey report. EPA will consider all natural or artificial hard structure detected by acoustic data to be live-bottom unless other data (i.e., video, still photographs, diver visual, etc.) determines otherwise. Permittees choosing to continue providing photo documentation will continue to conduct such surveys, as per NTL No. 2004-G05, attachment 7, or most current BOEM guidelines. Final siting of proposed outfalls must be no further than 500 meters from the proposed surface location. See Part I.D.5 for specific permit requirements pertaining to preparation of reports using high resolution acoustical data. For those facilities that submitted this information to the EPA Region 4 as part of the previous NPDES general permit, only indicate the previous submittal date of the information to meet the requirement of this NOI element;

m. the type of drilling fluids to be used (e.g., water-based and/or synthetic-based);

n. documentation that an Application for Permit to Drill (APD) has been submitted to BSEE and the EP, DOCD or DPP has been submitted to BOEM or approved by BOEM;

o. for facilities installed after March 4, 1993, the NOI must also identify that the facility is a new source and state the date on which the facility's obligation to meet more stringent new source performance standards or technology-based limitations begins. That date is the soonest of ten years from the date that construction is completed, ten years from the date the source begins to

discharge process or non-construction related wastewater, or the end of the period of depreciation or amortization of the facility for the purposes of Section 167 or 169 (or both) of the Internal Revenue Code of 1954;

p. the general permit coverage number for the previous general permit and/or the individual NPDES permit number of any individual permit issued by the EPA Region 4 for this activity;

q. for production platforms, indicate the estimated distance (in meters) from the platform to the nearest Federally Designated Dredged Material Ocean Disposal Site;

r. any permit violations under the previous Region 4 General Permit for the facility;

s. indicate if Phase III of EPA's Cooling Water Intake Structure Rule (CWIS) applies to the facility for which you are applying for coverage under this permit. Also indicate if the facility plans to comply under Track I or Track II of the CWIS. See Part I.D.3.

Note: The Phase III CWIS rule applies to new offshore oil and gas extraction facilities for which construction commenced after July 17, 2006, that meet the following criteria:

i. it is a point source that uses or proposes to use a cooling water intake structure;

ii. it has at least one cooling water intake structure that uses at least 25 percent of the water it withdraws for cooling purposes;

iii. it has a design intake flow greater than two million gallons per day (MGD).

Use of a cooling water intake structure includes obtaining cooling water by any sort of contract or arrangement with an independent supplier (or multiple suppliers) of cooling water if the supplier or suppliers withdraw(s) water from waters of the United States. The threshold requirement that at least 25 percent of water withdrawn be used for cooling purposes must be measured on an average monthly basis. A new offshore oil and gas extraction facility meets the

25 percent cooling water threshold if, based on the new facility's design, any monthly average over a year for the percentage of cooling water withdrawn is expected to equal or exceed 25 percent of the total water withdrawn.

t. if known, indicate the name and NPDES permit coverage number under GEG460000 for vessel operators/contractors that are, or will be, performing work at your facility that are new oil and gas facilities subject to Phase III of the CWIS Rule.

u. information on the specific chemical composition of any additives currently being used or proposed for use in well treatment, completion, or workover operations or as biocides for sump/drain systems. If the information on the additive is not known at the time of the submittal of this NOI, operators shall include the information in a report that shall be submitted on to the EPA Region 4 on September 30th of each year. Aside from submitting this information with the NOI, this information is also required to be recorded and retained on site for no less than five years from the issuance date of the permit. See Parts I.A.6.a.iii and II.C.5.

v. certification statement per 40 CFR § 122.22(d) and signature of the responsible party per 40 CFR § 122.22(a).

Operators with coverage under the previous general permit that was administratively continued (i.e., a request for continued coverage received prior to expiration of the permit) must submit a new NOI to be covered under this permit no later than 30 days from the effective date of this permit. All facility owners for newly acquired leases must submit a NOI prior to the date of discharge and no later than 14 days prior to the expiration date of this permit. All NOIs shall be signed in accordance with 40 CFR § 122.22.

All NOIs must be submitted electronically, and the effective date of coverage submitted electronically will be the date of the request. The EPA will notify the applicant within 21 days of the receipt date regarding the new permit coverage number(s) and effective date of permit coverage. If an NOI is determined to be incomplete, the EPA will notify the applicant within 21 days of receipt of the NOI regarding any discrepancies, and/or possible termination of coverage. Information regarding electronic submittals of NOIs is contained in Part III of this permit. Help with eNOIs can be found at: https://usepa.servicenowservices.com/oeca_icis. Permittees are required to make timely updates to the Operators NPDES ID section in the EPA's NeT GEG system. Any change in name, address, contact or contact information must be updated in NeT-GEG within 30 days of the change by the certified submittal of an updated Operator Activation form.

During anytime the NeT GEG system is unavailable, operators may submit a short NOI email containing the information required in a) through v), above. This temporary NOI is to be emailed to staples.bridget@epa.gov and the Region 4 NPDES mailbox at r4npdespermits@epa.gov. The EPA will consider disruptions in the NeT-GEG system or cdx registration systems (including waiting on EPA personnel to resolve issues) to fall under the meaning of the system being unavailable and thus allow the use of temporary paper NOIs if necessary. A written and signed paper NOI mailed to the EPA will be accepted as temporary coverage based on the postmark date. The temporary NOI is good for 14 days, unless an extension is granted by the Director. Notices of Intent shall be filed electronically using the NeT GEG tool within 14 days of submitting temporary NOI. If the NeT GEG system remains unavailable, the temporary NOI coverage will be extended to 14 days after the system becomes functional. The EPA may deny an NOI within 45 days after the filing.

5. Operational Facilities

a. Change in designation from existing source to new source

Operators obtaining coverage under the existing source general permit for exploration activities (existing source) must send a new NOI for coverage of development and production activities as new source 14 days prior to commencing such operations.

b. "No Activity" Notification

For any activity for which no discharge is occurring, the operator shall submit a "No Activity" list each calendar quarter along with the quarterly submittal of the Discharge Monitoring Report (DMR). The No Activity list shall include:

(i) The NPDES general permit coverage number assigned to the facility,

(ii) the lease block designation and,

(iii) a certification statement signed in accordance with Part II.D.13 of this permit.

All NOIs, No Activity lists, and any subsequent reports required under this permit shall contain a signed certification statement (see Part II.D.13).

6. Non-Operational Facilities

Non-operational facilities planned facilities or planned wells are only eligible for coverage under this general permit after documentation has been submitted to the EPA indicating that an EP, DOCD or DPP, has been submitted to, or approved by, BOEM.

7. Termination of Operations

Lease block operators shall notify the Director within 60 days after the permanent termination of discharges from their facility. Information regarding electronic submittals of Notices of Termination (NOTs) is contained in Part III of this permit.

8. Intent to be Covered by a Subsequently Issued Permit

This permit shall expire 5 years from the effective date of this permit A letter requesting coverage under a subsequent general permit must be submitted in the NeT GEG system no later than the expiration date of this permit.

Note: Due to this being a general permit, this stipulation supersedes the 180-day time frame in Part II.D.12.

The request letter must list the facilities to be covered under the subsequent permit, their current permit coverage numbers, and be certified in accordance with Part II.D.13. If reissuance of this general permit does not occur before its expiration date and the permittee has submitted the request letter, continued coverage under this permit will be allowed until the effective date of the reissued general permit. If the permittee is notified by the EPA of the need to submit application forms for an individual permit and a letter requesting coverage under the subsequent permit was submitted, continued coverage under this general permit will be allowed until the effective date of the individual permit issued to the applicable facility.

Permittees that fail to notify the Director, during the term of this permit, of their intent to be covered by a subsequently issued permit cannot obtain continued authorization to discharge after the expiration date of this permit and will be operating without NPDES permit coverage until they apply for and

obtain coverage under the subsequently issued general permit or apply for, and receive, an effective individual NPDES permit.

9. Transfer of General Permit Coverage

This permit is not transferable to any entity except after written notice to the Director and subsequent written approval by the Director. The request for transfer shall include the permit coverage number, the OCS number, the facility name, and lease block name, the name of the existing permittee, name of the operator the coverage is being transferred to, and the projected date the transfer is to become effective. Submittal of a new NOI is not required for the transfer of permit coverage. The request must contain a certification statement (see Part II.D.13.d.) and be signed and dated by officials from each operating company. The Director may require modification or revocation and reissuance of the permit coverage to change the name of the permittee and incorporate such other requirements as may be necessary under the CWA. (The transfer of permit coverage requirements in this section supersede the "Transfer of Ownership of Control" requirements set forth in Part II.D.3 of this permit.)

B. <u>Effluent Limitations and Monitoring Requirements for New and Existing Sources</u>

Note: The EPA published the final rule "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act: Analysis and Sampling Procedures" in Federal Register, Vol. 77, No. 97, May 18, 2012. Any recent or future changes or incorporation of new testing protocol or methods in the Effluent Limitation Guideline at 40 CFR Part 435 supersede the applicable requirements in this permit.

The following limitations and monitoring requirements are summarized in Part V, Table 1 of this permit. Note: All samples must be representative of the effluent. Permittees are not allowed to filter samples.

1. Drilling Fluids

a. Prohibitions

i. Non-Aqueous Based Drilling Fluids (NAFs) [including Synthetic-Based Drilling Fluids (SBFs)]. There shall be no discharge of NAFs, except that which adheres to cuttings, or which are considered de minimus discharges (see Part I.D.1) or as small volume discharges (see Part I.D.2).

Exception - NAFs may be used as a carrier fluids (e.g., transporter fluid), lubricity additive or pill in water-based drilling fluids and may be discharged with those drilling fluids provided the discharge continues to meet the no Free Oil limit, the 96-hour LC_{50} toxicity limits, and the pill is removed prior to discharge.

ii. Oil-Based Drilling Fluids. There shall be no discharge of oil-based drilling fluids and inverse emulsion drilling fluids.

iii. Oil-Contaminated Drilling Fluids. There shall be no discharge of drilling fluids to which waste engine oil, cooling oil, gear oil or any lubricants which have been previously used for purposes other than borehole lubrication have been added.

iv. Diesel Oil. There shall be no discharge of drilling fluids to which contain diesel oil.

v. No Discharge Near Areas of Biological Concern. Unless otherwise authorized by the Director, there shall be no discharge of drilling fluids and drill cuttings from those facilities within 1000 meters (or as determined by the Director) of an ABC.

vi. No Discharge Near Federally Designated Dredged Material Ocean Disposal Sites. Unless otherwise authorized by the Director, there shall be no discharge of any drilling fluids and drill cuttings from those facilities within 1000 meters (or as determined by the Director) of a Federally Designated Dredged Material Ocean Disposal Site. See 40 CFR § 228.15(f) for a list of Federally Designated Dredged Material Ocean Disposal Site.

b. Limitations

i. Mineral Oil. Mineral oil may be used only as a carrier fluid (e.g., transporter fluid), lubricity additive, or pill. If mineral oil is added to a water-based drilling fluid, the drilling fluid may not be discharged, unless the 96-hr LC_{50} of the drilling fluid is greater than 30,000 ppm (3 percent by volume) using the Suspended Particulate Phase (SPP) Toxicity Test and the sample passes the Static Sheen Test for free oil. The analytical methods for the SPP Toxicity Test and free oil are contained in Parts I.B.1(b)(iii) and (iv), below. Samples must be taken at the nearest accessible location prior to discharge, or prior to combining with any other wastewaters.

ii. Cadmium and Mercury in Barite. There shall be no discharge of drilling fluids to which barite has been added if such barite contains mercury in excess of 1.0 mg/kg (dry weight) or cadmium in excess of 3.0 mg/kg (dry weight). The permittee shall analyze a representative sample of each supply of stock barite prior to drilling each well and submit

the results for total mercury and cadmium on the DMR. If more than one well is being drilled at a site, new analyses are not required for subsequent wells, provided that no new supplies of barite have been received since the previous analysis. In this case, the results of the previous analysis should be used for completion of the DMR. Alternatively, the permittee may provide certification, as documented by the supplier(s), that the barite being used on the well will meet the above limits. The concentration of the mercury and cadmium in the barite shall be reported on the DMR as documented by the supplier. Analyses for cadmium shall be conducted by EPA Methods 200.7, 200.8 or EPA Method 3050 B followed by 6010 B or 6020A (EPA SW 846), or more recently approved EPA methods, and results shall be expressed in mg/kg (dry weight) of stock barite. Analysis for mercury shall be conducted using EPA Method 245.7 or EPA method 7471 A (EPA SW 846), or most recently approved EPA methods, and expressed as mg/kg (dry weight) of stock barite.

iii. Toxicity. Discharged water-based drilling fluids shall meet both a daily minimum and a monthly average minimum effluent toxicity limitation of 30,000 ppm (3.0 percent by volume), using a volumetric mud-to-water ratio of 1 to 9. The analytical method is cited in 40 CFR Part 435, Appendix 2 of subpart A, entitled, "Drilling Fluid Toxicity Test." Monitoring shall be performed at least once per month by a grab sample taken from beneath the shale shaker for both the daily minimum and the monthly average minimum. If there are no returns across the shaker, the sample must be taken from a location that is characteristic of the overall mud system to be discharged. An end-of-well sample (See definition in Part V.B) is also required. The end-of-well test sample can also be used for the last monthly grab sample. The lowest daily minimum and lowest monthly average for the

quarterly reporting period must be reported on the DMR. Copies of the summary sheets for laboratory reports must also be submitted with the DMR. If a failure occurs, the facility must submit the entire laboratory report with the DMR. Samples for this parameter must be taken at the nearest accessible location prior to discharge, or prior to combining with any other wastewaters.

iv. Free Oil. No free oil shall be discharged. Monitoring shall be performed once per week using the Static Sheen Test method in accordance with the method provided in Part V.A.3, as published in 40 CFR Part 435, Appendix 1 of subpart A. The results of each sheen test must be recorded for the fluids that are discharged and the number of days a sheen is observed must be reported on the DMR.

v. Maximum Hourly Discharge Rate. The maximum discharge rate (water-based drilling fluids) shall not exceed 1,000 barrels (bbls) per hour. The maximum hourly discharge rate for each month must be recorded. The highest hourly discharge rate for the quarterly reporting period must be reported on the DMR in bbls per hour.

Exception - The Maximum Hourly Discharge Rate Limitation shall not apply to Water-Based Drilling Fluids discharged prior to the installation of the marine riser.

c. Monitoring Only Requirements

In addition to the above limitations, the following monitoring and reporting requirements apply.

i. Drilling Fluids Inventory. The permittee shall maintain a precise chemical usage record of all constituents and their total volume and mass added for each well. Information shall be recorded and retained for the term of the permit.

ii. Volume. The total monthly volume (bbl per month) of bulk discharged drilling fluids must be estimated and recorded. The highest monthly volume (in bbl per month) and the average volume during the monitoring period shall be reported on the DMR.

2. Drill Cuttings

Except for the maximum hourly discharge rate, the permit prohibitions and limitations that apply to drilling fluids also apply to fluids that adhere to drill cuttings. Any permit condition that applies to the drilling fluid system, also applies to cuttings discharges. Monitoring requirements, however, may not be the same.

a. Prohibitions

i. Cuttings from Oil-Based Drilling Fluids. The discharge of cuttings is prohibited when they are generated while using an oil-based or invert emulsion mud.

ii. Cuttings from Oil Contaminated Drilling Fluids. There shall be no discharge of cuttings that are generated using drilling fluids that contain waste engine oil, cooling oil, gear oil or any lubricants which have been previously used for purposes other than borehole lubrication.

iii. Cuttings Generated Using Drilling Fluids Which Contain Diesel Oil. There shall be no discharge of drill cuttings generated using drilling fluids which contain diesel oil.

iv. Cuttings Generated Using Mineral Oil. The discharge of cuttings generated using drilling fluids which contain mineral oil is prohibited except when the mineral oil is used as a carrier fluid (e.g., transporter fluid), lubricity additive, or pill.

v. No Discharge Near Areas of Biological Concern. There shall be no discharge of drill cuttings from those facilities within 1000 meters (or as determined by the Director) of an ABC.

vi. No Discharge Near Federally Designated Dredged Material Ocean Disposal Sites. There shall be no discharge of any drilling fluids, drill cuttings or produced waters from those facilities within 1000 meters (or as determined by the Director) of a Federally Designated Dredged Material Ocean Disposal Site. See 40 CFR § 228.15(f) for a list of sites in the general permitting area.

vii. Cuttings Generated Using Non-Aqueous Based Drilling Fluid. There shall be no discharge of non-aqueous based drilling fluid, except that which adheres to cuttings, de minimus discharges (see Part I.D.1) and small volume discharges (see Part I.D.2). Exception - NAFs may be used as a carrier fluid (e.g., transporter fluid), lubricity additive or pill in water-based drilling fluids and discharged with those drilling fluids provided the discharge continues to meet the no free oil and 96-hour LC_{50} toxicity limits, and a pill is removed prior to discharge.

b. Limitations which apply to all drill cuttings

i. Mineral Oil. There shall be no discharge of mineral oil.

Exception - Cuttings from a water-based mud system may be discharged when mineral oil pills or mineral oil lubricity additives have been introduced if they meet the limitations below for aquatic toxicity and free oil.

ii. Free Oil. No free oil shall be discharged. Monitoring shall be performed on cuttings discharges once per week using the Static Sheen Test method in accordance with the method provided in Part V.A.3. Samples must be taken at the nearest accessible location prior to discharge, or prior to combining with any other wastewaters. There shall be no discharge of cuttings that fail the static sheen test. The results of each sheen test for fluids that are discharged must be recorded and the number of observations of a static sheen must be reported on the DMR.

iii. Suspended Particulate Phase Toxicity. Discharged cuttings shall meet both a daily minimum and a monthly average minimum effluent toxicity limitation of at least 30,000 ppm (3.0 percent by volume), using a volumetric mud-to-water ratio of 1 to 9. The analytical method is cited in 40 CFR Part 435, Appendix 2 of subpart A, entitled, "Drilling Fluid Toxicity Test." Monitoring shall be performed at least once per month by taking a grab sample from beneath the shale shaker for both the daily minimum and the monthly average minimum limits. The toxicity test may be satisfied by the same sample used for the drilling fluid. An end-of-well sample is also required. The end-of-well test sample may also be used as the last monthly grab sample. The lowest daily minimum value for the 12-month

reporting period as well as the lowest monthly average test result must be reported on the DMR. Copies of the summary sheets for laboratory reports also must be submitted with the DMR. If a failure occurs, the facility must submit the entire laboratory report with the DMR.

iv. Mercury and Cadmium in Stock Barite. There shall be no discharge of drilling fluids to which barite has been added if such barite contains mercury in excess of 1.0 mg/kg (dry weight) or cadmium in excess of 3.0 mg/kg (dry weight). The permittee shall analyze a representative sample of each supply of stock barite prior to drilling each well and submit the results for total mercury and total cadmium on the DMR. If more than one well is being drilled at a site, new analyses are not required for subsequent wells, provided that no new supplies of barite have been received since the previous analysis. In this case, the results of the previous analysis should be used for completion of the DMR. Alternatively, the permittee may provide certification, as documented by the supplier(s), that the barite being used on the well will meet the above limits. The concentration of the mercury and cadmium in the barite shall be reported on the DMR as documented by the supplier. Analyses for cadmium shall be conducted by EPA Methods 200.7, 200.8 or EPA Method 3050 B followed by 6010 B (EPA SW 846) and results expressed in mg/kg (dry weight) of stock barite. Analysis for mercury shall be conducted using method 245.7 or EPA Method 7471 A (EPA SW 846) and expressed as mg/kg (dry weight) of stock barite.

c. Discharge Limitations Applicable to Non-Aqueous Based Drill Cuttings

Except for the toxicity testing requirements for drilling fluids in Part I.B.1.b.(iii), all the limits for drill cuttings in Part I.B.2. (b) above, apply to synthetic-based drill cuttings.

i. Formation Oil. There shall be no discharge of formation oil. Monitoring of the drilling fluids shall be performed as follows:

(1). Once prior to drilling using the gas chromatography/mass spectrometry test (GC/MS) method specified in Appendix 5 of 40 CFR Part 435, subpart A. Alternatively, the permittee may provide certification, as documented by the supplier(s) that the drilling fluid being used on the well contains no formation oil as determined using the GC/MS method in Appendix 5 of 40 CFR Part 435, subpart A.

(2). Once per week during drilling using the Reverse Phase Extraction (RPE) test method specified in Appendix 6 of 40 CFR Part 435, subpart A. If an operator wishes to confirm the results of the RPE method, the GC/MS method may be used, and results of this method shall supersede the results of the RPE method. Alternatively, the operator may use the GC/MS method instead of the RPE method.
As an alternative to using the crude oil standard in Appendix 5 and 6 of 40 CFR Part 435 A, the permittee may use National Institute of Standards and Technology method no. 2779, Gulf of Mexico Crude Oil Standard.

All test results shall be reported with the DMR.

ii. Drilling Fluid Sediment Toxicity Ratio. The sediment toxicity test ratio shall not exceed 1.0 and shall be calculated based on the following:

$$\text{Drilling Fluid Sediment Toxicity Ratio} = \frac{\text{4-day } LC_{50} \text{ of } C_{16}\text{-}C_{18} \text{ internal olefin reference drilling fluid}}{\text{4-day } LC_{50} \text{ of drilling fluid removed from the drill cuttings at the solids control equipment}}$$

The approved test method is ASTM method no. E1367-92 (or the most current EPA approved method) and monitoring for this parameter shall be once per month per well. Samples shall be collected and analyzed in accordance with the sampling protocol in Part V.12.

iii. Base Fluid Retained on Cuttings. For NAFs that meet the stock limitation of C_{16}-C_{18} internal olefin, the maximum weighted mass ratio averaged over all non-aqueous-based drilling fluid well sections shall not exceed 6.9 g NAF per 100 g of wet drill cuttings. For NAFs that meet the stock limitation of C_{12}-C_{14} esters or C_8 ester, the maximum weighted mass ratio averaged over all NAF well sections shall not exceed 9.4 g non-aqueous-based drilling fluid per 100 g of wet drill cuttings. A default value of 14 percent of base fluid retained on drill cuttings may be used for determining compliance with the base fluids retained on cutting limit where seafloor discharges are made from dual gradient drilling. In those cases, 15 percent will be used as a default value for the mass fraction of cuttings discharged at the sea floor. The default values will be averaged with results obtained from daily monitoring to determine compliance with the retention limitations. Monitoring for this parameter shall be once per day by grab sample except when meeting the conditions of the Best Management Practices described in Part I.V.3.g., or one sample for every 500 feet

drilled, up to three samplings per day, using the American Petroleum Institute (API) Retort method specified in 40 CFR Part 435, subpart A of Appendix 7. The weighted mass ratio averaged over all non-aqueous-based drilling fluid well sections shall be reported on the DMR. The sample for the drilling fluid retained on cuttings shall be taken at the solids control equipment.

d. Base Drilling Fluid Stock Limitations Applicable to Non-Aqueous Based Drill Cuttings

i. Polynuclear Aromatic Hydrocarbon (PAH) Content. The PAH mass ratio shall not exceed $1x10^{-5}$. Monitoring shall be by grab sample taken once per year on each fluid blend using EPA Method 1654A (or the most current version), in conjunction with the following equation:

$$\text{PAH mass ratio} = \frac{\text{mass (g) of PAH (as phenanthrene)}}{\text{mass (g) of stock base fluid}}$$

The PAH ratio shall be reported on the DMR.

ii. Stock Drilling Fluid Sediment Toxicity Ratio. The sediment toxicity ratio shall not exceed 1.0, and shall be calculated as follows:

For NAF base fluid of C_{16}-C_{18} internal olefin,

$$\text{Sediment Toxicity Ratio} = \frac{\text{10-day } LC_{50} \text{ of } C_{16}\text{-}C_{18} \text{ internal olefin reference fluid}}{\text{10-day } LC_{50} \text{ of stock base fluid}}$$

For NAF base fluids of 100% C_{12}-C_{14} ester or C_8 ester content,

$$\text{Base Fluid Sediment Toxicity Ratio} = \frac{\text{10-day } LC_{50} \text{ of } C_{12}\text{-}C_{14} \text{ ester or } C_8 \text{ ester reference base fluid}}{}*$$

10-day LC_{50} of stock base fluid

* Chemical Abstract No. 135800-37-2

Monitoring for the parameter shall be performed at least once per year on each fluid blend using the 10-day LC_{50} sediment toxicity test specified in ASTM E1367-92 (or the most current EPA approved method) and reported on the DMR. Samples shall be collected and analyzed using the sampling protocol in Part V.12.

iii. Biodegradation Rate Ratio. The biodegradation rate ratio of the stock base fluid shall not exceed 1.0, and shall be calculated using the following equation:

For NAF base fluid of C_{16}-C_{18} internal olefin,

$$\text{Biodegradation Rate Ratio} = \frac{\text{Cumulative gas production (ml) of } C_{16}\text{-}C_{18} \text{ internal olefin reference base fluid at 275 days}}{\text{Cumulative gas production (ml) of stock base fluid at 275 days}}$$

For NAF base fluid of 100% C_{12}-C_{14} ester or C_8 ester content,

$$\text{Biodegradation Rate Ratio} = \frac{\text{Cumulative gas production (ml) of } C_{12}\text{-}C_{14} \text{ ester or } C_8 \text{ ester reference base fluid* at 275 days}}{\text{Cumulative gas production of (ml) of stock base fluid at 275 days}}$$

* Chemical Abstract No. 135800-37-2

Monitoring for the parameter shall be performed at least once per year on each fluid blend using International Standards Organization (ISO) Method 11734:1995 (or the most current EPA approved method) and results reported on the DMR. See Parts V.13 and 14 for additional requirements. Samples shall be collected and analyzed using the sampling protocol in Part V.12.

Exception - Stock limitations are designed to ensure that only base fluids meeting Best Available Technology (BAT) criteria are added to existing drilling fluids. As long as fluids or blends of fluids that are added to a built whole mud meet stock limitations criteria, it is acceptable to mix a base fluid to a built whole mud that differs from that originally used to make that mud. It is also acceptable to mix together two built whole mud systems that contain different base fluids so long as they are themselves built with base fluids that are compliant with the stock limitations. Operators choosing to mix previously compliant fluids, or blends of fluids, must analyze the mixture to show compliance with the limitations for:

(1) Formation Oil (see Part I.B.2.c.i (1)),

(2) SPP toxicity (see Part I.B.1.b.iii), and

(3) Drilling Fluid Sediment Toxicity (see Part I.B.2.c.ii).

All test results shall be submitted with the DMR.

e. Monitoring Only Requirements

Volume. The monthly total discharge of drill cuttings must be estimated. The estimated highest monthly volume (in bbl/month) and the average volume for the monitoring period for cuttings discharged shall be reported on the DMR.

