TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

AGENDA ITEM REQUEST

for General Permit Adoption

AGENDA REQUESTED: January 10, 2024

DATE OF REQUEST: December 20, 2023

INDIVIDUAL TO CONTACT REGARDING CHANGES TO THIS REQUEST, IF NEEDED: Gwen Ricco, Texas Register/Agenda Coordinator, (512) 239-2678

CAPTION: Docket No. 2020-1601-MIS. Consideration of the adoption of new Texas Pollutant Discharge Elimination System (TPDES) Oil and Gas Extraction Activities General Permit, TXG310000, which authorizes the discharge into water in the state of various waste streams associated with oil and gas extraction activities from new and existing onshore stripper well facilities, coastal facilities, and territorial seas facilities (located within 3.0 statute miles of the Texas coastline in the Gulf of Mexico). Public notice of the proposed general permit was published in the May 5, 2023, issue of the *Texas Register* (48 TexReg 2406). (Shannon Gibson, Kathy Humphreys) (Non-Rule Project No. 2020-053-OTH-NR)

Cari-Michel La Caille
Director

Division Deputy Director

Gwen Ricco
Agenda Coordinator

Texas Commission on Environmental Quality

Interoffice Memorandum

To: Commissioners **Date:** December 20, 2023

Thru: Laurie Gharis, Chief Clerk
Kelly Keel, Executive Director

From: CML Cari-Michel La Caille, Director
Office of Water

Docket No.: 2020-1601-MIS

Subject: General Permit: Commission Approval for Adoption
Oil and Gas Extraction Activities - New TPDES General Permit No. TXG310000
Project No. 2020-053-OTH-NR

Summary and background:

A new Texas Pollutant Discharge Elimination System (TPDES) discharge general permit has been drafted to authorize the discharge into water in the state of various waste streams associated with oil and gas extraction activities from new and existing onshore stripper well facilities, coastal facilities, and territorial seas facilities (located within 3.0 statute miles of the Texas coastline in the Gulf of Mexico).

The purpose of this new TPDES general permit is to implement House Bill 2771, 86th Legislative Session which transfers permitting authority for discharges into water in the state of certain waste streams generated by crude oil and natural gas facilities from the Railroad Commission of Texas (RRC) to TCEQ, and for the TCEQ to regulate such discharges into water in the state under the TPDES program after TCEQ received permitting authority from the United States Environmental Protection Agency (EPA). All discharges associated with oil and gas extraction activities adjacent to water in the state (i.e., evaporation and land application) and other activities not related to discharge to water in the state remain under the jurisdiction of the RRC.

Upon issuance of this new TPDES general permit, one combined state and federal authorization to discharge to water in the state will be able to be obtained.

To fully implement HB 2771, a second state-only general permit, WQG280000, has been developed to regulate oil and gas extraction activity discharges into the Gulf of Mexico located between 3.0 and 10.357 statute miles from the Texas coastline.

Both TXG310000 and WQG280000 are being proposed on a parallel path to Commission agenda for consideration of issuance.

Basic requirements:

A. **Applicability:**

The draft TPDES general permit authorizes the discharge of and/or prohibition of discharge for the following waste streams: produced wastewater; well treatment, completion, and workover fluids; drilling fluids; drill cuttings; produced sand; dewatering effluent; formation test fluids; hydrate control fluids; domestic waste; sanitary waste; contaminated miscellaneous discharges; uncontaminated

miscellaneous discharges; contaminated stormwater; and deck drainage. Authorized discharges and prohibitions on such discharges are primarily based on the geographical location of the oil and gas extraction facility, per federal law.

The TPDES general permit is drafted to be issued for a five-year term.

B. Permit Requirements:

Applicants would submit a Notice of Intent (NOI) to TCEQ to obtain authorization under the TPDES general permit. Facilities currently holding authorization to discharge from EPA (either under existing NPDES General Permit No. TXG260000 or TXG330000) or from the RRC (under individual discharge authorizations) would have 90 days from the effective date to submit an NOI.

All waste streams authorized for discharge under the draft TPDES general permit are subject to numeric effluent limitations (or no discharge of the identified pollutant based on visual observation) for varying pollutants with associated established monitoring and reporting requirements. The draft TPDES general permit also establishes prohibitions on discharges of various waste streams based on the geographical location of the facility. These effluent limitations and prohibitions on discharges are primarily based on EPA's two existing NPDES oil and gas extraction activities general permits and conditions in EPA's effluent limitation guidelines established at 40 Code of Federal Regulations (CFR) Part 435. Additional effluent limitations in the TPDES discharge general permit are based on TCEQ regulations and conditions established in the Texas Surface Water Quality Standards.

C. Fees:

An $800 NOI application fee and a $100 annual general permit wastewater fee. The $800 NOI application fee is based on application fees currently charged by RRC, to keep transfer of permitting authority to TCEQ from RRC revenue neutral. The annual fee is the minimum fee assessed to TCEQ general permit holders.

Number of current/expected authorizations:

TCEQ received and consolidated files and data transmitted from EPA and RRC following transfer of permitting authority. Based on TCEQ's reconciliation of these files/data, 33 entities are currently authorized to discharge to water in the state. They are expected to seek authorization under the new TPDES general permit.

New authorizations may increase moderately as the new TPDES general permit requires each discharging facility to submit an NOI versus allowing all facilities located within a lease or state tract to submit one NOI, as discussed below.

Changes from the EPA current general permits.

Changes from EPA's TXG260000 and TXG330000 are summarized below. Individual permits issued by RRC are site-specific and a comparison analysis with each individual permit was not conducted.

A. Conditions regarding who must apply for authorization are simplified and consistent with other TPDES general permits. Owners would have to apply for authorization. If the operator was a separate entity from the owner, the operator would be required to apply as well.

B. Each individual discharging facility (e.g., production platform, drilling rig, etc.) is required to submit an individual NOI. The draft TPDES general permit does not authorize multiple unique discharging facilities under a lease to be combined into one NOI. Should a facility containerize all its waste streams and transport them to another facility for subsequent treatment, management, and discharge, that facility would not be required to submit an NOI provided there are no discharges to water in the state from that facility.

C. Cooling water intake structure (CWIS) requirements apply to existing and below-threshold offshore (coastal and territorial seas) oil and gas CWISs, as established under Section 316(b) of the Clean Water Act (CWA).

D. All effluent limitations established for the discharge of sanitary waste apply to the discharge of domestic waste. Specifically, limitations and/or monitoring requirements for biochemical oxygen demand (5-day), total suspended solids, dissolved oxygen, total residual chlorine, bacteria, flow, and pH. These conditions are not established, or only partially established, in EPA's existing TXG260000 and TXG330000, but are required in TCEQ regulations at 30 Texas Administrative Code (TAC) Chapters 309 and 319.

E. Reclassifies "miscellaneous discharges" and "miscellaneous discharges of seawater and freshwater which have been chemically treated" as established in EPA's TXG260000 to "uncontaminated miscellaneous discharges" and "contaminated miscellaneous discharges," respectively. Furthermore, "contaminated miscellaneous discharges" not authorized under EPA's TXG330000 are authorized from coastal facilities under the draft TPDES general permit.

F. Revision of the conditions established in EPA's existing TXG260000 and TXG330000 associated with whole effluent toxicity (WET) limitations and associated monitoring requirements, as follows:

- Removal of requirements to conduct toxicity reduction evaluations and pass a WET test prior to discharge. See discussion below on compliance schedules related to WET limitations.
- Removal of requirements to reopen the general permit to require chemical-specific limits, however, all new discharges are required to meet water quality-based effluent limitations upon permit issuance, as required by 30 TAC Chapter 307.

- Removal of the exemption from compliance with the 24-hour acute WET limitations established in EPA's TXG330000 for stripper well facilities based on an excess, imbalance, or deficiency of dissolved salts.
- Removal of the allowance to submit an ion adjustment protocol. Facilities seeking this exemption as allowed under 30 TAC Chapter 307 can apply for an individual TPDES permit.
- The WET monitoring frequency for 24-hour acute testing is increased to once per six months, consistent with the TCEQ Water Quality Standards Implementation Procedures.
- WET limitations for the discharge of contaminated miscellaneous discharges comply with 24-hour acute 100% dilution conditions compared to 48-hour acute conditions with fluctuating critical conditions as established in EPA's TXG260000, consistent with TCEQ permitting procedures.
- One single critical dilution for 7-day chronic WET limitations for the discharge of produced wastewater from territorial seas facilities versus varying critical dilutions based on the latest discharge monitoring reports' (DMRs) flow data, depth to sea floor, and pipe diameter established in EPA's TXG260000.
- An increase in monitoring frequency from once per six months to once per quarter for WET testing of produced wastewater discharged to the territorial seas, consistent with the TCEQ Water Quality Standards Implementation Procedures.
- Well treatment, completion, and workover fluids are subject to 24-hour 100% acute WET limitations versus a prohibition on priority pollutant discharge as established in EPA's TXG260000 for territorial seas discharges.

G. Additional water quality-based effluent limitations for the discharge of produced wastewater to territorial seas (based on TCEQ-developed CORMIX dilution modeling) for total copper, total manganese, and total zinc. A three-year compliance schedule for existing produced wastewater discharged via either EPA's existing TXG260000 or a RRC individual authorization is provided. Additionally, a new monitoring and reporting requirement is established for total mercury for discharges of produced wastewater. For produced wastewater discharges from territorial seas facilities, an effluent flow limitation of 0.126 million gallons per day (3,000 barrels/day), restrictions on depth to sea floor, and restrictions on pipe diameter are based on CORMIX dilution modeling conducted by TCEQ. Furthermore, effluent monitoring requirements are required for total dissolved solids (TDS) and temperature to gather data to confirm assumptions TCEQ used in its CORMIX dilution modeling for produced wastewater discharges to the territorial seas.

H. For produced wastewater discharges to territorial seas, water quality-based effluent limitations on carbonaceous biochemical oxygen demand (5-day) and ammonia-nitrogen based on TCEQ's dissolved oxygen modeling assessment, are required to ensure dissolved oxygen standards in the Gulf of Mexico are achieved.

I. Although not a change from EPA's existing TXG260000, TCEQ is supporting the granting of a request received from the Offshore Operators Committee (OOC), a trade organization representing offshore oil and gas discharges in the Gulf of

Mexico, for an exception to applying 30 TAC Chapter 319 hazardous metals effluent limitations typically imposed on TPDES permitted discharges. To support this exemption request, the OOC submitted rationale and supporting historical produced wastewater discharge studies which were then reviewed by staff.

Other non-substantive changes are identified in the fact sheet.

Stakeholder involvement:

The TPDES general permit is discussed at the quarterly Water Quality Advisory Work Group meetings hosted by TCEQ. The Water Quality Advisory Work Group has been expanded to include the former HB 2771 Oil and Gas Stakeholder Work Group.

During the development of the draft TPDES general permit, the Water Quality Division (WQD) has conducted numerous discussions with the Texas Oil and Gas Association, the Offshore Operators Committee, the Environmental Defense Fund, U.S. EPA Region 6, environmental consultants, and other entities. An update on the status of this TPDES general permit was presented at the 2022 and 2023 annual TCEQ Trade Fair events.

TCEQ shared the draft TPDES general permit package with stakeholders for an informal 30-day review period via TCEQ's Water Quality Advisory Work Group webpage prior to submitting the draft general permit for EPA's 90-day review and eventual statewide public notice. The informal comment period ended in April 2022 and comments were received from an offshore oil and gas consulting firm, an onshore striper well representative, the Environmental Defense Fund, and the Sierra Club. Comments from the onshore stripper well facility representative related to clarifying language in the draft general permit to recognize multiple wells are connected to a common tank battery for treatment and discharge. Comments from the offshore oil and gas consultant related to revising the 24-hour acute WET testing/limitations from 24-hour acute at 100% effluent to 48-hour acute at varying dilutions related to the specific platform discharge. Comments received from the Environmental Defense Fund and the Sierra Club primarily related to requesting TCEQ require analytical testing and evaluation of test results submitted for a multitude of pollutants for produced wastewater discharges, similar to what is required in individual TPDES permit applications. Comments received were evaluated and minor revisions to the draft general permit package were completed prior to sending to EPA for their formal 90-day review period.

EPA Review:

On September 14, 2022, EPA submitted recommendations with no interim objection on the draft TPDES general permit and fact sheet. EPA's suggestions were to revise the sample type from grab to composite for WET testing of well treatment, completion, and workover fluids discharges from territorial seas facilities; to require WET testing for every well treatment, completion, and workover fluids discharge from territorial seas facilities; and to require WET testing in the event well treatment and workover fluids discharges are combined with produced wastewater discharges at stripper well facilities. WQD partially agreed with EPA comments and appropriate revisions were

made to the draft general permit. A response to EPA's no objection letter is not required under the TPDES Memorandum of Agreement with EPA.

Public comment:

Public notice of the draft general permit was published in the *Texas Register* on May 5, 2023, and in the *Houston Chronicle* and the *Dallas Morning News* on May 12, 2023. The public comment period ended on June 12, 2023. Public comments were received from J. Connor Consulting, Inc. The sole commenter requested that a three-year interim compliance schedule be allowed in the general permit for 24-hour acute and 7-day chronic WET limitations for the discharge of produced wastewater from territorial seas facilities. The commenter included justification to support the comment and potential general permit revisions based on EPA suspending 24-hour acute WET testing for such discharges in its existing NPDES TXG260000 general permit (this TPDES general permit is replacing EPA's existing NPDES general permit), as well as impacts that could potentially be realized by oil and gas extraction operations located in offshore Texas Gulf of Mexico waters, and economic impacts on the State of Texas should such compliance schedules not be supported. The Executive Director (ED) supports the comment and has revised the draft general permit to allow WET limitations compliance schedules for coastal facilities and territorial seas facilities discharges. See discussion and rationale outlined in the response to comments (RTC) for supporting revisions to the draft general permit.

Potential controversial concerns and legislative interest:

State legislators, the regulated community, and environmental organizations have been interested in the implementation of HB 2771, including this draft TPDES general permit. Specifically, produced wastewater discharges from oil and gas extraction activities which are to be authorized under this draft TPDES general permit continue to be a controversial topic.

Effect on the:

A. **Regulated community:**

Oil and gas extraction facilities will gain the benefit of obtaining one combined state and federal authorization under the TPDES program, versus a separate NPDES authorization from EPA and a state authorization from RRC. Authorization under the draft TPDES general permit would be obtained through an administrative and streamlined NOI process, versus the RRC permitting process which required the submittal an individual permit application including sample collection and laboratory analysis for a multitude of pollutants. The draft TPDES general permit has new requirements not currently established in EPA's NPDES general permits or RRC authorizations. It also revises certain unnecessary conditions established in EPA and RRC authorizations.

B. Public:

This draft TPDES general permit is more protective of public health and the environment than existing state and federal permitting programs by imposing additional limitations and conditions as outlined above.

C. Agency programs:

Regulation of oil and gas discharges into water in the state is a new program for TCEQ. Through HB 2771, WQD received three new full-time equivalents (FTEs) to implement this program, which includes processing of NOIs. WQD is also completing information technology (IT) projects required to implement the general permit. Funds to implement these IT projects have been encumbered and WQD is working with the Office of Administrative Services on this project. The Office of Compliance and Enforcement (OCE) will see an increase in workload, as this new universe of regulated activities will require routine inspections, complaint investigations, and potential resulting enforcement actions. OCE received six FTEs via HB 2771 to implement this new program.

Key dates in the general permit schedule:

Published notice in *Texas Register* on May 5, 2023 and newspapers on May 12, 2023
Public comment period ended: June 12, 2023
Scheduled Commission Agenda Date: January 10, 2024

Statutory authority:

- Texas Water Code (TWC), §26.121, which makes it unlawful to discharge waste or pollutants into water in the state except as authorized by a rule, permit, or order issued by the commission;
- TWC, §26.027, which authorizes the commission to issue permits and amendments to permits for the discharge of waste or pollutants into water in the state;
- TWC, §26.040, which provides the commission with authority to amend rules to authorize waste discharges into waters of the state by general permit; and
- TWC, §26.131, which transfers RRC's responsibilities to TCEQ relating to regulation of discharges into water in the state of produced water, hydrostatic test water, and gas plant effluent resulting from the exploration, production and development of oil, natural gas, or geothermal resources.

Agency Contacts:

Chris Linendoll, E.I.T., Project Manager, Water Quality Division, 254-761-3025
Kathy Humphreys, Staff Attorney, Environmental Law Division, 512-239-3417
Gwen Ricco, Texas Register/Agenda Coordinator, General Law Division, 512-239-2678

Attachments: Draft TPDES General Permit, Fact Sheet, and Response to Comments

cc: Chief Clerk, 7 copies

Texas Commission on Environmental Quality

P.O. Box 13087 Austin, Texas 78711-3087

TPDES GENERAL PERMIT TO DISCHARGE WASTEWATER ASSOCIATED WITH OIL AND GAS EXTRACTION ACTIVITIES
under provisions of Section 402 of the Clean Water Act
and Chapter 26 of the Texas Water Code

This TPDES general permit supersedes and replaces
NPDES General Permit No. TXG260000 effective on February 8, 2012 and
NPDES General Permit No. TXG330000 effective on September 11, 2014.

Wastewater associated with oil and gas extraction activities located in the State of Texas, may be discharged into water in the state, including receiving waters with exceptional, high, intermediate, limited or minimal aquatic life use as designated in the Texas Surface Water Quality Standards, only according to effluent limitations, monitoring requirements and other conditions set forth in this TPDES general permit, as well as the rules of the Texas Commission on Environmental Quality (TCEQ or Commission), the laws of the State of Texas, and other orders of the TCEQ. The issuance of this TPDES general permit does not grant the permittee the right to use private or public property for the conveyance of wastewater along the discharge route. This includes, but is not limited to, property belonging to any individual, partnership, corporation or other entity. This TPDES general permit neither authorizes any invasion of personal rights nor any violation of federal, state, or local laws or regulations. It is the responsibility of the permittee to acquire property rights as may be necessary to use the discharge route.

This TPDES general permit and the authorization contained herein shall expire at midnight five years from the effective date.

EFFECTIVE DATE:
ISSUED DATE:

_____
For the Commission

TPDES GENERAL PERMIT NUMBER TXG310000 RELATING TO DISCHARGES OF WASTEWATER ASSOCIATED WITH OIL AND GAS EXTRACTION ACTIVITIES

Table of Contents

Part I. Definitions

The following words and terms, for the purposes of this general permit, shall have the following meanings.

Areas of biological concern – A portion of the territorial seas identified by the U.S. Environmental Protection Agency (EPA), in consultation with the U.S. Department of Interior, as containing potentially productive or unique biological communities or as being potentially sensitive to discharges associated with oil and gas activities.

Bacteria concentration (Enterococci, or Fecal Coliform) - Colony Forming Units (CFU) or Most Probable Number (MPN) of bacteria per 100 milliliters effluent. The daily average bacteria concentration is a geometric mean of the values for the effluent samples collected in a calendar month. The geometric mean shall be determined by calculating the nth root of the product of all measurements made in a calendar month, where n equals the number of measurements made; or, computed as the antilogarithm of the arithmetic mean of the logarithms of all measurements made in a calendar month. For any measurement of bacteria equaling zero, a substituted value of one shall be made for input into either computation method.

Ballast/bilge water – Seawater added or removed to maintain proper draft (ballast water) or water from a variety of sources that accumulates in the lowest part of the vessel/facility (bilge water).

Blow-out preventer control fluid – Fluid used to actuate the hydraulic equipment on the blow-out preventer. This includes fluid from the subsea wireline “grease-head.”

Boiler blowdown – Discharges from boilers necessary to minimize solids build-up in the boilers, including vents from boilers and other heating systems.