3. Produced Water

Produced water is defined in Part V.B. and includes process water generated from the monoethylene glycol (MEG) reclamation processes including salt slurry generated from the salt centrifuge unit. This wastewater may be discharged separately from produced waters via outfall

014 (i.e., is not mixed and discharged with produced water via outfall 004). Permit requirements and limitations are the same as those for produced waters as stated in Parts 3.a., b., and c., below.

a. Prohibitions

i. No Discharge Near Areas of Biological Concern. There shall be no discharge of produced water from those facilities within 1000 meters of an ABC.

ii. No Discharge Near Federally Designated Dredged Material Ocean Disposal Sites. There shall be no discharge of produced water from those facilities within 1000 meters of a Federally Designated Dredged Material Ocean Disposal Site. See 40 CFR § 228.15(f) for a list of sites in the general permitting area.

b. Limitations

i. Oil and Grease. Produced water discharges shall not exceed both a daily maximum limitation of 42.0 mg/l and a monthly average limitation of 29.0 mg/l for oil and grease.

ii. Toxicity. Produced water discharges must meet the limiting permissible concentration (LPC) at the edge of a 100-meter mixing zone. The LPC is defined as the No Observed Effect Concentration (NOEC). The LPC must be equal to, or greater than, the predicted effluent concentration at the edge of a 100-meter mixing zone. Predicted effluent concentrations, referred to as critical dilutions, are presented in Tables 4 and 5 of Appendix A for a range of discharge rates and pipe diameters. The critical dilution shall be determined using Tables 4 and 5 of Appendix A of this permit based on the highest monthly average discharge rate for the three months prior to the month in which

the test sample is collected, discharge pipe diameter, and depth difference between the discharge pipe and the sea bottom. Facilities which have not previously reported produced water flow on the DMR shall use the estimated monthly average flow that was discharged during the first three months of produced water flow for determining the critical dilution from Tables 4 and 5 of Appendix A of this permit.

The NOEC shall be calculated by conducting 7-day chronic toxicity tests in accordance with methods published in *Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Marine and Estuarine Organisms* (EPA/821-R-02-014), or most current edition.

For facilities that had not previously reported produced water, testing to determine the NOEC shall begin after the third month of produced water discharge and shall be done every two months until the permittee demonstrates compliance with three consecutive produced water toxicity tests and reports those results. Permittees that comply with the toxicity limit for three consecutive produced water toxicity tests will be allowed to reduce sampling to a frequency of once every six months.

Permittees that were covered under the previous general permit, and that are currently performing routine toxicity tests every six months, shall continue testing with a frequency of once every six months. If at any time, a test result indicates a failed test, the permittee must resume testing at a greater frequency, as set forth in Part V.A.15, until such time that the facility demonstrates compliance through three consecutive

tests. If a new well is drilled into a formation currently not producing, which contains produced water, the permittee shall perform a new toxicity test on the discharge beginning after the end of the first three months of flow.

The results for both species shall be reported on the DMR. See Part V.A.15 of this permit for Whole Effluent Toxicity Testing Requirements. Grab samples must be taken at the nearest accessible location prior to discharge, or prior to combining with any other wastewaters. In the case where seawater is added in accordance with the exception below, samples may be taken downstream of the point where seawater is added.

Exception - Permittees wishing to increase mixing may use a horizontal diffuser, add seawater, or may install multiple discharge ports (e.g., vertical diffuser). Permittees using a horizontal diffuser or multiple discharge ports shall install the system such that the NOEC is greater than or equal to the critical dilution. The projected percent effluent (critical dilution) at the edge of the mixing zone will be calculated using CORMIX2 (for horizontal diffusers) and CORMIX1 (for vertical diffusers), with the following input conditions:

Density Gradient = 0.163 kg/m^3/m

Ambient seawater density at diffuser depth (or at surface for vertical diffuser) = 1023.0 kg/m^3

Produced water density = 1070.2 kg/m^3

Current speed = 5 cm/sec (<200 m water depth); 15 cm/sec (>200 m water depth)

See Tables 1 through 11 of Appendix A for a complete list of parameters and other information pertaining to CORMIX modeling for effluents.

Permittees shall submit a certification that the diffuser, seawater addition, or multiple discharge ports has been installed and state the critical dilution and corresponding NOEC in the certification. The certification shall be submitted along with the first DMR for produced water discharges to: Director, Water Division, U.S. EPA Region 4, Sam Nunn Atlanta Federal Center, 61 Forsyth Street, SW, Atlanta, GA 30303-8960. All modeling runs shall be retained by the permittee as part of its NPDES records.

Permittees using vertically aligned multiple discharge ports/vertical diffuser shall provide vertical separation between ports which is consistent with Table 6 of Appendix A of this permit. When multiple discharge ports are installed, the depth difference between the discharge port closest to the seafloor and the seafloor shall be the depth difference used to determine the critical dilution from Tables 4 and 5 of Appendix A of this permit.

Permittees discharging produced water at conditions other than those covered in Tables 4 and 5 of Appendix A (e.g., at a greater flow rate and/or with larger pipe diameters) shall determine the critical dilution using the appropriate CORMIX model with the above input parameters. Permittees shall retain the model runs as part of the NPDES records.

The critical dilution value shall be based on the port flow rate (total flow rate divided by the number of discharge ports) and based on the diameter of the discharge port (or largest discharge port if they are of different styles).

When seawater is added to produced water prior to discharge, the total produced water flow, including the added seawater, shall be used in determining the critical dilution from Table 7 of Appendix A. When freshwater is added to produced water prior to discharge, the total produced water flow, including the added freshwater, shall be used in determining the critical dilution from Table 8 of Appendix A.

Permittees wishing to reduce a produced water flow rate and thereby the critical dilution through operational changes must provide to the EPA a description of the specific changes that were made and the resultant low rate. The permittee must certify that this flow rate will not be exceeded for the remainder of the DMR period unless the permittee re-certifies.

c. Monitoring Requirements

i. Flow. Once per month, an estimate of the flow must be recorded in units of bbls per day (bbl per day). The highest monthly discharge flow rate (in bbl/day) shall be estimated and reported on the DMR.

ii. Oil and Grease. A grab sample must be taken at least once per month. The daily maximum sample may be based on the average concentration of four grab samples spaced evenly and weighted by the flow rate and taken within a 24-hour period. (see

Parts II.E.4 and E.7.c). If only one sample is taken for any one month, it must meet both the daily and monthly limits. If more samples are taken, they may exceed the monthly average for any one day, provided that the average of all samples taken meets the monthly limitation. The gravimetric method is specified in 40 CFR Part 136. Samples must be taken at the nearest accessible location after final treatment and prior to combining with any other wastewaters. The highest daily maximum concentration and the highest monthly average concentration shall be reported on the DMR.

In addition, a produced water sample shall be collected within two hours of when a sheen is observed in the vicinity of the discharge or within two hours after startup of the system if it is shut down following a sheen discovery and analyzed for oil and grease.

iii. Visual Sheen. The permittee shall monitor for free oil using the visual sheen test method on the surface of the receiving water. Monitoring shall be performed once per day when discharging, during conditions when observation of a sheen on 40 CFR § 122.42(a)(2)(i-iii)the surface of the receiving water is possible in the vicinity of the discharge, and when the facility is manned.

4. Deck Drainage

Limitations

Free Oil. No free oil shall be discharged. Monitoring shall be performed on each day of discharge during daylight hours using the visual sheen test method in accordance with the method provided at Part V.A.4. Discharge of deck drainage that fails the visual sheen test shall

be a violation of this permit. The results of each visual must be recorded and the number of observations of a sheen must be recorded for the monitoring period and reported on the DMR.

Note: An observation of deck drainage sheen is not required when the facility is not being manned.

Biocides: A use of biocide for sump/drain systems to comply with proper operation and maintenance requirements is permitted for those compounds that meet the requirements at 40 CFR §122.42(a)(2)(i-iii) (Also see Part II.D.11 of the permit).

5. Produced Sand

There shall be no discharge of produced sand. Wastes must be hauled to shore for treatment and disposal.

6. Well Treatment Fluids, Completion Fluids, or Workover Fluids

a. Limitations

i. Free Oil. No free oil shall be discharged. Monitoring shall be performed prior to discharge and on each day of discharge using the static sheen test method in accordance with the method provided at Part V.A.3. There shall be no discharge of well treatment, completion, or workover fluids that fail the static sheen test. Samples must be taken at the nearest accessible location after final treatment and prior to discharge, or prior to combining with any other wastewaters. The results of each sheen test for discharged fluids must be recorded and the number of observations of a sheen must be reported for the monitoring period on the DMR.

ii. Oil and Grease. Well treatment fluids, completion fluids, or workover fluids discharges must meet both a daily maximum of 42.0 mg/l and a monthly average of 29.0 mg/l limitation for oil and grease. A grab sample must be taken at least once per month when discharging. Samples must be taken at the nearest accessible location after final treatment and prior to discharge, or prior to combining with any other wastewaters. The daily maximum concentration may be based on the average of four grab samples spaced evenly and weighted by the flow rate and taken within a 24-hour period. (Reference Parts II.E.4 and E.7.c). taken within the 24-hour period. If only one sample is taken for any one month, it must meet both the daily and monthly limits. If more samples are taken, they may exceed the monthly average for any one day, provided that the average of all samples taken meets the monthly limitation. The analytical method is the gravimetric method, as specified in 40 CFR Part 136. The highest daily maximum and the highest monthly average for the monitoring period shall be reported on the DMR.

iii. Priority Pollutants. For well treatment fluids, completion fluids, or workover fluids, the discharge of priority pollutants is prohibited except in trace amounts. If multiple fluids are mixed, each fluid must be checked for priority pollutants. “Trace amounts” shall mean the amount equal to or less than the most sensitive method detection limit listed in 40 CFR Part 136 for the applicable parameter. Vendor certification indicating the fluids contain no priority pollutants is acceptable for meeting this requirement. Information on the specific chemical composition of any additives containing priority pollutants shall be recorded and submitted as part of the NOI (see Part I.A.4.u). Any updated information regarding chemical composition of new formulations that contain priority pollutants and will be used

shall be submitted to EPA Region 4 annually no later than September 30th. Operators may submit this information marked as "Confidential Business Information", if necessary. Copies of these records should also be kept on the rig while the rig is on the permitted location and thereafter at the permittee's shore base or office. These record retention requirements supersede those found in Part II.C.5. of this permit.

Note: If materials added downhole as well treatment, completion, or workover fluids contain no priority pollutants as determined by using analytical methods in 40 CFR Part 136, the discharge is assumed not to contain priority pollutants.

b. Monitoring Requirements

Volume. The highest daily total discharge and the 3-month average discharge must be estimated and reported on the DMR in bbls per month.

c. Discharges of Well Treatment, Completion, or Workover fluids shall be considered "produced water" when commingled with produced water.

d. This permit prohibits the discharge of a combination of compounds that form a gel-like or solid phase substance when added to or mixed with wastewater.

e. Whole Effluent Toxicity Requirements for Well Treatment, Completion or Workover Fluids that are Not Commingled with Produced Water.

i. Chronic Whole Effluent Toxicity Testing: Well treatment, completion or workover fluids that are not commingled with produced water discharges lasting four or more days must be monitored for at the limiting permissible concentration (LPC) at the edge of a 100-meter

mixing zone. The LPC is defined as the No Observed Effect Concentration (NOEC). The LPC must be equal to, or greater than, the predicted effluent concentration at the edge of a 100-meter mixing zone. Predicted effluent concentrations, referred to as critical dilutions, are presented in Tables 4 and 5 of Appendix A for a range of discharge rates and pipe diameters. The critical dilution shall be determined using Tables 4 and 5 of Appendix A of this permit based on the highest monthly average discharge rate for the three months prior to the month in which the test sample is collected, discharge pipe diameter, and depth difference between the discharge pipe and the sea bottom. Facilities which have not previously reported well treatment, completion, or workover fluids not commingled with produced water flow on the DMR shall use the estimated monthly average flow that was discharged during the first month of water flow for determining the critical dilution from Tables 4 and 5 of Appendix A of this permit.

The NOEC shall be calculated by conducting 7-day chronic toxicity tests in accordance with methods published in *Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Marine and Estuarine Organisms* (EPA/821-R-02-014), or most current edition. Grab samples shall be used.

Testing to determine the NOEC shall be done every month (or once per discharge, whichever is more frequent). Permittees that pass four consecutive toxicity tests will be allowed to reduce sampling to a frequency of once every six months.

If at any time, a test result indicates a failed test (NOEC is greater than the critical dilution), the permittee must resume testing at a greater frequency, as set forth in Part V.A.15, until such time that the facility demonstrates compliance through four consecutive tests.
The results for both species shall be reported on the DMR. See Part V.A.15 of this permit for Whole Effluent Toxicity Testing Requirements.

Grab samples must be taken at the nearest accessible location prior to discharge, or prior to combining with any other wastewaters. In the case where seawater is added in accordance with the exception below, samples may be taken downstream of the point where seawater is added.

Exception: Permittees wishing to increase mixing may use a horizontal diffuser, add seawater, or may install multiple discharge ports (e.g., vertical diffuser). Permittees using a horizontal diffuser or multiple discharge ports shall install the system such that the NOEC is greater than or equal to the critical dilution. The projected percent effluent (critical dilution) at the edge of the mixing zone will be calculated using CORMIX2 (for horizontal diffusers) and CORMIX1 (for vertical diffusers), with the following input conditions:

Density Gradient = 0.163 kg/m^3/m

Ambient seawater density at diffuser depth (or at surface for vertical position) = 1023.0 kg/m^3

Produced water density = 1070.2 kg/m^3

Current speed = 5 cm/sec (<200 m water depth); 15 cm/sec (>200 m water depth)

Permittees shall submit a certification that the diffuser, seawater addition, or multiple discharge ports has been installed and state the critical dilution and corresponding NOEC in the certification. The certification shall be submitted along with the first DMR for well treatment, completion, or workover fluids not commingled with Produced Water discharges to: Director, Water Division, U.S. EPA Region 4, Sam Nunn Atlanta Federal Center, 61 Forsyth Street, SW, Atlanta, Georgia 30303-8960. All modeling runs shall be retained by the permittee as part of its NPDES records.

Permittees using vertically aligned multiple discharge ports/vertical diffuser shall provide vertical separation between ports which is consistent with Table 6 of Appendix A of this permit. When multiple discharge ports are installed, the depth difference between the discharge port closest to the seafloor and the seafloor shall be the depth difference used to determine the critical dilution from Tables 4 and 5 of Appendix A of this permit.

Permittees discharging well treatment, completion, or workover fluids not commingled with produced water at conditions other than those covered in Tables 4 and 5 of Appendix A (e.g., at a rate greater flows and pipe diameters) shall determine the critical dilution using the appropriate CORMIX model with the above input parameters. Permittees shall retain the model runs as part of the NPDES records.

The critical dilution value shall be based on the port flow rate (total flow rate divided by the number of discharge ports) and based on the diameter
of the discharge port (or largest discharge port if they are of different styles).

When seawater is added to produced water prior to discharge, the total produced water flow, including the added seawater, shall be used in determining the critical dilution from Tables 74 of Appendix A. When freshwater is added to well treatment, completion, or workover fluids not commingled with produced water prior to discharge, the total flow, including the added freshwater, shall be used in determining the critical dilution from Table 8 of Appendix A.

Permittees wishing to reduce a flow rate for well treatment, completion, or workover fluids not commingled with produced water and thereby the critical dilution through operational changes must provide to the EPA a description of the specific changes that were made and the resultant low rate. The permittee must certify that this flow rate will not be exceeded for the remainder of the DMR period unless the permittee re-certifies.

ii. Acute Whole Effluent Toxicity Testing Limit for Well Treatment, Completion or Workover Fluids - The following Acute Whole Effluent Testing requirements apply to discharges of well treatment, completion or workover fluids not commingled with Produce Water that last less than four days. Permittees must monitor and report the acute critical dilution (ACD) at the edge of a 100-meter mixing zone. The ACD is defined as 1.0 times the $LC_{50.}$ The ACD and the predicted effluent concentration at the edge of a 100-meter mixing zone must be reported on the DMR. To be in compliance, the ACD must be equal to, or greater than, the predicted effluent concentration at the edge of a 100-meter mixing zone. Predicted effluent concentrations, referred to as "critical dilutions," are presented in Tables 4 and 5 of Appendix A for a range of discharge rates and pipe diameters. Critical dilution shall be determined using Tables 4 and 5 of this permit based on the most recent discharge rate, discharge pipe diameter, and water depth between the discharge pipe and the ocean bottom. LC_{50} shall be calculated by conducting 48-hour, non-static renewal, toxicity tests once per discharge using *Mysidopsis bahia* and *Menidia beryllina* (Inland silverside minnow). Additional acute toxicity testing requirements are contained in Part V.15.b of this permit.

Permittees discharging well treatment wastewater at conditions other than those covered in Tables 4 and 5 of Appendix A (e.g., at greater flows rates, pipe diameters, or discharge densities) shall determine the critical dilution using the appropriate CORMIX model with the input parameters shown below. Permittees shall retain the model runs as part of the NPDES records. The critical dilution shall be determined using the CORMIX model using the highest daily average discharge rate for the three days prior to the day in which the test sample is collected, the discharge pipe diameter, the measured discharge density, and the depth difference between the discharge pipe and the sea bottom.

Input Parameters:

Density Gradient = 0.163 kg/m3/m

Ambient seawater density = 1023.0 kg/m3

Well Treatment wastewater density = 1030.0 – 1680.0 kg/m3

Completion and workover fluids = 1030.0 – 1680.0 kg/m3

Current speed = 5 cm/sec (<200 m water depth); 15 cm/sec (>200 m water depth). Permittees shall retain the model runs as part of the NPDES records.

Grab samples for the acute WET tests shall be obtained at the nearest accessible point after final treatment and prior to discharge to surface waters. The Permittee must comply with these limitations 6 months after the effective date of the permit.

7. Sanitary Waste (Facilities Continuously Manned for 30 or more consecutive days by 10 or More Persons)

a. Prohibitions

Solids. There shall be no discharge of floating solids. Observations must be made once per day, during daylight in the vicinity of sanitary waste outfalls, and at the time during maximum estimated discharge. The number of days solids are observed during the quarter shall be reported on the DMR.

b. Limitations

Total Residual Chlorine. Discharges of sanitary waste must contain a minimum of 1.0 mg residual chlorine per liter and shall be maintained as close to this concentration as possible at all times. A grab sample must be taken once per month and the minimum and average concentrations for the monitoring period shall be reported on the DMR. The approved analytical methods are Hach CN-66-DPD or the EPA method specified in 40 CFR Part 136 for Total Residual Chlorine. Samples must be taken at the nearest accessible location prior to discharge and after final treatment.

Equivalent Disinfection – Other Technologies. The use of other disinfection technologies, including, but not limited to, bio-membrane filtration and ultra-violet light, are allowed as substitutes for total residual chlorine provided that those technologies result in equivalent or improved disinfection of the sanitary waste stream.

Exception - Any facility which properly maintains a marine sanitation device (MSD) that complies with pollution control standards and regulations under Section 312 of the Act shall be deemed in compliance with permit prohibitions and limitations for sanitary waste. The MSD

shall be tested annually for proper operation and the test results maintained at the facility or at an alternative site if not practicable. The operator shall indicate use of an MSD on the DMR.

8. Sanitary Waste (Facilities Continuously Manned for 30 or more consecutive days by 9 or Fewer Persons or Intermittently by Any Number)

Prohibition. There shall be no discharge of floating solids. An observation must be made once per day when the facility is manned, during daylight in the vicinity of sanitary waste outfalls, and at a time during maximum estimated discharge. The number of days solids are observed shall be reported on the DMR.

Exception - Any facility which properly maintains an MSD that complies with pollution control standards and regulations under Section 312 of the Act shall be deemed in compliance with permit prohibitions and limitations for sanitary waste. The MSD shall be tested annually for proper operation and the test results maintained at the facility or at an alternative site if not practicable. The operator shall indicate use of an MSD on the DMR.

9. Domestic Waste

a. Prohibitions

Solids. There shall be no discharge of floating solids.

b. Limitations

Solids. See Part I.C.4 - Rubbish, Trash and Other Refuse.

c. Monitoring Only Requirements

Solids. An observation must be made during daylight in the vicinity of domestic waste outfalls and at a time during maximum estimated discharge. The number of days solids are observed must be recorded and reported on the DMR.

10. Miscellaneous Discharges

The following miscellaneous discharges are authorized for discharge: Desalination Unit Discharge; Blowout Preventer Control Fluid; Uncontaminated Ballast Water; Uncontaminated Bilge Water; Mud, Cuttings, and Cement (including tracers) at the Seafloor; Uncontaminated Seawater; Uncontaminated Freshwater; Boiler Blowdown; Source Water and Sand; Diatomaceous Earth Filter Media; Subsea Wellhead Preservation Fluids; Subsea Cleaning Fluids; Subsea Production Control Fluids; Umbilical Steel Tube Storage Fluid; Leak Tracer Fluid, Riser Tensioner Fluid, Well Test Fluids, Bulk Transfer Operations Powder (Note: Authorized discharge is limited to dust emitted from vents that falls into water directly. No discharge of collected dust powder is authorized); Excess Cement Slurry, (Note: Discharges of cement slurry used for testing cement handling equipment are not authorized), Cement Equipment Washdown, Hydrate Control Fluid or Brine used as piping equipment preservation fluid (i.e., pipeline brines), and Aqueous Film Forming Foam (AFFF).

Additional miscellaneous discharges associated with subsea operations may be discharged based on the requirements set forth in Parts I.C.6 and V.A.15 of this permit.

a. Prohibitions.

Discharges of waste streams not mentioned above, including contaminated freshwater, contaminated seawater, contaminated bilge water and contaminated ballast water, are prohibited. (“Contaminated” refers to wastewater that has failed a Visual Sheen Test.)

b. Limitations.

i. Free Oil. There shall be no discharge of free oil. Monitoring shall be performed using the visual sheen test method once per week when discharging on the surface of the receiving water, or by use of the Static Sheen Test method. Tests shall be conducted in accordance with the methods contained in Part V.A.3 and V.A.4. Discharges are limited to those times that a visual sheen observation is possible. If the Static Sheen Test is used, samples must be taken at the nearest accessible location after final treatment and prior to discharge, or combination with any other wastewaters. The number of days a sheen is observed must be recorded and reported on the DMR.

Exception: Miscellaneous discharges may be discharged from platforms that are on automatic purge systems without monitoring for free oil when the facility is not manned. Discharges are not restricted to periods when observation is possible; however, the static sheen test method must be used during periods when observation of a sheen is not possible, such as at night or during inclement conditions. The static sheen testing is not required for miscellaneous discharges occurring at the sea floor.

The discharge of AFFF during a fire emergency is not subject to permit limitations established in this permit. Any discharge of AFFF associated with regulatory certification and inspection must be minimized and a substitute foaming agent (i.e., non-fluorinated) must be used, if possible. If vessel maintenance and training discharges are required, AFFF must be collected and stored for onshore disposal unless the vessel uses a non-fluorinated or alternative foaming agent.

ii. Toxicity. Fluids which are used as Subsea Wellhead Preservation Fluids, Subsea Production Control Fluids, Umbilical Steel Tube Storage Fluids, Leak Tracer Fluids, and Riser Tensioning Fluids shall have a 7-day No Observable Effect Concentration (NOEC) of no less than 50 mg/l. The 7-day NOEC shall be measured using Mysidopsis bahia (Mysid shrimp) chronic static renewal 7-day survival and growth test (Method 1007.0) and Menidia beryllina (Inland Silverside minnow) chronic static renewal 7-day larval survival and growth test (Method 1006.0) as described in Part V.A.15 of this permit. Compliance with this limit shall be measured at least annually (beginning from the effective date of this permit) using the survival and sub-lethal endpoints on each fluid added to an operation after the effective date of this permit. If the effluent fails the survival or sub-lethal test endpoint in any test, any discharge associated with the use of the product will be considered to be in violation of this permit. (For leak tracer fluid made from powder dye, the maximum concentration that can be discharged from the leak is the 7-day NOEC for that specific powder dye.)

iii. Pipeline Brines. Operators must demonstrate that brines used for pipeline/equipment preservation must meet the following three criteria prior to applying as preservation fluids:

(1) There shall be no free oil based on the static sheen test.

(2) The maximum daily concentration on oil and grease shall not exceed 29.0 mg/l.

(3) There shall be no priority pollutants, except in trace amounts.

11. Miscellaneous Discharges of Freshwater and Seawater In Which Treatment Chemicals Have Been Added, including, but not limited to: 1) excess seawater which permits the continuous

operation of fire control and utility lift pumps, 2) excess seawater from pressure maintenance and secondary recovery projects, 3) water released during training of personnel in fire protection, 4) seawater used to pressure test, or flush, new and existing piping and pipelines, 5) ballast water, 6) water flooding discharges, 7) once through non-contact cooling water, 8) seawater used as piping or equipment preservation fluids, and 9) seawater used during dual gradient drilling and well operations other than those covered by the other sections of Part I.B of the permit**.**

a. Limitations

Free Oil. There shall be no discharge of free oil. Monitoring shall be performed using the Visual Sheen Test method once per day when discharging on the surface of the receiving water or by use of the static sheen method at the operator's option. Both tests shall be conducted in accordance with the methods contained in Part V.A.3 and V.A.4. Samples must be taken at the nearest accessible location prior to discharge, or prior to combining with any other wastewaters. Discharges are limited to those times that a visual sheen observation is possible. The number of days a sheen is observed must be recorded and reported on the DMR.

Exception - Miscellaneous discharges may be discharged from platforms that are on automatic purge systems without monitoring for free oil when the facility is not manned. Discharges are not restricted to periods when observation is possible; however, the static sheen test method must be used during periods when observation of a sheen is not possible, such as at night or during inclement conditions. The static sheen testing is not required for miscellaneous discharges occurring at the sea floor.

b. Treatment Chemicals (see definition in Part V.B). The concentration of treatment chemicals in discharged chemically treated freshwater and seawater shall not exceed the most stringent of the following three constraints:

i. the maximum concentrations and any other conditions specified in the EPA product registration labeling if the chemical is an EPA registered product,

ii. the maximum manufacturer's recommended concentration, or

iii. the levels specified at 40 CFR 122.42(a) for toxic pollutants not limited in the permit. (Also see Part II.D.11 of this permit.).

c. Toxicity. The toxicity of discharged freshwater or seawater in which chemicals have been added shall be limited as follows:

The 7-day minimum and monthly average minimum NOEC, must be equal to or greater than the critical dilution concentration specified in this permit in Table 7 for seawater discharges and Table 8 for freshwater discharges. Critical dilution shall be determined using either Table 7 or 8 of this permit in conjunction with (1) the discharge rate, (2) discharge pipe diameter, and (3) the water depth between the discharge pipe and bottom. The monthly average minimum NOEC value is defined as the arithmetic average of all 7-day minimum NOEC values determined during the month. Compliance with the toxicity limitation shall be demonstrated by conducting 7-day chronic toxicity tests, using *Mysidopsis bahia (Americamysis bahia* (Mysid shrimp)) and *Menidia beryllina* (Inland silverside minnow). The 7-day chronic toxicity test method is published in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms* (EPA/821-R-02-014), or the most current edition. The results for

both species and the critical dilution shall be reported on the DMR. The operator shall also submit a copy of the summary sheets for all laboratory reports with the DMR. See Part V.A.15 of this permit for Whole Effluent Toxicity testing requirements.
Testing to determine the 7-day minimum and monthly average minimum NOEC shall begin after the third month of chemically treated water discharge and shall be done every two months until the permittee passes and reports three consecutive chemically treated water toxicity tests.

Toxicity testing for intermittent, or batch discharges shall be performed at least once per discharge but are required to be monitored no more frequently than the corresponding frequencies specified above for continuous discharges,
unless otherwise specified by the Director.
Samples shall be collected after addition of any substances, including seawater that is added prior to discharge and before the flow is split from multiple discharge ports. Samples also shall be representative of the discharge. Methods to increase dilution also apply to seawater and freshwater discharges which have been chemically treated previously described for produced water in Part I.B.3.

Permittees that pass three consecutive chemically treated water toxicity tests will be allowed to reduce to a sampling frequency of every six months after notification from the EPA Region 4 Water Division. Permittees that were covered under the previous general permit and that are currently performing routine toxicity tests, shall continue testing with a frequency of at least every six months. If at any time any toxicity test (i.e., for continuous

or intermittent discharges) results indicates a failure, the permittee must resume more frequent toxicity testing intervals, in accordance with Part V.A.15, or as specified by the Director. Miscellaneous discharges of seawater and freshwater to which only chlorine or hypochlorite and bromide have been added, or which contain only electrically generated form of chlorine, hypochlorite, copper, iron, and aluminum, are excluded from the monitoring requirement.

In cases where the discharge point for hydrostatic test water is subsea, such as the subsea end of a pipeline, and it is impractical to collect a sample at the discharge point, operators may collect a sample of the effluent, including additives, for this monitoring requirement prior to use of the fluid.

d. Monitoring Only Requirements for discharges of chemically treated freshwater and seawater.

Flow. The average flow (in bbls per day) must be estimated each month and the highest average monthly flow for the monitoring period shall be recorded and reported on the DMR.

C. Other Discharge Limitations

1. Floating Solids or Visible Foam

There shall be no discharge of floating solids or visible foam from any source other than in trace amounts.

2. Halogenated Phenol Compounds

There shall be no discharge of halogenated phenol compounds as a part of any waste streams authorized in this permit.

3. Dispersants, Surfactants, and Detergents

The facility operator shall minimize the discharge of dispersants, surfactants, and detergents, except as necessary, to comply with the safety requirements of the Occupational Safety and Health Administration and BOEM. This restriction applies to tank cleaning and other operations which do not directly involve the safety of workers. (The restriction is imposed because detergents disperse and emulsify oil, potentially increasing toxic impacts and making the detection of a discharge of free oil more difficult.)

Wastewater associated with tank and pit cleaning operations shall be classified as the same as the former contents of the tank or pit. (For example, wash water generated from cleaning drilling fluid pits would be subject to the same discharge limitations as the drilling fluid formerly contained in those pits.) The wastewater is deemed to have the same compliance status as the whole fluid that was originally in the tank or pit. No additional sampling/monitoring of the wastewater is required.

4. Rubbish, Trash, and Other Refuse

There shall be no discharge of any solid material not authorized in the permit. This permit includes limitations set forth by the U.S. Coast Guard in regulations implementing Annex V of MARPOL 73/78 for domestic waste disposal from all fixed or floating offshore platforms and associated vessels engaged in exploration of seabed mineral resources (33 CFR 151). These limitations, as specified by

Congress (33 U.S.C. 1901, the Act to Prevent Pollution from Ships), apply to all navigable waters of the United States.

This permit prohibits the discharge of "garbage." Comminuted food waste (able to pass through a screen with a mesh size no larger than 25 mm, approximately one inch) may be discharged when 12 nautical miles or more from land. Greywater, drainage from dishwater, shower, laundry, bath, and washbasins are not considered garbage within the meaning of Annex V. Incineration ash and non-plastic clinkers that can pass through a 25-mm mesh screen may be discharged beyond three miles from nearest land. Otherwise, ash and non-plastic clinkers may be discharged beyond 12 nautical miles from nearest land.

5. Dual Gradient Drilling Discharges

Operators performing dual gradient drilling operations may require seafloor discharges of large cuttings (greater than 1/4") to ensure the proper operation of subsea pumps (e.g., electrical submersible pumps). Operators performing dual gradient drilling operations which lead to seafloor discharges of large cuttings for the proper operation of subsea pumps shall either:

a. measure the mass percent NAFs retained on cuttings value [% Base Fluid (BF)] and mass NAF-cuttings discharge fraction (X) for seafloor discharges each time a set of retorts is performed,

b. use the following set of default values, (%BF=14%; X=0.15) or,

c. use a combination for %BF and measure (X).

Additionally, operators performing dual gradient drilling operations which lead to seafloor discharges of large cuttings for the proper operation of subsea pumps shall also perform the following tasks:

a. use side scan sonar of shallow seismic to determine the presence of high-density chemosynthetic communities. Chemosynthetic communities are assemblages of tube worms, clams, mussels, and bacterial mats that occur at natural hydrocarbon seeps or vents, generally in water depths of 500 meters or deeper. Seafloor discharges of large cuttings for the proper operation of subsea pumps shall not be permitted within 1000 feet of a high density chemosynthetic community;

b. seafloor discharges of large cuttings for the proper operation of subsea pumps shall be visually monitored and documented by a Remotely Operated Vehicle (ROV) within the tether limit (approximately 300 feet). The visual monitoring shall be conducted prior to each time the discharge point is relocated (cuttings discharge hose) and conducted along the same direction as the discharge hose position. Near-seabed currents shall be obtained at the time of the visual monitoring and;

c. seafloor discharges of large cuttings for the proper operation of subsea pumps shall be directed within a 150-foot radius of the wellbore.

6. Un-mixed Chemicals or Products

There shall be no discharge of any chemical or product not already mixed for use in any waste stream. Such unused chemicals or products shall be shipped onshore for final disposal or reuse.

Exception – This does not apply to the discharge of Bulk Transfer Operations Powder.

7. Pipeline Brines

The operator must demonstrate that brines used for pipeline/equipment preservation meet the following three criteria prior to applying as preservation fluids:

a. No free oil shall be discharged. Discharge is limited to those times that a visible sheen observation is possible unless the operator uses the static sheen method. Grab samples must be taken at the nearest accessible location prior to discharge, or prior to combining with any other wastewaters. There shall be no discharge of pipeline brines that fail the static sheen test. The results of each sheen test must be recorded, and the number of observations of a static sheen test must be reported on the DMR.

b. The daily maximum concentration of oil and grease concentration shall be less than 29 mg/l. The sample type shall be grab, and the monitoring frequency shall be daily during discharge. The analytical test method is specified in 40 CFR Part 136.

c. There shall be no discharge of priority pollutants, except in trace amounts.

8. Radioactive Materials

The discharge of radioactive materials under the jurisdiction of the US Nuclear Regulatory Commission (NRC) are not independently authorized by this permit.

D. <u>Special Conditions</u>

1. De minimus Discharges

De minimus discharges of non-aqueous based drilling fluids not associated with cuttings shall be contained to the extent practicable to prevent discharge. Allowable de minimus discharges can include wind-blown drilling fluids from the pipe rack, residual drilling fluids that are adhered to marine risers, diverter systems testing after drilling fluids displacement, blow-out preventers (BOP) after drilling fluids displacement, and minor drips and splatters around mud handling and solids control equipment. Such de minimus discharges are not likely to be measurable and are not considered in the base fluids retained on cuttings limit.

2. Small Volume Discharges

Small volume drilling fluid discharges which are associated with cuttings, and for which discharge is authorized included; displaced interfaces, accumulated solids in sand traps, pit clean-out solids, and centrifuge discharges made while changing mud weight. To determine the percent drilling fluids retained on cuttings for those discharges, the permittee may either monitor the discharge using the retort test method or use a default value of 25 percent to determine compliance with the limitation. Required discharge monitoring for small volume discharges consists only of static sheen tests and retention on cuttings (or use of the default retention on cuttings value).

3. Cooling Water Intake Structure Requirements

Applicability: These requirements apply to new facilities for which construction was commenced after July 17, 2006, with a cooling water intake structure having a design intake capacity of greater than 2 million gallons of water per day, of which at least 25 percent is used for cooling purposes. New facilities with a design intake capacity of less than or equal to 2 million gallons per day and all existing facilities will be required to reduced entrainment and impingement to the greatest extent practicable using Best Professional Judgment. For the purposes of this permit, "fixed facility" means a bottom founded offshore oil and gas extraction facility permanently attached to the seabed or subsoil of the OCS (e.g., platforms, guyed towers, articulated gravity platforms) or a buoyant facility securely and substantially moored so that it cannot be moved without a special effort (e.g., tension leg platforms, permanently moored semi-submersibles) and which is not intended to be moved during the production life of the well. This definition does not include mobile offshore drilling units (MODUs) (e.g., drill ships, temporarily moored semisubmersibles, jack-ups, submersibles, tender-assisted rigs, and drill

barges). See 40 CFR § 125.83 and 125.133. for other special definitions applicable to this section.

a. Baseline Study Requirements

These baseline study requirements are effective one year after the effective date of this permit. Operators of new facilities must submit sufficient information to characterize the biological community of commercial, recreational, and forage base fish and shellfish in the vicinity of the intake structure and to characterize the effects of the cooling water intake structure's operation on aquatic life. This biological characterization must include any available existing information along with field studies to obtain localized data. At a minimum, the information must include:

i. A list of the data required by this section that are not available and efforts made to identify sources of the data;

ii. A list of species (or relevant taxa) for all life stages and their relative abundance in the vicinity of the cooling water intake structure;

iii. Identification of the species and life stages that would be most susceptible to impingement and entrainment. Species evaluated should include the forage base as well as those most important in terms of significance to commercial and recreational fisheries;

iv. Identification and evaluation of the primary period of reproduction, larval recruitment, and period of peak abundance for relevant taxa;

v. Data representative of the seasonal and daily activities (e.g., feeding and water column migration) of biological organisms in the vicinity of the cooling water intake structure;

vi. Identification of all threatened, endangered, and other protected species that might be susceptible to impingement and entrainment at the cooling water intake structures;

vii. If the information above is supplemented with data from field studies, the supplemental data must include a description of all methods and quality assurance procedures for sampling and data analysis including a description of the study area; taxonomic identification of sampled and evaluated biological assemblages (including all life stages of fish and shellfish); and sampling and data analysis methods. The sampling and/or data analysis methods you use must be appropriate for a quantitative survey and based on consideration of methods used in other biological studies performed within the same source water body. The study area should include, at a minimum, the area of influence of the cooling water intake structure.

b. Supplemental Notification Requirements

Design information must be submitted at least 30 days in advance of a facility commencing operations in the geographical area covered by this permit. Design information required to be submitted for cooling water intake structures is only required to be submitted once for any facility that these requirements are applicable. Design information is not required to be resubmitted for additional leases where the facility subsequently operates or for a subsequent permit. EPA will notify the operator if additional information is required. Owners/operators of Mobile Offshore Drilling Units (MODUs) must also submit an NOI, in accordance with Part I.A.4 of this permit. The NOI shall be submitted and postmarked prior to operating.

New Non-Fixed Facilities Must Submit:

A narrative description and/or maps providing sufficient information on predicted locations during the permit term in sufficient detail for the Director to determine the appropriateness of additional impingement requirements. This information is only required to be submitted once for any facility.

Velocity Information, including**:**

i. A narrative description of the design, structure, equipment, and operation used to meet the requirements of a maximum through screen intake velocity of 0.5 ft/s at each cooling water intake structure; and

ii. For surface cooling water intake screens only, design calculations showing that the velocity requirement will be met at the minimum ambient source water surface elevation and maximum head loss across the screens or other device.

Cooling Water Intake Structure Data, including**:**

i.Design and construction technology plans and a description of operational measures which will be implemented to minimize impingement, including:

1) A narrative description of the design, operation of the design, and construction technologies including fish handling and return systems that the facility will utilize to maximize the survival of species expected to be most susceptible to impingement. Provide species specific information that demonstrates the efficacy of the technology; and

2) Design calculations, drawings, and estimates to support the descriptions above.

ii. A narrative description of the configuration of each of your cooling water intake structures and where it is located in the water body and in the water column;

iii. A narrative description of the operation of each of your cooling water intake structures, including design intake flows, daily hours of operation, number of days of the year in operation, and seasonal changes, if applicable;

iv. A flow distribution and water balance diagram that includes all sources of water to the facility, recirculating flows, and discharges; and

v. Engineering drawings of the cooling water intake structure.

New Fixed Facilities Must Submit:

Source Water Physical Data, including:

i. A narrative description and scaled drawings showing the physical configuration of all source water bodies used by your facility, including aerial dimensions, depths, salinity and temperature regimes, and other documentation that supports your determination of the water body type where each cooling water intake structure is located;

ii. Identification and characterization of the source water body's hydrological and geomorphological features, as well as the methods you used to conduct any studies to determine your intake's area of influence within the water body and the results of such studies; and

ii. Locational maps.

Cooling Water Intake Structure Data, including:

i. Design and construction technology plans and a description of operational measures which will be implemented to minimize impingement, including:

1) A narrative description of the design and operation of the design and construction technologies including fish handling and return systems that the facility will utilize to maximize the survival of species expected to be most susceptible to impingement.

2) For those new fixed facilities that do not employ sea chests as cooling water intake structures, a narrative description of the design, operation, and construction technologies that the facility will utilize to minimize entrainment of those species most susceptible to entrainment.

3) Design calculations, drawings, and estimates to support the design technologies.

ii. A narrative description of the configuration of each of your cooling water intake structures and where it is located in the water body and in the water column;

iii. Latitude and longitude in degrees, minutes, and seconds for each of your cooling water intake structures;

iv. A narrative description of the operation of each of your cooling water intake structures, including design intake flows, daily hours of operation, number of days of the year in operation and seasonal changes, if applicable;

v. A flow distribution and water balance diagram that includes all sources of water to the facility, re-circulating flows, and discharges; and

vi. Engineering drawings of the cooling water intake structure.

Velocity Information, including**:**

i. A narrative description of the design, structure, equipment, and operation used to meet the requirement of a maximum through-screen intake velocity of 0.5 ft/s at each cooling water intake structure; and

ii. For surface cooling water intake screens only, design calculations showing that the velocity requirement will be met at the minimum ambient source water surface elevation and maximum head loss across the screens or other device.

c. Cooling Water Intake Structure Requirements

New non-Fixed Facilities

i. The cooling water intake structure(s) must be designed and constructed so that the maximum through-screen design intake velocity is 0.5 ft/s or less;

ii. The operator must minimize impingement mortality of fish and shellfish through the use of cooling water intake design and construction technologies or operational measures.

New Fixed Facilities that do not employ sea chests as intake structures

i. The cooling water intake structure must be designed, constructed, operated and maintained so that the maximum through-screen design intake velocity is 0.5 ft/s; and

ii. The operator must develop and implement an Operation and Maintenance plan to minimize impingement mortality of fish and shellfish and minimize entrainment of entrainable life stages of fish and shellfish through the use of cooling water intake design and construction technologies or operational measures.

New Fixed Facilities that Employ Sea Chests as Intake Structures

i. The cooling water intake structure(s) must be designed and constructed so that the maximum through-screen design intake velocity is 0.5 ft/s or less; and

ii. The operator must minimize impingement mortality of fish and shellfish through cooling water intake design and construction technologies or operational measures.

d. Monitoring Requirements

New non-Fixed Facilities

i. The operator must conduct either visual inspections or use remote monitoring devices (e.g.,remotely operated vehicles (ROV), subsea cameras, or other monitoring device) during the period the cooling water intake structure is in operation. The operator must conduct visual inspections at least monthly, or at a lesser frequency as approved by the Director, to ensure that the required design and construction technologies are maintained and operated so they continue to function as designed. Alternatively, the operator must inspect using remote monitoring devices to ensure that the impingement and entrainment technologies are functioning as designed.

However, visual or remote monitoring is not required when conditions such as storms, high seas, evacuation, or other factors make it unduly hazardous to personnel, the facility, or the equipment utilized. The operator must provide an explanation for any such failure to visually or remotely monitor with the subsequent DMR submittal.

ii. For facilities that employ surface intake screens systems, the operator must monitor intake velocity by measuring the head loss across the intake screens and correlating the measured value with the design intake velocity. The operator must measure the head loss at the minimum ambient source water surface elevation using best professional judgment based on available hydrological data. The operator must use the maximum head loss across the screen for each cooling water intake structure to determine compliance with the velocity requirement. For facilities utilizing devices other than surface intake screens, the facility shall monitor intake velocity at the point of entry through the intake device or through a comparable method such as pump curve calculations. The operator shall monitor either head loss or velocity during initial facility startup, and thereafter, at a frequency of no less than once per quarter.

New Fixed Facilities that do not employ sea chests as intake structures

i. The operator must conduct either visual inspections or use remote monitoring devices (e.g., remotely operated vehicles (ROV), subsea cameras, or other monitoring device) during the period the cooling water intake structure is in operation. The operator must conduct visual inspections at least monthly, or at a lesser frequency as approved by the Director, to ensure that the required design and construction technologies are maintained and operated so they continue to function as designed. Alternatively, the operator must inspect using remote monitoring

devices to ensure that the impingement and entrainment technologies are functioning as designed.

However, visual or remote monitoring is not required when conditions such as storms, high seas, evacuation, or other factors make it unduly hazardous to personnel, the facility, or the equipment utilized. The operator must provide an explanation for any such failure to visually or remotely monitor with the subsequent DMR submittal.

ii. The operator must monitor for entrainment. The operator must collect samples to monitor entrainment rates (simple enumeration) for each species over a 24-hour period and no less than biweekly during the primary period of reproduction, larval recruitment, and peak abundance identified during the Source Water Baseline Biological Characterization Study. Representative species may be utilized for this monitoring consistent with their use in the Source Water Baseline Characterization Study. The operator must collect samples only when the cooling water intake structure is in operation. After 24 months of monitoring, the permittee may request from EPA a reduced monitoring frequency for the remainder of the permit.

iii. For facilities that employ surface intake screens systems, the operator shall monitor intake velocity by measuring the head loss across the intake screens and correlating the measured value with the design intake velocity. The operator must measure head loss at the minimum ambient source water surface elevation using best professional judgment based on available hydrological data. The operator must use the maximum head loss across the screen for each cooling water intake structure to determine compliance with the velocity requirement. For facilities utilizing devices other than surface intake screens, intake velocity shall be monitored

at the point of entry through the intake device or through a comparable method such as pump curve calculations. The operator shall monitor either head loss or velocity during initial facility startup, and thereafter, at a frequency of no less than once per quarter.

New Fixed Facilities that Employ Sea Chests as Intake Structures

i. The operator must conduct either visual inspections or utilize remote monitoring devices (e.g., remotely operated vehicles (ROV), subsea cameras, or other monitoring device) during the period the cooling water intake structure is in operation. The operator must conduct visual inspections at least monthly, or at a lesser frequency as approved by the Director, to ensure that the required design and construction technologies are maintained and operated so they continue to function as designed. Alternatively, the operator must inspect using remote monitoring devices to ensure that the impingement and entrainment technologies are functioning as designed.

However, visual or remote monitoring is not required when conditions such as storms, high seas, evacuation, or other factors make it unduly hazardous to personnel, the facility, or the equipment utilized. The operator must provide an explanation for any such failure to visually or remotely monitor with the subsequent DMR submittal.

ii. For facilities that employ surface intake screens systems, the operator shall monitor the intake velocity by monitoring the head loss across the intake screens and correlating the measured value with the design intake velocity. The operator must measure head loss at the minimum ambient source water surface elevation using best professional judgment based on available hydrological data. The operator must use the maximum head loss across the screen for each

cooling water intake structure to determine compliance with the velocity requirement. For facilities utilizing devices other than surface intake screens, intake velocity shall be monitored at the point of entry through the intake device or through a comparable method such as pump curve calculations. The operator must monitor either head loss or velocity during initial facility startup, and thereafter, at a frequency of no less than once per quarter.

iii. No monitoring for entrainment is required.

The permit may be reopened and modified or revoked and reissued to require additional monitoring or to change the cooling water intake structure requirements if found warranted by the Director as a result of either baseline study or entrainment monitoring.

4. Reference Drilling Fluid Formulation

The reference C_{16}-C_{18} internal olefin drilling fluids used to determine the drilling fluid sediment toxicity ratio and compliance with the BAT sediment toxicity discharge limitation shall be formulated to meet the specifications in Table 1 of Appendix 8 of 40 CFR Part 435, subpart A.

5. Preparation of Live-Bottom Survey and Live-Bottom Reports Using High Resolution Acoustical Data

Side-scan sonar data in the 100 kHz frequency or 500 kHz frequency if available (use data set providing best image quality) will be used to interpret for the presence of hard structure that could provide potential habitat for marine plant and animal communities. The area included in this interpretation should consist of a rectangular portion of the seabed with the proposed wells in the center. The sides of the rectangle should be at a distance of 1000 meters from the proposed wells. If

several wells are proposed throughout the lease block, a separate live-bottom report shall be provided for each.

The live-bottom report shall consist of text and appropriate figures including a brief description of the lease block, proposed project, location of wells and water depth. The report shall contain a section describing the methods used to acquire sonar data including sonar and positioning equipment, frequencies, range setting, lane spacing and overlap, cable layback and vessel speed.

The report will include a narrative interpretation of the seabed within the survey area and any discrete features based on acoustical reflection of the seabed. The interpretation shall include a description of features, their relative position within the survey area, the dimensions of discrete features and surface area of scattered targets. The report will include a figure consisting of a sonar mosaic of the sonar lane segments comprising the survey area fitted to a standard page. The mosaic figure shall be a color print (no photocopies). The location of seabed features referred to in the text, including any small or large acoustical targets, scattered or individual, should be shown in a separate figure, consisting of a diagram of the survey area and proposed well locations.

The EPA will not accept previously prepared geophysical survey reports for lease blocks in substitution for the live-bottom survey report described. Remote sensing data from other instruments such as echo sounders, magnetometers, sub-bottom profilers and seismic data should not be included in the live-bottom survey report. Reports containing photocopies of acoustical imagery will not be accepted.

Part II. Standard Conditions for NPDES Permits

A. General Conditions

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the CWA and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

[40 CFR § 122.41(a) and 122.41(a)(1)]

2. Penalties for Violations of Permit Conditions

The CWA provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed $64,618 per day for each violation. The CWA provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than one year, or both. In the case of a second or subsequent

conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than two years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than three years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than six years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

[40 CFR § 122.41(a)(2)]

Any person may be assessed an administrative penalty by the Administrator for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed $25,847 per violation, with the maximum amount of any Class I penalty assessed not to exceed $64,618. Penalties for Class II violations are not to exceed $25,847 per day for

each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $323,081.

[40 CFR § 122.41(a)(3)]

3. Civil and Criminal Liability

Except as provided in permit conditions on "Bypassing" Section B, Paragraph 3, and "Upset" Section B, Paragraph 4, nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

4. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

[40 CFR § 122.41(d)]

5. Permit Actions

This permit may be modified, revoked, and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

[40 CFR § 122.41(f)]

6. Toxic Pollutants

If any applicable toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Section 307(a) of the CWA for a toxic pollutant and that standard or prohibition is more stringent than any limitation on the pollutant in the permit, the Director shall institute proceedings under these regulations to modify or revoke and reissue the permit to conform to the toxic effluent standard or prohibition.

[40 CFR § 122.44(b)(1)]

7. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

8. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

9. Effect of a Permit

Except for any toxic effluent standards and prohibitions imposed under section 307 of the CWA and "standards for sewage sludge use or disposal" under 405(d) of the CWA, compliance with a permit during its term constitutes compliance, for purposes of enforcement, with sections 301, 302, 306, 307,

318, 403, and 405 (a)-(b) of the CWA. However, a permit may be modified, revoked, and reissued, or terminated during its term for cause as set forth in 40 CFR Sections 122.62 and 122.64.

Compliance with a permit condition which implements a particular "standard for sewage sludge use or disposal" shall be an affirmative defense in any enforcement action brought for a violation of that "standard for sewage sludge use or disposal" pursuant to sections 405(e) and 309 of the CWA.

[40 CFR § 122.5(a)]

10. Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

[40 CFR § 122.5(b) & 40 CFR § 122.41(g)]

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulation.

[40 CFR § 122.5(c)]

11. Onshore or Offshore Construction

This permit does not authorize or approve the construction of any onshore or offshore physical structures or facilities or the undertaking of any work in any waters of the United States.

12. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

[40 CFR § 124.16 paraphrased]

13. Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking, and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Director upon request, copies of records required to be kept by this permit.

[40 CFR § 122.41(h)]

B. <u>Operation and Maintenance of Pollution Controls</u>

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

[40 CFR § 122.41(e)]

2. Need to Halt or Reduce not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

[40 CFR § 122.41(c)]

3. Bypass of Treatment Facilities

a. Definitions

(i) "Bypass" means the intentional diversion of waste streams from any portion of treatment facility.

(ii) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not exceeding limitations.

The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (c.) and (d.) of this section.

c. Notice

(i) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible, at least ten days before the date of the bypass.

(ii) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section D, Paragraph 8 (24-hour notice).

d. Prohibition of bypass

(i) Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

(1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(3) The permittee submitted notices as required under paragraph (c) of this section.

(ii) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph (m)(4)(i) of 40 CFR § 122.41.

[40 CFR § 122.41(m)(1)-(4)]

4. Upsets

a. Definition

"Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. Effect of an upset

An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of paragraph (c) of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(i) An upset occurred, and that the permittee can identify the cause(s) of the upset;

(ii) The permitted facility was at the time being properly operated;

(iii) The permittee submitted notice of the upset as required in Section D, Paragraph 8 (24-hour notice); and

(iv) The permittee complied with any remedial measures required under paragraph (d) of this section.

d. Burden of proof

In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

[40 CFR § 122.41(n)(1)-(4)]

5. Removed Substances

This permit does not authorize discharge of solids, sludge, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters of the United States unless specifically limited in Part I.

C. Monitoring and Records

1. Representative Sampling

Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

[40 CFR § 122.41(j)(1)]

All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Director.

2. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to ensure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than $\pm$ 10 percent from the true discharge rates throughout the range of expected discharge volumes. Once-through condenser cooling water flow which is monitored

by pump logs, or pump hour meters, and based on the manufacturer's pump curves shall not be subject to this requirement. Guidance in selection, installation, calibration, and operation of acceptable flow measurement devices can be obtained from the following references. These references are available from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161. (800) 553-6847 or (703) 487-4650.

"A Guide to Methods and Standards for the Measurement of Water Flow," U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 421, May 1975, 100 pp. (Order by NTIS No. COM-7510683.)

"Water Measurement Manual," U.S. Department of Interior, Bureau of Reclamation, Revised Edition, 1984, 343 pp. (Order by NTIS No. PB-85221109.)

"Flow Measurement in Open Channels and Closed Conduits," U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 484, October 1977, 982 pp. (Order by NTIS No. PB-273535.)

"NPDES Compliance Flow Measurement Manual," U.S. Environmental Protection Agency, Office of Water Enforcement, Publication MCD-77, September 1981, 149 pp. (Order by NTIS No. PB-82131178.)

3. Monitoring Procedures

Monitoring results must be conducted according to test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, unless other test procedures have been specified in the permit.

[40 CFR § 122.41(j)(4)]

4. Penalties for Tampering

The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than two years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than four years, or both.

[40 CFR § 122.41(j)(5)]

5. Retention of Records

Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This

period may be extended by request of the Director at any time. For the purposes of this permit, all records can be scanned and saved electronically, and electronic records are acceptable for inspector's review.

[40 CFR § 122.41(j)(2)]

6. Record Contents

Records of monitoring information shall include:

a. The date, exact place, and time of sampling or measurements;

b. The individual(s) who performed the sampling or measurements;

c. The date(s) analyses were performed;

d. The individual(s) who performed the analyses;

e. The analytical techniques or methods used; and

f. The results of such analyses.

[40 CFR § 122.41(j)(3)(i)-(vi)]

7. Inspection and Entry

The permittee shall allow the Director, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA, any substances, or parameters at any location.