Coastal facility – Any oil and gas extraction operation located in or on a water in the State of Texas landward of the inner boundary of the territorial seas; or located landward of the inner boundary of the territorial seas and bounded on the inland side by latitude and longitude coordinates established in 40 Code of Federal Regulation (CFR) §435.40(b).

Composite Sample – A composite sample is a sample made up of a minimum of three effluent portions collected in a continuous 24-hour period or during the period of daily discharge if less than 24 hours, and combined in volumes proportional to flow, and collected at the intervals required by 30 TAC §319.9(c).

Contaminated miscellaneous discharges – Diatomaceous earth filter media; blowout preventer control fluid; ballast water; bilge water; freshwater discharge; sea water discharge; desalination unit discharge; boiler blowdown; source water and sand; excess cement slurry; and unused cement slurry which receive treatment via the use of treatment chemicals or come into contact with oil or petroleum waste.

Contaminated stormwater – Stormwater discharges from oil and gas extraction facilities meeting the conditions established in 40 CFR § 122.26(b)(14)(iii) (i.e., stormwater contaminated by contact with or that has come into contact with any overburden, raw material, intermediate products, finished products, byproducts or waste located on the site of operations).

Daily average flow - The arithmetic average of all determinations of the daily flow within a period of one calendar month. The daily average flow determination shall consist of determinations made on at least four separate days. If instantaneous measurements are used to determine the daily flow, the determination shall be the arithmetic average of all instantaneous measurements taken during that month. Daily average flow determination for intermittent discharges shall consist of a minimum of three flow determinations on days of discharge.

Daily average limitations - The arithmetic average of results of analyses for a parameter from a minimum of four samples of the discharges that occur in a single calendar month. When results of analyses of four samples are not available in a single calendar month, the arithmetic average of the most recent results, not to exceed four, must be reported as the daily average.

Daily maximum flow - The highest total flow for any 24-hour period in a calendar month.

Daily maximum limitations - The maximum value measured on a single day within a single calendar month as established by the unit of measurement. pH daily maximum limitations are established as a minimum and maximum range.

Deck drainage – Any waste resulting from deck washings, spillage, rainwater, or runoff from gutters and drains including drip pans and work areas within facilities subject to 40 CFR Part 435 (Oil and Gas Extraction Point Source Category).

Desalination unit discharge – Wastewater associated with the process of creating freshwater from seawater.

Development facility – Any fixed or mobile structure that is engaged in the drilling of productive wells.

Dewatering effluent – Wastewater from drilling fluids and drill cuttings dewatering activities (including but not limited to reserve pits or other tanks or vessels, and chemical or mechanical treatment occurring during the drilling solids separation/recycle/disposal process).

Diatomaceous earth filter media – Filter media used to filter seawater or other authorized completion fluids and subsequently washed from the filter.

Discharge - Deposit, conduct, drain, emit, throw, run, allow to seep, or otherwise release or dispose of, or to allow, permit, or suffer any of these acts or omissions.

Domestic waste – The materials discharged from sinks, showers, laundries, safety showers, eye-wash stations, hand-wash stations, fish cleaning stations, or galleys located within facilities subject to 40 CFR Part 435 (Oil and Gas Extraction Point Source Category).

Drill cuttings – 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. Drill cuttings are generally generated from solids control equipment and settle out and accumulate in quiescent areas in the solids control equipment or other equipment processing drilling fluid (i.e., accumulated solids). Both wet and dry drill cuttings are included in this definition.

Drilling fluid – The circulating fluid (mud) used in the rotary drilling of wells to clean and condition the hole and to counterbalance formation pressure. Both water-based drilling fluids and non-aqueous drilling fluids are included in this definition.

Excess cement slurry – The excess mixed cement, including additives and wastes from equipment washdown, after a cementing operation.

Exploratory facility – Any fixed or mobile structure subject to 40 CFR Part 435 that is engaged in the drilling of wells to determine the nature of potential hydrocarbon reservoirs.

Facility - Any National Pollutant Discharge Elimination System (NPDES) “point source” (as defined in 40 CFR § 122.2) or any other facility or activity that is subject to regulation under the Texas Pollutant Discharge Elimination System (TPDES) program. For the purposes of this general

permit, a facility includes a Development Facility, an Exploratory Facility, or a Production Facility.

Formation test fluids – The discharge that would occur if hydrocarbons are located during exploratory drilling and tested for formation pressure and content.

Freshwater discharge – Freshwater which is discharged. Included are (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, and (3) water released during training and testing of personnel in fire protection, potable water, and off-specification potable water.

Garbage – All kinds of victual, domestic, and operational waste, excluding fresh fish and parts thereof, generated during the normal operation of a coastal oil and gas 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.

Gas well – Any well which produces natural gas in a ratio to the petroleum liquids produced greater than 15,000 cubic feet of gas per one barrel (42 gallons) of petroleum liquids.

General permit - A permit issued under the provisions of Title 30 Texas Administrative Code (TAC) Chapter 205 authorizing the discharge of waste into water in the state for one or more categories of waste discharge within a geographical area of the state or the entire state, as provided by Texas Water Code (TWC), § 26.040.

Grab sample - An individual sample collected in less than 15 minutes.

Hydrate control fluids – Fluids used to prevent, retard, or mitigate the formation of hydrates in, and on, drilling equipment, process equipment, and piping.

Hydrostatic test water – Water resulting from testing the hydraulic and structural integrity of a vessel by either introducing water into the vessel or submerging the empty vessel in water.

Land application - The spraying or spreading of wastewater onto the land surface or the incorporation of wastewater into the soil in a way that causes no nuisance conditions and that uses the wastewater to either condition the soil or fertilize crops or vegetation grown in the soil, and does not result in discharge to surface water in the state.

Live bottom areas – Those areas which contain biological assemblages consisting of such sessile invertebrates as sea fans, sea whips, hydroids, anemones, ascidians sponges, bryozoans, seagrasses, or corals living upon, and attached to, naturally occurring hard or rocky formations with fishes and other fauna.

M9IM – A coastal facility or territorial seas facility continuously manned by nine (9) or fewer persons or only intermittently manned by any number of persons.

M10 – A coastal facility or territorial seas facility continuously manned by ten (10) or more persons.

Muds, cuttings, and cement at the seafloor – Discharges that occur at the seafloor prior to installation of the marine riser and during marine riser disconnect, well abandonment, and plugging operations.

Municipal separate storm sewer system (MS4) - A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(a) owned or operated by the United States, a state, city, town, borough, county, district, association, or other public body (created by, or pursuant to, state law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under state law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under § 208 of the Clean Water Act (CWA);
(b) designed or used for collecting or conveying stormwater;
(c) which is not a combined sewer;
(d) which is not part of a publicly owned treatment works (POTW) as defined at 40 CFR § 122.2; and
(e) which does not include very discrete systems such as those serving individual buildings. *See* also 40 CFR § 122.26(b)(4), (7), and (16).

Notice of change (NOC) - A written submission to the Executive Director from a permittee authorized under a general permit, providing information on changes to information previously provided to the Commission, or any changes with respect to the nature or operations of the regulated entity or the characteristics of the discharge.

Notice of intent (NOI) - A written submission to the Executive Director from an applicant requesting authorization under the terms of a general permit.

Notice of termination (NOT) - A written submission to the Executive Director from a permittee authorized under a general permit requesting termination of authorization.

Operator - A person responsible for the overall operation of a facility.

Owner - A person who owns a facility or part of a facility.

Packer fluid – Low solids fluids between the packer, production string and well casing. They are considered to be workover fluids.

Permittee - Any person issued an individual permit, order, or authorized by a general permit.

Produced sand – 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 wastewater stream, and blowdown of the water phase from the produced wastewater treating system.

Produced wastewater – The water (brine) brought up from the hydrocarbon-bearing strata during the extraction of oil and gas, which can include formation water, injection water, and any chemicals added downhole or during the oil/water separation process.

Production facility – Any fixed or mobile structure subject to 40 CFR Part 435 that is either engaged in well completion or used for active recovery of hydrocarbons from producing formations. This includes facilities that are engaged in hydrocarbon fluids separation even if located separately from wellheads.

Sanitary waste – Human body waste discharged from toilets and urinals located within facilities subject to 40 CFR Part 435.

Seawater discharge – Seawater which is returned to the sea. Included are (1) discharges of excess seawater necessary for the continuous operation of fire control and utility lift pumps, (2) excess seawater from pressure maintenance and secondary recovery projects, (3) water released during the training and testing of personnel in fire protection, and (4) once through non-contact cooling water.

Sheen – A silvery or metallic sheen, gloss, or increased reflectivity, visual color, or iridescence on the water surface.

Site - The land or water area where any facility or activity is physically located or conducted, including adjacent land used in connection with the facility or activity.

Solids control equipment – Shale shakers, centrifuges, mud cleaners, and other equipment used to separate drill cuttings and/or stock barite solids from drilling fluid recovered from the wellbore.

Source water and sand – Water from non-hydrocarbon bearing formations for the purpose of pressure maintenance or secondary recovery including entrained solids.

Stripper well facility – An oil and gas extraction operation located on land (not in or on water) east of the 98th meridian which only includes wells that produce 10 barrels per calendar day or less of crude oil and that are operating both at the maximum feasible rate of production and in accordance with recognized conservation practices. A stripper well facility does not include gas wells or wells injecting water for disposal or for enhanced recovery of oil or gas.

Territorial seas facility – An oil and gas extraction operation located in waters that are seaward of the inner boundary of the territorial seas and extending seaward a distance of three statute miles from the coastline. Territorial seas are defined in Section 502(8) of the Clean Water Act (CWA).

Texas Pollutant Discharge Elimination System (TPDES) – The Texas program for issuing, amending, terminating, monitoring, and enforcing permits, and imposing and enforcing pretreatment requirements, under the CWA §§ 307, 402, 318, and 405, Chapter 26 of the Texas Water Code (TWC), and Title 30 of the Texas Administrative Code (TAC).

Treatment chemicals – Biocides, corrosion inhibitors, or other chemicals which are used to treat wastewater. Non-toxic scale inhibitors, dyes, and chlorine/bromine used for disinfection or biological growth control are not considered treatment chemicals for the purpose of this TPDES general permit.

Uncontaminated miscellaneous discharges - Diatomaceous earth filter media; blowout preventer control fluid; ballast water; bilge water; muds, cuttings, and cement at the sea floor; freshwater discharge; sea water discharge; desalination unit discharge; boiler blowdown; source water and sand; excess cement slurry; and unused cement slurry which do not receive treatment via the use of treatment chemicals, or come into contact with oil or petroleum waste.

Water in the State - Groundwater, percolating or otherwise, lakes, bays, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, wetlands, marshes, inlets, canals, the Gulf of Mexico inside the territorial limits of the state, and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, navigable or nonnavigable, and including the beds and banks of all watercourses and bodies of surface water, that are wholly or partially inside or bordering the state or inside the jurisdiction of the state. TWC §26.01(5).

Well completion fluids – 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 may return to the surface as a slug with the produced wastewater. Drilling muds remaining in the wellbore during logging, casing, and cementing operations or during temporary abandonment of the well are not considered well completion fluids and are regulated by drilling fluids requirements.

Well treatment fluids – Any fluid used to restore or improve productivity by chemically or physically altering hydrocarbon-bearing strata after a well has been drilled. These fluids move into the formation and may return to the surface as a slug with the produced wastewater.

Workover fluids – Salt solutions, weighted brines, polymers, or other specialty additives used in a producing well 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 discharge is prohibited. 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.

Part II. Permit Applicability and Authorization

Section A. Discharges Authorized

This TPDES general permit authorizes the discharge of wastewater associated with oil and gas extraction activities into water in the state from:

1. Onshore Stripper Well Facilities Located East of the 98th Meridian (hereafter referred to as Stripper Well Facilities);

2. Coastal Facilities; and

3. Territorial Seas Facilities.

Section B. Limitations on Authorization

1. Additional authorization for Stripper Well Facilities may be required for discharges into water in the state located on or within ten stream miles upstream of the Edwards Aquifer recharge zone, as defined in 30 TAC Chapter 213, *Edwards Aquifer*. Also, see Part II.C.3 for discharges regulated under 30 TAC Chapter 213.

2. Discharges are not authorized by this TPDES general permit where prohibited by:

   a. 30 TAC Chapter 311, *Watershed Protection*;

   b. 30 TAC Chapter 213, *Edwards Aquifer*; or

   c. any other applicable rules or laws.

3. This TPDES general permit does not authorize disposal of wastewater discharges by land application or evaporation from oil and gas extraction activities.

4. The Executive Director will deny an application for authorization under this TPDES general permit and may require that the applicant apply for an individual TPDES permit if the Executive Director determines that discharge activities will not maintain existing uses of receiving waters and an individual permit would require additional controls to maintain existing uses of the receiving water. Additionally, the Executive Director may cancel, revoke, or suspend authorization for discharge under this TPDES general permit based on a finding of historical and significant noncompliance with the provisions of this TPDES general permit. The Executive Director shall deny or suspend a facility's

authorization for discharge under this TPDES general permit based on a rating of "unsatisfactory performer" according to Commission rules in 30 TAC §60.3, *Use of Compliance History*. An applicant who owns or operates a facility classified as an "unsatisfactory performer" is entitled to a hearing before the Commission prior to having its authorization denied or suspended, in accordance with TWC § 26.040(h). Denial of authorization for discharge under this TPDES general permit will be done according to Commission rules in 30 TAC Chapter 205, *General Permits for Waste Discharges*.

5. This TPDES general permit does not limit the authority of a home-rule municipality as established in Texas statute.

6. New sources or new discharges [as defined in 40 CFR §122.2, 40 CFR §435.11(w), and 40 CFR §435.41(x)] of the constituent(s) of concern to impaired waters are not authorized by this TPDES general permit, unless otherwise allowable under 30 TAC Chapter 305 and applicable state law. Impaired waters are 1) those that do not meet applicable water quality standard(s) and are listed as category 4 or 5 in the current version of the *Texas Integrated Report of Surface Water Quality* and 2) waterbodies listed on the CWA § 303(d) list. Constituents of concern are those for which the water body is listed as impaired. In relation to this TPDES general permit limitation, monitoring and reporting requirements are established for total mercury for produced wastewater discharges to the Gulf of Mexico.

7. Discharges of the constituent(s) of concern to impaired water bodies where there is a total maximum daily load (TMDL) implementation plan are not eligible for authorization under this TPDES general permit unless the discharge is consistent with the approved TMDL and the implementation plan. The Executive Director may amend this TPDES general permit or develop a separate TPDES general permit for discharges to these water bodies. For discharges not eligible for authorization under this TPDES general permit, the discharger must apply for, and receive, an individual TPDES permit or be authorized under another applicable TPDES general permit prior to discharging.

8. Discharges that would adversely affect a listed endangered or threatened species or its critical habitat are not authorized by this TPDES general permit. Federal requirements related to endangered species apply to all TPDES permitted activities, and site-specific controls may be required to ensure that protection of endangered or threatened species is achieved.

9. This TPDES general permit does not authorize discharges from onshore facilities defined in 40 CFR Part 435, Subpart C (Onshore Subcategory) and 40 CFR Part 435, Subpart E (Agricultural and Wildlife Water Use Subcategory).

10. This TPDES general permit does not authorize discharges from facilities located greater than three statute miles from the coastline in an area of the Gulf of Mexico that is commonly referred to as the Outer Continental Shelf.

11. This TPDES general permit does not authorize discharges from facilities located west of the 98th meridian.

12. This TPDES general permit does not authorize discharges from stripper well facilities to tidally influenced or marine water bodies.

13. This TPDES general permit does not authorize the discharge of hydrostatic test water. Oil and gas extraction facilities seeking to discharge hydrostatic test water into surface water in the state have the option of obtaining coverage under TPDES General Permit No. TXG670000 or obtaining an individual TPDES permit.

14. This TPDES general permit regulates the discharges of wastewater into surface water in the state. Activities associated with oil and gas extraction activities not associated with discharges into surface water in the state are regulated by the Railroad Commission of Texas (RRC) (and potentially EPA). Such activities include, but are not limited to drilling new wells, plugging and abandoning existing wells, blowout prevention control, spill prevention, surface coatings and preparation, and other activities not associated with wastewater discharges into water in the state.

15. This TPDES general permit does not authorize discharges into Areas of Biological Concern, including marine sanctuaries and live bottom areas.

16. This TPDES general permit does not authorize discharges of radiological substances or materials in excess of the amount regulated by 30 TAC Chapter 336 as required by 30 TAC § 307.4(c).

17. This TPDES general permit does not authorize discharges from centralized waste treatment (CWT) facilities as defined in 40 CFR Part 437 that receive wastes generated from oil and gas extraction facilities. Such CWT facilities seeking authorization to discharge into surface water in the state must obtain an individual TPDES permit.

18. This TPDES general permit does not authorize the discharge of wastewater generated at a location where that wastewater is prohibited from discharge to waters in the U.S. from a location where that wastewater is authorized for discharge to waters in the U.S., as established in 40 CFR Part 435, Subpart G (One example of what is not allowed under this restriction is produced wastewater generated at a coastal facility, where produced wastewater is prohibited from discharge, being transported to, and being discharged from, a territorial seas facility, where such discharge is authorized).

19. Discharges authorized under this TPDES general permit into the Gulf of Mexico are restricted to oil and gas extraction activities as established in 40 CFR Part 435. Other offshore activities located in the Gulf of Mexico, such as carbon sequestration activities, are not authorized by this TPDES general permit and are required to obtain an individual TPDES permit.

Section C. Application for Authorization

1. Facilities that seek to discharge under authority of this TPDES general permit shall submit a completed Notice of Intent (NOI) on a form approved by the Executive Director. Permittees authorized under NPDES General Permit No. TXG260000, effective February 8, 2012, or NPDES General Permit No. TXG330000, effective September 11, 2014, are required to submit a new NOI within 90 days of the effective date of this TPDES general permit to continue authorization to discharge. Permittees authorized to discharge to surface water in the state via an existing RRC authorization may submit a new NOI within 90 days of the expiration date of their existing RRC authorization to continue authorization to discharge. The NOI shall, at a minimum, include: the legal name and address of the owner and operator, the facility name and address, specific description(s) of the location of the facility, type of facility and discharges, the receiving waters, and other requirements established in the NOI. Each individual discharging facility (e.g., production platform, drilling rig, central tank battery and associated surface treatment tanks, etc.) is required to submit an individual NOI. This TPDES general permit does not authorize multiple discharging facilities under a lease to be combined into one NOI. Should a facility contain all waste streams and transport them to another facility for subsequent treatment, management, and discharge, such a facility is not required to submit an NOI provided there are no resulting discharges to surface water in the state from the facility.

2. Submission of an NOI is an acknowledgment that the conditions of this TPDES general permit are applicable to the proposed discharge(s) to surface water in the state, and that the applicant agrees to comply with the conditions of this TPDES general permit.

   a. Provisional authorization begins 48 hours after a completed NOI is postmarked for delivery to the TCEQ. The NOI shall be submitted to the address indicated on the NOI form. If the TCEQ provides for electronic submission of NOIs during the term of this TPDES general permit, authorization begins immediately after the TCEQ confirms receipt of the electronic NOI. Following review of the NOI, the Executive Director will either:

      (i) determine that the NOI is complete and confirm authorization by providing a written notification and an authorization number;
      (ii) determine that the NOI is incomplete and request additional information needed to complete the NOI; or
      (iii) deny authorization in writing. Denial of authorization will be made in accordance with 30 TAC § 205.4, *Authorizations and Notices of Intent*.

   b. Stripper Well Facilities seeking authorization to discharge to a MS4 must provide a copy of the NOI, or electronic equivalent, to the operator of the system at the same time an NOI is submitted to the TCEQ.