[40 CFR § 122.41(i)(1)-(4)]

D. Reporting Requirements

1. Change in Discharge

Planned changes. The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR § 122.29(b); or

b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under Section D, Paragraph 10.

c. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

[40 CFR § 122.41(l)(1)(i)-(iii)]

2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

[40 CFR § 122.41(l)(2)]

Any maintenance of facilities, which might necessitate unavoidable interruption of operation and degradation of effluent quality, shall be scheduled during noncritical water quality periods, and carried out in a manner approved by the Director.

3. Transfer of Ownership of Control

The transfer of permit coverage requirements in Part I.A.9 supersede the "Transfer of Ownership of Control" requirements set forth in Part II.D.3 of this permit.

a. This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the CWA.

[40 CFR § 122.41(l)(3)]

b. Automatic transfers. As an alternative to transfers under paragraph (a) of this section, any NPDES permit may be automatically transferred to a new permittee if:

(i) The current permittee notifies the Director at least 30 days in advance of the proposed transfer date in paragraph (b)(ii) of this section;

(ii) The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and

(iii) The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify or revoke and reissue the permit. A modification under this subparagraph may also be a minor modification under 40 CFR § 122.63. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph (b)(ii) of this section.

[40 CFR § 122.61(b)]

4. Monitoring Reports

Monitoring results shall be reported at the intervals specified elsewhere in this permit. See Part III of the permit.

[40 CFR § 122.41(l)(4)]

Monitoring results must be reported on a Discharge Monitoring Report (DMR), or forms provided or specified by the Director.

[40 CFR § 122.41(l)(4)(i)]

5. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.

[40 CFR § 122.41(l)(4)(ii)]

6. Averaging of Measurements

Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

[40 CFR § 122.41(l)(4)(iii)]

7. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

[40 CFR § 122.41(l)(5)]

Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

8. Twenty-Four Hour Reporting

The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances; contact the National Response Center at (800) 424-8802. A written submission shall also be provided within five days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

The following shall be included as information which must be reported within 24 hours under this paragraph.

a. Any unanticipated bypass which exceeds any effluent limitation in the permit. (See 40 CFR § 122.41(g)).
b. Any upset which exceeds any effluent limitation in the permit.
c. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within 24 hours. (See 40 CFR § 122.44(g).)

The Director may waive the written report on a case-by-case basis for reports under this section's paragraph if the oral report has been received within 24 hours.

[40 CFR § 122.41(l)(6)]

9. Other Noncompliance

The permittee shall report all instances of noncompliance not reported under Section D at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph D-8.

[40 CFR § 122.41(l)(7)]

10. Other Information

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information to the Director.

[40 CFR § 122.41(l)(8)]

11. Changes in Discharge of Toxic Substances

The following conditions apply to all NPDES permits within the categories specified below:

a. *Existing manufacturing, commercial, mining, and silvicultural dischargers.* All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe:

(i) That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(1)100 micrograms per liter (100 ug/l);

(2) 200 micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;

(3) Five times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR § 122.21(g)(7); or

[40 CFR § 122.42(a)(1)(i-iii)]

(ii) That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(1) 500 micrograms per liter (500 µg/l);

(2) One milligram per liter (1 mg/l) for antimony;

(3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR § 122.21(g)(7).

[40 CFR § 122.42(a)(2)(i-iii)]

b. *Publicly owned treatment works.* All POTWs must provide adequate notice to the Director of the following:

(i) Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of the CWA if it were directly discharging those pollutants;

(ii) Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit; and

(iii) For purposes of this paragraph, adequate notice shall include information on:

(1) the quality and quantity of effluent introduced into the POTW, and

(2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

[40 CFR § 122.42(b)]

12. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.

[40 CFR § 122.41(b)]

The application should be submitted at least 180 days before the expiration date of this permit. The Regional Administrator may grant permission to submit an application later than the 180 days in advance, but no later than the permit expiration date.

[40 CFR § 122.21(d) paraphrased]

When EPA is the permit-issuing authority, the conditions of an expired permit continue in force until the effective date of a new permit if the permittee has submitted a timely application which is a complete application for a new permit; and the Regional Administrator, through no fault of the permittee does not issue a new permit with an effective date on or before the expiration date of the previous permit.

[40 CFR § 122.6(a) paraphrased]

Permits continued under this section remain fully effective and enforceable.

[40 CFR § 122.6(b)]

13. Signatory Requirements

All applications, reports, or information submitted to the Director shall be signed and certified.

[40 CFR § 122.41(k)(1)]

a. *Applications.* All permit applications shall be signed as follows:

(i) *For a corporation.* By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(1) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or

(2) The manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with

environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

Note: EPA does not require specific assignments or delegations of authority to responsible corporate officers identified in 40 CFR § 122.22(a)(1)(i). The Agency will presume that these responsible corporate officers have the requisite authority to sign permit applications unless the corporation has notified the Director to the contrary. Corporate procedures governing authority to sign permit applications may provide for assignment or delegation to applicable corporate positions under 40 CFR § 122.22(a)(1)(ii) rather than to specific individuals.

(ii) *For a partnership or sole proprietorship.* By a general partner or the proprietor, respectively; or

(iii) *For a municipality, State, Federal, or other public agency.* By either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(1) The chief executive officer of the agency, or

A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

b. All reports required by permits, and other information requested by the Director shall be signed by a person described in paragraph (a) of this section, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(i) The authorization is made in writing by a person described in paragraph a. of this section;

(ii) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company, (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) and

(iii) The written authorization is submitted to the Director.

c. *Changes to authorization.* If an authorization under paragraph (b) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph b. of this section must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

d. *Certification.* Any person signing a document under paragraph (a) or (b) of this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

[40 CFR § 122.22]

14. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Permit Issuing Authority. As required by the Act, permit applications, permits and effluent data shall not be considered confidential.

[40 CFR § 124.18 & 122.7 paraphrased]

15. Penalties for Falsification of Reports

The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $16,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

[40 CFR § 122.41(k)(2)]

E. Definitions

1. Permit Issuing Authority

The Regional Administrator of the EPA Region 4 or his/her designee, unless at some time in the future the State or Indian Tribe receives authority to administer the NPDES program and assumes jurisdiction over the permit; at which time, the Director of the State program receiving the authorization becomes the issuing authority. The use of the term "Director" in this permit shall apply to the Water Division Director for EPA Region 4.

2. Act

"Act" means the CWA (formerly referred to as the Federal Water Pollution Control Act) Public Law 92-500, as amended by Public Law 95-217 and Public Law 95-576, 33 U.S.C. 1251 et seq.

[40 CFR § 124.2]

3. Mass/Day Measurements

a. The "average monthly discharge" is defined as the total mass of all daily discharges sampled and/or measured during a calendar month on which daily discharges are sampled and measured, divided by the number of daily discharges sampled and/or measured during such month. It is, therefore, an arithmetic mean determined by adding the weights of the pollutant found each day of the month and then dividing this sum by the number of days the tests were reported. This limitation is identified as "Daily Average" or "Monthly Average" in Part I of the permit and the average monthly discharge value is reported in the "Average" column under "Quantity or Loading" on the Discharge Monitoring Report (DMR).

b. The "average weekly discharge" is defined as the total mass of all daily discharges sampled and/or measured during the calendar week on which daily discharges are sampled and measured, divided by the number of daily discharges sampled and/or measured during such week. It is, therefore, an arithmetic mean determined by adding the weights of pollutants found each day of the week and then dividing this sum by the number of days the tests were reported. This limitation is identified as "Weekly Average" in Part I of the permit and the average weekly discharge value is reported in the "Maximum" column under "Quantity or Loading" on the DMR.

c. The "maximum daily discharge" is the total mass (weight) of a pollutant discharged during a calendar day. If only one sample is taken during any calendar day, the weight of pollutant

calculated from it is the "maximum daily discharge." This limitation is identified as "Daily Maximum," in Part I of the permit and the highest such value recorded during the reporting period is reported in the "Maximum" column under "Quantity or Loading" on the DMR.

d. The "average annual discharge" is a rolling average equal to the arithmetic mean of the mass measured in all discharges sampled and/or measured during consecutive reporting periods which comprise one year. For parameters that are measured at least once per month, the annual average shall be computed at the end of each month and is equal to the arithmetic mean of the monthly average of the month being reported and each of the previous eleven months. This limitation is defined as "Annual Average" in Part I of the permit and the average annual discharge value is reported in the "Average" column under "Quantity or Loading" on the DMR.

4. Concentration Measurements

a. The "average monthly concentration," other than for bacterial indicators, is the sum of the concentrations of all daily discharges sampled and/or measured during a calendar month on which daily discharges are sampled and measured, divided by the number of daily discharges sampled and/or measured during such month (arithmetic mean of the daily concentration values). The daily concentration value is equal to the concentration of a composite sample or in the case of grab samples is the arithmetic mean (weighted by flow value) of all the samples collected during that calendar day. This limitation is identified as "Monthly Average" or "Daily Average" under "Other Limits" in Part I of the permit and the average monthly concentration value is reported under the "Average" column under "Quality or Concentration" on the DMR.

b. The "average weekly concentration," other than for bacterial indicators, is the sum of the concentrations of all daily discharges sampled and/or measured during a calendar week on which

daily discharges are sampled and measured divided by the number of daily discharges sampled and/or measured during such week (arithmetic mean of the daily concentration values). The daily concentration value is equal to the concentration of a composite sample or in the case of grab samples is the arithmetic mean (weighted by flow value) of all the samples collected during that calendar day. This limitation is identified as "Weekly Average" under "Other Limits" in Part I of the permit and the average weekly concentration value is reported under the "Maximum" column under "Quality or Concentration" on the DMR.

c. The "maximum daily concentration" is the concentration of a pollutant discharged during a calendar day. It is identified as "Daily Maximum" under "Other Units" in Part I of the permit and the highest such value recorded during the reporting period is reported in the "Maximum" column under "Quality or Concentration" on the DMR.

d. The "average annual concentration," other than for bacterial indicators, is a rolling average equal to the arithmetic mean of the effluent or influent samples collected during consecutive reporting periods which comprise one year. For parameters that are measured at least once per month, the annual average shall be computed at the end of each month and is equal to the arithmetic mean of the monthly average of the month being reported and the monthly average of each of the previous eleven months. This limitation is identified as "Annual Average" under "Other Limits" in Part I of the permit and the average annual concentration value is reported in the "Average" column under "Quality or Concentration" on the DMR.

5. Other Measurements

a. The effluent flow expressed as million gallons per day (MGD) is the 24-hour average flow averaged over a monthly period. It is the arithmetic mean of the total daily flows recorded during

the calendar month. Where monitoring requirements for flow are specified in Part I of the permit, the flow rate values are reported in the "Average" column under "Quantity or Loading" on the DMR.

b. An "instantaneous flow measurement" is a measure of flow taken at the time of sampling, when both the sample and flow are representative of the total discharge.

c. Where monitoring requirements for pH, dissolved oxygen, or bacterial indicators are specified in Part I of the permit, the values are generally reported in the "Quality or Concentration" column on the DMR.

d. The "average annual discharge" for bacterial indicators shall be calculated in the same manner as that for mass limitations (see Paragraph II.E.3.d.).

6. Types of Samples

a. Composite Sample: A "composite sample" is a combination of not less than 8 influent or effluent portions, of at least 100 ml, collected over the full time period specified in Part I.A. The composite sample must be flow proportioned by either a time interval between each aliquot or by volume as it relates to effluent flow at the time of sampling or total flow since collection of the previous aliquot. Aliquots may be collected manually or automatically.

b. Grab Sample: A "grab sample" is a single influent or effluent portion which is not a composite sample. The sample(s) shall be collected at the period(s) most representative of the total discharge.

7. Calculation of Means

a. Arithmetic Mean: The "arithmetic mean" of any set of values is the sum of the individual values divided by the number of individual values.

b. Geometric Mean: The "geometric mean" of any set of values is the N^{th} root of the product of the individual values where N is equal to the number of individual values. The geometric mean is equivalent to the antilog of the arithmetic mean of the logarithms of the individual values. For purposes of calculating the geometric mean, values of zero (0) shall be considered to be one (1).

c. Weighted by Flow Value: "Weighted by flow value" means the sum of each concentration times its respective flow divided by the sum of the respective flows.

8. Calendar Day

A "calendar day" is defined as the period from midnight of one day until midnight of the next day. However, for purposes of this permit, any consecutive 24-hour period that reasonably represents the calendar day may be used for sampling.

9. Hazardous Substance

A "hazardous substance" means any substance designated under 40 CFR Part 116 pursuant to Section 311 of the CWA.

[40 CFR § 122.2]

10. Toxic Pollutants

A "toxic pollutant" is any pollutant listed as toxic under Section 307(a)(1) of the CWA or, in the case of "sludge use or disposal practices," any pollutant identified in regulations implementing section 405(d) of the CWA.

[40 CFR § 122.2]

Part III. Monitoring Reports and Permit Modification

A. <u>Monitoring Reports</u>

The operator shall be responsible for submitting monitoring results for each permitted facility (e.g., well) within the lease block. If there is more than one type of wastewater for each well, the discharge outfalls shall be designated in the following manner:

001 for Water-based Drilling Fluids

002 for Water-based Drill Cuttings

003 for Synthetic-based Drill Cuttings

004 for Produced Water

005 for Deck Drainage

006 for Well Treatment Fluids

007 for Completion Fluids

008 for Workover Fluids

009 for Sanitary Discharges

010 for Domestic Waste Discharges

011 for Miscellaneous Discharges

012 for Miscellaneous Discharges in Which Chemicals Have Been Added

013 for Status Updates for Required Studies and Plans

014 Process water generated from the Monoethylene glycol reclamation process and discharged separately from produced water via outfall 004.

Monitoring results obtained for each 3-month period (i.e., quarter), starting with the first month of coverage under this permit, shall be summarized for that timeframe and reported on either a DMR

form (EPA No. 3320-1) or optional EPA Region 4 approved form, and shall be postmarked no later than the 28th day of the month following the completed quarterly period. For example, for coverage beginning on January 1, data for January 1 to March 31 shall be submitted by April 28th. If a failure of any permit limitation occurs, the permittee must report the incidents to the EPA Director, or their designated representative, orally within 24 hours and file a written report with the Director in accordance with the requirements in 40 CFR Part 122.

All incidents shall be reported on the quarterly DMR along with the entire laboratory results for all non-compliant parameters, until such time as the facility returns to compliance. All laboratory reports submitted with DMRs should clearly indicate the permit number, outfall number(s), and any other identification information necessary to associate the report with the correct facility, waste stream, and outfall(s).

The Non-Compliance Report for Permit Exceedances shall include:

1. A description of the non-compliance and its cause,
2. The period of non-compliance, including dates and times,
3. The anticipated time the non-compliance is expected to continue (if it has not been corrected), and
4. Steps taken or planned to reduce, eliminate, and prevent re-occurrence of the non-compliance.

Electronic Reporting. Due to the e-reporting regulations which require electronic submittal of NPDES reports and forms, EPA will not process any paper NOIs. Additionally, DMRs must be submitted via the Network Discharge Monitoring Report (NetDMR) tool. Once finalized, instructions for all electronic submittals will be posted on EPA website at: https://usepa.servicenowservices.com/oeca_icis . If the website is not operational, signed copies of these and all other reports required by Part II.D. shall be submitted to the following address:

Director
Water Division
U.S. EPA Region 4
Sam Nunn Atlanta Federal Center
61 Forsyth Street, S.W.
Atlanta, GA 30303-8960

If no discharge occurs during the reporting period, sampling requirements of this permit do not apply. The operator must check the "No Discharge" block on the DMR or enter "NODI=C" for quantity and concentration in cases where there is no discharge from a particular outfall. In cases where there is no discharge from any outfalls, the operator may include the facility on a "No Activity" list each monitoring period. If, during the term of this permit, the facility ceases discharge to surface waters, the Regional Director shall be notified within 60 days upon permanent cessation of discharge. This notification shall be in writing.

Additional Monitoring Requirements

1. For effluent monitoring of parameters in Part I of this permit, the permittee shall utilize an EPA approved test procedure with a minimum level (ML) which is lower than the effluent limitations. The permittee must utilize a standard calibration where the lowest standard point is

equal to, or less than, the concentration of the ML. In accordance with 40 CFR § 122.45.45(c), effluent analyses for metals shall measure "total recoverable metal."

2. The permittee shall report the analytical results on the DMR, as follows:

a. Report for maximum daily, monthly, or quarterly effluent limitation (or if no limitation applies but samples are collected during the reporting period):

i. The maximum value of all analytical results, if the maximum value is greater than the ML; or

ii. For no data (e.g., not quantifiable), report "NODI (Q)" on the DMR form, if the maximum value of all analytical results is greater than or equal to the laboratory's minimum detection limit (MDL), but less than the ML; or

iii. Report "NODI (B)" (e.g., below detection level), if the maximum value of all analytical results is less than the laboratory's MDL.

b. Report for average monthly or quarterly effluent limitation (or if no limitation applies but samples are collected during the reporting period):

i. As directed for maximum effluent limitation, if only one sample is collected during the monthly reporting period; or

ii. The average value of all analytical results where 0 (zero) is substituted for NODI (B) and the laboratory's MDL is substituted for NODI Q), if more than one sample is collected during the reporting period.

c. Report an attachment to the DMR form for each value reported under paragraphs 2.a and 2.b:

i. The number or title of the approved analytical method, preparation procedure utilized by the laboratory, and MDL or ML of the analytical method for the pollutant available under 40 CFR 136:

ii. The laboratory's MDL for the analytical method computed in accordance with Appendix B of 40 CFR 136, the standard deviation (S) from the laboratory's MDL study, and the number of replicate analyses (*n*) used to compute the laboratory's MDL; and

iii. The lowest calibration standard (i.e., the ML, or lower value).

B. <u>Permit Modification</u>

1. This permit shall be modified, or alternatively, revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under sections 301(b)(2) (C) and (D), 304(b)(2), 307(b)(2) and 316(b) of the CWA, as amended, if the effluent standard or limitation requirement so issued or approved:
   a. Contains different conditions or is otherwise more stringent than any conditions in the permit; or
   b. Controls any pollutant or disposal method not addressed in the permit.

   The permit as modified or reissued under this paragraph shall also contain any other requirements of the CWA then applicable.
2. In accordance with Section 306(d) of the CWA, effluent limitations based on standards of performance for new sources in this permit shall not be made more stringent during a ten-year period beginning on the date of completion of such construction or during the period of depreciation or amortization of such facility for the purposes of Section 167 and/or 169 of the Internal Revenue Code of 1954, whichever period ends first. The provisions of Section 306(d) do not limit the authority of the EPA to modify, or alternatively revoke and reissue, the permit to require compliance with a toxic effluent limitation promulgated under Best Available Technology (BAT) or toxic pollutant standard established under 307(a) of the Act, or to modify, as necessary

to assure compliance with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:

a. Contains different conditions or is otherwise more stringent than any conditions in the permit; or

b. Controls any pollutant or disposal method not addressed in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the CWA then applicable.

3. Pursuant to Section 7(a)(2) of the Endangered Species Act (ESA), EPA is required to consult with the U.S. Fish and Wildlife Service (FWS), and the National Marine Fisheries Service (NMFS) and ensure that "agency action" such as the issuance of this CWA NDPES permit does not jeopardize the continued existence of any endangered or threatened species or result in destruction or adverse modification of the critical habitat of such species. Section 7(d) of the ESA requires that, after initiation of consultation under Section 7(a)(2), the Federal agency "shall not make any irreversible or irretrievable commitment of resources with respect to the agency action which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures which would not violate subsection (a)(2) of this section." EPA Region 4 completed consultation with NMFS using the step down process as required by the 2020 Biological Opinion on the Federally Regulated Oil and Gas Program Activities in the Gulf of Mexico. To ensure compliance with Section 7(a)(2) and 7(d) of the ESA, this permit may be revoked or reopened and modified at any time during the life of the permit if NMFS identifies reasonable and prudent alternative measures that are necessary to avoid jeopardy to an ESA threatened or endangered species or

adverse effects to its critical habitat. Any such reasonable and prudent alternative measures may be added as conditions to this permit through the reopening and modification process.

4. In addition to any other ground specified herein, this permit shall be modified or revoked at any time if, on the basis of any new data, the director determines that continued discharges may cause unreasonable degradation of the marine environment.

NOTE: Conditions of the permit section do not apply if the EPA proposes/promulgates a different and applicable New Source Performance Standard (NSPS) prior to "start of construction" for any new sources, as defined in 40 CFR Sections 122.29(b)(4) or 125.83. In such case, this permit shall be modified to comply with the requirements of such new NSPS.

Part IV. Best Management Practices/Pollution Prevention (BMP3) Plan

A. Objective

This part is directed towards developing and implementing best management practices plan that incorporates pollution prevention measures for the entire facility. The plan shall address measures towards reducing pollutants of concern and wastes from maintenance operations which discharge (or could discharge) to surface waters. For the purposes of this permit, pollutants of concern shall be limited to toxic pollutants, as defined below under Part IV.C.4, known to the discharger. If applicable, the plan shall address each component or system capable of generating or causing a release of non-aqueous drilling fluids (NAF) and identify specific preventative or remedial measures to be implemented.

B. General Requirements

In accordance with Section 304(e) and 402(a)(2) of the CWA as amended, 33 U.S.C. § 1251 et seq., and consistent with the policy of the Pollution Prevention Act of 1990, 42 U.S.C. § 13101-13109, the permittee must develop and implement a Best Management Practices (BMP) plan incorporating pollution prevention measures for the entire offshore facility.

Note: This part does not require the permittee to incorporate pollution prevention measures that would jeopardize efficient operation or result in an unreasonable economic burden. If applicable, the plan shall also include measures to prevent, or minimize, the discharge of NAFs from the NAF facility to waters of the United States through normal operations and ancillary activities. Ways to reduce impingement and entrainment of organisms in the cooling water intake structure shall also be evaluated.

A BMP plan developed as a requirement of a previous NPDES permit will satisfy the requirements of this part if it addresses both facility-wide and specific BMPs for NAFs per Appendix 7 of 40 CFR Part 435, subpart A, to reduce the likelihood of spills or other releases of oil or oil contaminated water, chemicals, cleaning chemicals, and biocides that may enter waters of the United States. References which may be used in developing the plan are "Criteria and Standards for Best Management Practices Authorized Under Section 304(e) of the Act," found at 40 CFR § 122.44(k), the Waste Minimization Opportunity Assessment Manual, EPA/625/7-88/003, and other EPA documents relating to BMP guidance.

Pollution prevention requirements per BSEE (see 30 CFR Part 250.300), or other federal requirements relating to BMP guidance, may be incorporated by reference.

The BMP plan is to be retained on-site. Within one year of coverage, operators must submit a certification statement that the BMP plan has been developed and is being implemented. Unless otherwise required by the Director, submittal of the BMP plan to EPA is not required.

C. Part IV Special Definitions

1. The term "pollutants" refers to conventional, non-conventional and toxic pollutants, as appropriate for the NPDES storm water program and toxic pollutants.

2. Conventional pollutants are: biochemical oxygen demand (BOD), suspended solids, pH, fecal coliform bacteria and oil & grease.

3. Non-conventional pollutants are those which are not defined as conventional or toxic, such as phosphorus, nitrogen, or ammonia. (Ref: 40 CFR Part 122, Appendix D, Table IV)

4. For purposes of this part, Toxic Pollutants include, but are not limited to: a) any toxic substance listed in Section 307(a)(1) of the CWA, any hazardous substance listed in Section 311 of the CWA, and b) any substance (that is not also a conventional or non-conventional pollutant) for which EPA has published an acute or chronic toxicity criterion, or that is a pesticide regulated by the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).

5. "Pollution prevention" and "waste minimization" refer to the first two categories of EPA's preferred hazardous waste management strategy: first, source reduction and then, recycling.

6. “Recycle/Reuse” is defined as the minimization of waste generation by recovering and reprocessing usable products that might otherwise become waste; or the reuse or reprocessing of usable waste products in place of the original stock, or for other purposes such as material recovery, material regeneration or energy production.

7. “Source reduction” means any practice which: i) reduces the amount of any pollutant entering a waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment, or disposal; and ii) reduces the hazards to public health and the environment associated with the release of such pollutant. The term includes equipment or technology modifications, process or procedure modifications, reformulation or substitution of raw materials, and improvements in housekeeping, maintenance, training, or inventory control. It does not include any practice which alters the physical, chemical, or biological characteristics or the volume of a pollutant through a process or activity which itself is not integral to, or previously considered necessary for, the production of a product or the providing of a service.

8. “BMP3” means a Best Management Plan incorporating the requirements of 40 CFR 122.44(k) and Addendum B of Appendix 7 of 40 CFR Part 435, subpart A, plus pollution prevention techniques, except where other existing programs are deemed equivalent by the permittee. The permittee shall certify the equivalency of the other referenced programs.

9. “Waste Minimization Assessment” means a systematic planned procedure with the objective of identifying ways to reduce or eliminate waste.

10. The term “material” refers to chemicals or chemical products used in any plant operation (i.e., caustic soda, hydrazine, degreasing agents, paint solvents, etc.). It does not include lumber, boxes, packing materials, etc.

D. Specific BMP3 Plan Requirements

1. Facility-Wide Operations

The following items shall be included in the BMP3 Plan and may be incorporated by reference from existing facility plans and other facility documents. Any incorporated items must be easily identifiable and accessible to any staff or contractors responsible for compliance with the BMP3 plan, and must be available for review during any compliance inspection:

a. Name and description of facility, a map illustrating the location of the facility and adjacent receiving waters, and other maps, plot plans or drawings, as necessary;

b. overall objectives (both short-term and long-term) and scope of the plan, towards reduction of pollutants, anticipated dates of achievement of reduction, and a description of means for achieving each reduction goal;

c. a description of procedures relative to spill prevention, control and countermeasures and a description of measures employed to prevent storm water contamination, where the storm water can reasonably be expected to reach waters of the U.S. prior to treatment;

d. a description of practices involving preventive maintenance, housekeeping, record keeping, inspections, and plant security;

e. a description of a waste minimization assessment (WMA) plan for this facility, to determine actions that could be taken to reduce waste loadings and chemical losses to all wastewater and/or storm water streams, without compromising production efficiency or jeopardizing

operations. The plan shall address both short-term and long-term opportunities for minimizing waste generation at this facility, particularly for high volume and/or high toxicity components of wastewater and storm water streams. Initially, the WMA plan should focus primarily on actions that could be implemented quickly, thereby realizing tangible benefits to surface water quality. Long term goals and actions pertaining to waste reduction shall include investigation of the feasibility of eliminating toxic chemical use, instituting process changes, raw material replacements, etc. At minimum, the WMA plan should include the following items:

(i) Material and Risk Assessment - A materials and risk assessment shall be developed and shall include the following:

(1) Identification of the types and quantities of materials used at the facility;

(2) identification of the location and types of materials management activities which occur at the facility;

(3) an evaluation of the following aspects of materials compatibility: containment and storage practices for chemicals, container compatibility, chemical mixing procedures; potential mixing or compatibility problems; and specific prohibitions regarding mixing of chemicals;

(4) technical information on human health and ecological effects of toxic or hazardous chemicals presently used or manufactured (including by-products produced) or planned for future use or production;

(5) analyses of chemical use and waste generation, including input parameters for all pollutants, overall facility material balances and as necessary, internal process balances, for all pollutants. (When actual measurements of the quantity of a chemical entering a wastewater or storm water stream are not readily available, reasonable estimates should be made based on best engineering judgment.) The analyses should address reasons for using particular

chemicals, and/or measures or estimates of the actual and potential chemical discharges via wastewater, wastewater sludge, storm water, air, solid waste, or hazardous waste media.