3. For discharges from Stripper Well Facilities located in areas regulated by 30 TAC Chapter 213, *Edwards Aquifer*, an authorization to discharge under this TPDES general permit is separate from the requirements of that chapter. Discharge may not commence for sites regulated under 30 TAC Chapter 213 until all applicable requirements in that chapter are met. For discharges located, on or within, ten stream miles upstream of the Edwards Aquifer recharge zone, applicants must also submit a copy of the NOI to the appropriate TCEQ regional office shown below. The applicant may not discharge until authorization is received from the regional office.

   Counties: Comal, Bexar, Medina, Uvalde, and Kinney
   Contact: TCEQ Edwards Aquifer Program Manager
   San Antonio Regional Office
   14250 Judson Rd.
   San Antonio, Texas 78233-4480
   210-490-3096

Counties: Bell, Williamson, Travis, and Hays
Contact: TCEQ Edwards Aquifer Program Manager
Austin Regional Office
P.O. Box 13087, MC-R11
Austin, TX 78711-3087
512-239-2929

4. Authorization under this TPDES general permit is not transferable. If either the owner or operator of the regulated entity changes, then both the present owner and operator must submit a Notice of Termination (NOT) and the new owner and operator must submit an NOI. The NOT and NOI must be submitted no later than 10 days before the change. Stripper Well Facilities discharging to an MS4 must submit a copy of the NOT to the operator of the system at the same time the NOT is submitted to the TCEQ

5. If the owner or operator becomes aware that he or she failed to submit any relevant facts, or submitted incorrect information, or if relevant information provided in the NOI changes (for example, phone number, address, outfall information, type of facility or discharges, or the receiving waters), the correct information must be provided to the Executive Director in a Notice of Change (NOC) within 14 days after discovery. Stripper Well Facilities discharging to an MS4 must submit a copy of any NOC to the operator of the system at the same time the NOC is submitted to the TCEQ.

Section D. Termination of Authorization

A permittee shall terminate authorization under this TPDES general permit through the submittal of an NOT, on a form approved by the Executive Director, when the owner or operator of the facility changes; the discharge becomes authorized under an individual TPDES permit; the use of the facility changes and is no longer subject to regulation under this TPDES general permit; or the discharge becomes unnecessary, is delayed, or is completed. Authorization to discharge terminates on the day that a NOT is postmarked for delivery to the TCEQ. If electronic submission of the NOT is provided, authorization to discharge under this TPDES general permit terminates immediately after TCEQ confirms receipt of the NOT. Compliance with the conditions and requirements of this TPDES general permit is required until an NOT is submitted. Stripper Well Facilities discharging to an MS4 must submit a copy of the NOT to the operator of the system at the same time the NOT is submitted to the TCEQ.

Section E. Authorization Under an Individual TPDES Permit

1. Discharges eligible for authorization under this TPDES general permit may alternatively be authorized under an individual TPDES permit according to 30 TAC Chapter 305, *Consolidated Permits*.

2. When an individual TPDES permit is issued for a discharge that is at that time authorized under this TPDES general permit, the permittee shall submit a NOT to the Executive Director. Authorization to discharge terminates on the day that a NOT is postmarked for delivery to the TCEQ. If electronic submission of the NOT is provided, authorization to discharge under this TPDES general permit terminates immediately after TCEQ confirms receipt of the NOT.

Section F. Permit Expiration

1. This TPDES general permit is effective until five years from the effective date. Authorizations for discharge under the provisions of this TPDES general permit may be issued until the expiration date of the TPDES general permit. This TPDES general permit may be amended, revoked, cancelled, or renewed by the Commission after notice and comment as provided by 30 TAC § 205.3 and § 205.5.

2. If the Commission proposes to reissue this TPDES general permit before the expiration date, the TPDES general permit shall remain in effect after the expiration date for those existing discharges covered by the TPDES general permit in accordance with 30 TAC Chapter 205. The TPDES general permit shall remain in effect for these discharges until the date on which the Commission takes final action on the proposal to reissue this TPDES general permit. However, no new authorizations may be issued under the TPDES general permit after the expiration date.

3. Upon issuance of a renewed or amended TPDES general permit, all facilities, including those covered under the expired TPDES general permit, shall submit an NOI according to the requirements of the new TPDES general permit or obtain an individual TPDES permit for those discharges.

4. If the Commission does not propose to reissue this TPDES general permit within 90 days before the expiration date, permittees must apply for authorization under an individual TPDES permit or, if applicable, an alternative TPDES general permit. If the application for an individual TPDES permit or alternative TPDES general permit is submitted before the TPDES general permit expiration date,

authorization under this expiring TPDES general permit remains in effect until the issuance or denial of an individual TPDES permit or alternative TPDES general permit.

Part III. Permit Requirements

Section A. Effluent Limitations and Monitoring Requirements

1. Stripper Well Facilities

   a. Prohibited discharges: The following waste streams are prohibited from discharge to surface water in the state under the terms and conditions of this TPDES general permit.

      (i) Drilling Fluids
      (ii) Drill Cuttings
      (iii) Produced Sand
      (iv) Dewatering Effluent
      (v) Formation Test Fluids
      (vi) Well Completion Fluids
      (vii) Hydrate Control Fluids
      (viii) Domestic Waste
      (ix) Sanitary Waste
      (x) Contaminated Miscellaneous Discharges and Uncontaminated Miscellaneous Discharges
      (xi) Contaminated Stormwater

   b. Authorized discharges: The following waste streams are authorized for discharge to surface water in the state subject to the following effluent limitations and monitoring requirements.

      (i) Produced Wastewater, Well Treatment Fluids, and Workover Fluids

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Flow	Report, MGD	N/A	Estimate	Once/month
Total Dissolved Solids	3000 mg/L	N/A	Grab	Once/year
Oil & Grease	35 mg/L	25 mg/L	Grab	Once/month
pH	6.0 - 9.0 standard units	N/A	Grab	Once/month

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Lethal Whole Effluent Toxicity (WET) limit > 100% (Parameter 51711) *Daphnia pulex* (24-hour acute LC50 [1])	≥ 100%	≥ 100%	Grab	Once/six months[2]
Lethal Whole Effluent Toxicity (WET) limit > 100% (Parameter 51714) *Pimephales promelas (*24-hour acute LC50 [1])	≥ 100%	≥ 100%	Grab	Once/six months[2]

[1] The LC50 (Lethal Concentration 50) is defined as the effluent dilution at which 50% of the organisms survive. See Appendix D for conditions associated with these effluent limitations.

[2] Should well treatment or workover fluids be discharged with produced wastewater, testing of the effluent on such combined discharges shall occur within the once/six months monitoring frequency.

2. Coastal Facilities

a. Prohibited discharges: The following waste streams are prohibited from discharge to surface water in the state under the terms and conditions of this TPDES general permit.

(i) Drilling Fluids
(ii) Drill Cuttings
(iii) Produced Wastewater
(iv) Produced Sand
(v) Dewatering Effluent
(vi) Formation Test Fluids
(vii) Well Treatment, Completion, and Workover Fluids
(viii) Hydrate Control Fluids
(ix) Contaminated Stormwater from inland facilities (located on land and not located in a bay, estuary, or wide tidal river where such discharges are considered deck drainage)

b. Authorized discharges: The following waste streams are authorized for discharge to surface water in the state subject

to the following effluent limitations and monitoring requirements.

(i) Deck Drainage

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Free Oil [1]	No discharge	N/A	Observation	Once/day

[1] As determined by the presence of a film or sheen upon or discoloration of the surface of the receiving water (visual sheen).

(ii) Domestic Waste

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Flow	Report, MGD	Report, MGD	Instantaneous	Five times/week
Floating Solids, Garbage, Foam	No discharge	N/A	Observation	Once/day
Biochemical Oxygen Demand (5-day)	65 mg/L	20 mg/L	Grab	Once/week
Total Suspended Solids	65 mg/L	20 mg/L	Grab	Once/week
Dissolved Oxygen	2.0 mg/L (minimum)	N/A	Grab	Once/week
Enterococci	130 cfu or MPN/100 mL	35 cfu or MPN/100 mL	Grab	Once/quarter
Fecal Coliform	43 cfu or MPN/100 mL	14 cfu or MPN/100 mL	Grab	Once/quarter
Total Residual Chlorine	1.0 mg/L (minimum) and 4.0 mg/L (maximum)	N/A	Grab	Five times/week
pH	6.0 - 9.0 standard units	N/A	Grab	Once/day

(iii) Sanitary Waste (M10 and M9IM)

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Flow	Report, MGD	Report, MGD	Instantaneous	Five times/week
Floating Solids	No discharge	N/A	Observation	Once/day

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Biochemical Oxygen Demand (5-day)	65 mg/L	20 mg/L	Grab	Once/week
Total Suspended Solids	65 mg/L	20 mg/L	Grab	Once/week
Dissolved Oxygen	2.0 mg/L (minimum)	N/A	Grab	Once/week
Enterococci	130 cfu or MPN/100 mL	35 cfu or MPN/100 mL	Grab	Once/quarter
Fecal Coliform	43 cfu or MPN/100 mL	14 cfu or MPN/100 mL	Grab	Once/quarter
Total Residual Chlorine	1.0 mg/L (minimum) and 4.0 mg/L (maximum)	N/A	Grab	Five times/week
pH	6.0 - 9.0 standard units	N/A	Grab	Once/day

(iv) Uncontaminated Miscellaneous Discharges

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Free Oil [1]	No discharge	N/A	Observation	Once/day

[1] As determined by the presence of a film or sheen upon or discoloration of the surface of the receiving water (visual sheen).

(v) Contaminated Miscellaneous Discharges

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Flow	Report, MGD	N/A	Estimate	Once/month
Free Oil [1]	No discharge	N/A	Observation	Once/day
pH	6.0 - 9.0 standard units	N/A	Grab	Once/week
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51712) *Menidia beryllina* (24-hour acute LC50 [2])	≥ 100%	≥ 100%	Grab	Once/six months

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51713) *Americamysis bahia (*24-hour acute LC50 [2])	≥ 100%	≥ 100%	Grab	Once/six months

[1] As determined by the presence of a film or sheen upon or discoloration, of the surface of the receiving water (visual sheen).

[2] The LC50 (Lethal Concentration 50) is defined as the effluent dilution at which 50% of the organisms survive. See Appendix C for conditions associated with these effluent limitations.

3. Territorial Seas Facilities

a. Prohibited discharges: The following waste streams are prohibited from discharge to surface water in the state under the terms and conditions of this TPDES general permit.

(i) Drilling Fluids
(ii) Drill Cuttings
(iii) Produced Sand
(iv) Dewatering Effluent
(v) Formation Test Fluids

b. Authorized discharges: The following waste streams are authorized for discharge to surface water in the state subject to the following effluent limitations and monitoring requirements.

(i) Produced Wastewater and Hydrate Control Fluids

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Flow	Report, MGD	0.126 MGD	Estimate	Once/day
Free Oil [1]	No discharge	N/A	Observation	Once/day
Oil & Grease	42 mg/L	29 mg/L	Grab	Once/month
Carbonaceous Biochemical Oxygen Demand (5-day)	N/A	6483 mg/L	Grab	Once/month
Ammonia (as N)	N/A	112 mg/L	Grab	Once/month
Temperature	Report, °F	N/A	In-Situ	Once/quarter

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Total Dissolved Solids	Report, mg/L	N/A	Grab	Once/quarter
Total Copper	0.371 mg/L	0.175 mg/L	Grab	Once/month
Total Manganese	32.14 mg/L	15.19 mg/L	Grab	Once/month
Total Mercury	Report, mg/L	N/A	Grab	Once/month
Total Zinc	11.57 mg/L	5.47 mg/L	Grab	Once/month
pH	6.0-9.0 standard units	N/A	Grab	Once/week
Sublethal Whole Effluent Toxicity (WET) limit (Parameter 51712) *Menidia beryllina* (Chronic NOEC [2])	1.1%	1.1%	Grab	Once/quarter
Sublethal Whole Effluent Toxicity (WET) limit (Parameter 51713) *Americamysis bahia* (Chronic NOEC [2])	1.1%	1.1%	Grab	Once/quarter
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51712) *Menidia beryllina* (24-hour acute LC50 [3])	≥ 100%	≥ 100%	Grab	Once/six months
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51713) *Americamysis bahia* (24-hour acute LC50 [3])	≥ 100%	≥ 100%	Grab	Once/six months

[1] As determined by the presence of a film or sheen upon, or discoloration of, the surface of the receiving water (visual sheen).

[2] The NOEC is defined as the greatest effluent dilution at which no significant sublethality is demonstrated. Significant sublethality is defined as a statistically significant difference between a specified effluent dilution and the control for the sublethal endpoint. See Appendix B for conditions associated with these effluent limitations. The daily maximum limitation established above is a 7-day minimum limitation.

[3] The LC50 (Lethal Concentration 50) is defined as the effluent dilution at which 50% of the organisms survive. See Appendix C for conditions associated with these effluent limitations.

(ii) Well Treatment, Completion, and Workover Fluids

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Flow	Report, MGD	Report, MGD	Estimate	Once/day
Free Oil [1]	No discharge	N/A	EPA Approved Method [1]	Once/day
Oil & Grease	42 mg/L	29 mg/L	Grab	Once/month
pH	6.0-9.0 standard units	N/A	Grab	Once/week
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51712) *Menidia beryllina* (24-hour acute LC50 [2])	> 100%	> 100%	Grab [3]	Once/six months
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51713) *Americamysis bahia* (24-hour acute LC50 [2])	> 100%	> 100%	Grab [3]	Once/six months

[1] As determined by the static sheen test utilizing EPA Method 1617 which is published in Appendix 1 to 40 CFR Part 435, Subpart A.

[2] The LC50 (Lethal Concentration 50) is defined as the effluent dilution at which 50% of the organisms survive. See Appendix C for conditions associated with these effluent limitations.

[3] Should the planned or actual discharge occur for a duration of 24 hours or greater, the sample type shall be a 24-hour composite.

(iii) Deck Drainage

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Free Oil [1]	No discharge	N/A	Observation	Once/day

[1] As determined by the presence of a film or sheen upon, or discoloration of, the surface of the receiving water (visual sheen).

(iv) Domestic Waste

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Flow	Report, MGD	Report, MGD	Instantaneous	Five times/week
Floating Solids, and Foam	No discharge	N/A	Observation	Once/day
Biochemical Oxygen Demand (5-day)	65 mg/L	20 mg/L	Grab	Once/week
Total Suspended Solids	65 mg/L	20 mg/L	Grab	Once/week
Dissolved Oxygen	2.0 mg/L (minimum)	N/A	Grab	Once/week
Enterococci	130 cfu or MPN/100 mL	35 cfu or MPN/100 mL	Grab	Once/quarter
Fecal Coliform	43 cfu or MPN/100 mL	14 cfu or MPN/100 mL	Grab	Once/quarter
Total Residual Chlorine	1.0 mg/L (minimum) and 4.0 mg/L (maximum)	N/A	Grab	Five times/week
pH	6.0 - 9.0 standard units	N/A	Grab	Once/day

(v) Sanitary Waste (M10 and M9IM)

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Flow	Report, MGD	Report, MGD	Instantaneous	Five times/week
Floating Solids	No discharge	N/A	Observation	Once/day
Biochemical Oxygen Demand (5-day)	65 mg/L	20 mg/L	Grab	Once/week
Total Suspended Solids	65 mg/L	20 mg/L	Grab	Once/week
Dissolved Oxygen	2.0 mg/L (minimum)	N/A	Grab	Once/week
Enterococci	130 cfu or MPN/100 mL	35 cfu or MPN/100 mL	Grab	Once/quarter
Fecal Coliform	43 cfu or MPN/100 mL	14 cfu or MPN/100 mL	Grab	Once/quarter
Total Residual Chlorine	1.0 mg/L (minimum) and	N/A	Grab	Five times/week

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
	4.0 mg/L (maximum)			
pH	6.0 - 9.0 standard units	N/A	Grab	Once/day

(vi) Uncontaminated Miscellaneous Discharges

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Free Oil [1]	No discharge	N/A	Observation	Once/day

[1] As determined by the presence of a film or sheen upon, or discoloration of, the surface of the receiving water (visual sheen).

(vii) Contaminated Miscellaneous Discharges

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Flow	Report, MGD	N/A	Estimate	Once/month
Free Oil [1]	No discharge	N/A	Observation	Once/day
pH	6.0 - 9.0 standard units	N/A	Grab	Once/week
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51712) *Menidia beryllina* (24-hour acute LC50 [2])	≥ 100%	≥ 100%	Grab	Once/six months
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51713) *Americamysis bahia* (24-hour acute LC50 [2])	≥ 100%	≥ 100%	Grab	Once/six months

[1] As determined by the presence of a film or sheen upon, or discoloration of, the surface of the receiving water (visual sheen).

[2] The LC50 (Lethal Concentration 50) is defined as the effluent dilution at which 50% of the organisms survive. See Appendix C for conditions associated with these effluent limitations.

Section B. General Requirements Applicable to All Facilities Authorized to Discharge under this TPDES General Permit

1. There shall be no discharge of floating solids or visible foam other than in trace amounts, and no discharge of visible oil.

2. The discharge(s) shall not contain a concentration of taste, or odor-producing substances that interfere with the production of potable water by reasonable water treatment methods, impart unpalatable flavor to food fish including shellfish, result in offensive odors arising from the receiving waters, or otherwise interfere with reasonable uses of water in the state.

3. Facilities which generate industrial solid wastes, as defined in 30 TAC § 335.1, shall comply with the provisions of 30 TAC Chapter 335, *Industrial Solid Waste and Municipal Hazardous Waste*. If the requirements of 30 TAC Chapter 335 do not apply, the solid wastes shall be disposed of in accordance with the Texas Health and Safety Code, Chapter 361. Management of industrial solid wastes not under the regulatory jurisdiction of the TCEQ shall be managed in accordance with regulations established by the RRC.

4. The permittee shall take necessary steps to prevent adverse effects to human health, safety, or the environment. The permittee shall immediately cease discharging whenever it is determined that the discharge(s) may endanger human health, safety, or the environment.

5. Disposal of wastewater shall be done in such a manner as to prevent nuisance conditions.

6. The permittee shall provide the following noncompliance notifications:

    a. Any noncompliance that may endanger human health or safety or the environment shall be reported by the permittee to the TCEQ. Report of such information shall be provided orally, by facsimile (FAX), or by email to the appropriate TCEQ regional office within 24 hours of becoming aware of the noncompliance. A written submission of such information shall also be provided by the permittee to the appropriate TCEQ regional office and the TCEQ Enforcement Division (MC-224) within five working days of becoming aware of the noncompliance. The written report shall contain a description of the noncompliance and its cause; the potential danger to human health or safety or the

environment; the period of noncompliance, including exact dates and times; 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 recurrence of the noncompliance and to mitigate its adverse effects.

b. Any effluent violation that deviates from the permitted effluent limitation by more than 40% shall be reported by the permittee in writing to the appropriate TCEQ regional office and the TCEQ Enforcement Division (MC-224) within five working days of becoming aware of the noncompliance.

c. Any noncompliance other than those specified in paragraphs (a) and (b) above, or any required information not submitted or submitted incorrectly, shall be reported to the TCEQ Enforcement Division (MC-224) as promptly as possible. For effluent limitation violations, non-compliances must be reported on the NetDMR form or if a waiver is obtained on the approved DMR form (EPA No. 3320-1).

7. Applicants seeking authorization to discharge under this TPDES general permit and permittees that are authorized to discharge under this TPDES general permit are hereby issued a waiver from the electronic reporting requirements of 40 CFR Part 127 for application submittal, changes, and termination requirements. Therefore, applicants and permittees may submit NOI, NOT, and NOC forms to TCEQ in paper format. This waiver does not apply to submittal of compliance monitoring DMRs.

8. Facilities that generate wastes that are prohibited from discharge under Part III, Sections A.1.a, A.2.a, and A.3.a are required to maintain records of the volumes of these wastes generated and their ultimate disposal location (if such waste streams are generated and disposed). Records shall be recorded on a monthly basis and shall be maintained onsite or at another accessible location for review by TCEQ personnel.

9. There shall be no discharge of halogenated phenolic compounds as part of any waste stream authorized for discharge under the terms and conditions of this TPDES general permit.

Section C. Specific Requirements Applicable to Stripper Well Facilities

1. The discharge(s) may not be located within 300 feet of the intake for a public drinking water supply.

2. The discharge(s) must be a minimum distance of 500 feet from any water well and the discharge(s) shall be managed to minimize the potential of contamination to all public and private wells.

3. When the discharge(s) originates within the boundaries of an MS4, the permittee shall notify the appropriate MS4 operator in writing at least 48 hours prior to initiating the discharge(s).

4. Facilities shall maintain oil and gas production records for each well that demonstrates eligibility for coverage under this TPDES general permit (e.g., maximum production rate of ten barrels of oil per day and other restrictions established in this TPDES general permit). Records shall be maintained onsite or be readily available for access and review by TCEQ personnel.

5. Discharges of stormwater to surface water in the state are exempt from obtaining authority under the TPDES program as established in 40 CFR § 122.26(a)(2)(ii) unless classified as contaminated stormwater as established in 40 CFR § 122.26(b)(14)(iii). Discharges of contaminated stormwater are not authorized under the terms and conditions of this TPDES general permit. Entities seeking such discharge of contaminated stormwater may obtain authorization via TPDES Multi-Sector General Permit No. TXR050000 (operating facilities), TXR150000 (facilities under construction), or an individual TPDES permit.

6. If generated, well treatment fluids and workover fluids shall be managed, treated, and discharged with produced wastewater in accordance with the effluent limitations and monitoring requirements established in Part III, Section A.1.b.i. For purposes of stripper well facilities, hydraulic fracturing fluids are not considered well treatment fluids and are thus prohibited from discharge.

7. There is no mixing zone established for discharges of produced wastewater (or well treatment fluids or workover fluids) authorized under this TPDES general permit. Acute toxic criteria apply at the point of discharge.

Section D. Specific Requirements Applicable to Coastal Facilities

1. Permittees which operate a cooling water intake structure (CWIS) subject to Section 316(b) of the CWA and 40 CFR Part 125, Subpart

N are subject to the requirements established in Appendix A of this TPDES general permit.

2. Monitoring for the effluent limitation of no free oil for the discharge of deck drainage and contaminated/uncontaminated miscellaneous discharges shall be done when an observation of a visual sheen on the surface of the receiving water is possible in the vicinity of the discharge, and the facility is manned. All other discharges must be sampled in accordance with the monitoring frequencies established in Part III, Section A.2.b of this TPDES general permit, and all other discharges are prohibited when the facility is unmanned.

3. This TPDES general permit does not authorize on-site disposal of sewage sludge, biosolids, or water treatment residuals. The permittee shall ensure that all sewage sludge, biosolids, and water treatment residuals which are not a hazardous waste (as defined in 30 TAC Chapter 335) are handled, transported, and disposed of in compliance with the applicable provisions of 30 TAC Chapter 312. The permittee shall ensure that all sewage sludge, biosolids, and water treatment residuals which are a hazardous waste (as defined in 30 TAC Chapter 335) are handled, transported, and disposed of in compliance with the applicable provisions of 30 TAC Chapter 335. The permittee shall keep records of all sewage sludge, biosolids, and water treatment residuals removed from the facility. Such records will include the following information:

   a. volume (dry weight basis) of sewage sludge, biosolids, and water treatment residuals disposed;
   b. date of disposal;
   c. identity and registration number of hauler/transporter;
   d. location and registration or permit number of disposal site; and
   e. method of final disposal.

4. Discharges from outfalls that combine multiple waste streams authorized for discharge under Part III, Section A.2.b of this TPDES general permit are subject to all effluent limitations and associated monitoring requirements for every waste stream combined for discharge.

5. The mixing zone for contaminated miscellaneous discharges is defined as a volume of water within a radius of 200 feet extending over the receiving water from the point where the discharge enters water in the state. Chronic toxic criteria apply at the edge of the mixing zone.

The zone of initial dilution (ZID) for contaminated miscellaneous discharges is defined as a volume of water within a radius of 50 feet extending over the receiving water from the point where the discharge enters water in the state. Acute toxic criteria apply at the edge of the ZID.

6. Adding seawater for the purpose of achieving compliance with whole effluent toxicity (WET) limitations for the discharge of contaminated miscellaneous discharges is prohibited.

7. Discharges of stormwater to surface water in the state from inland coastal facilities (e.g., not located in a bay, estuary, or wide tidal river) are exempt from obtaining authority under the TPDES program as established in 40 CFR § 122.26(a)(2)(ii) unless classified as contaminated stormwater as established in 40 CFR § 122.26(b)(14)(iii). Discharges of contaminated stormwater are not authorized under the terms and conditions of this TPDES general permit and entities seeking to discharge contaminated stormwater may obtain authorization via TPDES Multi-Sector General Permit No. TXR050000 (operating facilities), TXR150000 (facilities under construction), or an individual TPDES permit. Discharges of stormwater from coastal facilities located in a bay, estuary, or wide tidal river are encompassed as authorized discharges under the terms and conditions of this TPDES general permit as deck drainage.

8. Permittees which are currently authorized to discharge contaminated miscellaneous discharges under NPDES General Permit Number TXG330000 and/or an individual RRC authorization shall comply with the following schedule of activities for the attainment of water quality-based final effluent limitations for 24-hour acute lethal WET limitations:

    a. determine exceedance cause(s);
    b. develop control options;
    c. evaluate and select control mechanisms;
    d. implement corrective action; and
    e. attain final effluent limitations no later than three years from the date of acknowledgment to discharge under this TPDES general permit.

    The permittee shall submit quarterly progress reports in accordance with the following schedule. The requirement to submit quarterly progress reports expires three years from the date of acknowledgment to discharge under this TPDES general permit.

PROGRESS REPORT DATE
January 1
April 1
July 1
October 1

The quarterly progress reports must include a discussion of the interim requirements that have been completed at the time of the report and must address the progress towards attaining the water quality-based final effluent limitations for 24-hour acute lethal WET limitations for the discharge of contaminated miscellaneous discharges at the outfall being discharged no later than three years from the date of acknowledgment to discharge under this TPDES general permit. Should compliance be obtained, the requirement to submit quarterly progress reports is waived, provided the permittee indicates such compliance in the latest quarterly progress report.

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this TPDES general permit must be submitted no later than 14 days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

All reports must be submitted to the appropriate TCEQ Regional Office and to the Compliance Monitoring Team (MC-224).

New permittees are subject to effluent limitations for the discharge of contaminated miscellaneous discharges upon authorization to discharge under the terms and conditions of this TPDES general permit.

Section E. Specific Requirements Applicable to Territorial Seas Facilities

1. Permittees which operate a CWIS subject to Section 316(b) of the CWA and 40 CFR Part 125, Subpart N are subject to the requirements established in Appendix A of this TPDES general permit.

2. Monitoring for the effluent limitation of “no free oil for the discharge of produced wastewater, deck drainage, and contaminated/uncontaminated miscellaneous discharges” shall be done when an observation of a visual sheen on the surface of the receiving water is possible in the vicinity of the discharge, and the

facility is manned. All other discharges must be sampled in accordance with the monitoring frequencies established in Part III, Section A.3.b of this TPDES general permit, and all other discharges are prohibited when the facility is unmanned.

3. This TPDES general permit does not authorize on-site disposal of sewage sludge, biosolids, or water treatment residuals. The permittee shall ensure that all sewage sludge, biosolids, and water treatment residuals which are not a hazardous waste (as defined in 30 TAC Chapter 335) are handled, transported, and disposed of in compliance with the applicable provisions of 30 TAC Chapter 312. The permittee shall ensure that all sewage sludge, biosolids, and water treatment residuals which are a hazardous waste (as defined in 30 TAC Chapter 335) are handled, transported, and disposed of in compliance with the applicable provisions of 30 TAC Chapter 335. The permittee shall keep records of all sewage sludge, biosolids, and water treatment residuals removed from the facility. Such records will include the following information:

   a. volume (dry weight basis) of sewage sludge, biosolids, and water treatment residuals disposed;
   b. date of disposal;
   c. identity and registration number of hauler/transporter;
   d. location and registration or permit number of disposal site; and
   e. method of final disposal.

4. Discharges from outfalls that combine multiple waste streams authorized for discharge under Part III, Section A.3.b of this TPDES general permit are subject to all effluent limitations and associated monitoring requirements for every waste stream combined for discharge.

5. The mixing zone for produced wastewater discharges; well treatment, completion, and workover fluids; and contaminated miscellaneous discharges, is defined as a volume of water within a radius of 200 feet extending over the receiving water from the point where the discharge enters water in the state. Chronic toxic criteria apply at the edge of the mixing zone.

   The ZID for produced wastewater discharges; well treatment, completion, and workover fluids; and contaminated miscellaneous discharges is defined as a volume of water within a radius of 50 feet extending over the receiving water from the point where the discharge enters water in the state. Acute toxic criteria apply at the edge of the ZID.

6. Adding seawater for the purpose of achieving compliance with WET limitations for the discharge of produced wastewater; well treatment, completion, and workover fluids; and contaminated miscellaneous discharges, is prohibited.

7. Discharges of domestic waste are subject to U.S. Coast Guard regulations established at 33 CFR Part 151.

8. Hydrate control fluids are authorized for discharge provided they are routed for treatment and discharge with produced wastewater.

9. Permittees which are currently authorized to discharge produced wastewater under NPDES General Permit No. TXG260000 and/or an individual RRC authorization shall comply with the following schedule of activities for the attainment of water quality-based final effluent limitations for total copper, total manganese, total zinc, 7-day chronic sublethal WET limitations, and 24-hour acute lethal WET limitations at the outfall(s) discharging produced wastewater. Additionally, permittees which are currently authorized to discharge either or both well treatment, completion, and workover fluids; and contaminated miscellaneous discharges under NPDES General Permit Number TXG260000 and/or an individual RRC authorization shall comply with the following schedule of activities for the attainment of water quality-based final effluent limitations for 24-hour acute lethal WET limitations:

   a. determine exceedance cause(s);
   b. develop control options;
   c. evaluate and select control mechanisms;
   d. implement corrective action; and
   e. attain final effluent limitations no later than three years from the date of acknowledgment to discharge under this TPDES general permit.

   The permittee shall submit quarterly progress reports in accordance with the following schedule. The requirement to submit quarterly progress reports expires three years from the date of acknowledgment to discharge under this TPDES general permit.

PROGRESS REPORT DATE
January 1
April 1
July 1
October 1

The quarterly progress reports must include a discussion of the interim requirements that have been completed at the time of the report and must address the progress towards attaining the water quality-based final effluent limitations for total copper, total manganese, total zinc, 7-day chronic sublethal WET limitations, and 24-hour acute lethal WET limitations (produced wastewater discharges); and 24-hour acute lethal WET limitations (well treatment, completion, and workover fluids; and contaminated miscellaneous discharges) at the outfall being discharged no later than three years from the date of acknowledgment to discharge under this TPDES general permit. Should compliance be obtained, the requirement to submit quarterly progress reports is waived, provided the permittee indicates such compliance in the latest quarterly progress report.

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this TPDES general permit must be submitted no later than 14 days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

All reports must be submitted to the appropriate TCEQ Regional Office and to the Compliance Monitoring Team (MC-224).

New permittees are subject to effluent limitations for the discharge of produced wastewater; well treatment, completion, and workover fluids discharges; and contaminated miscellaneous discharges upon authorization to discharge under the terms and conditions of this TPDES general permit.

10. Minimum analytical levels (MALs) are established for the following parameters. By establishing MALs, TCEQ is not requiring use of a specific analytical test method, nor is TCEQ requiring analytical results to be submitted where the laboratory test was run to achieve the MAL. When an analysis of an effluent sample for a pollutant indicates no detectable levels above the MAL and the test method detection level is as sensitive as the specified MAL, a value of zero shall be used for that measurement. When an analysis of an effluent sample for a pollutant indicates no detectable levels and the test method detection level is not as sensitive as the specified MAL, the level of detection achieved shall be used for that measurement. A zero may not be used.

Pollutant	MAL
Total Copper	0.002 mg/L
Total Manganese	0.0005 mg/L
Total Mercury	0.000005 mg/L
Total Zinc	0.005 mg/L

11. Discharges of produced wastewater are granted an exemption for compliance with hazardous metals effluent limitations established under 30 TAC §319.23 per 30 TAC §319.26, except in any case where there is a water quality-based effluent limitation for a metal listed in 30 TAC §319.23 otherwise imposed in this general permit, in which case such discharges must adhere to the water quality-based effluent limitation.

12. Discharges of produced wastewater are restricted to discharge/outfall configurations of discharge pipe diameter no greater than six inches, and discharge depth to sea floor of no less than five meters.

Part IV. Standard Permit Conditions

1. The permittee has a duty to comply with all conditions in this TPDES general permit. Failure to comply with any condition is a violation of the TPDES general permit and the statutes under which the TPDES general permit was issued. Any violation may be grounds for enforcement action, for terminating authorization under this TPDES general permit, or for requiring a permittee to apply for and obtain a TPDES individual permit.

2. It is not a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted discharge(s) to maintain compliance with conditions of the TPDES general permit.

3. The permittee, shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) installed or used by the permittee to achieve compliance with conditions of the TPDES general permit. Proper operation and maintenance also include adequate laboratory and process controls, and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with conditions of the TPDES general permit. This provision does not apply to pits and impoundments which are regulated by the RRC and operated with treatment systems resulting in discharges to surface water in the state.

4. At the request of the Executive Director, the permittee shall furnish any information that is necessary to determine whether cause exists for revoking, suspending, or terminating authorization under this TPDES general permit. The requested information must be provided within a reasonable time frame and in no case later than 30 days from the date of the request.

5. The permittee shall give notice to the Executive Director before physical alterations or additions to the permitted facility if such alterations would result in a violation of the TPDES general permit requirements.

6. Inspection and entry shall be allowed per Chapter 26 of the TWC; Texas Health and Safety Code, §§ 361.032 - 361.033 and 361.037; and 40 CFR § 122.41(i). The statement in TWC, § 26.014 that Commission entry of a regulated entity shall occur in accordance with an establishment's rules and regulations concerning safety, internal security, and fire protection is not grounds for denial or restriction of entry to any part of the regulated entity, but merely describes the Commission's duty to observe appropriate rules and regulations during an inspection.

7. Standard monitoring and reporting requirements are as follows:

    a. Samples shall be collected, measurements shall be taken, and visual observations shall be made at times and in a manner so as to be representative of the monitored and/or observed discharge.

    b. All samples must be collected according to the latest edition of "Standard Methods for the Examination of Water and Wastewater" (prepared and published jointly by the American Public Health Association, the American Water Works Association, and the Water Environment Federation), the EPA’s, "Methods for Chemical Analysis of Water and Wastes" (1979), or the EPA’s, "Biological Field and Laboratory Methods for Measuring the Quality of Surface Waters and Effluents" (1973). The effluent limitations for the observation of free oil, floating solids, foam, and garbage are not subject to this condition.

    c. Sample containers, holding times, preservation methods, and analytical methods, shall either follow the requirements in 40 CFR Part 136, or the latest edition of "Standard Methods for the Examination of Water and Wastewater.” The effluent

limitations for the observation of free oil, floating solids, foam, and garbage are not subject to this condition.

d. The permittee shall ensure that properly trained and authorized personnel monitor, sample, and, as applicable, observe the discharge.

e. The point of discharge, sampling point and observation point (as applicable) must be downstream of any treatment unit or treatment technique that is used to improve or otherwise alter the quality of the discharge.

f. Analytical results for determining compliance with effluent limitations shall be submitted online using the NetDMR reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver. Permittees that are issued an electronic reporting waiver shall submit analytical results to the TCEQ Enforcement Division (MC-224) on an approved DMR form (EPA No. 3320-1). Effluent sampling shall be conducted in accordance with the monitoring frequencies specified in this TPDES general permit. The DMR for any given month shall be due by the 20th day of the following month. The DMR for annual testing must be submitted to TCEQ by March 31st of the following year. All DMRs shall be signed in accordance with the requirements in Part IV.8 of this TPDES general permit. If non-compliance with a discharge limitation occurs, the permittee shall provide notification according to Part III.B.6. of this TPDES general permit.

g. All laboratory tests submitted to demonstrate compliance with this TPDES general permit must meet the requirements of 30 TAC Chapter 25, *Environmental Testing Laboratory Accreditation and Certification*. The effluent limitations for the observation of free oil, floating solids, foam, and garbage are not subject to this condition.

h. Records of monitoring and observation activities shall include:

(i) date, time, and place of sample, measurement, or observation;

(ii) identity of individual who collected the sample, made the measurement, or made the observation;

(iii) date and time of laboratory analysis (the effluent limitations for the observation of free oil, floating solids, foam, and garbage are not subject to this condition);

(iv) identity of the individual and laboratory that performed the analysis (the effluent limitations for the observation of free oil, floating solids, foam, and garbage are not subject to the laboratory condition);

(v) the technique or method of analysis (the effluent limitations for the observation of free oil, floating solids, foam, and garbage are not subject to this condition);

(vi) the results of the analysis, measurement, or observation; and

(vii) quality assurance/quality control records (the effluent limitations for the observation of free oil, floating solids, foam, and garbage are not subject to this condition).

i. If the permittee monitors any pollutant in a discharge more frequently than required by the TPDES general permit using approved analytical methods as specified in Part IV.7 of this TPDES general permit, all results of such monitoring shall be included in the calculation and recording of the values on the DMR. Increased frequency of sampling shall be indicated on the DMR.

8. All reports, NOIs, NOTs, NOCs, or other information requested by the Executive Director shall meet the requirements of 30 TAC § 305.44, *Signatories to Applications*.

9. The permittee shall retain copies of all records required by this TPDES general permit, including monitoring and observation records and records related to the application or any certification requirements, for a period of three years from the date of the record. This period may be extended at the request of the Executive Director. The records shall be retained at the facility or be readily available for review by TCEQ personnel upon request.

10. Authorization under this TPDES general permit may be suspended or revoked for the reasons stated in 30 TAC § 205.4. Notifying the TCEQ of planned changes or an anticipated noncompliance does not stay any TPDES general permit condition.

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

12. If the permittee becomes aware that it failed to submit any relevant facts in an NOI or submitted incorrect information in an NOI or in any report to the Executive Director, it shall promptly submit such facts or information.

13. The permittee is subject to administrative, civil, and criminal penalties, as applicable, under TWC Chapter 7 for violations including, but not limited to, the following:

    a. violating CWA §§ 301, 302, 306, 307, 308, 318, or 405, any condition or limitation implementing any sections in a TPDES general permit issued under CWA § 402, or any requirement imposed in a pretreatment program approved under CWA § 402(a)(3) or (b)(8);

    b. intentionally or knowingly tampering with, modifying, disabling, or failing to use pollution control or monitoring devices, systems, methods, or practices required under this TPDES general permit; and

    c. intentionally or knowingly making or causing to be made a false material statement, representation, or certification in, or omitting or causing to be omitted material information from, an application, notice, record, report, plan, or other document, including monitoring device data, filed or required to be maintained by this TPDES general permit.