(ii) Pollutant Reduction Methods - The WMA plan shall include, at a minimum, the following means of reducing pollutant discharges in wastewater streams or of otherwise minimizing wastes:

(1) Process related source reduction measures, including any or all of the following, as appropriate: improved process controls; reduction in use of toxic or hazardous materials; chemical modifications and/or material purification; chemical substitution employing non-toxic or less toxic alternatives; and equipment upgrades or modifications or changes in equipment use.

(2) Housekeeping/operational changes, including waste stream segregation, inventory control, spill and leak prevention, equipment maintenance; and employee training in areas of pollution prevention, good housekeeping, and spill prevention and response;

(3) in-process recycling, on-site recycling and/or off-site recycling of materials (such as non-hazardous rags, pads and filters, antifreeze, lube oil, cooking oil, etc.);

(4) following all source reduction and recycling practices, wastewater treatment process changes, including the use of new or improved treatment methods, such that treatment degradation products are less toxic to aquatic or human life; and

(5) other means as agreed upon by the permit issuing authority and the permittee.

(iii) Storm Water Evaluation - For storm water discharges and instances where storm water enters the wastewater treatment/disposal system or is otherwise commingled with wastewater, the BMP3 shall evaluate the following potential sources of storm water contamination, at a minimum:

(1) Loading, unloading and transfer areas for dry bulk materials or liquids;

(2) outdoor storage of raw materials or products;

(3) outdoor processing activities;

(4) dust or particulate generating processes;

(5) on-site waste and/or sludge disposal practices.

The likelihood of storm water contact in these areas and the potential for spills from these areas shall be considered in the evaluation. The history of significant leaks or spills of toxic or hazardous pollutants shall also be considered. Recommendations for changes to current practices which would reduce the potential for storm water contamination from these areas shall be made, as necessary.

Practices which reduce pollutant loading in wastewater or storm water discharges with a consequent increase in solid hazardous waste generation, decrease in air quality, or adverse effect to groundwater shall not be considered waste reduction for the purposes of this assessment planning.

2. Wastes From Maintenance Operations

Maintenance waste, such as removed paint and materials associated with surface preparation and coating operations, must be contained to the maximum extent practicable to prevent discharge. This

includes airborne material such as spent or over-sprayed abrasives, paint chips, and paint overspray. Measures such as vacuum abrasive blasting, covering grated areas with plywood, surrounding the area with canvas tarps and similar measures must be employed to capture as much material as practicable.

Prior to conducting sandblasting or similar maintenance activities, operators shall operate in accordance with company or site specific BMPs as needed. BMPs utilized must include specific containment measures which should be implemented to the maximum extent practicable. These measures should include, but not limited to:

a. enclose, cover, or contain blasting, sanding, painting, or mechanical cleaning activities, to prevent abrasives, dust, and paint chips from reaching the receiving water.

b. contain blasting, sanding, painting, or mechanical cleaning activities performed over open water.

c. prevent blasting, sanding, painting, or mechanical cleaning activities performed during windy and high precipitation conditions which render containment ineffective.

d. collect spent abrasives routinely and properly store pending shipment to shore for proper disposal.

e. mix paints and solvents in designated areas away from drains, ditches, piers, and surface waters, preferably indoors or under cover.

f. have absorbent and other cleanup items readily available for immediate cleanup of spills.

g. allow empty paint cans to dry before disposal.

h. use plywood and/or plastic sheeting to cover open areas between decks when water blasting, sandblasting and/or mechanical cleaning activities.

3. Non-Aqueous Drilling Fluids

Operators are not required to use specific BMPs for NAFs if all cuttings are monitored in accordance with Appendix 7 of 40 CFR Part 435, subpart A. (This special exemption for NAFs cuttings does not excuse the facility from developing and implementing BMPs for other areas/operations at the site.)

The following specific best management practices and pollution prevention activities are required in the BMP3 Plan when operators elect to control NAF discharges associated with cuttings by a set of BMPs:

a. The operator shall identify and document each NAF well that uses BMPs before starting drilling operations and the anticipated total feet to be drilled with NAF for that particular well.
b. Each facility component or system controlled through use of BMPs shall be examined for its NAF-waste minimization opportunities and its potential for causing a discharge of NAF to waters of the United States due to natural phenomena (e.g., rain, snowfall).
c. For each NAF waste stream controlled through BMPs where experience indicates a reasonable potential for equipment failure (e.g., tank overflow or leakage), natural conditions (e.g., precipitation), or other circumstances to result in NAF reaching surface waters, the BMP3 plan shall include a prediction of the total quantity of NAF which could be discharged from the facility as a result of each condition or circumstance. Specifically, the BMP3 plan should address how NAF cuttings will be handled during routine preventative maintenance or repairs periods for non-crucial equipment such as mud cleaner and high-speed centrifuge and crucial equipment such as the cuttings dryer and cuttings transport system. See Part II.B.c. for NPDES permit requirements regarding “anticipated bypass.”

d. The operator must establish programs for identifying, documenting, and repairing malfunctioning NAF equipment, tracking NAF equipment repairs, and training personnel to report and evaluate malfunctioning NAF equipment.

e. The operator must establish operating and maintenance procedures for each component in the solids control system in a manner consistent with the manufacturer's design criteria.

f. The operator must use the most applicable spacers, flushers, pills, and displacement techniques to minimize contamination of drilling fluids when changing from water-based drilling fluids to NAF, and vice versa.

g. A daily retort analysis shall be performed (in accordance with Appendix 7 to 40 CFR Part 435, subpart A) during the first 0.33 X feet drilled with NAF, where X is the anticipated total feet to be drilled with NAF for that particular well. The retort analyses shall be documented in the well retort log. The operators shall use the calculation procedures detailed in Appendix 7 to subpart A of 40 CFR Part 435 (see equations 1 through 8) to determine the arithmetic average ($\%BF_{well}$) of the retort analyses taken during the first 0.33 X feet drilled with NAF.

h. When the arithmetic average ($\% BF_{well}$) of the retort analyses taken during the first 0.33 X feet drilled with NAF is less than or equal to the base fluid retained on cuttings limitation or standard (see 40 CFR § 435.13 and 435.15), retort monitoring of cuttings may cease for that particular well. The same BMPs and drilling fluid used during the first 0.33 X feet shall be used for all remaining NAF sections for that particular well.

i. When the arithmetic average ($\% BF_{well}$) of the retort analyses taken during the first 0.33 X feet drilled with NAF is greater than the base fluid retained on cuttings limitation or standard (see 40 CFR § 435.13 and 435.15), retort monitoring shall continue for the next 0.33 X feet drilled with NAF, where X is the anticipated total feet to be drilled with NAF for that particular well.

The retort analyses for the first and second 0.33 X feet shall be documented in the well retort log.

j. When the arithmetic average (% BF_{well}) of the retort analyses taken during the first 0.66 X feet (i.e., retort analyses taken from the first and second X feet) drilled with NAF is less than or equal to the base fluid retained on cuttings limitation or standard (see 40 CFR § 435.13 and 435.15), retort monitoring of cuttings may cease for that particular well. The same BMPs and drilling fluid used during the first 0.66 X feet shall be used for all remaining NAF sections for that particular well.

k. When the arithmetic average (%BF_{well}) of the retort analyses taken during the first 0.66 X feet shall (i.e., retort analyses taken from first and second 0.33 X feet) drilled with NAF is greater than the base fluid retained on cuttings limitation or standard (see 40 CFR § 435.13 and 435.15), retort monitoring shall continue for all remaining sections for that particular well. The retort analyses for all NAF sections shall be documented in the well retort log.

l. When the arithmetic average (%BF_{well}) of the retort analyses taken over all NAF sections for the entire well is greater that the base fluid retained on cuttings limitation or standard (see § 435.13 and 435.15), the operator is in violation of the base fluid retained on cuttings limitation or standard and shall submit notification of these monitoring values in accordance with NPDES permit requirements. Additionally, the operator shall, as part of the BMP3 Plan, initiate a re-evaluation and modification to the BMP3 Plan in conjunction with equipment vendors and/or industry specialists.

m. The operator shall include retort monitoring data and dates of retort-monitored and non-retort-monitored NAF-cuttings discharges managed by BMPs in their NPDES permit reports.

n. The operator shall establish mud pit and equipment cleaning methods in such a way as to minimize the potential for building-up drill cuttings (including accumulated solids) in the active mud system and solids control equipment system. These cleaning methods shall include, but are not limited to, the following procedures:

(1) Ensuring proper operation and efficiency of mud pit agitation equipment,

(2) Using mud gun lines during mixing operations to provide agitation in dead spaces, and

(3) Pumping drilling fluids from drill cuttings (including accumulated solids) for use, recycle, or disposal before using wash water to dislodge solids.

E. Signatory Authority and Management Responsibilities

The BMP3 plan shall contain a written and dated statement (with signatures) from the individual responsible for development and implementation of the BMP3 plan stating that the review has been completed and that the BMP3 plan fulfills the objective and specific requirements set forth in Parts IV. A. and D., above. The statement shall be publicized or made known to all facility employees.

F. Plan Certification

The operator shall certify that its BMP3 plan is complete, on-site, and being implemented. This certification shall identify the NPDES permit number and be signed by an authorized representative of the operator. This certification shall be kept with the BMP3 plan. The certification shall be made no later than one year from the effective date of coverage under this general permit and must be submitted to EPA Region 4.

G. Plan Documentation

The BMP3 plan shall be documented in narrative form, and shall include any necessary plot plans, drawings, or maps, and shall be developed in accordance with good engineering practices. At a minimum, the BMP3 plan shall contain the planning, development and implementation, and evaluation/re-evaluation components. Examples of these components are contained in "Guidance Document for Developing Best Management Practices," EPA document no. 833-B-93-004 (1993).

The permittee shall maintain a copy of the BMP3 plan and related documentation (e.g., training certifications, summary of the monitoring results, records of NAF-equipment spills, repairs, and maintenance) at the facility and shall make the BMP3 plan and related documentation available to EPA upon request.

H. Best Management Practices and Pollution Prevention Committee:

A Best Management Practices Committee (Committee) should be established to direct or assist in the implementation of the BMP3 plan. The Committee should be comprised of individuals within the plant organization who are responsible for developing, implementing, monitoring of success, and revision of the BMP3 plan. The activities and responsibilities of the Committee should address all aspects of the facility's BMP3 plan. The scope of responsibilities of the Committee should be described in the plan.

I. Employee Training

Employee training programs shall inform appropriate personnel of the components and goals of the BMP3 plan and shall describe employee responsibilities for implementing the plan. Training shall address topics such as good housekeeping, materials management, record keeping and reporting, spill

prevention and response, as well as specific waste reduction practices to be employed. The plan shall identify periodic dates for such training.

J. Plan Development and Implementation

The BMP3 plan shall be developed and implemented within one year after the effective date of this coverage under this general permit.

K. Plan Review

The plan shall be reviewed by the permittee's designated responsible party (such as the facility drilling engineer) to ensure compliance with the BMP3 plan purpose and objectives set forth above.

If following review by EPA, the BMP3 plan is determined insufficient, EPA may notify the permittee that the BMP3 plan does not meet one or more of the minimum requirements of this Part. Upon such notification from the Director, or authorized representative, the permittee shall amend the plan and shall submit to the Director a written certification that the requested changes have been made. Unless otherwise provided by the Director of the Water Division, EPA Region 4, the permittee shall have 30 days after such notification to make the changes necessary.

L. Plan Modification

The permittee shall modify the BMP3 plan whenever there is a change in design, construction, operation, or maintenance, pertaining to the facility which has a significant effect on the potential for the discharge of pollutants to waters of the United States or if the plan proves to be ineffective in achieving the general objectives of reducing pollutants in wastewater or wet weather discharges.

At a minimum, the BMP3 plan shall be reviewed once every five years and amended within three months if warranted. Any such changes to the BMP3 plan shall be consistent with the objectives and specific requirements listed in this permit. All changes in the BMP3 plan shall be reviewed by the operator's drilling engineer and authorized on-site representative.

At any time, if the BMP3 plan proves to be ineffective in achieving the general objective of preventing and minimizing the discharge of toxic pollutants and/or NAF-wastes, the BMP3 plan be subject to modification. If the BMP3 requirements in the permit are modified, the BMP3 plan must be modified to incorporate the revised BMP3 requirements within three months.

For those NAF-waste streams controlled through BMPs, the operator shall amend the BMP3 plan within 30 days whenever there is a change in the facility or in the operation of the facility which materially increases the generation of those NAF wastes or their release, or potential release to the receiving waters

.
Modifications to the plan may be reviewed by EPA in the same manner as described above.

Part V. Test Procedures and Definitions

A. <u>Test Procedures</u>

1. Samples of Wastes

If requested, the permittee shall provide EPA with a sample of any waste in a manner specified by the Agency.

2. Drilling Fluids Toxicity Test (Suspended Particulate Phase Toxicity Test)

The approved sampling and test methods for permit compliance are provided in the final effluent guidelines published at 58 FR 12507 on March 4, 1993, as Appendix 2 to subpart A of 40 CFR Part 435.

3. Static Sheen Test

The approved sampling and test methods for permit compliance are provided in the final effluent guidelines published at 58 FR 12506 on March 4, 1993, as Appendix 1 to subpart A of 40 CFR Part 435.

4. Visual Sheen Test

The visual sheen test is used to detect free oil by observing the surface of the receiving water for the presence of a sheen while discharging. A sheen is defined as a "silvery" or metallic" sheen, gloss, or increased reflectivity; visual color; iridescence; or oil slick on the surface (see 58 FR 12507). The operator must conduct a visual sheen test only at times when a sheen could be observed. This restriction eliminates observations at night or when atmospheric or surface conditions prohibit the observer from detecting a sheen (e.g., during rain or rough seas, etc.). Certain discharges can only occur if a visual sheen test can be conducted.

The observer must be positioned on the rig or platform, relative to both the discharge point and current flow at the time of discharge, such that the observer can detect a sheen should it surface down current from the discharge. For discharges that have been occurring for at least 15 minutes, observations may be made any time thereafter. For discharges of less than 15 minutes duration, observations must be made both during discharge and 5 minutes after discharge has ceased

5. Produced Water Toxicity Tests

Operators may choose to demonstrate compliance with the toxicity testing requirements for produced water by performing a 7-day chronic toxicity test in accordance with methods for determining the 7-day NOEC is *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms* (EPA/821-R-02-014). The species to be used for compliance testing for this permit are *Mysidopsis bahia (Americamysis bahia* (Mysid shrimp*)*) and *Menida beryllina* (Inland silverside minnow).

6. Base Fluid Sediment Toxicity Test

The approved test method for permit compliance is identified as ASTM E1367-92 (or most current EPA approved method) entitled, *Standard Guide for Conducting 10-day Static Sediment Toxicity Tests with Marine and Estuarine Amphipods* (or the most current EPA approved method), with *Leptocheirus plumulosus* as the test organism and sediment preparation procedures specified in Appendix 3 of 40 CFR Part 435, subpart A.

$$\text{The base fluid sediment toxicity ratio} = \frac{\text{10-day } LC_{50} \text{ of reference fluid*}}{\text{10-day } LC_{50} \text{ of stock base fluid}}$$

*C_{16}-C_{18} internal olefin, C_{12}-C_{14} ester or C_8 ester

7. Base Fluids Biodegradation Rate

The approved method for permit compliance is identified as International Standards Organization (ISO) 11734:1995 (or the most current EPA approved method) entitled, *Water quality - Evaluation of the ultimate anaerobic biodegradability of organic compounds in digested sludge - Method by measurement of the biogas production* (1995 edition), supplemented with modifications in Appendix 4 of 40 CFR Part 435, subpart A. Compliance with the biodegradation limit will be determined using the

following ratio. As described in Section 5.1 of this permit ("Total Gas monitoring procedures") the term "Cumulative gas production" in the following ratio refers to head space gas. This is consistent with the Western Gulf of Mexico OCS General Permit (GMG290000).

$$\text{Biodegradation rate ratio} = \frac{\text{Cumulative gas production (ml) of reference fluid *}}{\text{Cumulative gas production (ml) of stock base fluid, both at 275 days}}$$

*C_{16}-C_{18} internal olefin, C_{12}-C_{14} ester or C_8 ester

8. Polynuclear Aromatic Hydrocarbons

The approved method for permit compliance is EPA Method 1654A entitled, *PAH Content of Oil by High Performance Liquid Chromatography with a UV Detector*.

$$\text{PAH mass ratio} = \frac{\text{Mass (g) of PAH (as phenanthrene)}}{\text{Mass (g) of stock base fluid}}$$

9. Formation Oil

a. Contamination of Non-Aqueous Based Drilling Fluids

The approved test method for permit compliance is Gas Chromatography/Mass Spectrometry (GC/MS) contained in Appendix 5 of 40 CFR Part 435, subpart A (or most current EPA approved method). This test shall be performed prior to drilling.

The GC/MS method reports results for the GC/MS test as a percentage crude contamination when calibrated for a specific crude oil. To define an applicable pass/fail limit to cover a variety of crude oils, the same crude oil used in calibration of the Reverse Phase Extraction (RPE) test shall be used to calibrate the GC/MS test results to a standardized ratio of the target ION Scan 105 (or most current

EPA approved method). Based on the performance of a range of crude oils against the standardized ratio, a value will be selected as a pass/fail standard which will represent detection of crude oil.

b. Contamination of Discharged Non-Aqueous Based Drilling Fluids Retained on Cuttings

The approved test method for permit compliance is the RPE method in Appendix 6 of 40 CFR Part 435, subpart A, which is applied to drilling fluid removed from drill cuttings. If the operator wishes to confirm with results of the RPE method (Appendix 6 of 40 CFR Part 435, subpart A), the operator may use the GC/MS compliance assurance method (Appendix 5 of 40 CFR Part 435, subpart A). Results from the GC/MS compliance assurance method shall supersede the results of the RPE method.

10. Drilling Fluids Sediment Toxicity

The approved test method for permit compliance is identified as ASTM E1367-92 (or the most current EPA approved method) entitled, *Standard Guide for Conducting 10-day Static Sediment Toxicity Tests with Marine and Estuarine Amphipods*, with *Leptocheirus plumulosus* as the test organism and sediment preparation procedures specified in Appendix 3 of 40 CFR Part 435, subpart A.

$$\text{The drilling fluid sediment toxicity ratio} = \frac{\text{4-day } LC_{50} \text{ of } C_{16}\text{-}C_{18} \text{ internal olefin}}{\text{4-day } LC_{50} \text{ drilling fluid removed from drill cuttings at the solids control equipment}}$$

11. Retention of Non-Aqueous Based Drilling Fluid on Cuttings

The maximum permissible retention of NAF base on wet drill cuttings averaged over drilling intervals using NAFs shall be determined by the American Petroleum Institute Retort method contained in

Appendix 7 of 40 CFR Part 435, subpart A. The required sampling, handling, and documentation procedures are listed in Addendum A of Appendix 7 of 40 CFR Part 435, subpart A.

12. Sampling Protocol for Stock Drilling Fluid Sediment Toxicity Test, Drilling Fluid Sediment Toxicity Test and Biodegradation Rate Test

Compliance with the sediment toxicity test ratio limit of1.0 shall be based on the ratio of the arithmetic average of up to three test results from two grab samples. The first grab sample must be split into two aliquots (e.g., grab1A and grab1B) and analyzed separately. The second grab sample (grab2) shall be a backup sample, which shall be retained following proper storage and handling procedures. The second grab sample will be collected within 15 minutes of the first grab sample, and in the case of base fluid testing, will be from the same production lot. Permittees shall show compliance based on results from grab1A, or from the ratio of the arithmetic average of grab1A, grab1B, and if necessary grab2. All test results obtained shall be submitted with the DMR and all ratios shall be rounded to the nearest tenths.

All test results shall be generated as follows:

a. The 10-day stock base fluid toxicity test results consist of individual stock base fluid LC_{50}s and individual reference fluid LC_{50}s (paired results). The arithmetic average of the LC_{50} for the test fluid sample(s) will be compared to determine compliance with the 1.0 ratio permit limit.

b. The stock base fluid biodegradation test results consist of individual stock base fluid cumulative gas production (ml) and individual reference fluid cumulative gas production (ml) tests (paired results). The arithmetic average of the cumulative gas production (ml) for the test fluid samples(s) will be compared against the arithmetic average of the cumulative gas

production (ml) of the reference fluid sample(s) to determine compliance with the 1.0 ratio permit limit.

c. The 4-day drilling fluid mud toxicity test results consist of the individual field mud LC_{50}s and individual reference mud LC_{50}s (paired results). The arithmetic average of the LC_{50} for the field mud sample(s) will be compared against the arithmetic average of the LC_{50} of the reference mud sample(s) to determine compliance with the 1.0 ratio permit limit.

13. Rounding of Ratios (to be applied in measuring compliance with the sediment toxicity and biodegradation tests)

All ratios shall be rounded as follows:

The following rounding procedures shall only be applied to the sediment toxicity and biodegradation limitations and standards in this permit:

If the digit 6, 7, 8, or 9 is dropped, increase preceding digit by one unit.

a. Example: a calculated sediment toxicity or biodegradation ratio of 1.06 should be rounded to 1.1 and reported as a violation of the permit limit.

If the digit 0, 1, 2, 3, or 4 is dropped, do not alter the preceding digit.

b. Example: a calculated sediment toxicity ratio of 1.04 should be rounded to 1.0 and reported to EPA as compliant with the permit limit.

If the digit 5 is dropped, round off preceding digit to the nearest even number.

c. Example: a calculated ratio of 1.05 should be rounded to 1.0 and reported to EPA as compliant with the permit limit.

14. Protocol for the Determination of Degradation of Non aqueous Base Fluids in a Marine Closed Bottle Biodegradation Test System: Modified ISO 11734

Section 1: Summary of Method

This method determines the anaerobic degradation potential of mineral oils, paraffin oils and non aqueous fluids (NAF) in sediments. These substrates are base fluids for formulating offshore drilling fluids. The test evaluates base fluid biodegradation rates by monitoring gas production due to microbial degradation of the test fluid in natural marine sediment.

The test procedure places a mixture of marine/estuarine sediment, test substrate (hydrocarbon or controls) and seawater into clean 120 ml (150 ml actual volume) Wheaton serum bottles. The test is run using four replicate serum bottles containing 2000 mg carbon/kg dry weight concentration of test substrate in sediment. The use of resazurin dye solution (1 ppm) evaluates the anaerobic (redox) condition of the bottles (dye is blue when oxygen is present, reddish in low oxygen conditions and colorless if oxygen free). After capping the bottles, a nitrogen sparge removes air in the headspace before incubation begins. During the incubation period, the sample should be kept at a constant temperature of 29 (+/-1)ºC. Gas production and composition is measured approximately every two weeks. The samples need to be brought to ambient temperature before making the measurements. Measure gas production using a pressure gauge. Barometric pressure is measured at the time of testing to make necessary volume adjustments.

ISO 11734 specifies that total gas is the standard measure of biodegradation. While modifying this test for evaluating biodegradation of NAF's, methane was also monitored and found to be an acceptable method of evaluating biodegradation Appendix 1 contains the procedures used to follow

biodegradation by methane production. Measurement of either total gas or methane production is permitted. If methane is followed, determine the composition of the gas by using gas chromatography (GC) analysis at each sampling. At the end of the test when gas production stops, or at around 275 days, an analysis of sediment for substrate content is possible. Common methods which have been successfully used for analyzing NAF's from sediments are listed in Appendix 2.

Section 2: System Requirements

This environmental test system has three phases, spiked sediment, overlying seawater, and a gas headspace. The sediment/test compound mixture is combined with synthetic sea water and transferred into 120 ml serum bottles. The total volume of sediment/sea water mixture in the bottles is 75 mL. The volume of the sediment layer will be approximately 50 ml, but the exact volume of the sediment will depend on sediment characteristics (wet:dry ratio and density). The amount of synthetic sea water will be calculated to bring the total volume in the bottles to 75 mL. The test systems are maintained at a temperature of 29 ^{o}C during incubation. The test systems are brought to ambient temperatures prior to measuring pressure or gas volume.

Section 2.1: Sample Requirements

The concentration of base fluids are at least 2000 mg carbon test material/kg dry sediment. Carbon concentration is determined by theoretical composition based on the chemical formula or by chemical analysis by ASTM D5291-96. Sediments with positive, intermediate and negative control substances as well as a C1618 Internal Olefin type base fluid will be run in conjunction with test materials under the same conditions. The positive control is ethyl oleate (CAS 111-62-6), the intermediate control is 1-hexadecene (CAS 629-73-2), and the negative control is squalane (CAS 111-01-3). Controls must be

of analytical grade or the highest grade available. Each test control concentration should be prepared according to the mixing procedure described in Section 3.1.

Product names will be used for examples or clarification in the following text. Any use of trade or product names in this publication is for descriptive use only, and does not constitute endorsement by EPA or the authors.

Section 2.2: Seawater Requirements

Synthetic seawater at a salinity of 25 parts per thousand should be used for the test. The synthetic seawater should be prepared by mixing a commercially available artificial seawater mix, into high purity distilled or de-ionized water. The seawater should be aerated and allowed to age for approximately one month prior to use.

Section 2.3: Sediment Requirements

The dilution sediment must be from a natural estuarine or marine environment and be free of the compounds of interest. The collection location, date and time will be documented and reported. The sediment is prepared by press-sieving through a 2000-micron mesh sieve to remove large debris, then press-sieving through a 500-micron sieve to remove indigenous organisms that may confound test results. The water content of the sediment should be less than 60 percent (w/w) or a wet to dry ratio of 2.5. The sediment should have a minimum organic matter content of 3 percent (w/w) as determined by ASTM D2974-87 (95) (Method A and D and calculate organic matter as in section 12 of method ASTM D2974-87).

To reduce the osmotic shock to the microorganisms in the sediment, the salinity of the sediment's pore water should be between 20-30 ppt. Sediment should be used for testing as soon as possible after field collection. If required, sediment can be stored in the dark at 4^{o}C with 3-6 inches of overlying water in a sealed container for a maximum period of two months prior to use.

Section 3: Test Set up

The test is set up by first mixing the test or control substrates into the sediment inoculum, then mixing in seawater to make a pourable slurry. The slurry is then poured into serum bottles, which are then flushed with nitrogen and sealed.

Section 3.1: Mixing Procedure

Because base fluids are strongly hydrophobic and do not readily mix with sediments, care must be taken to ensure base fluids are thoroughly homogenized within the sediment. All concentrations are weight-to-weight comparisons (mg of base fluid to kg of dry control sediment). Sediment and base fluid mixing will be accomplished by using the following method.