Part V. Fees

1. NOI fee: An NOI must include a $800 application fee. A fee is not required for submission of an NOT or NOC.

2. Annual Water Quality Fee: Facilities with an active authorization on September 1 of each year (i.e., those that have not submitted an NOT prior to this date) will be billed $100 for the following fiscal year.

Appendix A: Cooling Water Intake Structure (CWIS) Requirements Applicable to Coastal Facilities and Territorial Seas Facilities

Section I. Applicability and Limitations on Authorization

A. General Applicability

This appendix applies to coastal facilities and territorial seas facilities that use or propose to use a CWIS.

B. Specific Applicability

1. A new facility which meets the following criteria is subject to the requirements of this appendix.

    i. It is a point source that uses or proposes to use a CWIS either directly or indirectly via an independent supplier;

    ii. It has at least one CWIS that uses at least 25 percent of the water withdrawn on an average monthly basis for cooling purposes; and

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

2. A new facility which does not meet all criteria established under Section I, paragraph B.1 of this appendix or an existing facility is subject to the requirements of this appendix on a best professional judgment (BPJ) basis.

C. Exemptions

Use of water obtained from the following sources is exempted from the requirements of this appendix:

1. an active public water system; or

2. treated effluent that would have otherwise been discharged into a Water of the U.S.

D. Limitations on Coverage

Facilities with a CWIS shall not be authorized under this TPDES general permit where:

1. threatened or endangered or otherwise protected federal, state, or tribal species, or critical habitat for these species, are present within the hydraulic zone of influence of the CWIS;

2. migratory and/or sport or commercial species of impingement concern to the Executive Director pass through the hydraulic zone of influence of the CWIS; or

3. the owner or operator of a new facility intends to comply with the Track II requirements established at 40 CFR § 125.134(c).

Section II. Specialized Definitions for Terms Used in this Appendix

Cooling water - Water used for contact or noncontact cooling, including water used for equipment cooling, evaporative cooling tower makeup, and dilution of effluent heat content. The intended use of the cooling water is to absorb waste heat rejected from the process or processes used, or from auxiliary operations on the facility's premises. Cooling water that is used in another industrial process either before or after it is used for cooling is considered process water rather than cooling water for the purposes of calculating the percentage of a new facility's intake flow that is used for cooling purposes in Section I, paragraph B.1.ii of this appendix.

Fixed facility - A bottom founded facility permanently attached to the seabed or subsoil of waters in the coastal or territorial seas (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 semi-submersibles, jack-ups, submersibles, tender-assisted rigs, and drill barges).

Hydraulic zone of influence - That portion of the source waterbody hydraulically affected by the CWIS withdrawal of water.

New facility - Any building, structure, facility, or installation that: meets the definition of a “new facility” at 40 CFR § 125.83; is regulated by 40 CFR Part 435 Subpart A or D; and it commenced construction after July 17, 2006.

Sea chest - The underwater compartment or cavity within the facility or vessel hull or pontoon through which sea water is drawn in (for cooling and other purposes) or discharged.

Waters of the United States or Waters of the U.S. – The term as defined in 40 CFR § 120.2.

Other special definitions can be found at 40 CFR §§ 125.83, 125.92 and 125.133.

Section III. CWIS Requirements.

A. Operational Requirements.

Each CWIS utilized by a new or existing facility which is subject to this appendix based on Section I, paragraph B (of this appendix), must meet the following operational requirements to demonstrate compliance with CWA Section 316(b) under this TPDES general permit.

1. Design and construction of each CWIS must have a maximum through-screen design intake velocity of 0.5 feet/second.

2. For CWISs located in an estuary or tidal river, the total design intake flow over one tidal cycle of ebb and flow must be no greater than one (1) percent of the volume of the water column within the area centered about the opening of the intake with a diameter defined by the distance of one tidal excursion at the mean low water level.

3. A new facility which is a fixed facility *without* sea chests must also select and implement design and construction technologies or operational measures for minimizing entrainment of entrainable life stages of fish and shellfish.

B. Monitoring Requirements

A new facility which meets all criteria under Section I, paragraph B.1 of this appendix, must conduct the following monitoring activities for each CWIS to demonstrate compliance with CWA Section 316(b) under this TPDES general permit.

1. Biological monitoring. A new facility which is a fixed facility *without* sea chests must monitor for entrainment. The facility 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 required by Section IV, paragraph D.1 of this appendix below. Sampling must occur only when the CWIS is in operation.

2. Velocity monitoring. If the facility uses a surface intake screen system, it must monitor head loss across the screens and correlate the measured value with the design intake velocity.

The head loss across the intake screen must be measured at the minimum ambient source water surface elevation (BPJ based on available hydrological data). The maximum head loss across the screen for each CWIS must be used to determine compliance with the velocity requirement in Section III, paragraph A.1 of this appendix. If the facility uses devices other than surface intake screens, it must monitor velocity at the point of entry through the device. The facility must monitor head loss or velocity during initial facility startup, and thereafter, at a frequency of no less than once per quarter.

3. Visual or remote inspections. The facility must either conduct visual inspections or employ remote monitoring devices during the period the CWIS is in operation. The facility must conduct visual inspections at least weekly to ensure that any design and construction technologies required in Section III, paragraph A.3 of this appendix are maintained and operated to ensure that they will continue to function as designed. Alternatively, the facility may inspect via remote monitoring devices to ensure that the entrainment technologies are functioning as designed.

C. Record-Keeping Requirements.

1. A new or existing facility which is subject to this appendix based on Section I, paragraph B, must keep records of the following for a period of at least three (3) years from the date of obtaining authorization to discharge under this TPDES general permit: all the data used to complete the NOI and show compliance with the requirements; any supplemental information developed under Section IV of this appendix; and any compliance monitoring data required under Section III, paragraph B of this appendix.

2. A new facility which meets all criteria under Section I, paragraph B.1 of this appendix, must also provide the following information to the Executive Director in a yearly status report:

   i. for fixed facilities *without* sea chests, biological monitoring records for each CWIS as required by paragraph B.1 of this section;

   ii. velocity and head loss monitoring records for each CWIS as required by paragraph B.2 of this section; and

   iii. records of visual or remote inspections as required in paragraph B.3 of this section.

Section IV. NOI Materials

The facility must submit application materials for each CWIS that is used to obtain water for cooling purposes.

A. Applicability. This Section applies to:

1. a new facility which meets all criteria under Section I, paragraph B.1 of this appendix and is:

   i. a fixed facility which employs or will employ sea chests must submit information required by paragraphs B – F in this section;

   ii. a fixed facility *without* sea chests must submit information required by paragraphs B – G of this section; or

   iii. an unfixed facility must submit information required by paragraphs C (except C.2), D.2, E, and F of this section.

2. a new facility which does not meet all the criteria under Section I, paragraph B.1 of this appendix, but is not exempt from requirements for CWISs under Section I, paragraph C of this appendix, must submit information required by Section IV, paragraphs C (except C.2, if unfixed), D.2, E, and F of this appendix.

3. an existing facility that is not exempt from requirements for CWISs under Section I, paragraph C of this appendix must submit information required by Section IV, paragraphs C (except C.2, if unfixed), D.2, E, and F of this appendix.

B. Required Information: Source water physical data

The following source water physical data must be provided:

1. A narrative description and scaled drawings showing the physical configuration of all source water bodies used by the facility, including areal dimensions, depths, salinity and temperature regimes, and other documentation that supports this determination of the water body type where each CWIS is located;

2. Identification and characterization of the source waterbody's hydrological and geomorphological features, as well as the methods used to conduct any physical studies to determine the

intake's area of influence within the waterbody and the results of such studies; and

3. Locational maps to support the descriptions provided in paragraphs B.1 and B.2 of this section.

C. Required Information: CWIS data

The following information regarding CWIS data must be provided:

1. A narrative description of the configuration of each CWIS and its location in the water body and in the water column;

2. Latitude and longitude in degrees, minutes, and seconds for each of the CWISs;

3. A narrative description of the operation of each of the CWISs, including design intake flows, daily hours of operation, number of days of the year in operation, and seasonal changes, if applicable;

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

5. Engineering drawings of the CWIS.

D. Required Biological information

The following biological information must be provided:

1. Source water baseline biological characterization data. This information is required to characterize the biological community in the vicinity of the CWISs and to characterize the operation of the CWISs. This supporting information must include existing data (if they are available). However, the facility may choose to supplement the data using newly conducted field studies. The information submitted must include:

    i. a list of the data in paragraphs D.1.ii through v of 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 CWIS;

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 CWIS; and

vi. if supplementing the information requested in paragraph D.1.ii through v of this section with data collected using field studies, supporting documentation for the Source Water Baseline Biological Characterization must include the following: a description of all methods and quality assurance procedures for sampling; 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 used 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 CWIS.

2. Documentation from any fishery management agency(ies) or other relevant information which demonstrates:

i. there are no threatened or endangered or otherwise protected federal, state, or tribal species, or critical habitat for these species, within the hydraulic zone of influence of the CWIS; and

ii. there are no migratory and/or sport or commercial species of impingement concern to the Executive Director that pass through the hydraulic zone of influence of the CWIS.

E. Required Velocity information.

Submit the following information to the Executive Director to demonstrate the facility is complying with the requirement at Section III, paragraph A.1 of this appendix to meet a maximum through-screen design intake velocity of no more than 0.5 feet/second at each CWIS:

1. a narrative description of the design, structure, equipment, and operation used to meet the velocity requirement; and

2. design calculations showing that the velocity requirement will be met at minimum ambient source water surface elevations (based on BPJ using available hydrological data) and maximum head loss across the screens or other device.

F. Required Source waterbody flow information.

For a fixed facility where the CWIS is located in an estuary or tidal river, the applicant must provide the mean low water tidal excursion distance and any supporting documentation and engineering calculations to show that the CWIS meets the flow requirements under Section III, paragraph A.2 of this appendix.

G. Required Design and Construction Technology Plan.

To demonstrate compliance with Section III, paragraph A.3 of this appendix if applicable, the facility must submit to the Executive Director the following information in a Design and Construction Technology Plan:

1. a narrative description of the design and operation of the design and construction technologies that you will use to minimize entrainment of those species expected to be the most susceptible to entrainment. Provide species-specific information that demonstrates the efficacy of the technology; and

2. design calculations, drawings, and estimates to support the descriptions provided in paragraph 1 of this subsection.

Appendix B: 7-Day Chronic Marine WET Testing Requirements Applicable to Territorial Seas Facilities:

CHRONIC BIOMONITORING REQUIREMENTS: MARINE

The provisions of this appendix apply to the outfall being tested for whole effluent toxicity (WET) testing.

1. Scope, Frequency and Methodology

   a. The permittee shall test the effluent for toxicity in accordance with the provisions below. Such testing will determine if an appropriately dilute effluent sample adversely affects the survival or growth of the test organisms.

   b. The permittee shall conduct the following toxicity tests using the test organisms, procedures, and quality assurance requirements specified below and in accordance with "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms," third edition (EPA-821-R-02-014) or its most recent update:

      1) Chronic static renewal 7-day survival and growth test using the mysid shrimp (*Americamysis bahia*) (Method 1007.0). A minimum of eight replicates with five organisms per replicate shall be used in the control and in each dilution. This test shall be conducted once per quarter.

      2) Chronic static renewal 7-day larval survival and growth test using the inland silverside (*Menidia beryllina*) (Method 1006.0). A minimum of five replicates with eight organisms per replicate shall be used in the control and in each dilution. This test shall be conducted once per quarter.

      The permittee must perform and report a valid test for each test species during the prescribed reporting period. An invalid test must be repeated during the same reporting period. An invalid test is defined as any test failing to satisfy the test acceptability criteria, procedures, and quality assurance requirements specified in the test methods and general permit.

c. The permittee shall use five effluent dilution concentrations and a control in each toxicity test. These effluent dilution concentrations are 0.5%, 0.6%, 0.8%, 1.1%, and 1.5% effluent. The critical dilution, defined as 1.1% effluent, is the effluent concentration representative of the proportion of effluent in the receiving water during critical mixing conditions.

d. The sublethal NOEC effluent limitation of not less than 1.1% is effective for both test species (see Part III, Sections A.3.b.i and A.3.b.ii of the general permit. Compliance schedules for existing permitted discharges are established in Part III, Section E.9.

e. Should a test demonstrate significant toxicity (that is, there is a statistically significant difference in survival or growth at the critical dilution when compared to the survival or growth in the control), the testing frequency for that test species increases to monthly until three consecutive tests pass (do not demonstrate statistically significant toxicity), at which time the testing frequency of once per quarter resumes. An NOC as established in Part II, Section C.5 of the general permit is required to be submitted upon a demonstration of significant toxicity that requires an increase in monitoring frequency. Additionally, upon three consecutive tests passing, an NOC is required to be submitted to revert to the once per quarter monitoring frequency.

    1) If none of the first four consecutive quarterly tests demonstrates significant toxicity, the permittee may submit this information to the Standards Implementation Team (MC-150) and, upon approval, reduce the testing frequency to once per six months for the invertebrate test species and once per year for the vertebrate test species. A request for a monitoring frequency reduction shall be submitted in an NOC as established in Part II, Section C.5 of the general permit. The NOC shall include written correspondence from the Standards Implementation Team supporting the reduction in monitoring frequency.

    2) If one or more of the first four consecutive quarterly tests demonstrates significant toxicity, the permittee shall continue quarterly testing for that species until this general permit is reissued. If a testing frequency reduction had been previously granted and a subsequent test demonstrates significant toxicity, the

permittee will resume a quarterly testing frequency for that species until this general permit is reissued.

2. Required Toxicity Testing Conditions

a. Test Acceptance - The permittee shall repeat any toxicity test, including the control and all effluent dilutions, which fails to meet any of the following criteria:

1) a control mean survival of 80% or greater;

2) a control mean dry weight of surviving mysid shrimp of 0.20 mg or greater;

3) a control mean dry weight for surviving unpreserved inland silverside of 0.50 mg or greater and 0.43 mg or greater for surviving preserved inland silverside.

4) a control coefficient of variation percent (CV%) between replicates of 40 or less in the growth and survival tests;

5) a critical dilution CV% of 40 or less in the growth and survival endpoints for either growth or survival test. However, if statistically significant lethal or nonlethal effects are exhibited at the critical dilution, a CV% greater than 40 shall not invalidate the test;

6) a percent minimum significant difference of 37 or less for mysid shrimp growth; and

7) a percent minimum significant difference of 28 or less for inland silverside growth.

b. Statistical Interpretation

1) For the mysid shrimp and the inland silverside larval survival and growth tests, the statistical analyses used to determine if there is a significant difference between the control and an effluent dilution shall be in accordance with the manual referenced in Part 1.b of this appendix.

2) The permittee is responsible for reviewing test concentration-response relationships to ensure that calculated test-results are interpreted and reported correctly. The document entitled “Method Guidance

and Recommendation for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)" (EPA 821-B-00-004) provides guidance on determining the validity of test results.

3) If significant lethality is demonstrated (that is, there is a statistically significant difference in survival at the critical dilution when compared to the survival in the control), the conditions of test acceptability are met, and the survival of the test organisms are equal to or greater than 80% in the critical dilution and all dilutions below that, then the permittee shall report a survival No Observed Effect Concentration (NOEC) of not less than the critical dilution for the reporting requirements.

4) The NOEC is defined as the greatest effluent dilution at which no significant effect is demonstrated. The Lowest Observed Effect Concentration (LOEC) is defined as the lowest effluent dilution at which a significant effect is demonstrated. A significant effect is herein defined as a statistically significant difference between the survival, reproduction, or growth of the test organism in a specified effluent dilution compared to the survival, reproduction, or growth of the test organism in the control (0% effluent).

5) The use of NOECs and LOECs assumes either a monotonic (continuous) concentration-response relationship or a threshold model of the concentration-response relationship. For any test result that demonstrates a non-monotonic (non-continuous) response, the NOEC should be determined based on the guidance manual referenced in Item 2 of this appendix.

c. Dilution Water

1) Dilution water used in the toxicity tests shall be standard, synthetic reconstituted seawater.

2) Upon approval, the permittee may substitute other dilution water with chemical and physical characteristics similar to that of the receiving water.

d. Samples

1) The permittee shall collect a minimum of three grab samples from the outfall being tested. The second and third grab samples will be used for the renewal of the dilution concentrations for each toxicity test.

2) The permittee shall collect the grab samples such that the samples are representative of any periodic episode of chlorination, biocide usage, or other potentially toxic substance being discharged on an intermittent basis.

3) The permittee shall initiate the toxicity tests within 36 hours after collection of the first grab sample. The holding time for any subsequent grab sample shall not exceed 72 hours. Samples shall be maintained at a temperature of 0-6 degrees Centigrade during collection, shipping, and storage.

4) If the outfall being tested ceases discharging during the collection of effluent samples, the requirements for the minimum number of effluent samples, and the sample holding time are waived during that sampling period. However, the permittee must have collected an effluent grab sample volume sufficient to complete the required toxicity tests with renewal of the effluent. The sample collection duration and the static renewal protocol associated with the abbreviated sample collection must be documented in the full report.

3. Reporting

a. The permittee shall prepare a full report of the results of all tests conducted in accordance with the manual referenced in Part 1.b. of this appendix for every test initiated.

b. The permittee shall routinely report the results of each biomonitoring test in the Table 1 format of this appendix to the Standards Implementation Team (MC-150).

c. Enter the following codes for the appropriate parameters for valid tests only:

1. For the mysid shrimp, Parameter TLP3E, enter a “1” if the NOEC for survival is less than the critical dilution; otherwise, enter a “0.”

2. For the mysid shrimp, Parameter TOP3E, report the NOEC for survival.

3. For the mysid shrimp, Parameter TXP3E, report the LOEC for survival.

4. For the mysid shrimp, Parameter TWP3E, enter a “1” if the NOEC for growth is less than the critical dilution; otherwise, enter a “0.”

5. For the mysid shrimp, Parameter TPP3E, report the NOEC for growth.

6. For the mysid shrimp, Parameter TYP3E, report the LOEC for growth.

7. For the inland silverside, Parameter TLP6J, enter a “1” if the NOEC for survival is less than the critical dilution; otherwise, enter a “0.”

8. For the inland silverside, Parameter TOP6J, report the NOEC for survival.

9. For the inland silverside, Parameter TXP6J, report the LOEC for survival.

10. For the inland silverside, Parameter TWP6J, enter a “1” if the NOEC for growth is less than the critical dilution; otherwise, enter a “0.”

11. For the inland silverside, Parameter TPP6J, report the NOEC for growth.

12. For the inland silverside, Parameter TYP6J, report the LOEC for growth.

d. The permittee shall report the sublethal WET values for the 30-day average and the 7-day minimum under Parameter No. 51712 for the inland silverside and Parameter No. 51713 for the mysid shrimp. If more than one valid test was performed during the reporting period, the NOECs will be averaged arithmetically and reported as the daily average NOEC. The data submitted should reflect the lowest sublethal results during the reporting period.

TABLE 1 (SHEET 1 OF 4)

MYSID SHRIMP SURVIVAL AND GROWTH

		Date	Time	Date	Time
Dates and Times	No. 1 FROM:	_____		TO: _____	
Samples Collected	No. 2 FROM:	_____		TO: _____	
	No. 3 FROM:	_____		TO: _____	

Test initiated: _____am/pm _____date

Dilution water used: _____ Synthetic dilution water _____ Other (approved)

MYSID SHRIMP SURVIVAL

Percent Survival in Replicate Chambers

Percent Effluent	A	B	C	D	E	F	G	H	CV% [1]
0%									
0.5%									
0.6%									
0.8%									
1.1%									
1.5%									

Mean Percent Survival

Percent Effluent	24h	48h	7 day	CV% [1]
0%				
0.5%				
0.6%				
0.8%				
1.1%				
1.5%				

[1] Coefficient of Variation = standard deviation x 100/mean

DATA TABLE FOR GROWTH OF MYSID SHRIMP

Mean dry weight in milligrams in replicate chambers

Replicate	0%	0.5%	0.6%	0.8%	1.1%	1.5%
A						
B						
C						
D						
E						

TABLE 1 (SHEET 2 OF 4)

MYSID SHRIMP SURVIVAL AND GROWTH

DATA TABLE FOR GROWTH OF MYSID SHRIMP (Continued)

Mean dry weight in milligrams in replicate chambers

Replicate	0%	0.5%	0.6%	0.8%	1.1%	1.5%
F						
G						
H						
Mean Dry Weight (mg)						
CV% [1]						
PMSD						

2. Dunnett's Procedure or Steel's Many-One Rank Test or Wilcoxon Rank Sum Test (with Bonferroni adjustment) or t-test (with Bonferroni adjustment) as appropriate:

   Is the mean survival at 7 days significantly less than the control survival for the % effluent corresponding to lethality?

   CRITICAL DILUTION (1.1%): _____ YES _____ NO

3. Dunnett's Procedure or Steel's Many-One Rank Test or Wilcoxon Rank Sum Test (with Bonferroni adjustment) or t-test (with Bonferroni adjustment) as appropriate:

   Is the mean dry weight (growth) at 7 days significantly less than the control's dry weight (growth) for the % effluent corresponding to non-lethal effects?

   CRITICAL DILUTION (1.1%): _____ YES _____ NO

4. Enter percent effluent corresponding to each NOEC\LOEC below:

   a) NOEC survival = _____% effluent

   b) LOEC survival = _____% effluent

   c) NOEC growth = _____% effluent

   d) LOEC growth = _____% effluent

TABLE 1 (SHEET 3 OF 4)

INLAND SILVERSIDE MINNOW LARVAL SURVIVAL AND GROWTH TEST

		Date	Time	Date	Time
Dates and Times	No. 1 FROM:	_____		TO: _____	
Samples Collected	No. 2 FROM:	_____		TO: _____	
	No. 3 FROM:	_____		TO: _____	

Test initiated: _____am/pm _____date

Dilution water used: _____ Synthetic dilution water _____ Other (approved)

INLAND SILVERSIDE SURVIVAL

Percent Survival in Replicate Chambers

Percent Effluent	A	B	C	D	E	F	G	H	CV% [1]
0%									
0.5%									
0.6%									
0.8%									
1.1%									
1.5%									

Mean Percent Survival

Percent Effluent	24h	48h	7 day	CV% [1]
0%				
0.5%				
0.6%				
0.8%				
1.1%				
1.5%				

[1] Coefficient of Variation = standard deviation x 100/mean

TABLE 1 (SHEET 4 OF 4)

INLAND SILVERSIDE LARVAL SURVIVAL AND GROWTH TEST

INLAND SILVERSIDE GROWTH

Average Dry Weight in milligrams in replicate

Percent Effluent	**A**	**B**	**C**	**D**	**E**	**Mean Dry Weight (mg)**	**CV%** [1]
0%							
0.5%							
0.6%							
0.8%							
1.1%							
1.5%							
PMSD							

[1] Weights are for: ___ preserved larvae, or ___ unpreserved larvae

1. Dunnett's Procedure or Steel's Many-One Rank Test or Wilcoxon Rank Sum Test (with Bonferroni adjustment) or t-test (with Bonferroni adjustment) as appropriate:

   Is the mean survival at 7 days significantly less than the control survival for the % effluent corresponding to lethality?

   CRITICAL DILUTION (1.1%): _____ YES _____ NO

2. Dunnett's Procedure or Steel's Many-One Rank Test or Wilcoxon Rank Sum Test (with Bonferroni adjustment) or t-test (with Bonferroni adjustment) as appropriate:

   Is the mean dry weight (growth) at 7 days significantly less than the control's dry weight (growth) for the % effluent corresponding to non-lethal effects?

   CRITICAL DILUTION (1.1%): _____ YES _____ NO

3. Enter percent effluent corresponding to each NOEC/LOEC below:

   a) NOEC survival = _____% effluent

   b) LOEC survival = _____% effluent

c) NOEC growth = _____% effluent

d) LOEC growth = _____% effluent

Appendix C: 24-Hour Acute Marine WET Testing Requirements Applicable to Coastal Facilities and Territorial Seas Facilities

24-HOUR ACUTE BIOMONITORING REQUIREMENTS: MARINE

The provisions of this section apply to the outfall being tested for WET testing.

1. Scope, Frequency, and Methodology

   a. The permittee shall test the effluent for lethality in accordance with the provisions in this appendix. Such testing will determine compliance with Texas Surface Water Quality Standard 30 TAC § 307.6(e)(2)(B), which requires greater than 50% survival of the appropriate test organisms in 100% effluent for a 24-hour period.

      The permittee may be exempted from complying with 30 TAC § 307.6(e)(2)(B) upon proving that toxicity is caused by an excess, imbalance, or deficiency of dissolved salts. This exemption excludes instances where individually toxic components (e.g., metals) form a salt compound. To obtain this exemption, a permittee is required to submit an individual permit application and obtain an individual TPDES permit allowing an ion-adjustment protocol, alternate species testing, or single species testing.

   b. The toxicity tests specified shall be conducted once per six months. The permittee shall conduct the following toxicity tests using the test organisms, procedures, and quality assurance requirements specified in this appendix of the general permit and in accordance with "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms," fifth edition (EPA-821-R-02-012) or its most recent update:

      1) Acute 24-hour static toxicity test using the mysid shrimp (*Americamysis bahia*). A minimum of five replicates with eight organisms per replicate shall be used in the control and each dilution.

      2) Acute 24-hour static toxicity test using the inland silverside (*Menidia beryllina*). A minimum of five replicates with eight organisms per replicate shall be used in the control and each dilution.

The permittee must perform and report a valid test for each test species during the prescribed reporting period. An invalid test must be repeated during the same reporting period. An invalid test is defined as any test failing to satisfy the test acceptability criteria, procedures, and quality assurance requirements specified in the test methods and general permit.

c. In addition to an appropriate control, a 100% effluent concentration shall be used in the toxicity tests. The control shall consist of standard, synthetic, reconstituted seawater.

d. The WET limits of greater than 50% survival in 100% effluent (LC50 of greater than 100%) after 24-hours are effective for both test species (see Part III, Sections A.2.b.v, A.3.b.i, A.3.b.ii, and A.3.b.vii of the general permit). Compliance schedules for existing permitted discharges are established in Part III, Sections D.8 and E.9.

e. If a test fails to meet an LC50 of greater than 100%, the testing frequency for that test species will increase to monthly until such time compliance with the WET limit is demonstrated for three consecutive months, at which time the permittee may return to the semi-annual testing frequency. An NOC as established in Part II, Section C.5 of the general permit is required to be submitted upon a demonstration of lethality that requires an increase in monitoring frequency. Additionally, upon three consecutive tests passing, an NOC is required to be submitted to revert to the semi-annual monitoring frequency.

2. Required Toxicity Testing Conditions

a. Test Acceptance - The permittee shall repeat any toxicity test, including the control, if the control fails to meet a mean survival equal to or greater than 90%.

b. Samples

1) The permittee shall collect one grab sample from the outfall being tested.

2) The permittee shall collect the grab sample such that the sample is representative of any periodic episode of chlorination, biocide usage, or other potentially toxic substance being discharged on an intermittent basis.

3) The permittee shall initiate the toxicity tests within 36 hours after collection of the grab sample. The sample shall be maintained at a temperature of 0-6 degrees Centigrade during collection, shipping, and storage.

3. Reporting

a. The permittee shall prepare a full report of the results of all tests conducted in accordance with the manual referenced in Part 1.b. of this appendix for every test initiated.

b. The permittee shall routinely report the results of each biomonitoring test in the Table 2 format of this appendix to the Standards Implementation Team (MC-150).

c. Enter the following codes for the appropriate parameters for valid tests only:

1) For the mysid shrimp, Parameter TIE3E, enter a "0" if the mean survival at 24-hours is greater than 50% in the 100% effluent dilution; if the mean survival is less than or equal to 50%, enter a "1."

2) For the inland silverside, Parameter TIE6J, enter a "0" if the mean survival at 24-hours is greater than 50% in the 100% effluent dilution; if the mean survival is less than or equal to 50%, enter a "1."

d. The permittee shall report the LC50 WET values for the 30-day average and the 7-day minimum under Parameter No. 51712 for the inland silverside and Parameter No. 51713 for the mysid shrimp. If more than one valid test was performed during the reporting period, the LC50s will be averaged arithmetically and reported as the daily average LC50. The data submitted should reflect the lowest LC50 results during the reporting period.

TABLE 2 (SHEET 1 OF 2)

MYSID SHRIMP SURVIVAL

GENERAL INFORMATION

	Time	Date
Sample Collected		
Test Initiated		

PERCENT SURVIVAL

Percent	effluent	0%	6%	13%	25%	50%	100%
Time	Rep						
24h	A						
	B						
	C						
	D						
	E						
	MEAN						

Enter percent effluent corresponding to the LC50 below:

24 hour LC50 = _____% effluent

TABLE 2 (SHEET 2 OF 2)

INLAND SILVERSIDE SURVIVAL

	Time	**Date**
Sample Collected		
Test Initiated		

PERCENT SURVIVAL

Percent	**effluent**	**0%**	**6%**	**13%**	**25%**	**50%**	**100%**
Time	Rep						
24h	A						
	B						
	C						
	D						
	E						
	MEAN						

Enter percent effluent corresponding to the LC50 below:

24 hour LC50 = _____% effluent

Appendix D: 24-Hour Acute Freshwater WET Testing Requirements Applicable to Stripper Well Facilities

24-HOUR ACUTE BIOMONITORING REQUIREMENTS: FRESHWATER

The provisions of this appendix apply to the outfall being tested for WET testing.

1. Scope, Frequency, and Methodology

   a. The permittee shall test the effluent for lethality in accordance with the provisions in this appendix. Such testing will determine compliance with Texas Surface Water Quality Standard 30 TAC § 307.6(e)(2)(B), which requires greater than 50% survival of the appropriate test organisms in 100% effluent for a 24-hour period.

      The permittee may be exempted from complying with 30 TAC § 307.6(e)(2)(B) upon proving that toxicity is caused by an excess, imbalance, or deficiency of dissolved salts. This exemption excludes instances where individually toxic components (e.g., metals) form a salt compound. To obtain this exemption, a permittee is required to submit an individual permit application and obtain an individual TPDES permit allowing an ion-adjustment protocol, alternate species testing, or single species testing.

   b. The toxicity tests specified shall be conducted once per six months. The permittee shall conduct the following toxicity tests using the test organisms, procedures, and quality assurance requirements specified in this appendix of the general permit and in accordance with "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms," fifth edition (EPA-821-R-02-012) or its most recent update:

      1) Acute 24-hour static toxicity test using the water flea (*Daphnia pulex*). A minimum of five replicates with eight organisms per replicate shall be used in the control and each dilution.

      2) Acute 24-hour static toxicity test using the fathead minnow (*Pimephales promelas*). A minimum of five replicates with eight organisms per replicate shall be used in the control and each dilution.

The permittee must perform and report a valid test for each test species during the prescribed reporting period. An invalid test must be repeated during the same reporting period. An invalid test is defined as any test failing to satisfy the test acceptability criteria, procedures, and quality assurance requirements specified in the test methods and general permit.

c. In addition to an appropriate control, a 100% effluent concentration shall be used in the toxicity tests. The control shall consist of standard, synthetic, moderately hard, reconstituted water.

d. The WET limits of greater than 50% survival in 100% effluent (LC50 of greater than 100%) after 24-hours are effective for both test species (see Part III, Section A.1.b.i of the general permit).

e. If a test fails to meet an LC50 of greater than 100%, the testing frequency for that test species will increase to monthly until such time compliance with the WET limit is demonstrated for three consecutive months, at which time the permittee may return to the semi-annual testing frequency. An NOC as established in Part II, Section C.5 of the general permit is required to be submitted upon a demonstration of lethality that requires an increase in monitoring frequency. Additionally, upon three consecutive tests passing, an NOC is required to be submitted to revert to the semi-annual monitoring frequency.

2. Required Toxicity Testing Conditions

a. Test Acceptance – The permittee shall repeat any toxicity test, including the control, if the control fails to meet a mean survival equal to or greater than 90%.

b. Samples

1) The permittee shall collect one grab sample from the outfall being tested.

2) The permittee shall collect the grab sample such that the sample is representative of any periodic episode of chlorination, biocide usage, or other potentially toxic substance being discharged on an intermittent basis.

3) The permittee shall initiate the toxicity tests within 36 hours after collection of the grab sample. The sample shall be maintained at a temperature of 0-6 degrees Centigrade during collection, shipping, and storage.

3. Reporting

a. The permittee shall prepare a full report of the results of all tests conducted pursuant to this general permit in accordance with the manual referenced in Part 1.b. of this appendix for every test initiated.

b. The permittee shall routinely report the results of each biomonitoring test in the Table 3 format of this appendix to the Standards Implementation Team (MC-150).

c. Enter the following codes for the appropriate parameters for valid tests only:

1) For the water flea, Parameter TIE3D, enter a “0” if the mean survival at 24 hours is greater than 50% in the 100% effluent dilution; if the mean survival is less than or equal to 50%, enter “1.”

2) For the fathead minnow, Parameter TIE6C, enter a “0” if the mean survival at 24 hours is greater than 50% in the 100% effluent dilution; if the mean survival is less than or equal to 50%, enter “1.”

d. The permittee shall report the LC50 WET values for the 30-day average and the 7-day minimum under Parameter No. 51711 for the water flea and Parameter No. 51714 for the fathead minnow. If more than one valid test was performed during the reporting period, the LC50s will be averaged arithmetically and reported as the daily average LC50. The data submitted should reflect the lowest LC50 results during the reporting period.

TABLE 3 (SHEET 1 OF 2)

WATER FLEA SURVIVAL

GENERAL INFORMATION

	Time	**Date**
Sample Collected		
Test Initiated		

PERCENT SURVIVAL

Percent	**effluent**	**0%**	**6%**	**13%**	**25%**	**50%**	**100%**
Time	Rep						
24h	A						
	B						
	C						
	D						
	E						
	MEAN						

Enter percent effluent corresponding to the LC50 below:

24 hour LC50 = _____% effluent

TABLE 3 (SHEET 2 OF 2)

FATHEAD MINNOW SURVIVAL

	Time	**Date**
Sample Collected		
Test Initiated		

PERCENT SURVIVAL

Percent	**effluent**	**0%**	**6%**	**13%**	**25%**	**50%**	**100%**
Time	Rep						
24h	A						
	B						
	C						
	D						
	E						
	MEAN						

Enter percent effluent corresponding to the LC50 below:

24 hour LC50 = _____% effluent

FACT SHEET AND EXECUTIVE DIRECTOR'S FINAL DECISION

For proposed Texas Pollutant Discharge Elimination System (TPDES) General Permit No. TXG310000 to discharge wastewater associated with oil and gas extraction activities into water in the state.

Issuing Office: Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

Prepared By: Chris Linendoll, E.I.T.
Wastewater Permitting Section
Water Quality Division

Date: December 2023

Permit Action: New General Permit to replace existing U.S. Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) General Permit Nos. TXG260000 and TXG330000

Table of Contents

I. Summary

The Texas Commission on Environmental Quality (TCEQ or Commission) is issuing a new TPDES general permit (to replace existing EPA NPDES General Permit Nos. TXG260000 and TXG330000) authorizing discharges of wastewater associated with oil and gas extraction activities into water in the state, and the application of cooling water intake structure requirements. The TPDES general permit authorizes discharges of various waste streams described below from Onshore Stripper Well Facilities Located East of the 98th Meridian (herein after referred to as Stripper Well Facilities), Coastal Facilities, and Territorial Seas Facilities (located within three statute miles of the Texas coastline). The TPDES general permit also establishes specific prohibitions regarding the discharge of various waste streams from operations whose discharges are authorized under the TPDES general permit; prohibitions regarding discharges from other operations described below; and establishes cooling water intake structure operational requirements included under Section 316b of the Clean Water Act (CWA).

The purpose of the development of this new TPDES general permit is two-fold: one, the implementation of House Bill 2771, 86th Legislative Session which transfers permitting authority for discharges of certain waste streams from crude oil and natural gas facilities into water in the state from the Railroad Commission of Texas (RRC) to TCEQ, and two, for the TCEQ to regulate such discharges into water in the state under the TPDES program after TCEQ receiving authority from EPA to regulate such discharges. All discharges associated with oil and gas extraction activities adjacent to water in the state (i.e., evaporation and land application) and other activities not related to discharge to water in the state remains under the jurisdiction of the RRC. Upon issuance of this TPDES general permit, oil and gas extraction activities will no longer be required to obtain individual RRC authorizations to discharge to surface waters or separate federal authorization to discharge to surface waters via either NPDES General Permit Nos. TXG260000 or TXG330000. One combined state and federal authorization to discharge to surface waters will be able to be obtained under the TPDES general permit.

II. Executive Director’s Recommendation

The Executive Director has made a final decision that this draft TPDES general permit, if issued, meets all statutory and regulatory requirements. It is proposed that the TPDES general permit expire five years from the effective date.

III. Permit Applicability

This TPDES general permit authorizes the discharge to water in the state of various waste streams described below from Stripper Well Facilities, Coastal Facilities, and Territorial Seas Facilities. The TPDES general permit also establishes specific prohibitions for the discharge of various waste streams from operations proposed for authorization under the TPDES general permit; prohibitions for discharges from other operations described below; and establishes cooling water intake structure (CWIS) operational requirements included under Section 316b of the CWA.

A. The TPDES general permit specifies which facilities may be authorized under this TPDES general permit and those that must be authorized by an individual TPDES permit or another TPDES general permit.