3.1.1. Determine the wet to dry weight ratio for the control sediment by weighing approximately 10 sub-samples of approximately 1.0 g each of the screened and homogenized wet sediment into tared aluminum weigh pans. Dry sediment at 105 C for 18-24 h. Remove the dried sediments and cool in a desiccator. Repeat the drying, cooling, and weighing cycle until a constant weight is achieved (within 4 percent of previous weight). Re-weigh the samples to determine the dry weight. Calculate the mean wet and dry weights of the 10 sub-samples and determine the wet/dry ratio by dividing the mean wet weight by the mean dry weight using Formula 1. This is required to determine the weight of wet sediment needed to prepare the test samples.

$$\frac{\text{Mean Wet Sediment Weight (g)}}{\text{Mean Dry Sediment Weight (g)}} = \text{Wet to Dry Ratio} \quad [1]$$

3.1.2. Determine the density (g/ml) of the wet sediment. This will be used to determine total volume of wet sediment needed for the various test treatments. One method is to tare a 5 ml graduated cylinder and add about 5 ml of homogenized sediment. Carefully record the volume then weigh this volume of sediment. Repeat this a total of three times. To determine the wet sediment density, divide the weight by volume per the following formula:

$$\frac{\text{Mean Wet Sediment Weight (g)}}{\text{Mean Wet Sediment Volume (ml)}} = \text{Wet Sediment Density (g/ml)} \quad [2]$$

3.1.3. Determine the amount of base fluid to be spiked into wet sediment in order to obtain the desired initial base fluid concentration of 2000 mg carbon/kg dry weight. An amount of wet sediment that is the equivalent of 30 g of dry sediment will be added to each bottle. A typical procedure is to prepare enough sediment for 8 serum bottles (3 bottles to be sacrificed at the start of the test, 4 bottles incubated for headspace analysis, and enough extra sediment for 2 extra bottles). Extra sediment is needed because some of the sediment will remain coated onto the mixing bowl and utensils. Experience with this test may indicate that preparing larger volumes of spiked sediment is a useful practice, then the following calculations should be adjusted accordingly.

3.1.3.1 Determine the total weight of dry sediment needed to add 30 g dry sediment to eight bottles. If more bottles are used then the calculations should be modified accordingly. For example:

30 g dry sediment per bottle x 8 = 240 g dry sediment [3]

3.1.3.2 Determine the weight of base fluid, in terms of carbon, needed to obtain a final base fluid concentration of 2000 mg carbon/kg dry weight. For example:

$$\frac{\text{2000 mg carbon}}{\text{per kg dry sediment}} \times \frac{\text{240 g}}{\text{1000}} = \text{480 mg carbon} \quad [4]$$

3.1.3.3 Convert from mg of carbon to mg of base fluid.

This calculation will depend on the percent fraction of carbon present in the molecular structure of each base fluid. For the control fluids, ethyl oleate is composed of 77.3 percent carbon, hexadecene is composed of 85.7 percent carbon, and squalane is composed of 85.3 percent carbon. The carbon fraction of each base fluid should be supplied by the manufacturer or determined before use. ASTM D5291-96 or equivalent will be used to determine composition of fluid.

To calculate the amount of base fluid to add to the sediment, divide the amount of carbon (480 mg) by the percent fraction of carbon in the fluid.

For example, the amount of ethyl oleate added to 240 g dry weight sediment can be calculated from the following equation:

$$480 \text{ mg carbon} \div (77.3/100) = 621 \text{ mg ethyl oleate} \quad [5]$$

Therefore, add 621 mg of ethyl oleate to 240 g dry weight sediment for a final concentration of 2000 mg carbon/kg sediment dry weight.

3.1.4. Mix the calculated amount of base fluid with the appropriate weight of wet sediment.

3.1.4.1 Use the wet:dry ratio to convert from g sediment dry weight to g sediment wet weight, as follows:

240 g dry sediment x wet:dry ratio = g wet sediment needed [6]

3.1.4.2 Weigh the appropriate amount of base fluid (calculated in section 3.1.3.3) into stainless mixing bowls, tare the vessel weight, then add the wet sediment calculated in equation 5, and mix with a high shear dispersing impeller for 9 minutes.

The sediment is now mixed with synthetic sea water to form a slurry that will be transferred into the bottles.

Section 3.2: Creating Seawater/Sediment Slurry

Given that the total volume of sediment/sea water slurry in each bottle is to be 75 mL, determine the volume of sea water to add to the wet sediment.

3.3.1 If each bottle is to contain 30 g dry sediment, calculate the weight, and then the volume, of wet sediment to be added to each bottle.

30 g dry sediment x wet:dry ratio = g wet sediment added to each bottle [7]

g wet sediment ÷ density (g/mL) of wet sediment = mL wet sediment [8]

3.3.2 Calculate volume of sea water to be added to each bottle.

75 mL total volume - mL wet sediment (from eq. 8) = mL of sea water [9]

3.3.3 Determine the ratio of sea water to wet sediment (volume:volume) in each bottle

$$\frac{\text{volume sea water per bottle (eq. 9)}}{\text{volume sediment per bottle (eq. 8)}} = \text{ratio of sea water:wet sediment} \quad [10]$$

3.3.4 Convert the wet sediment weight from equation 6 into a volume using the sediment density.

g wet sediment (eq. 6) ÷ density = volume (mL) of sediment [11]

3.3.5 Determine the amount of sea water to mix with the wet sediment.

mL wet sediment (eq. 11) x sea water:sediment ratio (eq. 10)

= mL sea water to add to wet sediment [12]

Mix sea water thoroughly with wet sediment to form a sediment/sea water slurry.

Section 3.3: Bottling the Sediment Seawater Slurry

The total volume of sediment/sea water slurry in each bottle is to be 75 mL. Convert the volume (mL) of sediment/sea water slurry into a weight (g) using the density of the sediment and the sea water.

3.4.1 Determine the weight of sediment to be added to each bottle.

mL sediment (eq. 8) x density of wet sediment (g/mL) = g wet sediment [14]

3.4.2 Determine the weight of sea water to be added to each bottle.

mL sea water (eq. 9) x density of sea water (1.01 g/mL) = g sea water [15]

3.4.3 Determine weight of sediment/sea water slurry to be added to each bottle.

g wet sediment (eq. 14) + g sea water (eq. 15) = g sediment/sea water slurry [16]

This should provide each bottle with 30 g dry sediment in a total volume of 75 mL.

3.4.4 Putting the sediment:seawater slurry in the serum bottles.

Note: The slurry will need to be constantly stirred to keep the sediment suspended.

Place a tared serum bottle on a balance and add the appropriate amount of slurry to the bottle using a funnel. Once the required slurry is in the bottle remove the funnel, add 2-3 drops (25 µl) of a 1gram/L resazurin dye stock solution. Cap the bottle with a butyl rubber stopper (Bellco Glass, Part #2048- 11800) and crimp with an aluminum seal (Bellco Glass Part #2048-11020).

Using a plastic tube with a (23 gauge, 1 inch long) needle attached to one side and a nitrogen source to the other, puncture the serum cap with the needle. Puncture the serum cap again with a second needle to sparge the bottle's headspace of residual air for two minutes. The nitrogen should be flowing at no more than 100 mL/min to encourage gentle displacement of oxygenated air with nitrogen. Faster nitrogen flow rates would cause mixing and complete

oxygen removal would take much longer. Remove the nitrogen needle first to avoid any initial pressure problems. The second (vent) needle should be removed within 30 seconds of removing the nitrogen needle.

Triplicate blank test systems are prepared with similar quantities of sediment and seawater without any base fluid. Incubate in the dark at a constant temperature of 29 ^{o} C.

Record the test temperature. The test duration is dependent on base fluid performance, but at a maximum should be no more than 275 days. Stop the test after all base fluids have achieved a plateau of gas production. At termination, base fluid concentrations can be verified in the terminated samples by extraction and GC analysis according to Appendix 2 of ISO 11734.

Section 4: Concentration Verification Chemical Analyses

Because of the difficulty of homogeneously mixing base fluid with sediment, it is important to demonstrate that the base fluid is evenly mixed within the sediment sea water slurry that was added to each bottle. Of the seven serum bottles set up for each test or control condition, three are randomly selected for concentration verification analyses. These should be immediately placed at 4 ° C and a sample of sediment from each bottle should be analyzed for base fluid content as soon as possible. The coefficient of variation (CV) for the replicate samples must be less than 20 percent. The results should show recovery of at least 70 percent of the spiked base fluid. Use an appropriate analytical procedure described in Appendix 2 to perform the extractions and analyses. If any set of sediments fail the criteria for concentration verification, then the corrective action for that set of sediments is also outlined in Appendix 2.

The nominal concentrations and the measured concentrations from the three bottles selected for concentration verification should be reported for the initial test concentrations. The CV for the replicate samples must be less than 20 percent. If base fluid content results are not within the 20 percent CV limit, the test must be stopped and restarted with adequately mixed sediment.

Section 5 Gas monitoring procedures

Biodegradation is measured by total gas as specified in ISO 11734. Methane production can also be tracked and is described in Appendix 1.

Section 5.1 Total Gas monitoring procedures

Bottles should be brought to room temperature before readings are taken. The bottles are observed to confirm that the resazurin has not oxidized to pink or blue. Total gas production in the culture bottles (head space gas) should be measured using a pressure transducer (one source is Biotech International). The pressure readings from test and control cultures are evaluated against a calibration curve created by analyzing the pressure created by known additions of gas to bottles established identically to the culture bottles. Bottles used for the standard curve contain 75 mL of water, and are sealed with the same rubber septa and crimp cap seals used for the bottles containing sediment. After the bottles used in the standard curve have been sealed, a syringe needle inserted through the septa is used to equilibrate the pressure inside the bottles to the outside atmosphere. The syringe needle is removed and known volumes of air are injected into the headspace of the bottles. Pressure readings provide a standard curve relating the volume of gas injected into the bottles and headspace pressure. No less than three points may be used to generate the standard curve. A typical standard curve may use 0, 1, 5, 10, 20 and 40 ml of gas added to the standard curve bottles.

The room temperature and barometric pressure (to two digits) should be recorded at the time of sampling. One option for the barometer is Fisher Part #02-400 or 02-401. Gas production by the sediment is expressed in terms of the volume (mL) of gas at standard temperature ($0^oC = 273^oK$) and pressure (1 atm = 30 inches of mercury (Hg)) using Eqn.17,

$$V_2 = \frac{P_1 * V_1 * T_2}{T_1 * P_2} \qquad [17]$$

Where: V_2 = volume of gas production at standard temperature and pressure

P_1 = barometric pressure on day of sampling (inches of Hg)

V_1 = volume of gas measured on day of sampling (mL)

T_2 = standard temperature = 273^oK

T_1 = temperature on day of sampling ($^oC + 273 = {}^oK$)

P_2 = standard pressure = 30 inches Hg

An estimation can be made of the total volume of anaerobic gas that will be produced in the bottles. The gas production measured for each base fluid can be expressed as a percent of predicted total anaerobic gas production.

5.1.1. Calculate the total amount of carbon in the form of the base fluid present in each bottle.

Each bottle is to contain 30 g dry weight sediment. The base fluid concentration is 2000 mg carbon/kg dry weight sediment. Therefore:

2000 mg carbon/kg sediment x (30 g/1000) = 60 mg carbon per bottle [18]

5.1.2. Theory states that anaerobic microorganisms will convert 1 mole of carbon substrate into 1 mole of total anaerobic gas production.

Calculate the number of moles of carbon in each bottle.

The molecular weight of carbon is 12 (i.e., 1 mole of carbon = 12 g). Therefore, the number of moles of carbon in each bottle can be calculated.

(60 mg carbon per bottle/1000) ÷ 12 g/mole = 0.005 moles carbon [19]

5.1.3. Calculate the predicted volume of anaerobic gas.

One mole of gas equals 22.4 L (at standard temperature and pressure), therefore, 0.005 moles x 22.4 L = 0.112 L (or 112 mL total gas production). [20]

Section 5.2 Gas Venting

If the pressure in the serum bottle is too great for the pressure transducer or syringe, some of the excess gas must be wasted. The best method to do this is to vent the excess gas right after measurement. To do this, remove the barrel from a 10-mL syringe and fill it 1/3 full with water. This is then inserted into the bottle through the stopper using a small diameter (high gauge) needle. The excess pressure is allowed to vent through the water until the bubbles stop. This allows equalization of the pressure inside the bottle to atmospheric without introducing oxygen. The amount of gas vented (which is equal to the volume determined that day) must be kept track of each time the bottles are

vented. A simple way to do this in a spreadsheet format is to have a separate column in which cumulative vented gas is tabulated. Each time the volume of gas in the cultures is analyzed, the total gas produced is equal to the gas in the culture at that time plus the total of the vented gas.

To keep track of the methane lost in the venting procedure, multiply the amount of gas vented each time by the corrected percent methane determined on that day. The answer gives the volume of methane wasted. This must be added into the cumulative totals similarly to the total gas additions.

Section 6: Test Acceptability and Interpretation

Section 6.1 Test Acceptability

At day 275 or when gas production has plateaued, whichever is first, the controls are evaluated to confirm that the test has been performed appropriately. In order for this modification of the closed bottle biodegradation test to be considered acceptable, all the controls must meet the biodegradation levels indicated in Table 1. The intermediate control hexadecene must produce at least 30 percent of the theoretical gas production. This level may be re-examined after two years and more data has been generated.

Table 1: Test Acceptability Criteria

Concentration	Percent Biodegradability as a Function of Gas Measurement		
	Positive control	Squalane negative control	Hexadecene intermediate control
2000 mg carbon/kg	$\geq$ 60% theoretical	$\leq$ 5% theoretical	$\geq$ 30% theoretical

Section 6.2 Interpretation

In order for a fluid to pass the closed bottle test, the biodegradation of the base fluid as indicated by the total amount of total gas (or methane) generated once gas production has plateaued (or at the end of 275 days, which ever is first) must be greater than or equal to the volume of gas (or methane) produced by the reference standard (internal elefin or ester).

The method for evaluating the data to determine whether a fluid has passed the biodegradation test must use the equations:

$$\frac{\%\ \text{Theoretical gas production of reference fluid}}{\%\ \text{Theoretical gas production of NAF}} \quad X\ 1.0$$

Where: NAF = stock base fluid being tested for compliance

Reference Fluid = C_{16}-C_{18} internal olefin or C_{12}-C_{14} or C_8 ester reference fluid

15. Whole Effluent Toxicity Testing – Chronic WET monitoring and Acute WET limit

(a) The following Chronic Whole Effluent Toxicity testing requirements are for monitoring purposed only and apply to: 1) Produced Water Discharges; 2) Well Treatment, Well Completion or Well Workover Fluid Discharges lasting four or more days; 3) Miscellaneous Discharges of Seawater and Freshwater to which chemicals have been added; and 4) Chemicals used in subsea operations, including but not limited to, Subsea Wellhead Preservation Fluids, Subsea Production Control fluids, Umbilical Steel Tube Storage Fluid, Leak Tracer Fluids, and Riser Tensioner Fluids.

If both acute and chronic testing are done concurrently, the results for the acute 48-hour test can be derived from the 7-day chronic test.

The control and dilution water will be natural or synthetic seawater at 25 parts per trillion (ppt) salinity as described in EPA-821-R-02-014, Section 7, or the most current edition. A standard reference toxicant quality assurance chronic toxicity test shall be conducted concurrently with each species used in the toxicity tests and the results included in summary laboratory report, which is to be submitted with the DMR. Alternatively, if monthly QA/QC reference toxicant tests are conducted, these results must be included in the summary laboratory report. The permittee shall submit a full laboratory report in the event a failure occurs for any test, or upon specific request of EPA. Any deviation from the bioassay procedures outlined or cited herein shall be submitted in writing to the EPA for review and approval prior to use.

1. a. The permittee shall conduct a mysid, *Mysidopsis bahia*, Survival and Reproduction test and an Inland silverside minnow, *Menida beryllina*, Larval Survival and Growth test. All tests shall be conducted using a control (0% effluent) and the following dilution concentrations: 0.25 times the critical dilution (CD), 0.5 times the CD, the CD, two times the CD and, four times the CD. The measured endpoints will be the survival and growth No Observed Effect Concentration (NOEC) concentration for each species. The survival and growth responses will be determined based on the number of *Mysidopsis bahia* or *Menida beryllina* larvae used to initiate the test.

   b. For each set of tests conducted, a grab sample of final effluent shall be collected and used to initiate the test within 72 hours of collection.

c. If control mortality exceeds 20 percent in any test, the test(s) with that species (including the control) shall be repeated. For either species, a test will be considered valid only if control mortality does not exceed 20 percent. Each test must meet the test acceptability criteria for each species as defined in EPA-821-R-02-014, Section 13.12 for *Menida beryllina* and Section 14.12 for *Mysidopsis bahia*, or the most current edition. Additionally, all test results must be evaluated and reported for concentration-response relationship based on "Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)," EPA/821/B-00/004 (http://water.epa.gov/scitech/methods/cwa/wet/upload/2007_07_10_methods_wet_disk2_atx.pdf), or the most current edition. If the required concentration-response review fails to yield a valid relationship per EPA/821/B-00/004 (or the most current edition), that test shall be repeated. Any test initiated but terminated prior to completion must be reported with a complete explanation for the termination. If the conditions of test acceptability are met as described above and in Part V.15.4, and the percent survival of the test organism is equal to or greater than 80 percent in the critical dilution concentration and all lower dilution concentrations, the survival test shall be considered to be passing and the permittee shall report a survival NOEC of not less than the critical dilution in the DMR.

2. a. The toxicity tests specified above shall be conducted once every two months for the first year of the permit until three consecutive valid bimonthly tests with passing results are completed. The permittee may reduce monitoring frequency to once per every six months thereafter for the duration of the permit for Produced Water and Well Treatment, Completion, or Workover fluid discharges and once per every six months period thereafter for the duration of the permit for

continuous discharges of Miscellaneous Discharges to Which Chemicals Have Been Added. These tests are referred to as “routine” tests.

Exception - Toxicity testing for chemicals/fluids used in subsea operations shall be once prior to use during the term of this general permit and at least annually thereafter on each product added to an operation after the effective date of this permit. Additionally, permittees that were covered under the previous general permit and that are currently performing toxicity tests for produced water discharges and have passed the most recent three consecutive toxicity test results shall continue beginning with a frequency of at least every six months, unless a subsequent non-compliance occurs or if the fluid formulation changes.

b. Results from routine tests shall be reported according to EPA-821-R-02-014, Section 10, or the most current edition. All results shall also be recorded and submitted on the Discharge Monitoring Report (DMR) in the following manner: If the NOEC of a test species is less than CD% effluent, this constitutes a test failure and “1” shall be entered on the DMR for that species. If the NOEC of a test species is greater than or equal to the CD% effluent, this constitutes a pass, and “0” shall be entered on the DMR.

c. The summary laboratory reports shall include, as a minimum, the following information:

(1) Permittee’s Name

(2) Name of test and test method number

(3) Name of test species

(4) Outfall identification designation and type of wastewater

(5) Name of biomonitoring laboratory

(6) Date sample was collected

(7) Date and time test initiated

(8) Critical Dilution

(9) Indicate if test is "valid." If not, state reasons why.

(10) For each species, the percent effluent corresponding to each NOEC for both the growth test and the survival test.

3. a. An NOEC of less than CD% effluent in any valid routine or additional definitive Survival or Growth test for either species will be a violation of this permit.

b. If an NOEC of less than CD% effluent is found in a routine test; the permittee shall conduct three valid additional tests on each species indicating the violation and report each NOEC obtained. A valid additional definitive test result cannot be used to negate a permit violation based on failure of a routine test.

c. The first valid additional test shall be conducted using a control (0% effluent) and a minimum of five dilutions: 0.0625 times the CD, 0.125 times the CD, 0.25 times the CD, 0.5 times the CD and the CD. The dilution series may be modified in the second and third valid tests to identify the toxicity more accurately.

d. For each additional test, the sample collection requirements and the test acceptability criteria and concentration-response relationships specified in sections 1.b. and c. above, respectively, must be met for the additional test to be considered valid. The first additional test shall begin

within two weeks of the end of the routine test failure and shall be conducted every two weeks thereafter until three consecutive additional valid tests are completed.

e. Results from additional tests, required due to a chronic toxicity violation in a routine test, shall be submitted in a single report prepared according to EPA-821-R-02-014, Section 10, or the most current edition and submitted within 30 days of completion of the third valid additional test.

f. After compliance is demonstrated for the three consecutive additional tests, the permittee may return to the testing frequency prior to the non-compliance.

4. To assess within test variability, test results must be evaluated for, and reported with the DMR in terms of the percent minimum significant difference (PMSD), in accordance with Section 10.28 of EPA/821-R-02-014. If toxicity is not found at the critical dilution concentration based on the value of the effect concentration estimate and the PMSD measured for a given test exceeds the upper PMSD bound as provided in this section, then the test shall not be accepted, and a new test must be conducted promptly on a newly collected sample.

5. This permit may be reopened to require chemical specific effluent limits, additional testing and/or other appropriate actions to address toxicity.

(b) The following Acute Whole Effluent Toxicity testing requirements set forth an acute whole effluent toxicity limit to apply to Well Treatment, Well Completion or Well Workover Fluid Discharges lasting less than four consecutive days.

Acute toxicity shall be used to determine the concentration of effluent that results in mortality of the test organisms during a 48-hour exposure, and results will be used to determine compliance with an acute whole effluent toxicity effluent permit limit. The control and dilution water will be natural or synthetic seawater at 25 parts per thousand salinity as described in EPA's acute WET test methods (2002), "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, EPA-821-R-02-012 () or the most current edition. A standard reference toxicant quality assurance acute toxicity test shall be conducted concurrently with each species used in the toxicity tests and the results included in summary laboratory report, which is to be submitted with the discharge monitoring report (DMR). Alternatively, if monthly quality assurance/quality control (QA/QC) reference toxicant tests are conducted, these results must be included in the summary laboratory report. The permittee shall submit a full laboratory report in the event a failure occurs (WET test demonstrates toxicity that would result in an exceedance of a NPDES WET compliance level for any test, or upon specific request of EPA. Any deviation from the EPA promulgated WET test methods (40 CFR Part 136) outlined or cited herein shall be submitted in writing to the EPA for review and approval prior to use *acute test methods)*, Section 7, (http://water.epa.gov/scitech/methods/cwa/wet/upload/2007_07_10_methods_wet_disk2_atx.pdf) or the most current edition. A standard reference toxicant quality assurance acute toxicity test shall be conducted concurrently with each species used in the toxicity tests and the results included in summary laboratory report, which is to be submitted with the discharge monitoring report (DMR). Alternatively, if monthly quality assurance/quality control (QA/QC) reference toxicant tests are conducted, these results must be included in the summary laboratory report. The permittee shall submit a full laboratory report in the event a failure occurs (WET test demonstrates toxicity that would result in an exceedance of a NPDES WET compliance level for any test, or upon specific request of EPA. Any deviation from

the EPA promulgated WET test methods (40 CFR Part 136) outlined or cited herein shall be submitted in writing to the EPA for review and approval prior to use.

(i) The permittee shall conduct a mysid, *Mysidopsis bahia*, Lethality test and an Inland silverside minnow, *Menida beryllina*, Lethality test, for the duration of a discharge of well treatment, well completion, or well workover fluids, based on an effluent grab sample. All tests shall be conducted using a control (0% effluent) and the following dilution concentrations: 0.25 times the critical dilution (CD), 0.5 times the CD, the CD, two times the CD and, four times the CD. The measured endpoints will be the survival and growth Lethal Concentration for 50 percent of the test organisms (LC_{50}) for each species. The endpoints will be determined based on a comparison of *Mysidopsis bahia* or *Menida beryllina* responses in the control (0% effluent) and in each of the five dilutions.

For each set of tests conducted, a grab sample of final effluent shall be collected and used to initiate the test within 72 hours of collection.

If control mortality exceeds 10 percent in any test, the test(s) with that species (including the control) shall be repeated. For either species, a test will be considered valid only if control mortality does not exceed 10 percent. Each WET test must meet the required EPA WET test method's Test Acceptability Criteria (TAC) for each species as defined in the EPA's acute WET test method, (2002) EPA-821-R-02-012, Section 9, or the most current edition. Additionally, all WET test results must be evaluated and reported for concentration-response relationship based on EPA's (2000) "Method Guidance and Recommendations for Whole

Effluent Toxicity (WET) Testing (40 CFR Part 136)," EPA/821/B-00/004, (http://water.epa.gov/scitech/methods/cwa/wet/upload/2007_07_10_methods_wet_wetguide.pdf), or the most current edition. If the recommended concentration-response review produces an inconsistent dose-response curve per EPA/821/B-00/004 (or the most current edition), the test is not considered an invalid test but should be repeated. Any WET test initiated but terminated prior to completion must be reported with a complete explanation for the termination. If the requirements of EPA's WET test method's TAC are met as described above and in Part V.15(b).4, and the percent survival of the test organism is equal to or greater than 90 percent in the critical dilution concentration and all lower dilution concentrations, the survival test shall be considered to be passing and the permittee shall report a LC_{50} greater than the critical dilution in the DMR.

(ii) The permittee may reduce monitoring frequency to once per discharge for the duration of the permit for Well Treatment, Completion or Workover fluid discharges after two consecutive valid tests. These tests are referred to as "routine" tests.

Results from routine WET tests shall be reported according to EPA's acute WET test methods (2002), EPA-821-R-02-012, Section 12, or the most current edition. All results shall also be recorded and submitted on the DMR in the following manner: If the LC_{50} of a test species is less than or equal to the CD% effluent and enter "1" shall be entered on the DMR for that species. If the LC_{50} of a test species is greater than the CD% effluent, and "0" shall be entered on the DMR.

The summary laboratory reports shall include, as a minimum, the following information:

(1) Permittee's Name

(2) Name of WET test and EPA WET test method number

(3) Name of WET test species

(4) Outfall identification designation and type of wastewater

(5) Name of biomonitoring laboratory

(6) Date sample was collected

(7) Date and time test initiated

(8) Critical Dilution

(9) Indicate if test is "valid." If not, state reasons why (i.e., what EPA WET test methods TAC not met).

(10) LC_{50} for the acute test/survival test.

(11) NOEC/sublethal endpoints for language for any chronic tests performed.

(iii) An LC_{50} of greater than or equal to the CD% effluent in any valid routine or additional definitive Survival WET test for either species will not be a violation of this permit.

. If an LC_{50} of less than CD% effluent is found in a routine WET test, the permittee shall conduct two valid additional WET tests on each species indicating the violation and report each LC_{50} obtained. A valid additional definitive WET test result cannot be used to negate a permit violation based on failure of a routine WET test.

. The first valid additional WET test shall be conducted using a control (0% effluent) and a minimum of five dilutions: 0.0625 times the CD, 0.125 times the CD, 0.25 times the CD, 0.5 times the CD and the CD. The dilution series may be modified in the second valid WET test to more accurately identify the toxicity endpoints.

. For each additional WET test, the sample collection requirements and the required EPA WET test method's TAC must be met and the recommended concentration-response relationships (i.e., dose response curve) specified in sections 1.b. and c. above, respectively, must be met for the additional WET test to be considered valid. The first additional WET test shall begin within one day of the end of the routine WET test failure and shall be conducted every other day thereafter until two consecutive additional passing WET tests are completed.

. Results from additional WET tests, required due to an acute toxicity violation in a routine WET test, shall be submitted in a single report prepared according to EPA's acute WET test methods (2002), EPA-821-R-02-012, Section 12, or the most current edition and submitted within 30 days of completion of the second valid additional test.

(iv) This permit may be reopened to require chemical specific effluent limits, additional WET testing and/or other appropriate actions to address toxicity.