B. The following activities are not eligible for this TPDES general permit coverage:

1. discharges prohibited by 30 Texas Administrative Code (TAC) Chapter 311, *Watershed Protection* or 30 TAC Chapter 213, *Edwards Aquifer;*

2. discharges of wastewater associated with oil and gas extraction facilities adjacent to water in the state (e.g., land application or evaporation) that are regulated by the RRC. Discharges from these facilities into water in the state are authorized under this draft TPDES general permit;

3. new sources or new discharges [as defined in 40 Code of Federal Regulation (CFR) § 122.2, 40 CFR § 435.11(w), and 40 CFR § 435.41(x)] of the constituent(s) of concern to impaired waters are not authorized by this draft TPDES general permit unless otherwise allowable under 30 TAC Chapter 305, *Consolidated Permits*, and applicable state law. Impaired waters are those that do not meet applicable water quality standard(s) and are listed as category 4 or 5 in the current version of the *Texas Integrated Report of Surface Water Quality*, and waterbodies on the CWA, § 303(d) list. Constituents of concern are those for which the water body is listed as impaired. As a note, the Water Quality Assessment Section interoffice memorandum regarding the dissolved oxygen modeling assessment for discharges of produced wastewater to the territorial seas identified the Gulf of Mexico being impaired for mercury. Available data to TCEQ indicates non-detect values for mercury for existing territorial seas produced wastewater discharges. Several samples submitted historically to RRC do not meet current TCEQ minimum analytical levels (MALs) thus a monitoring and reporting requirement for total mercury is proposed in the draft TPDES general permit for discharges of produced wastewater to the territorial seas;

4. discharges of the constituent(s) of concern to impaired water bodies for which there is a total maximum daily load (TMDL) implementation plan unless they are consistent with the approved TMDL and the implementation plan. (The Executive Director may amend this TPDES general permit or develop a separate TPDES general permit for discharges to these water bodies. For discharges not eligible for coverage under this draft TPDES general permit, the discharger must apply for and receive an individual TPDES permit or other applicable TPDES general permit prior to discharging to water in the state);

5. discharges that would adversely affect a listed endangered or threatened species or its critical habitat. (Federal requirements related to endangered species apply to all TPDES permitted activities. Site-specific controls may be required to ensure the protection of endangered or threatened species is achieved);

6. discharges from facilities defined in 40 CFR Part 435, Subpart C (Onshore Subcategory) and 40 CFR 435, Subpart E (Agricultural and Wildlife Use Subcategory);

7. discharges from facilities included under 40 CFR Part 435, Subpart A (Offshore Subcategory) located greater than three statute miles from the coastline in an area of the Gulf of Mexico that is commonly referred to as the Outer Continental Shelf. Such discharges may be authorized via separate State of Texas authority

under TCEQ General Permit No. WQG280000 and EPA authority under NPDES General Permit No. GMG290000. Discharges beyond 10.357 statute miles from the coastline do not require authorization from the State of Texas and are regulated solely by EPA [Note: 10.357 statute miles = 9 nautical miles x (1.15078 statute miles / nautical mile)];

8. discharges from Stripper Well Facilities into water in the state located west of the 98th meridian;

9. discharges from Stripper Well Facilities to tidally influenced or marine water bodies;

10. discharge of hydrostatic test water: oil and gas extraction facilities seeking to discharge hydrostatic test water into water in the state have the option of obtaining coverage under TPDES General Permit No. TXG670000 or obtaining an individual TPDES permit;

11. activities associated with oil and gas extraction activities which are not associated with discharges into water in the state regulated by the RRC. Such activities include, but are not limited to drilling new wells, plugging and abandoning existing wells, blowout prevention control, spill prevention, surface coatings and preparation, and other activities not associated with wastewater discharges into water in the state;

12. discharges into Areas of Biological Concern, including marine sanctuaries and live bottom areas;

13. discharges of radiological substances or materials in excess of the amount regulated by 30 TAC Chapter 336 as required by 30 TAC § 307.4(c);

14. discharge of waste streams generated at a location where that waste stream is prohibited from discharge to waters in the U.S. from a location where that waste stream is authorized for discharge to waters in the U.S., as established in 40 CFR Part 435, Subpart G (one example of what is not authorized is produced wastewater generated at a Coastal Facility, where produced wastewater is prohibited from discharge being transported and discharged from a Territorial Seas Facility where such discharge is authorized);

15. discharges from operations defined as Centralized Waste Treatment (CWT) facilities as established in 40 CFR Part 437; and

16. discharge of halogenated phenolic compounds as part of any waste stream authorized for discharge.

C. Facilities that handle or dispose of various waste streams from Stripper Well Facilities, Coastal Facilities, and Territorial Seas Facilities by any of the following practices are not required to obtain coverage under either this TPDES general permit or an individual TPDES permit:

1. recycling with no resulting discharge into water in the state, including recycling of waste streams in industrial processes, hydraulic fracturing, etc.;

2. pumping and hauling or otherwise transporting to an authorized disposal facility;

3. discharge to a publicly owned treatment works (POTW), provided the POTW is authorized to receive such waste streams;

4. underground injection in accordance with 30 TAC Chapter 331, *Underground Injection Control*; or underground injection in accordance with RRC rules; and

5. storage in above-ground storage tanks with no resulting discharge into water in the state.

IV. Permit Effluent Limitations and Monitoring Requirements

A. Discharge into water in the state from Stripper Well Facilities is authorized in the draft TPDES general permit and subject to the following effluent limitations and monitoring requirements:

- Produced Wastewater, Well Treatment Fluids, and Workover Fluids

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Flow	Report, MGD	N/A	Estimate	Once/month
Total Dissolved Solids	3000 mg/L	N/A	Grab	Once/year
Oil and Grease	35 mg/L	25 mg/L	Grab	Once/month
pH	6.0 - 9.0 standard units	N/A	Grab	Once/month
Lethal Whole Effluent Toxicity (WET) limit > 100% (Parameter 51711) *Daphnia pulex* (24-hour acute LC50 [1])	> 100%	> 100%	Grab	Once/six months[2]
Lethal Whole Effluent Toxicity (WET) limit > 100% (Parameter 51714) *Pimephales promelas* (24-hour acute LC50 [1])	> 100%	> 100%	Grab	Once/six months [2]

[1] The LC50 (Lethal Concentration 50) is defined as the effluent dilution at which 50% of the organisms survive.

[2] Should well treatment or workover fluids be discharged with produced wastewater, testing of the effluent on such combined discharges shall occur within the once/six months monitoring frequency.

Discharge into water in the state of the following waste streams from Stripper Well Facilities is prohibited in the TPDES general permit:

- Drilling Fluids
- Drill Cuttings
- Produced Sand

- Dewatering Effluent
- Formation Test Fluids
- Well Completion Fluids
- Hydrate Control Fluids
- Domestic Waste
- Sanitary Waste
- Contaminated Miscellaneous Discharges and Uncontaminated Miscellaneous Discharges
- Contaminated Stormwater

B. Discharge into water in the state from Coastal Facilities is authorized in the TPDES general permit and subject to the following effluent limitations and monitoring requirements:

- Deck Drainage

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Free Oil [1]	No discharge	N/A	Observation	Once/day

[1] As determined by the presence of a film or sheen upon or discoloration of the surface of the receiving water (visual sheen).

- Domestic Waste

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Flow	Report, MGD	Report, MGD	Instantaneous	Five/week
Floating Solids, Garbage, Foam	No discharge	N/A	Observation	Once/day
Biochemical Oxygen Demand (5-day)	65 mg/L	20 mg/L	Grab	Once/week
Total Suspended Solids	65 mg/L	20 mg/L	Grab	Once/week
Dissolved Oxygen	2.0 mg/L (minimum)	N/A	Grab	Once/week
Enterococci	130 cfu or MPN/100 mL	35 cfu or MPN/100 mL	Grab	Once/quarter
Fecal Coliform	43 cfu or MPN/100 mL	14 cfu or MPN/100 mL	Grab	Once/quarter
Total Residual Chlorine	1.0 mg/L (minimum) and 4.0 mg/L (maximum)	N/A	Grab	Five/week
pH	6.0 - 9.0 standard units	N/A	Grab	Once/day

- Sanitary Waste (M10 and M9IM) - these terms are defined in the general permit

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Flow	Report, MGD	Report, MGD	Instantaneous	Five/week
Floating Solids	No discharge	N/A	Observation	Once/day
Biochemical Oxygen Demand (5-day)	65 mg/L	20 mg/L	Grab	Once/week
Total Suspended Solids	65 mg/L	20 mg/L	Grab	Once/week
Dissolved Oxygen	2.0 mg/L (minimum)	N/A	Grab	Once/week
Enterococci	130 cfu or MPN/100 mL	35 cfu or MPN/100 mL	Grab	Once/quarter
Fecal Coliform	43 cfu or MPN/100 mL	14 cfu or MPN/100 mL	Grab	Once/quarter
Total Residual Chlorine	1.0 mg/L (minimum) and 4.0 mg/L (maximum)	N/A	Grab	Five/week
pH	6.0 - 9.0 standard units	N/A	Grab	Once/day

- Uncontaminated Miscellaneous Discharges

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Free Oil [1]	No discharge	N/A	Observation	Once/day

[1] As determined by the presence of a film or sheen upon or discoloration of the surface of the receiving water (visual sheen).

- Contaminated Miscellaneous Discharges

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Flow	Report, MGD	N/A	Estimate	Once/month
Free Oil [1]	No discharge	N/A	Observation	Once/day
pH	6.0 - 9.0 standard units	N/A	Grab	Once/week
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51712) *Menidia beryllina* (24-hour Acute LC50 [2])	> 100%	> 100%	Grab	Once/six months

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51713) *Americamysis bahia* (24-hour Acute LC50 [2])	> 100%	> 100%	Grab	Once/six months

[1] As determined by the presence of a film or sheen upon or discoloration of the surface of the receiving water (visual sheen).

[2] The LC50 (Lethal Concentration 50) is defined as the effluent dilution at which 50% of the organisms survive.

Discharges into water in the state from the following sources from Coastal Facilities are prohibited in the TPDES general permit:

- Drilling Fluids
- Drill Cuttings
- Produced Wastewater
- Produced Sand
- Dewatering Effluent
- Formation Test Fluids
- Well Treatment, Completion, and Workover Fluids
- Hydrate Control Fluids
- Contaminated stormwater for inland facilities (not defined as deck drainage)

C. Discharge into water in the state from Territorial Seas Facilities is authorized in the TPDES general permit and subject to the following effluent limitations and monitoring requirements:

- Produced Wastewater and Hydrate Control Fluids

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Flow	Report, MGD	0.126 MGD	Estimate	Once/day
Free Oil [1]	No discharge	N/A	Observation	Once/day
Oil & Grease	42 mg/L	29 mg/L	Grab	Once/month
Carbonaceous Biochemical Oxygen Demand (5-day)	N/A	6483 mg/L	Grab	Once/month
Ammonia (as N)	N/A	112 mg/L	Grab	Once/month
Temperature	Report, °F	N/A	In-Situ	Once/quarter
Total Dissolved Solids	Report, mg/L	N/A	Grab	Once/quarter
Total Copper	0.371 mg/L	0.175 mg/L	Grab	Once/month
Total Manganese	32.14 mg/L	15.19 mg/L	Grab	Once/month

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Total Mercury	Report, mg/L	N/A	Grab	Once/month
Total Zinc	11.57 mg/L	5.47 mg/L	Grab	Once/month
pH	6.0 - 9.0 standard units	N/A	Grab	Once/week
Sublethal Whole Effluent Toxicity (WET) limit (Parameter 51712) *Menidia beryllina* (Chronic NOEC [2])	1.1%	1.1%	Grab	Once/quarter
Sublethal Whole Effluent Toxicity (WET) limit (Parameter 51713) *Americamysis bahia* (Chronic NOEC [2])	1.1%	1.1%	Grab	Once/quarter
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51712) *Menidia beryllina* (24-hour acute LC50 [3])	> 100%	> 100%	Grab	Once/six months
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51713) *Americamysis bahia* (24-hour acute LC50 [3])	> 100%	> 100%	Grab	Once/six months

[1] As determined by the presence of a film or sheen upon or discoloration of the surface of the receiving water (visual sheen).

[2] The NOEC is defined as the greatest effluent dilution at which no significant sublethality is demonstrated. Significant sublethality is defined as a statistically significantly difference between a specified effluent dilution and the control for a sublethal endpoint. The daily maximum limitation established above is a 7-day minimum limitation.

[3] The LC50 (Lethal Concentration 50) is defined as the effluent dilution at which 50% of the organisms survive.

- Well Treatment, Completion, and Workover Fluids

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Flow	Report, MGD	Report, MGD	Estimate	Once/day
Free Oil [1]	No discharge	N/A	EPA Approved Method [1]	Once/day
Oil & Grease	42 mg/L	29 mg/L	Grab	Once/month
pH	6.0 - 9.0 standard units	N/A	Grab	Once/week
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51712) *Menidia beryllina* (24-hour acute LC50 [2])	> 100%	> 100%	Grab [3]	Once/six months
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51713) *Americamysis bahia* (24-hour acute LC50 [2])	> 100%	> 100%	Grab [3]	Once/six months

[1] As determined by the static sheen test utilizing EPA Method 1617.

[2] The LC50 (Lethal Concentration 50) is defined as the effluent dilution at which 50% of the organisms survive.

[3] Should the planned or actual discharge occur for a duration of 24 hours or greater, the sample type shall be a 24-hour composite.

- Deck Drainage

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Free Oil [1]	No discharge	N/A	Observation	Once/day

[1] As determined by the presence of a film or sheen upon or discoloration of the surface of the receiving water (visual sheen).

- Domestic Waste

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Flow	Report, MGD	Report, MGD	Instantaneous	Five/week
Floating Solids and Foam	No discharge	N/A	Observation	Once/day

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Biochemical Oxygen Demand (5-day)	65 mg/L	20 mg/L	Grab	Once/week
Total Suspended Solids	65 mg/L	20 mg/L	Grab	Once/week
Dissolved Oxygen	2.0 mg/L (minimum)	N/A	Grab	Once/week
Enterococci	130 cfu or MPN/100 mL	35 cfu or MPN/100 mL	Grab	Once/quarter
Fecal Coliform	43 cfu or MPN/100 mL	14 cfu or MPN/100 mL	Grab	Once/quarter
Total Residual Chlorine	1.0 mg/L (minimum) and 4.0 mg/L (maximum)	N/A	Grab	Five/week
pH	6.0 - 9.0 standard units	N/A	Grab	Once/day

- Sanitary Waste (M10 and M9IM) – these terms are defined in the general permit.

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Flow	Report, MGD	Report, MGD	Instantaneous	Five/week
Floating Solids	No discharge	N/A	Observation	Once/day
Biochemical Oxygen Demand (5-day)	65 mg/L	20 mg/L	Grab	Once/week
Total Suspended Solids	65 mg/L	20 mg/L	Grab	Once/week
Dissolved Oxygen	2.0 mg/L (minimum)	N/A	Grab	Once/week
Enterococci	130 cfu or MPN/100 mL	35 cfu or MPN/100 mL	Grab	Once/quarter
Fecal Coliform	43 cfu or MPN/100 mL	14 cfu or MPN/100 mL	Grab	Once/quarter
Total Residual Chlorine	1.0 mg/L (minimum) and 4.0 mg/L (maximum)	N/A	Grab	Five/week
pH	6.0 – 9.0 standard units	N/A	Grab	Once/day

- Uncontaminated Miscellaneous Discharges

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Free Oil [1]	No discharge	N/A	Observation	Once/day

[1] As determined by the presence of a film or sheen upon or discoloration of the surface of the receiving water (visual sheen).

- Contaminated Miscellaneous Discharges

Parameter	Daily Maximum Limitations	Daily Average Limitations	Sample Type	Monitoring Frequency
Flow	Report, MGD	N/A	Estimate	Once/month
Free Oil [1]	No discharge	N/A	Observation	Once/day
pH	6.0 - 9.0 standard units	N/A	Grab	Once/week
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51712) *Menidia beryllina* (24-hour acute LC50 [2])	> 100%	> 100%	Grab	Once/six months
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51713) *Americamysis bahia* (24-hour acute LC50 [2])	> 100%	> 100%	Grab	Once/six months

[1] As determined by the presence of a film or sheen upon or discoloration of the surface of the receiving water (visual sheen).

[2] The LC50 (Lethal Concentration 50) is defined as the effluent dilution at which 50% of the organisms survive.

Discharge into water in the state of the following waste streams from Territorial Seas Facilities is prohibited in the TPDES general permit:

- Drilling Fluids
- Drill Cuttings
- Produced Sand
- Dewatering Effluent
- Formation Test Fluids

V. Significant Changes from Existing EPA General Permit Nos. TXG260000 and TXG330000

A. General Changes from EPA's existing TXG260000 and TXG330000 (applicable to all facilities)

1. Conditions in the draft TPDES general permit in relation to who is required to apply for authorization are proposed to be simplified and be consistent with other TPDES general permits. Owners and operators (provided the operator has independent operational control of a facility) are required to apply for

authorization. EPA's existing TXG260000 and TXG330000 contained different conditions related to state tracts, leases, facilities (which may include different types of operations – exploratory, development, production, etc.). Each individual discharging facility (e.g., production platform, drilling rig, central tank battery and associated treatment tanks, etc.) is required to submit an individual NOI. This TPDES general permit does not authorize multiple discharging facilities under a lease to be combined into one NOI. Should a facility contain all waste streams and transport such waste streams to another facility for subsequent treatment, management, and discharge; such facility is not required to submit an NOI provided there are no resulting discharges to water in the state from such facility.

2. The draft TPDES general permit proposes to remove all language related to electronic application submittal requirements based on the limited number of facilities currently authorized under EPA's existing general permits TXG260000 and TXG330000. Information obtained from EPA indicates it did not proceed with developing electronic permit application tools based on the limited number of facilities covered under both of EPA's existing NPDES general permits. Discharge monitoring reports (DMRs) will continue to be required to be submitted electronically under this new draft TPDES general permit.
3. The draft TPDES general permit proposes to remove all conditions not related to discharge to water in the state in EPA's existing TXG260000 and TXG330000 that were not transferred to TCEQ via HB 2771 (which authorizes TCEQ to regulate discharges into water in the state). Conditions such as spill prevention, blowout prevention control, drilling of new wells, plugging wells, well abandonment, surface preparation and coatings, etc. remain under the regulatory authority of the RRC. Additionally, standard TPDES permit language related to maintenance of treatment units is revised to recognize RRC retains jurisdiction related to pits and impoundments as identified in RRC's Oil and Gas Division's Notice to Oil and Gas Operators, dated August 2021.
4. The draft TPDES general permit proposes to revise definitions in EPA's existing TXG260000 and TXG330000 and new definitions have been established in the draft TPDES general permit. The draft TPDES general permit reconciles discrepancies in definitions between EPA's existing TXG260000 and TXG330000 and further revises definitions to be consistent (where applicable) with EPA's existing NPDES General Permit No. GMG290000 for discharges to the Outer Continental Shelf (OCS) which was issued and effective five years after issuance of these two existing NPDES general permits. New definitions were developed to ensure enforceability of the draft TPDES general permit.
5. The draft TPDES general permit proposes to prohibit the discharge of hydrostatic test waters. Oil and gas extraction facilities seeking authorization to discharge into water in the state have the ability to obtain coverage under TPDES General Permit No. TXG670000 or otherwise obtain an individual TPDES permit. Hydrostatic test waters discharged adjacent to water in the state (e.g., land application or evaporation) remains under the authority of RRC.
6. The term "produced water" in EPA's existing TXG260000 and TXG330000 (and as defined in 40 CFR Part 435) has been revised in the draft TPDES general permit to "produced wastewater" to be consistent with TWC § 26.131 and 30 TAC § 305.541(b) which adopted 40 CFR Part 435 by reference.
7. The draft TPDES general permit proposes to include a condition prohibiting the discharges of radiological substances or materials in excess of amounts authorized under 30 TAC Chapter 336. TCEQ review of EPA issued individual

NPDES permits for oil and gas extraction activities under 40 CFR Part 435, Subpart E (Agricultural and Wildlife Use Subcategory) indicated EPA has included conditions in those individual NPDES permits which are not established in EPA's existing TXG26000 or TXG330000 (i.e., requiring monitoring for certain radioactive parameters).

8. The draft TPDES general permit proposes to establish Notice of Intent (NOI) application and annual water quality assessment fees consistent with TCEQ regulations and all other TPDES general permits which are not established in EPA's existing TXG260000 and TXG330000. The NOI fee is proposed to be established consistent with current fees charged by RRC for filing of oil and gas applications seeking discharge authorization. The annual fee is set at the minimum amount established in TCEQ regulations.
9. The draft TPDES general permit provides clarification on the authority to discharge stormwater from oil and gas extraction facilities authorized under the TPDES general permit. Discharges of deck drainage, which includes stormwater, from Territorial Seas Facilities and Coastal Facilities which are located in waters are authorized under the TPDES general permit as regulated by 40 CFR Part 435. Discharges of stormwater from Stripper Well Facilities and Coastal Facilities located inland are not authorized under the TPDES general permit. Discharges of "uncontaminated stormwater" from these facilities are exempt from obtaining NPDES authorization to discharge under 40 CFR § 122.26(a)(2)(ii). Discharges of stormwater that do not meet the designation of "uncontaminated stormwater" from Stripper Well Facilities and inland Coastal Facilities are not authorized for discharge under this TPDES general permit and have the option of obtaining discharge authorization via TPDES Multi-Sector General Permit No. TXR050000 (operating facilities), TXR150000 (facilities under construction), or obtaining an individual TPDES permit. The requirement to obtain an NPDES permit for discharges of "contaminated stormwater" is established in 40 CFR § 122.26(a)(14)(iii).