B. Other Definitions

All definitions contained in Sections 502 of the CWA and 40 CFR §122.2 shall apply to this permit and are incorporated herein by references. Unless otherwise specified in this permit, additional definitions of words or phrases used in this permit are as follows:

1. Administrator means the Administrator of the U.S. Environmental Protection Agency.
2. Annual monitoring period means the 12-month period after the effective date of this permit.
3. Applicable effluent standards and limitations means all state and Federal effluent standards and limitations to which a discharge is subject under the Act, including, but not limited to, effluent limitations, standards or performance, toxic effluent standards and prohibitions, and pretreatment standards.
4. Areas of Biological Concern for water within the territorial seas (shoreline to 3-mile offshore) are those defined as "no activity zones" for biological reasons by the states of Alabama, Florida, and Mississippi. For offshore waters seaward of three miles, areas of biological concern include "no activity zones" defined by the Department of Interior (DOI) for biological reasons, or identified by EPA in consultation with the DOI, the states, or other interested federal agencies, as containing biological communities, features or functions that are potentially sensitive to discharges associated with the oil and gas industry.
5. Base fluid means the continuous phase or suspending medium of a drilling fluid formation.
6. Base fluid retained on cuttings refers to the American Petroleum Institute Recommended Practice 13B-2 supplemented with the specifications, sampling methods, and averaging method for retention values provided in 40 CFR Part 435, subpart A, Appendix 7.

7. Batch or Bulk Discharge is any discharge of a discrete volume or mass of effluent from a pit, tank, or similar container that occurs on a one-time, infrequent, or irregular basis.
8. Biodegradation rate refers to the ISO 11734:1995 (or most current EPA approved method), "Water quality - Evaluation of the ultimate anaerobic biodegradation of organic compounds in digested sludge - Method by measurement of the biogas production (1995 edition)," supplemented with modifications in Appendix 4 of 40 CFR Part 435, subpart A.
9. Blow-Out Preventer Control Fluid means fluid used to actuate the hydraulic equipment on the blow-out preventer or subsea production wellhead assembly.
10. Boiler Blowdown means discharges from boilers necessary to minimize solids build-up in the boilers, including vents from boilers and other heating systems.
11. Bypass means the intentional diversion of waste streams from any portion of a treatment facility. (See Part II.B.3 of this permit.)
12. C_{12}-C_{14} Ester and C_8 Ester means the fatty-acid/2-ethylhexyl esters with carbon chain lengths ranging from 8 to 16 and represented by the Chemical Abstracts Service (CAS) No. 135800-37-2.
13. C_{16}-C_{18} Internal Olefin means a 65/35 blend, proportioned by mass, of hexadecene and octadecene, respectively. Hexadecene is an unsaturated hydrocarbon with a carbon chain length of 16, an internal double carbon bond, and is represented by the CAS No. 26952-14-7. Octadecene is an unsaturated hydrocarbon with a carbon chain length of 18, an internal double carbon bond, and is represented by CAS No. 27070-58-2.
14. C_{16}-C_{18} Internal Olefin Drilling Fluid means a C_{16}-C_{18} internal olefin drilling fluid formulated as specified in Appendix 8 of CFR Part 435, subpart A.
15. Clinkers are small lumps of residual material left after incineration.

16. Cooling Water means water used for contact or noncontact cooling, including water used for equipment cooling, evaporative cooling tower make-up, and dilution of effluent heat content.
17. Cooling Water Intake Structure means the physical equipment with a design intake flow greater than or equal to 2 MGD, used to intake seawater, of which 25 percent, or more, is used for cooling water purposes.
18. Completion Fluids are salt solutions, weighted brines, polymers, and various additives used to prevent damage to the well bore during operations which prepare the drilled well for hydrocarbon production. These fluids move into the formation and return to the surface as a slug with the produced water. Drilling muds remaining in the wellbore during logging, casing, and cementing operations or during temporary abandonment of the well are not considered completion fluids and are regulated by drilling fluids requirements.
19. Daily Discharge means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in terms of mass, the daily discharge is calculated as the total mass of the pollutant or waste stream discharged over the sampling day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the average measurement of the pollutant over the sampling day. Daily discharge determination of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the daily discharge determination of concentration shall be the average (weighted by flow value) of all samples collected during that sampling day
20. Daily Average (also known as monthly average) discharge limitations means the highest allowable average of daily discharge(s) over a calendar month, calculated as the sum of all daily discharge(s) measured during a calendar month divided by the number of daily

discharge(s) measured during that month. When the permit establishes daily average concentration effluent limitations or conditions, the daily average concentration means the arithmetic average (weighted by flow) of all daily discharge(s) of concentration determined during the calendar month where C = daily concentration, F = daily flow, and n = number of daily samples; daily average discharge =

$$\frac{C_1F_1 + C_2F_2 + ... + C_nF_n}{F_1 + F_2 + ... + F_n.}$$

21. Daily Maximum is the total mass (weight) of a pollutant discharged during a calendar day. If only one sample is taken during any calendar day, the weight of pollutant calculated from it is the "maximum daily discharge." This limitation is identified as "Daily Maximum" in Part I of the permit and the highest such value recorded during the reporting period is reported in the "Maximum" column under "Quantity or Loading" on the DMR.
22. Deck Drainage is all waste resulting from platform washings, deck washings, deck area spills, equipment washings, rainwater, and runoff from curbs, gutters, and drains, including drip pans and wash areas, pans, and work areas within facilities subject to this permit.
23. Desalination Unit Discharge means wastewater associated with the process of creating freshwater from seawater.
24. Development Drilling means the drilling of wells required to efficiently produce a hydrocarbon formation or formations.
25. Development Facility means any fixed or mobile structure that is engaged in the drilling of productive wells.
26. Diatomaceous Earth Filter Media is the filter media used to filter seawater or other authorized completion fluids and subsequently washed from the filter.

27. Diesel oil refers to the grade if distillate fuel oil, as specified in the American Society of Testing and Materials Standard Specifications for Diesel Fuel Oils D975-91, that is typically used as the continuous phase in conventional oil-based drilling fluids.

28. Director means the Director, EPA Region 4, Water Division.

29. Discharge of a pollutant means: (a) Any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source," or (b) Any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation.

30. Domestic waste means materials discharged from sinks, showers, laundries, safety showers, eye-wash stations, hand-wash stations, fish cleaning stations, and galleys located within facilities subject to 40 CFR Part 435, subpart A.

31. Drill cuttings means the particles generated by drilling into subsurface geologic formations and carried out from the wellbore with the drilling fluid. Examples of drill cuttings include small pieces of rock varying in size and texture from fine silt to gravel and particles of cured cement. Drill cuttings are generally generated from solids control equipment and settle out and accumulate in quiescent areas in the solids control equipment or the equipment processing drilling fluid (i.e., accumulated solids).

    a. Wet drill cuttings means the unaltered drill cuttings and adhering drilling fluid and formation oil carried out from the wellbore with the drilling fluid.

    b. Dry drill cuttings mean the residue remaining in the retort vessel after completing the retort procedure specified in Appendix 7 of 40 CFR Part 435, subpart A.

32. Drilling fluid means the circulating fluid (mud) used in the rotary drilling of wells to clean and condition the hole and to counterbalance formation.

a. Water-based drilling fluid means the continuous phase and suspending medium for solids is a water-miscible fluid, regardless of the presence of oil.

b. Non-aqueous drilling fluid means the continuous phase and suspending medium for solids is a water-immiscible fluid, such as oleaginous materials (e.g., mineral oil, paraffinic oil, C_{16}-C_{18} internal olefins, and C_8-C_{16} fatty acid/2-ethylhexyl esters).

   i. Oil-based means the continuous phase of the drilling fluid consists of diesel oil, mineral oil, or some other oil, but contains no synthetic material or enhanced mineral oil.

   ii. Enhanced mineral oil-based means the continuous phase of the drilling fluid is enhanced mineral oil.

iii. Synthetic-based means the continuous phase of the drilling fluid is a synthetic material or a combination of synthetic materials.

33. Dual Gradient Drilling means well drilling where a pump is used at the seafloor to lift drilling fluids and cuttings to the surface. This allows for a dual pressure gradient - one from the hydrostatic weight of water in the riser and one from the mud weight in the well. Dual gradient drilling can include a discharge of the larger size cuttings at the seafloor.

34. End of Well Sample means the sample taken after the final log run is completed and prior to bulk discharge.

35. Enhanced mineral oil as applied to enhanced mineral-oil based drilling fluid means a petroleum distillate which has been highly purified and is distinguished from diesel oil in having a lower polynuclear aromatic hydrocarbon (PAH) content. Typically, conventional mineral oils have a PAH content on the order of 0.35 weight percent expressed as phenanthrene, whereas enhanced

mineral oils typically have a PAH content of 0.001 or lower weight percent PAH expressed as phenanthrene.

36. Excess Cement Slurry means the excess mixed cement, including additives and wastes from equipment washdown after a cementing operation.

37. Existing Sources are facilities conducting exploration activities and those that have commenced development or production activities that were permitted as of the effective date of the Offshore Guidelines (March 4, 1993).

38. Exploratory facility means any fixed or mobile structure subject to 40 CFR Part 435, subpart A that is engaged in the drilling of wells to determine the nature of potential hydrocarbon reservoirs.

39. Facility means an exploratory facility, a development facility, or a production facility as defined in 40 CFR 435.11.

40. Floating Offshore Facility defined, in BOEM's Notice to Lessees (NTL) No. 2008-N05 *Guidelines for Oil Spill Financial Responsibility (OSFR) for Covered Facilities,* means a buoyant offshore facility, securely and substantially moored or otherwise connected to the seabed of Federal, State, or Territorial coastal waters of the United States of America, that cannot be moved without substantial effort. This term includes tension leg platforms, spars, and similar facilities designed or modified for drilling, production, separation, or storage of oil. These facilities may have semisubmersible or ship-shape hulls.

41. Formation oil means the oil from a producing formation which is detected in the drilling fluid, as determined by Gas Chromatography/Mass Spectrometer (GC/MS) compliance assurance method specified in Appendix 5 of 40 CFR Part 435, subpart A, when the drilling fluid is analyzed prior to drilling and as determined by the Reverse Phase Extraction (RPE) method specified in Appendix 6

of 40 CFR Part 435, subpart A, or the GC/MS method when the drilling fluid is analyzed at the offshore point of discharge. Detection of formation oil by the RPE method may be confirmed by the GC/MS method, and the results of the GC/MS compliance assurance method shall supersede those of the RPE method.

42. Four (4)-day LC_{50} as applied to the sediment toxicity BAT effluent limitations and NSPS means the concentration (milliliters/kilogram dry sediment) of the drilling fluid in sediment that is lethal to 50 percent of the *Leptocheirus plumulosus* test organisms exposed to that concentration of the drilling fluids after four days of constant exposure.
43. Free Oil is oil that causes a sheen, streak, or slick on the surface of the test container or receiving water.
44. Garbage means all kinds of food waste, waste generated in living areas on the facility, and operational waste, excluding fresh fish and parts thereof, generated during the normal operation of the facility and liable to be disposed of continuously or periodically except dishwater, graywater, and those substances that are defined or listed in other Annexes to MARPOL 73/78 regulations.
45. Graywater is drainage from dishwater, shower, laundry, bath, and wash basin drains and does not include drainage from toilets, urinals, hospitals, and drainage from cargo areas (see MARPOL 73/78 regulations).
46. Inverse Emulsion Drilling Fluids are oil-based drilling fluids which also contain large amounts of water.
47. Live Bottom Areas are those areas that contain biological assemblages consisting of such sessile invertebrates as sea fans, sea whips, hydroids, anemones, ascidians sponges, bryozoans, sea grasses, or corals living upon and attached to naturally occurring hard or rocky formations with fishes and other fauna.

48. Manned facility defined at 33 CFR 140.10 means an OCS facility in which people are routinely accommodated for more than 12 hours in successive 24-hour periods.

49. Maximum as applied to BAT effluent limitations and NSPS for drilling fluids and drill cuttings means the maximum concentration allowed as measured in any single sample of the barite for determination of cadmium and mercury content.

50. Maximum for any one day as applied to BCT and BAT effluent limitations and NSPS for oil and grease in produced water means the maximum concentration allowed as measured by the average of four grab samples collected over a 24-hour period that are analyzed separately. Alternatively, for BAT and NSPS the maximum concentration allowed may be determined on the basis of physical composition of the four grab samples prior to a single analysis.

51. Maximum Hourly Rate is the greatest number of bbls of drilling fluids discharged within one hour, expressed as bbls per hour.

52. Maximum weighted mass ratio averaged over all NAF well sections for BAT effluent limitations and NSPS for base fluid retained on cuttings means the weighted average base fluid retention for all NAF well sections as determined by the API Recommended Practice 13B-2, using the methods and averaging calculations presented in Appendix 7 of 40 CFR Part 435, subpart A.

53. Method 1654A refers to the method "PAH Content of Oil by High Performance Liquid Chromatography with a UV Detector," which was published in Methods for the Determination of Diesel, Mineral and Crude Oils in Offshore Oil and Gas Industry Discharges, EPA-821-R-92-008 (incorporated by reference and available from the National Technical Information Service).

54. Minimum as applied to BAT effluent limitations and NSPS for drilling fluids and drill cuttings means the minimum 96-hour LC_{50} value allowed as measured in any single sample of the discharged waste stream. Minimum as applied to BPT and BCT effluent limitations and NSPS for

sanitary wastes means the minimum concentration value allowed as measured in any single sample of the discharged waste stream.

55. Mobile Offshore Drilling Unit (MODU) means any facility designed or modified to engage in drilling and exploration activities, but not production, separation, or storage of oil in or on Federal, State, or Territorial coastal waters of the United States. This term includes drilling vessels, semisubmersibles, submersibles, jack-ups, and similar facilities that can be moved without substantial effort. These facilities may or may not have self-propulsion equipment on board and may require dynamic positioning equipment or mooring systems to maintain their position.

56. Muds, Cuttings, and Cement at the Seafloor means discharges that occur at the seafloor prior to installation of the marine riser and during marine riser disconnect, well abandonment, and plugging operations.

57. National Pollutant Discharge Elimination System (NPDES) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring, and enforcing permits, and imposing and enforcing pretreatment requirements under sections 307, 316, 318, 402, 403, and 405 of the Act.

58. New Source means any facility or activity of this subcategory that meets the definition of "new source" under 40 CFR § 122.2 and meets the criteria for determination of new sources under 40 CFR § 122.29(b) applied consistently with all of the following definitions: (i) the term "water area" as used in the term "site" in 40 CFR § 122.29 and § 122.2 shall mean the water area and ocean floor beneath any exploratory, development, or production facility where such facility is conducting its exploratory, development or production activities and, (ii) the term "significant site preparation work" as used in 40 CFR § 122.29 shall mean the process of surveying, clearing, or preparing an area of the ocean floor for the purpose of constructing or placing a development or

production facility on or over the site. New Source does not include facilities covered by an existing NPDES permit immediately prior to the effective date of 40 CFR Part 435 pending EPA issuance of a new source NPDES permit.

59. Ninety-Six (96)-hour LC_{50} means the concentration (parts per million) or percent of the suspended particulate phase (SPP) from a sample that is lethal to 50 percent of the test organisms exposed to that concentration of the SPP after 96 hours of constant exposure.

60. No Activity Zones means those areas identified by the US Minerals Management Service where no structures, drilling rigs, or pipeline will be allowed. Those zones are identified in lease stipulations that are applied to BOEM oil and gas lease sites. Additional no activity zones may be identified by BOEM during the term of this permit.

61. No Discharge Areas are areas specified by the EPA where discharge of pollutants may not occur.

62. No discharge of free oil means that waste streams may not be discharged that contain free oil as evidenced by monitoring method specified for that particular stream, e.g., deck drainage or miscellaneous discharges cannot be discharged when they would cause a film or sheen upon or discoloration of the surface of the receiving water; drilling fluids or cuttings may not be discharged when they fail the static sheen test defined in Appendix 1 of subpart A of 40 CFR Part 435.

63. No Observed Effect Concentration (NOEC) means the greatest effluent dilution which does not result in lethality or sublethal endpoints that are statistically different from the control (0% effluent) at the 95 percent confidence level.

64. Non-Operational Leases are those facilities from which no discharge has taken place within two years prior to the effective date of the reissued general permit, until such time that documentation is submitted to EPA that MMS had previously granted approval of an EP, DOCO, or DPD or submitted a new MMS-approved EP, DPP, or DOCD.

65. Operating Facilities are facilities from which a discharge has taken place within two years of the effective date of the reissued general permit.

66. Operational Waste means all cargo associated waste, maintenance waste, cargo residues, and ashes and clinkers from incinerators and coal burning boilers.

67. Packer Fluids are low solids fluids between the packer, production string, and well casing. They are considered to be workover fluids.

68. PAH (as phenanthrene) means polynuclear aromatic hydrocarbons reported as phenanthrene.

69. Pipeline Brines shall mean salt solutions and weighted brines used during pipeline commissioning for hydrotesting or flowline preservation. Brine is not a treatment chemical.

70. Priority Pollutants are the 126 chemicals or elements identified by EPA, pursuant to section 307 of the CWA and 40 CFR § 401.15.

71. Produced Sand means the slurried particles used in hydraulic fracturing, the accumulated formation sands and scales particles generated during production. Produced sand also includes desander discharge from the produced water waste stream, and blowdown of the water phase from the produced water treating system.

72. Produced Water means the water (brine) brought up from the hydrocarbon-bearing strata during the extraction of oil and gas, and can include formation water, injection water, and any chemicals added downhole or during the oil/water/gas separation process. Produced water also includes any wastewater generated during separation and processing operations or any chemicals added downhole, subsea or during separation and processing operations.

73. Production facility means any fixed or mobile structure subject to this subpart that is either engaged in well completion or used for active recovery of hydrocarbons from producing

formations. It includes facilities that are engaged in hydrocarbon fluids separation even if located separately from wellheads.

74. Quarterly means a calendar quarter.

75. Sanitary Waste means human body waste discharged from toilets and urinals.

76. Sediment Toxicity as applied to BAT effluent limitations and NSPS for drilling fluids and drill cuttings refers to the ASTM E1367-92 (or most current EPA approved method): Standard Guide for Conducting 10-day Static Sediment Toxicity Tests with Marine and Estuarine Amphipods with *Leptocheirus plumulosus* as the test organism and sediment preparation procedures specified in Appendix 3 of 40 CFR Part 435, subpart A.

77. Severe Property Damage means substantial physical damage to property, damage to the treatment facilities which cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

78. Sheen means a silvery or metallic sheen, gloss, or increased reflectivity; visual color; iridescence; or oil slick on the water surface.

79. Solids Control Equipment means shale shakers, centrifuges, mud cleaners, and other equipment used to separate drill cuttings and/or stock barite solids drilling fluid recovered from the wellbore.

80. Source Water and Sand are the water and entrained solids brought to the surface from non-hydrocarbon bearing formations for the purpose of pressure maintenance or secondary recovery.

81. Spotting means the process of adding a lubricant (spot) downhole to free stuck pipe.

82. SPP toxicity as applied to BAT effluent limitations and NSPS for drilling fluids and drill cuttings refers to bioassay test procedure presented in Appendix 2 of subpart A of 40 CFR Part 435.

83. Static sheen test means the standard test procedure that has been developed for this industrial subcategory for the purpose of demonstrating compliance with the requirement of no discharge of free oil. The methodology for performing the static sheen test is presented in Appendix 1 of subpart A of 40 CFR Part 435.

84. Stock barite means the barite that was used to formulate a drilling fluid.

85. Stock base fluid means the base fluid that was used to formulate a drilling fluid.

86. Subsea cleaning fluids means acidic cleaning agents used to dissolve marine deposits on subsea equipment during subsea maintenance and intervention activities to assure proper sealing of operating equipment and to avoid ingress of extremely high subsea pressures and egress (losses of containment) of fluids to the environment

87. Support pipeline facility is a facility that is designed to allow surface access to pipelines; there is no oil and gas production associated with the facility. They include but are not limited to, compressor stations, pumping stations, valve stations, pig launcher/receiving stations, gas/product metering stations, and other appurtenances thereto.

88. Synthetic material as applied to synthetic-based drilling fluid means material produced by the reaction of specific purified chemical feedstock, as opposed to the traditional base fluids such as diesel and mineral oil which are derived from crude oil solely through physical separation processes include fractionation and distillation and/or minor chemical reactions such as cracking and hydro processing. Since they are synthesized by the reaction of purified compounds, synthetic materials suitable for use in drilling fluids are typically free of polynuclear aromatic hydrocarbons (PAHs) but are sometimes found to contain levels of PAH up to 0.001 weight percent PAH expressed as phenanthrene. Internal olefins and vegetable esters are two examples of synthetic materials suitable for use by the oil and gas extraction industry in formulating drilling fluids.

Internal olefins are synthesized from the isomerization of purified straight-chain (linear) alpha olefins. C_{16-18} linear alpha olefins are unsaturated hydrocarbons with the carbon to carbon double bond in the terminal position. Internal olefins are typically formed from heating linear alpha olefins with a catalyst. The feed material for synthetic linear alpha olefins is typically purified ethylene. Vegetable esters are synthesized from the acid-catalyzed esterification of vegetable fatty acids with various alcohols. EPA listed these two branches of synthetic fluid base materials to provide examples, and EPA does not mean to exclude other synthetic materials that are either in current use or may be used in the future. A synthetic-based drilling fluid may include a combination of synthetic materials.

89. Territorial Seas means the belt of the seas measured from the line of ordinary low water along that portion of the coast which is in direct contact with the open sea and the line marking the seaward limit of inland waters and extending seaward a distance of three miles.
90. Toxic pollutant means any pollutant listed as toxic under section 307(a)(1).
91. Trace Amounts means priority pollutants are present in a quantity greater than the minimum detection method for that pollutant in accordance with 40 CFR Part 136. Discharges that have priority pollutants in less than trace amounts are assumed not to contain priority pollutants.
92. Tracer means a very small quantity of tracer (~1 mCi) of Sc-46 embedded in inert beads suspended in a gel (~1 cup by total volume), placed in the first 50 bbls of cement pumped.
93. Track I means new offshore oil and gas facilities that will comply with the CWIS rule based on the requirements at 40 CFR § 125.84(b) or (c).
94. Track II means new offshore oil and gas facilities that will comply with the CWIS rule based on requirements at 40 CFR § 125.84(d).

95. Treatment Chemicals means biocides, corrosion inhibitors, or other chemicals which are used to treat seawater or freshwater to prevent corrosion or fouling of piping or equipment. Non-toxic scale inhibitors and dyes are not considered treatment chemicals.

96. Uncontaminated Ballast/Bilge water means seawater added or removed to maintain proper draft that does not come in contact with surfaces that may cause contamination or a non-compliance of a limit in this permit.

97. Uncontaminated freshwater means freshwater which is discharged without the addition of chemicals, such as: (1) discharges of excess freshwater that permit the continuous operation of fire control and utility lift pumps, (2) excess freshwater from pressure maintenance and secondary recovery projects, (3) water released during training and testing of personnel in fire protection, and (4) water used to pressure test of flush new piping.

98. Uncontaminated seawater means seawater which is returned to the sea without the addition of chemicals, such as: (1) discharges of excess seawater which permit the continuous operation of fire control and utility lift pumps, (2) excess seawater from pressure maintenance and secondary recovery projects, (3) water released during training and testing of personnel in fire protection, (4) water used to pressure test, or flush, new piping, and (5) non-contact cooling water which has not been treated with biocides.

99. "Wastes from Maintenance Operations" includes, but is not limited to, removed paint and materials associated with surface preparation and coating applications, airborne material such as spent or over sprayed abrasives, paint chips, and paint overspray.

100. Water-based Drilling Fluids is the conventional drilling mud in which water is the continuous phase and the suspending medium for solids, whether or not oil is present.

101. Well treatment fluids means any fluid used to restore or improve productivity by chemically or physically altering hydrocarbon-bearing strata after a well has been drilled. . Stimulation fluids include substances such as acids, solvents, and propping agents. Types of well

Types of well treatment include:

a. Hydraulic Fracture Treatment:

Data Frac: A fracture test pumped prior to the actual treatment to determine rates and breakdown pressures. These and other parameters are then used to customize the treatment.

Mini-Frac: Industry slang for a small fracture treatment designed to break through the near-wellbore damage caused by drilling and/or completion. Often times the fracture is "propped" open with sand or similar proppant. Mini-fracs are often the same as "Data Fracs".

Frac-Pac: Also a very small fracture treatment done in conjunction with a gravel pack job. Gravel is placed in the annulus between a wire wrapped screen and the formation. By injecting over the fracture pressure the sand is also placed a short distance into the fracture. Primary purposes are formation sand control and damage removal.

Acid Frac: Used primarily in carbonate reservoirs, acid is used as the fracture fluid. The acid etches the rock face inside the fracture and establishes a high conductivity flow path to the well.

b. Well Simulation Treatment (non-frac):

Matrix Acid/ Acid Squeeze: Acid is injected into the formation pore system to dissolve/remove damaging material. This treatment is always done below the fracture pressure.

c. Well Cleanup Treatment:

Acid wash: Acid (typically HCL) is placed across the perforations at a very low pressure to soak and dissolve damaged intervals.

Solvent wash: Hydrocarbon (typically Xylene) solvent is placed across perforated intervals to remove hydrocarbon based damage (sludge, heavy oils or paraffin).

Casing scrape/surge: Casing is mechanically scraped with a tool then the well is surged with water or mud to clean contaminants from the well.

Pressure/jet wash: High pressure (low volume) water is used to mechanically scour the casing and perforations to remove surface damage and corrosion.

102. Workover fluids means salt solutions, weighted brines, polymers, or other specialty additives used in a producing well, an associated producing well infrastructure (i.e., flowlines, manifolds), or a latched-up workover system, to allow for maintenance, repair or abandonment procedures. High solids drilling fluids used during workover operations are not considered workover fluids by definition and therefore must meet drilling fluid effluent limitations before discharge may occur. Packer fluids, low solids fluids between the packer, production string, and well casing are considered to be workover fluids and must meet only the effluent requirements imposed on workover fluids.

103. 96-hour LC_{50} means the concentration (parts per million) or percent of the suspended particulate phase (SPP) from a sample that is lethal to 50 percent of the test organisms exposed to that concentration of the SPP after 96 hours of constant exposure.

104. The term “bbl/day” means barrels per day, where one barrel equals to 42 gallons.

105. The term mg/l means milligrams per liter or parts per million (ppm).

106. The term μg/l shall means micrograms per liter or part per billion (ppb).

Table 1. Summary of Effluent Limitations, Prohibitions, and Monitoring Requirements for the Eastern Gulf of Mexico NPDES General Permit for Existing Sources and New Sources (Refer to permit for specific, enforceable requirements.)

			Limit and Monitoring Requirements		
Discharge	Regulated & Monitored Discharge Parameter	Discharge Limitation/ Prohibition	Measurement Frequency	Sample Type/ Method	Recorded/ Reported Value
Water-Based Drilling Fluids	Oil-based Drilling Fluids	No discharge			
	Oil-contaminated Drilling Fluids	No discharge			
	Drilling Fluids to Which Diesel Oil has been Added	No discharge			
	Mercury (Hg) and Cadmium (Cd) in Barite	No discharge of drilling fluids if added barite contains Hg in excess of 1.0 mg/kg (dry wt) or Cd in excess of 3.0 mg/kg (dry wt)	Once per new source of barite used	EPA SW846 method 6010B, or EPA 200.7 or 200.8 for cadmium & EPA SW846 method 7471A or EPA 245.7 for mercury	mg Hg/kg and mg Cd/kg in stock barite
	Toxicity[a]	30,000 ppm daily minimum 30,000 ppm monthly average of minimum values	Once/month Once/end of well[b] Once/month	Grab/96-hr LC_{50} using *Mysidopsis bahia;* Method at 58 FR 12507	Minimum LC_{50} of tests performed and monthly average LC_{50}
	Free Oil	No free oil	Once/week during discharge	Static sheen; Method at 58 FR 12506	Number of days sheen observed

			Limit and Monitoring Requirements		
Discharge	Regulated & Monitored Discharge Parameter	Discharge Limitation/ Prohibition	Measurement Frequency	Sample Type/ Method	Recorded/ Reported Value
	Maximum Discharge Rate	1,000 barrels/hr	Once/day	Estimate	Max. hourly rate in bbl/hr
	Mineral Oil	Mineral oil may be used only as a carrier fluid, lubricity additive, or pill			
	Drilling Fluids Inventory	Record	Once/well	Inventory	Chemical constituents
	Volume	Report	Once/month	Estimate	Monthly total in bbl/month
Water-Based Drill Fluids (Continued)	Within 1000 Meters of an Area of Biological Concern (ABC) or a Federally Designated Dredged Material Disposal Site	No discharge			
Water-Based Drill Cuttings	Note: Drill cuttings are subject to the same limitations/prohibitions as drilling fluids except Maximum Discharge Rate				
	Free Oil	No Free Oil	Once/week	Static sheen; Method at 58 FR 12506	Number of days sheen observed
	Volume	Report	Once/month	Estimate	Monthly total in bbl/month

			Limit and Monitoring Requirements		
Discharge	Regulated & Monitored Discharge Parameter	Discharge Limitation/ Prohibition	Measurement Frequency	Sample Type/ Method	Recorded/ Reported Value
Produced Water	Oil and Grease	≤42.0 mg/l daily maximum and ≤29.0 mg/l monthly average	Once/month[c]	Grab/ Gravimetric	Daily max. and monthly avg.
	Toxicity	Chronic toxicity (NOEC); critical dilution as specified by the requirements at Part I.B.3(b).	Once/2 month (or semiannually after passing three consecutive bimonthly test)	Grab/7-day NOEC using *Mysidopsis bahia* and Inland Silverside minnows	"Pass" or "Fail" for both species and summary laboratory report
	Flow (bbl/month)		Once/month	Estimate	Monthly rate
	Within 1000 meters of an ABC or a Federally Designated Dredged Material Disposal Site	No discharge			
Deck Drainage	Free Oil	No Free Oil	Once/day when discharging[d]	Visual sheen	Number of days sheen observed
Produced Sand	No Discharge				
Well Treatment, Completion, and	Free Oil	No Free Oil	Once/day when discharging	Static sheen	Number of days sheen observed

			Limit and Monitoring Requirements		
Discharge	Regulated & Monitored Discharge Parameter	Discharge Limitation/ Prohibition	Measurement Frequency	Sample Type/ Method	Recorded/ Reported Value
Workover Fluids (includes packer fluids)[e]	Oil and Grease	≤42.0 mg/l daily maximum and ≤29.0 mg/l monthly average	Once/month	Grab/ Gravimetric	Monthly max. and monthly avg.
	Toxicity	Chronic WET Monitoring only.	For chronic toxicity: Once/2 month (or semiannually after passing three consecutive bimonthly test)	For Chronic toxicity: Grab sample/7-day NOEC using *Mysidopsis bahia* and Inland Silverside minnows	NOEC" for both species and summary laboratory report
		Acute WET Limit	For acute toxicity: Once/discharge (or semiannually after passing three consecutive tests)	For acute toxicity: Grab/48-hr LC_{50} using *Mysidopsis bahia* and Inland Silverside minnows	LC_{50} and CD
	Priority Pollutants	Non-detect for priority pollutants		Monitor added materials using methods in 40 CFR Part 136	
	Volume (bbl/month)		Once/month	Estimate	See permit

			Limit and Monitoring Requirements		
Discharge	Regulated & Monitored Discharge Parameter	Discharge Limitation/ Prohibition	Measurement Frequency	Sample Type/ Method	Recorded/ Reported Value
Sanitary Waste (Continuously manned by 10 or more persons)[f]	Solids	No floating solids	Once/day, during daylight	Observation	Number of days solids observed
	Residual Chlorine	At least (but as close to) 1.0 mg/l	Once/month	Grab/Hach CN-66-DPD or TRC method in 40 CFR Part 136	Concentration
Sanitary Waste (Continuously manned by 9 or fewer persons or intermittently by any)[f]	Solids	No floating solids	Once/day, during daylight	Observation	Number of days solids observed
Domestic Waste	Solids	No floating solids; no food waste within 12 miles of land; comminuted food waste smaller than 25-mm beyond 12 miles	Once/day following morning or midday meal at time of maximum expected discharge	Observation	Number of days solids observed

Miscellaneous Discharges[g] – 1. Desalination Unit 2. Blowout Preventer Fluid 3. Uncontaminated Ballast/Bilge Water 4. Mud, Cuttings, and Cement at the Seafloor 5. Uncontaminated Seawater or Freshwater 6. Boiler Blowdown 7. Source Water and Sand 8. Diatomaceous Earth Filter Media 9. Excess Cement Slurry 10. Uncontaminated Freshwater 11. Cement Equipment Washdown 12. Hydrate Control Fluid 13. Subsea Wellhead Preservation Fluids 14. Subsea Cleaning Fluids 15. Subsea Production Control Fluids 16. Umbilical Steel Tube Storage Fluid 17. Leak Tracer Fluid, 18. Riser Tensioner Fluid	Free Oil	No Free Oil	Once/week during discharge	Visual sheen	Number of days sheen observed

			Limit and Monitoring Requirements		
Discharge	Regulated & Monitored Discharge Parameter	Discharge Limitation/ Prohibition	Measurement Frequency	Sample Type/ Method	Recorded/ Reported Value
19. Well Test Fluids 20. Bulk Transfer Operations Powder					
Miscellaneous Discharges to Which Treatment Chemicals Have Been Added	Free Oil	No Free Oil	Once/day when discharging	Visual Sheen	Number of days sheen observed

			Limit and Monitoring Requirements		
Discharge	Regulated & Monitored Discharge Parameter	Discharge Limitation/ Prohibition	Measurement Frequency	Sample Type/ Method	Recorded/ Reported Value
1) excess seawater which permits the continuous operation of fire control and utility lift pumps, 2) excess seawater from pressure maintenance and secondary recovery projects, 3) water released during training of personnel in fire protection, 4) seawater used to pressure test, or flush, new and existing piping and pipelines, 5) ballast water, 6) water flooding discharges, 7) once through non-contact cooling water, 8) seawater used as piping or equipment preservation fluids, and 9) seawater used during dual gradient drilling and well operations other than those covered by the other sections of Part I.B of the permit	Toxicity	7-day minimum and monthly average minimum NOEC	Rate Dependent	Grab	Lowest NOEC observed for either of the two species

[a] Toxicity test to be conducted using suspended particulate phase (SPP) of a 9:1 seawater: mud dilution. The sample shall be taken beneath the shale shaker, or if there are no returns across the shaker, the sample must be taken from a location that is characteristic of the overall mud system to be discharged.

[b] Sample shall be taken after the final log run is completed and prior to bulk discharge.

[c] The daily maximum concentration may be based on the average of up to four grab sample results in the 24 hour period.

[d] When discharging and facility is manned. Monitoring shall be accomplished during times when observation of a visual sheen on the surface of the receiving water is possible in the vicinity of the discharge.

[e] No discharge of priority pollutants except in non-detectable amounts using EPA methods in 40 CFR Part 136. Information on the specific chemical composition shall be recorded but not reported unless requested by EPA.

[f] Any facility that properly operates and maintains a marine sanitation device (MSD) that complies with pollution control standards and regulations under Section 312 of the Act shall be deemed to be in compliance with prohibitions and permit limitations for sanitary waste. The MSD shall be tested yearly for proper operation and test results maintained at the facility.

[g] Based on LC_{50} results, the following compounds may also be included as miscellaneous discharges: subsea wellhead preservation fluids, subsea production control fluids, umbilical steel tune storage fluid, leak tracer fluid, riser tensioner fluid.

Table 2. Effluent Limitations, Prohibitions, and Monitoring Requirements for the Eastern Gulf of Mexico NPDES General Permit Existing and New Sources using Synthetic Based Drilling Fluids (Refer to permit for specific requirements.)

			Monitoring and Limit Requirements		
Discharge	Regulated & Monitored Discharge Parameter	Discharge Limitation/ Prohibition	Measurement Frequency	Sample Type/ Method	Recorded/ Reported Value
Non-Aqueous Based Drilling Fluids	No discharge, except that which adheres to cuttings, de minimis discharges and small volume discharges				
Drill Cuttings Generated Using Non-Aqueous-Based Drilling	Cuttings from Oil-Based Drilling Fluids	No Discharge			
	Cuttings from Oil Contaminated Drilling Fluids	No Discharge			
	Cuttings Generated Using Mineral Oil	No Discharge			
	Cuttings Generated Using Drilling Fluids Which Contain Diesel Oil	No Discharge			
	Free Oil	No Discharge	Once/week	Static sheen; method at 58 FR 12506	Number of days observed
	Volume	Report	Once/month	Estimate	Monthly total in bbl/month

			Monitoring and Limit Requirements		
Discharge	Regulated & Monitored Discharge Parameter	Discharge Limitation/ Prohibition	Measurement Frequency	Sample Type/ Method	Recorded/ Reported Value
	Formation Oil	No Discharge	RPE test once prior to drilling & RPE or GC/MS once/week	GC/MS method at 40 CFR Part 435, Appendix 5 of Subpart A	Number of Days
	Suspended Particulate Phase Toxicity	30,000 ppm daily minimum 30,000 ppm monthly avg of minimum values	Once/month and Once/end of well[b]	Grab/96-hr LC_{50} using *Mysidopsis bahia (*same as *Americamysis bahia*); Method 58 FR 12507	Minimum LC_{50} of tests performed and monthly avg LC_{50}
	Drilling Fluid Sediment Toxicity Ratio	$\leq$1.0	Once/month by grab sample(s)	Grab(s)/ASTM E1367-92	Ratio
	Polynuclear Aromatic Hydrocarbons (PAH)	$\leq 1 \times 10^{-5}$	Once per year on each fluid blend	Grab/EPA Method 1654A	Ratio
	Sediment Toxicity Ratio	$\leq$1.0	Once per year on each fluids blend	Grab(s)/ASTM E1367-92	Ratio

			Monitoring and Limit Requirements		
Discharge	Regulated & Monitored Discharge Parameter	Discharge Limitation/ Prohibition	Measurement Frequency	Sample Type/ Method	Recorded/ Reported Value
	Base Fluid Retained on Cuttings (C_{16-18} internal olefin)	≤6.9 g/100 g wet drill cuttings	Once per day by grab sample, up to three sampling episodes per day	API Retort Method; 40 CFR Part 423, Subpart A, Appendix 7	g/ 100 g wet drill cuttings
	Base Fluid Retained on Cuttings (C_{12-14} ester)	≤9.4 g/100 g wet drill cuttings	Once per day by grab sample, up to three sampling episodes per day	API Retort Method; 40 CFR Part 423, Subpart A, Appendix 7	g/ 100 g wet drill cuttings
	Biodegradation Rate	≤1.0	Once per year on each fluid blend	Grab(s)/ISO 11734:1995	Ratio
	Mercury in Stock barite	≤1.0 mg/kg (dry wt.)	Representative sample of each stock barite prior to drilling	EPA SWA 846 method 7471A	mg/kg
	Cadmium in Stock barite	≤3.0 mg/kg (dry wt.)	Representative sample of each stock barite prior to drilling	EPA SWA 846 method 6010B	mg/kg

[a] Toxicity test to be conducted using suspended particulate phase (SPP) of a 9:1 seawater:mud dilution. The sample shall be taken beneath the shale shaker, or if there are no returns across the shaker, the sample must be taken from a location that is characteristic of the overall mud system to be discharged.

[b] Sample shall be taken after the final log run is completed and prior to bulk discharge.

Appendix A Table 1: CORMIX Ambient Input Parameters and Constant Discharge Input Parameters

Parameter	Units	Value
Surface Density (ρ_s)	kg/m^3	1023.00
Density Gradient ($\Delta\rho$)	$kg/m^3/m$	0.163 (Linear)
Current Speed for < 200 m	cm/sec	5
Current Speed for > 200 m	cm/sec	15
Wind Speed	m/sec	4
Darcy-Wiesbach Friction Factor (f)		0.02
Legal Mixing Zone	m	100
Discharge Density	kg/m^3	1070.2
Horizontal Discharge Angle (σ)	degrees	0
Vertical Discharge Angle (θ)	degrees	- 90

Table 2: Produced Water Discharge Pipe Diameters

Range on Table	Model Input	
(inches)	(inches)	(meters)
0 - 5	4	0.1016
>5 - 7	6	0.1524
>7 - 9	8	0.2032
>9 - 11	10	0.3048
>11 - 15	13	0.3302

Table 3: Produced Water Discharge Rates

Range on Table	Model Input	
Barrels per Day (bbl/day)	(bbl/day)	(m^3/sec)
0 - 500	500	0.0009
501 - 1000	1000	0.0018
1001 - 2000	2000	0.0037
2001 - 3000	3000	0.0055
3001 - 4000	4000	0.0070
4001 - 5000	5000	0.0090
5001 - 6000	6000	0.0110
6001 - 7000	7000	0.0122
7001 - 8000	8000	0.0147

Results

Results of the CORMIX model simulations are provided in tables 4 and 5. For certain discharge and ambient conditions, intrusion of ambient water into the discharge opening will occur. This occurs when the densimetric Froude number is well below unity. According to the CORMIX authors, this is an undesirable operating conditions. Conditions for which this is likely to occur have been identified in Tables 4 and 5. The UFs from the sensitivity analysis are provided in Table 9. Tables 10 and 11 provide the UF adjusted CDTs. The model simulations resulted in a plume-like discharge (buoyancy dominated) trapped in a linearly stratified layer (see figure 2). Shelf discharges resulted in a stratified dominated plume (flow class IS5) 4 to 10 meters below the discharge, whereas slope discharges by a cross-flow dominated plume (flow class IS4) 2 to 8 meters below the discharge. In conducting the sensitivity analysis, for the higher discharge rates, the high current scenarios and lower density stratification scenarios resulted in plumes interacting with the bottom (see figure 3) and higher concentrations. However, this would only occur when water depths are at the minimum permitted under the General Permit and would be a conservative value for all depths greater than the minimum of 12 meters.

Table 4: CORMIX Predicted Critical Dilutions (Percent Effluent) for Discharges with a Depth Difference Between the Discharge Pipe Outlet and the Sea Floor of Greater than 12 meters and in Waters Less than 200 meters

Discharge Rate	Pipe Diameter (inches)				
(bbl/day)	>0" to 5"	>5" to 7"	>7" to 9"	>9" to 11"	>11" to 15"
>0 to 500	0.08	0.08	0.08	0.08	0.08
501 to 1000	0.14	0.14	0.14	0.14	0.14
1001 to 2000	0.21	0.21	0.21	0.21	0.21
2001 to 3000	0.25	0.26	0.26	0.26	0.26
3001 to 4000	0.30	0.30	0.30	0.30	0.30
4001 to 5000	0.33	0.33	0.33	0.33	0.33
5001 to 6000	0.50	0.50	0.49	0.48	0.47
6001 to 7000	0.60	0.60	0.59	0.58	0.57
7001 to 8000	0.68	0.69	0.68	0.67	0.66

Shaded cells represent undesirable operating conditions

Table 5: CORMIX Predicted Critical Dilutions (Percent Effluent) for Discharges with a Depth Difference Between the Discharge Pipe Outlet and the Sea Floor of Greater than 12 meters and in Waters Greater than 200 meters

Discharge Rate	Pipe Diameter (inches)				
(bbl/day)	>0" to 5"	>5" to 7"	>7" to 9"	>9" to 11"	>11" to 15"
>0 to 500	0.07	0.07	0.07	0.07	0.07
501 to 1000	0.11	0.12	0.12	0.12	0.12
1001 to 2000	0.13	0.13	0.13	0.13	0.13
2001 to 3000	0.15	0.15	0.15	0.15	0.15
3001 to 4000	0.17	0.17	0.17	0.17	0.17
4001 to 5000	0.19	0.19	0.19	0.19	0.19
5001 to 6000	0.20	0.20	0.20	0.20	0.20
	0.22	0.22	0.22	0.22	0.22

6001 to 7000					
7001 to 8000	0.23	0.23	0.23	0.23	0.23

Shaded cells represent undesirable operating conditions

Table 6: Minimum Vertical Port Separation to Avoid Interference

Port Discharge Rate (bbls/day)	Waters Less Than 200 meters (meters)	Waters Greater Than 200 meters (meters)
>0 to 500	**3.0**	**3.0**
501 to 1000	**3.0**	**6.0**
1001 to 2000	**4.0**	**6.0**
2001 to 5000	**5.0**	**6.0**
5001 to 7000	**5.0**	**6.0**
7001 to 10,000	**6.0**	**6.0**

Table 7: Critical Dilutions (Percent Effluent) for Toxicity Limitations for Seawater to which treatment chemicals have been added

Water Depth	**Discharge Rate (bbl/day)**	**Pipe Diameter Range (actual diameter modeled)**		
		>0 to 2" (1)	**>2 to 4" (3)**	**>4 to 6" (5)**
Less than 200 meters (shelf)	**500 (0 to 1000)**	0.29	0.81	1.23
	1000 (1000 - 2000)	0.31	0.86	1.34

	2000 (2000-4000)	0.34	0.88	1.43
	4000 (4000-8000)	0.33	0.98	1.48
	8000 (>8000)	0.29	1.02	1.68
Deeper than 200 meters (slope)	**500 (0 to 1000)**	0.32	1.03	1.65
	1000 (1000-2000)	0.28	0.99	1.65
	2000 (2000-4000)	0.24	0.89	1.57
	4000 (4000-8000)	0.20	0.78	1.42
	8000 (>8000)	0.17	0.66	1.24

Table 8: Critical Dilutions (Percent Effluent) for Toxicity Limitations for Freshwater to which treatment chemicals have been added

Water Depth	**Discharge Rate (bbl/day)**	**Pipe Diameter (actual diameter modeled)**		
		>0 to 2" (1)	**>2 to 4" (3)**	**>4 to 6" (5)**
Less than 200 meters (shelf)	**500 (0 to 1000)**	0.57	3.85	16.9
	1000 (1000 - 2000)	0.44	3.20	16.7
	2000 (2000-4000)	0.34	2.50	5.76
	4000 (4000-8000)	0.35	1.86	4.66
	8000 (>8000)	0.30	1.36	3.52

Deeper than 200 meters (slope)	**500 (0 to 1000)**	0.67	11.6	29.9
	1000 (1000 - 2000)	0.40	6.69	29.1
	2000 (2000-4000)	0.26	3.57	15.9
	4000 (4000-8000)	0.22	1.96	9.14
	8000 (>8000)	0.19	1.06	4.67

Table 9: Uncertainty Factors Due to Variability in Currents and Seasonal Density Stratification

Discharge Rate	Uncertainty Factor	
(bbl/day)	Waters Less than 200 meters	Waters Greater than 200 meters
>0 to 500	1.20	1.30
501 to 1000	1.40	1.11
1001 to 2000	1.50	1.44
2001 to 3000	1.50	1.46
3001 to 4000	1.50	1.48
4001 to 5000	1.53	1.49

5001 to 6000	1.24	1.50
6001 to 7000	1.17	1.51
7001 to 8000	1.13	1.52

Table 10: Eastern Gulf of Mexico OCS Critical Dilutions (Percent Effluent) for Discharges with a Depth Difference Between the Discharge Pipe Outlet and the Sea Floor of Greater than 12 meters and in Waters Less than 200 meters

Discharge Rate	Pipe Diameter (inches)				
(bbl/day)	>0" to 5"	>5" to 7"	>7" to 9"	>9" to 11"	>11" to 15"
>0 to 500	0.10	0.10	0.10	0.10	0.10
501 to 1000	0.19	0.19	0.19	0.19	0.19
1001 to 2000	0.31	0.31	0.31	0.31	0.31
2001 to 3000	0.38	0.38	0.38	0.38	0.38
3001 to 4000	0.45	0.45	0.45	0.45	0.45
4001 to 5000	0.51	0.51	0.51	0.51	0.51
5001 to 6000	0.62	0.61	0.61	0.59	0.59
6001 to 7000	0.70	0.69	0.69	0.68	0.67
7001 to 8000	0.78	0.77	0.76	0.75	0.74

Shaded cells represent undesirable operating conditions

Table 11: Eastern Gulf of Mexico OCS Critical Dilutions (Percent Effluent) for Discharges with a Depth Difference Between the Discharge Pipe Outlet and the Sea Floor of Greater than 12 meters and in Waters Greater than 200 meters

Discharge Rate	Pipe Diameter (inches)				
(bbl/day)	>0" to 5"	>5" to 7"	>7" to 9"	>9" to 11"	>11" to 15"
>0 to 500	0.10	0.10	0.10	0.10	0.10
501 to 1000	0.13	0.13	0.13	0.13	0.13
1001 to 2000	0.19	0.19	0.19	0.19	0.19
2001 to 3000	0.22	0.22	0.22	0.22	0.22

3001 to 4000	0.26	0.26	0.26	0.26	0.26
4001 to 5000	0.28	0.28	0.28	0.28	0.28
5001 to 6000	0.30	0.30	0.30	0.30	0.30
6001 to 7000	0.32	0.33	0.33	0.33	0.33
7001 to 8000	0.34	0.35	0.35	0.35	0.35

Shaded cells represent undesirable operating conditions

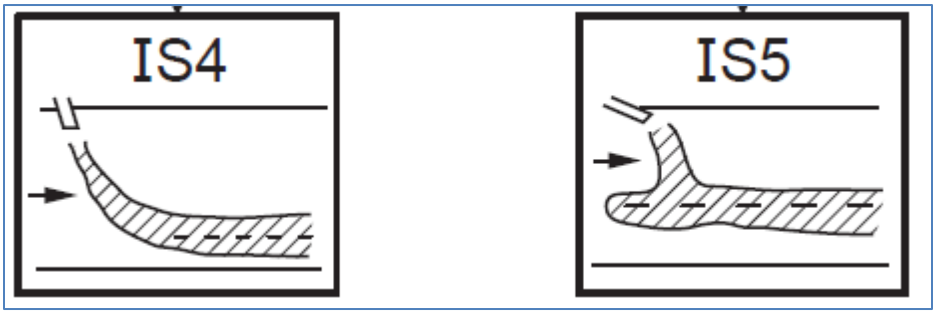

Figure 1: CORMIX Flow Classification for Negatively Buoyant Internally Trapped Near Surface Discharges

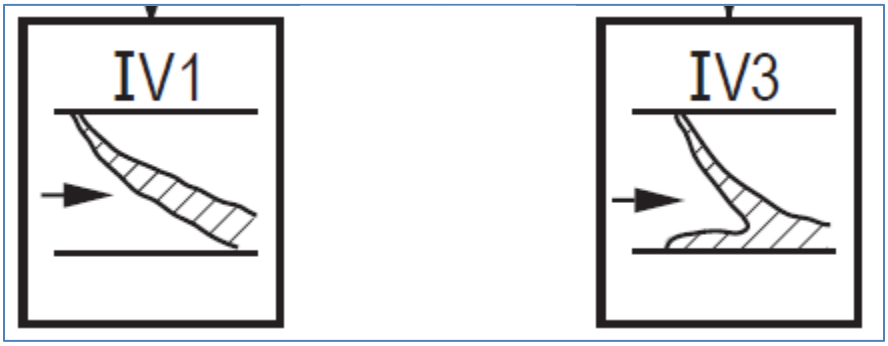

Figure 2: CORMIX Flow Classification for Negatively Buoyant Discharges in Uniform Ambient Flow

Appendix B – Map Showing Areas of Biological Concern

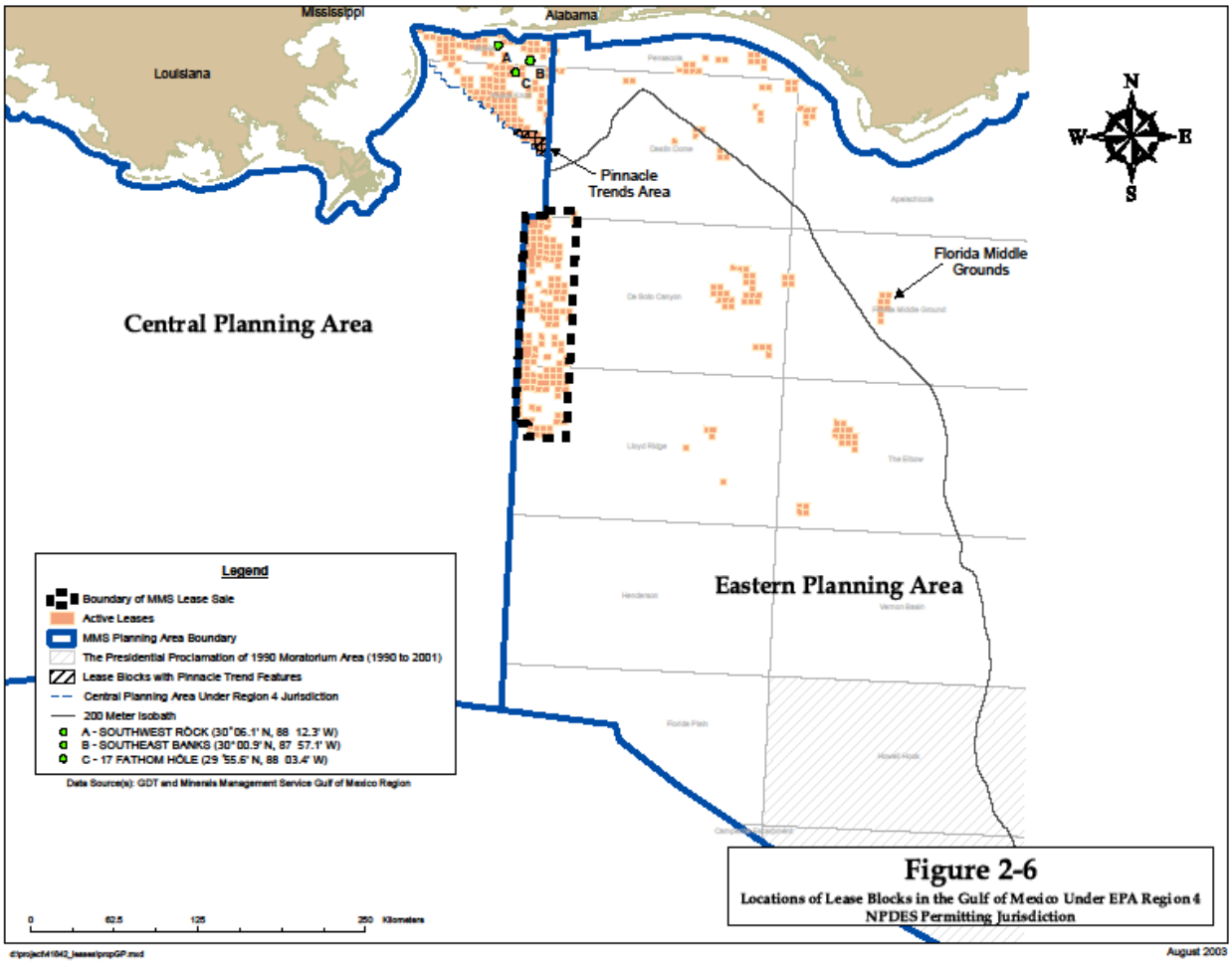

Figure 2-6
Locations of Lease Blocks in the Gulf of Mexico Under EPA Region 4 NPDES Permitting Jurisdiction