B. Changes Specific to Stripper Well Facilities authorized under EPA's existing TXG330000

1. The draft TPDES general permit proposes to remove restrictions established in EPA's existing TXG330000 to the Carrizo/Wilcox, Reklaw, or Bartosh formations and authorizes discharges from Stripper Well Facilities associated with any formation east of the 98th meridian.
2. The draft TPDES general permit proposes to remove authorization to discharge waste streams not known to be associated with Stripper Well Facilities (deck drainage, formation test fluids, sanitary waste, domestic waste, and miscellaneous discharges). EPA proposed a new NPDES general permit, TXG350000, to separate Stripper Well Facilities from coastal oil and gas extraction facilities. This draft NPDES general permit which did not proceed to final issuance (reasons unknown to TCEQ) proposed these same revisions. Although these waste streams are not known to be associated with this type of operation, the draft TPDES general permit includes provisions prohibiting these discharges in the event any of these types of waste streams are generated at Stripper Well Facilities.
3. The draft TPDES general permit proposes to increase the 24-hour acute whole effluent toxicity (WET) testing frequency established in EPA's existing TXG330000 for the discharge of produced wastewater from once per year to

once per six months, as established by the EPA approved TCEQ's *Procedures to Implement the Texas Surface Water Quality Standards*, RG-194.

4. The draft TPDES general permit proposes to revise conditions established in EPA's existing TXG330000 associated with 24-hour acute WET limitations and associated monitoring requirements to remove compliance schedules, conducting toxicity reduction evaluations (TREs), conducting repeat tests, reopening the general permit to require chemical specific limits, and requiring passing a WET test prior to discharge. All new discharges are required to meet water quality-based effluent limitations upon permit issuance as required by 30 TAC Chapter 307. The compliance period for existing discharges authorized under EPA's existing TXG330000 has expired. Conditions related to reopening the general permit, establishing chemical specific limits, conducting TREs, etc. are not appropriate conditions for a general permit that already establishes WET limitations. The draft TPDES general permit further proposes to remove exemption from compliance with the 24-hour acute WET limitations established in EPA's existing TXG330000 based on an excess, imbalance, or deficiency of dissolved salts; and the allowance of the submittal of an ion adjustment protocol. Facilities seeking this exemption as allowed under 30 TAC Chapter 307 have the ability to apply for an individual TPDES permit.
5. The draft TPDES general permit proposes to establish a prohibition on discharges to receiving waters considered to be marine waters as currently authorized under EPA's existing TXG330000. Information received from EPA and RRC indicate there are no existing onshore stripper well facility discharges to marine water bodies. Additionally, the draft TPDES general permit removes all marine water WET testing requirements and additional metals testing requirements to marine impaired water bodies established in EPA's existing TXG330000, as these discharges are prohibited in the draft TPDES general permit.
6. The draft TPDES general permit proposes to establish conditions requiring permittees to maintain records on how oil-producing wells meet the criteria established in 40 CFR 435, Subpart F (Stripper Subcategory) to qualify for authorization to discharge onshore east of the 98th meridian.
7. The draft TPDES general permit proposes to authorize the discharge of well treatment and workover fluids provided they are discharged with produced wastewater as 40 CFR § 435.60 recognizes onshore stripper wells are engaged in production and well treatment. For purposes of Stripper Well Facilities, hydraulic fracturing fluids are not considered well treatment fluids and are thus prohibited from discharge.
8. The draft TPDES general permit proposes to remove the best professional judgement (BPJ) technology-based effluent limitation on free oil for the discharge of produced wastewater established in EPA's existing TXG330000. EPA's existing TXG330000 currently requires oil and grease effluent limitations with the same monitoring frequency for free oil of once/month. See discussion in the technology-based effluent limitations rationale section of this fact sheet.
9. The draft TPDES general permit proposes to establish new technology-based effluent limitations for pH for the discharge of produced wastewater. See discussion in the technology-based effluent limitations rationale section of this fact sheet.

C. Changes Specific to Coastal Facilities authorized under EPA's existing TXG330000

1. The draft TPDES general permit proposes to expand and reclassify miscellaneous discharges authorized under EPA's existing TXG330000. In addition to the waste streams currently authorized for discharge as miscellaneous discharges, the draft TPDES general permit proposes to authorize uncontaminated miscellaneous discharges (currently authorized as miscellaneous discharges) and contaminated miscellaneous discharges (authorized under EPA's existing TXG260000 as miscellaneous discharges of sea water and fresh water which have been chemically treated). These waste streams (and associated definitions) proposed for authorization have been further expanded to be consistent with EPA's existing NPDES General Permit No. GMG290000 for discharges from OCS facilities, which was re-issued in 2017, five years after the effective date of EPA's existing TXG330000. These additional waste streams are similar to discharges authorized to bays and estuaries in individual industrial TPDES permits, and oil and gas extraction activities located in coastal waters could potentially generate and discharge similar waste streams as those located in the territorial seas unless otherwise restricted by 40 CFR Part 435. See discussion below related to compliance schedules for whole effluent toxicity (WET) limitations discussed in the territorial seas section.
2. The draft TPDES general permit proposes to revise cooling water intake structure (CWIS) requirements established under Section 316(b) of the CWA. EPA's existing TXG330000 only applied requirements to new CWIS's. EPA regulations at 40 CFR § 125.130(c), 40 CFR § 125.90(b), and 40 CFR § 125.91(d) apply to existing and below threshold offshore oil and gas CWIS's and TCEQ is proposing to subject these operations to requirements established in EPA regulations.
3. The draft TPDES general permit proposes to add dissolved oxygen and pH limitations and include a daily maximum limitation for total residual chlorine (in addition to the existing minimum limitation) for the discharge of sanitary waste which are not included in EPA's existing TXG330000. 30 TAC Chapter 309 establishes minimum secondary treatment standards for the discharge of domestic wastewater which include requirements for dissolved oxygen, pH, and a maximum total residual chlorine. See discussion below in the technology-based limitations rationale section of this fact sheet.
4. The draft TPDES general permit proposes to add instantaneous flow monitoring for the discharge of sanitary waste as required by 30 TAC Chapter 319 which is not established in EPA's existing TXG330000. See discussion below in the technology-based limitations rationale section of this fact sheet.
5. The draft TPDES general permit proposes to revise the daily maximum limitations for biochemical oxygen demand (5-day) and total suspended solids established in EPA's existing TXG330000 from 45 milligrams per liter (mg/L) to 65 mg/L. Daily average limitations are proposed in the draft TPDES general permit for these discharges which are not established in EPA's existing TXG330000. See discussion below in the technology-based limitations rationale section of this fact sheet.
6. The draft TPDES general permit proposes to increase the total residual chlorine monitoring frequency for the discharge of sanitary waste from once per month as established in EPA's existing TXG330000 to five times per week as established in 30 TAC Chapter 319.

7. The draft TPDES general permit proposes to increase the *Enterococci* daily maximum limitation established in EPA's existing TXG330000 for sanitary waste based on revisions to the Texas Surface Water Quality Standards (30 TAC Chapter 307) and reduce *Enterococci* monitoring frequency based on 30 TAC Chapter 319. See the technology-based and water quality-based limitations rationale sections of this fact sheet.
8. The draft TPDES general permit proposes to apply Fecal Coliform effluent limitations for the discharge of sanitary waste to all discharges to segments designated for oyster waters, consistent with the Texas Surface Water Quality Standards, not just those oyster waters designated segments impaired for bacteria as currently established in EPA's existing TXG330000.
9. The draft TPDES general permit proposes to apply all effluent limitations established for the discharge of sanitary waste to the discharge of domestic waste. Specifically, limitations and/or monitoring requirements are proposed for biochemical oxygen demand (5-day), total suspended solids, dissolved oxygen, total residual chlorine, bacteria, flow, and pH which are not established in EPA's existing TXG330000. See discussion below in the technology-based and water quality-based effluent limitations rationale sections of this fact sheet.
10. The draft TPDES general permit proposes to prohibit the discharge of formation test fluids authorized under EPA's existing TXG330000. This waste stream is not authorized for discharge to the territorial seas under EPA's existing TXG260000 or to the OCS in EPA's existing NPDES General Permit No. GMG290000. Oil and gas extraction activities located in coastal waters should generally generate and discharge similar waste streams as those located in the territorial seas or the OCS unless otherwise restricted by 40 CFR Part 435.
11. The draft TPDES general permit proposes to prohibit the discharge of hydrate control fluids which is not addressed under EPA's existing TXG330000. EPA's existing TXG260000 authorizes this discharge and applies the same limitations as produced wastewater which is prohibited from discharge in EPA's existing TXG330000.
12. The draft TPDES general permit proposes to establish a monitoring frequency of once per day (via observation) for the prohibition of discharge for floating solids, garbage, and foam for domestic waste. EPA's existing TXG330000 establishes this discharge prohibition but does not establish a monitoring frequency as required by 40 CFR Part 122.

D. Changes Specific to Territorial Seas Facilities authorized under EPA's existing TXG260000

1. The draft TPDES general permit proposes to reclassify "miscellaneous discharges" and "miscellaneous discharges of seawater and freshwater which have been chemically treated" as established in EPA's existing TXG260000 to "uncontaminated miscellaneous discharges" and "contaminated miscellaneous discharges," respectively. Waste streams proposed for authorization to discharge have been revised (where appropriate) to be consistent with EPA's existing discharges. These waste streams (and associated definitions) proposed for authorization have been further expanded to be consistent with EPA's existing NPDES General Permit No. GMG290000 for discharges from OCS facilities, which was re-issued in 2017, five years after the effective date of EPA's existing TXG260000.

2. The draft TPDES general permit proposes to revise the WET limitations and associated biomonitoring testing procedures for the discharge of produced wastewater and hydrate control fluids; and contaminated miscellaneous discharges which are established in EPA's existing TXG260000. The draft TPDES general permit removes conditions associated with the requirement to pass WET tests prior to discharge, the requirement to cease discharge upon a WET test failure until the results of a retest comply with WET limitations, and conditions to reopen the general permit to require chemical specific effluent limitations or other conditions. Failure of a WET test is considered a violation of the terms and conditions of the draft TPDES general permit and is subject to appropriate compliance and enforcement conditions. The draft TPDES general permit further proposes to remove exemption from compliance with the 24-hour acute WET limitations established in EPA's existing TXG260000 based on an excess, imbalance, or deficiency of dissolved salts; and the allowance of the submittal of an ion adjustment protocol. Facilities seeking this exemption as allowed under 30 TAC Chapter 307 have the ability to apply for an individual TPDES permit.
3. WET limitations for the discharge of contaminated miscellaneous discharges have been revised to comply with 24-hour acute conditions compared to 48-hour acute conditions established in EPA's existing TXG260000. See discussion in the water quality-based effluent limitations rationale section of this fact sheet, as well as compliance schedules associated with such discharges.
4. The draft TPDES general permit proposes to apply one single critical dilution applicable to chronic WET limitations and associated biomonitoring requirements for the discharge of produced wastewater and hydrate control fluids. EPA's existing TXG260000 establishes numerous critical dilutions utilized for WET limitations based on discharge rate (in barrels per day) and depth of discharge point to the sea floor. EPA's existing TXG260000 further allows routine adjustment of the critical dilution based on the most recent reported discharge volume on the latest DMR. The draft TPDES general permit establishes one critical dilution (and associated additional dilutions to be used in WET tests) at 1.1% based on a discharge rate of 3000 barrels/day (0.126 million gallons per day, MGD), six-inch pipe diameter, and depth to the sea floor of 4-6 meters. Furthermore, EPA's existing TXG260000 establishes provisions for alternative critical dilutions based on flow rates greater than 25,000 barrels per day and facilities incorporating diffusers. These conditions have been removed in the draft TPDES general permit, facilities seeking these site-specific discharge scenarios must apply for an individual TPDES permit. The chronic WET testing frequency for the discharge of produced wastewater/hydrate control fluids in the draft TPDES general permit will increase from once per six months to once per quarter consistent with RG-194. Compliance schedules for existing permitted discharges are authorized. See discussion in the water quality-based effluent limitations rationale section of this fact sheet.
5. The draft TPDES general permit proposes to replace the 48-hour acute WET effluent limitations for the discharge of contaminated miscellaneous discharges (at varying critical dilutions based on discharge rate and pipe diameter) to 24-hour acute WET 100% effluent limitations. 48-hour WET conditions are typically included in TPDES permits when instream effluent dilutions are at extremely low levels where normally 7-day chronic WET conditions would be imposed. This revision is consistent with requirements established in RG-194 and compliance schedules for existing permitted discharges are authorized.

6. The draft TPDES general permit proposes to establish 24-hour acute WET limitations for the discharge of well treatment, completion, and workover fluids and to remove conditions regulating discharges of priority pollutants established in EPA's existing TXG260000 as WET limitations properly regulate the discharge of priority pollutants. See discussion in the water quality-based effluent limitations rationale section of this fact sheet. Applying WET limitations for these discharges in place of priority pollutant controls is appropriate and further justified, as well treatment, completion and workover fluids generally return as a slug with produced wastewater and are managed and discharged as a combined waste stream along with produced wastewater. Compliance schedules for existing permitted discharges is authorized.
7. The draft TPDES general permit proposes to remove the industry-wide or facility-specific "Produced Water Characterization Study" requirements in EPA's existing TXG260000. Discussion with EPA indicated the results of these studies did not indicate adverse water quality impacts from produced wastewater discharges in the Gulf of Mexico. See discussion in Part X. and XI. of this fact sheet related to produced wastewater studies historically conducted and submitted to EPA from the Offshore Operators Committee (OOC).
8. The draft TPDES general permit proposes an increase in the monitoring frequency of free oil for the discharge of uncontaminated miscellaneous discharges and contaminated miscellaneous discharges from once per week established in EPA's existing TXG260000 to once per day. This revision is consistent with conditions established for these discharges in EPA's existing general permits, TXG330000 and GMG290000.
9. The draft TPDES general permit proposes to authorize the discharge of hydrate control fluids provided they are discharged as a combined waste stream with produced wastewater. EPA's existing TXG260000 establishes this condition as a narrative requirement and the proposed draft TPDES general permit clarifies this condition in the effluent limitations and monitoring requirements section.
10. The draft TPDES general permit proposes to add new water quality-based effluent limitations for the discharge of produced wastewater for total copper, total manganese, and total zinc which are not established in EPA's existing TXG260000. A three-year compliance schedule for existing produced wastewater discharged via either EPA's existing TXG260000 or an RRC individual authorization is provided in the draft TPDES general permit. Additionally, a monitoring and reporting requirement is established for total mercury for discharges of produced wastewater. See the water quality-based effluent limitations rationale section of this fact sheet.
11. The draft TPDES general permit proposes to establish new technology-based effluent limitations on pH for the discharge of produced wastewater/hydrate control fluids; well treatment, completion, and workover fluids; and contaminated miscellaneous discharges, which are not established in EPA's existing TXG260000. See discussion in the technology-based effluent limitations rationale section of this fact sheet.
12. The draft TPDES general permit proposes to require the following technology-based and water quality-based effluent limitations and/or monitoring requirements for the discharge of sanitary waste: biochemical oxygen demand (5-day), total suspended solids, flow, dissolved oxygen, bacteria, pH, and total residual chlorine (daily maximum) as required by 30 TAC Chapters 307, 309, and 319. EPA's existing TXG260000 does not include these limitations (the

majority of these limitations were established for sanitary waste discharges to coastal waters in EPA's existing TXG330000).

13. The draft TPDES general permit proposes to increase the total residual chlorine monitoring frequency for the discharge of sanitary waste from once per month as established in EPA's existing TXG260000 to five times per week (5/week). This requirement is also established by 30 TAC Chapter 319.
14. All effluent limitations established for the discharge of sanitary waste are also proposed in the draft TPDES general permit for the discharge of domestic waste. Specifically, limitations and/or monitoring requirements are proposed for biochemical oxygen demand (5-day), total suspended solids, dissolved oxygen, total residual chlorine, bacteria, flow, and pH which are not established in EPA's existing TXG260000. See discussion below in the technology-based and water quality-based effluent limitations rationale sections of this fact sheet.
15. The draft TPDES general permit proposes to revise CWIS requirements established under Section 316b of the CWA. EPA's existing TXG260000 only applies requirements to new CWIS's. EPA regulations at 40 CFR § 125.130(c), 40 CFR § 125.90(b), and 40 CFR § 125.91(d) apply to existing and below threshold offshore oil and gas CWIS's. TCEQ is proposing to subject existing and below threshold CWIS operations to requirements established in EPA regulations.
16. A daily average produced wastewater flow limitation of 0.126 MGD is proposed in the draft TPDES general permit, see discussion in the water quality-based effluent limitations rationale section of this fact sheet.
17. Water quality-based effluent limitations for Carbonaceous Biochemical Oxygen Demand (5-day) and Ammonia-Nitrogen for produced wastewater discharges are proposed in the draft TPDES general permit. See discussion in the water quality-based effluent limitations rationale section of this fact sheet.
18. Monitoring and reporting requirements are proposed in the draft TPDES general permit for temperature and total dissolved solids (TDS) for the discharge of produced wastewater. See the discussion in the water quality-based effluent limitations rationale section of this fact sheet.
19. Discharges of produced wastewater are restricted in relation to the discharge outfall configuration. Based on CORMIX modeling and dissolved oxygen modeling, discharges of produced wastewater are restricted to a pipe diameter of no greater than six inches, and discharge depth to the sea floor of no less than five meters.

VI. Addresses

Comments on this general permit should be sent to:

Office of the Chief Clerk (MC-105)
TCEQ
P.O. Box 13087
Austin, TX 78711-3087
(512) 239-3300

Questions concerning this general permit should be directed to:

Chris Linendoll, E.I.T.
TCEQ, Water Quality Division
Wastewater Permitting Section (MC-148)
P.O. Box 13087
Austin, TX 78711-3087
(254) 761-3025

Supplementary information on this fact sheet is organized as follows:

VII. Legal Basis

Texas Water Code (TWC), § 26.121 makes it unlawful to discharge pollutants into water in the state except as authorized by the Commission. TWC, § 26.027 authorizes the Commission to issue permits and amendments to permits for the discharge of waste or pollutants into water in the state.

TWC§ 26.040 provides the Commission with the authority to issue general permits that authorize the discharge of waste into or adjacent to water in the state by category of discharges in the state if the dischargers: engage in the same or substantially similar types of authorizations; discharge the same types of waste; are subject to the same requirements regarding effluent limitations or operating conditions; are subject to the same or similar monitoring requirements and are more appropriately regulated under a general permit. General permits must be published in one or more newspapers of general circulation and in the Texas Register. Additionally, if the Commission receives public comment on the proposed general permit, the Commission cannot issue the general permit before responding to the comments in writing.

On September 14, 1998, the TCEQ received authority from the EPA to administer the TPDES program. The TCEQ and the EPA signed a Memorandum of Agreement (MOA) which authorizes the administration of the NPDES program to the TCEQ as it applies to the State of Texas. TWC § 26.131, as amended by HB 2771 in the 86th Legislature, 2019, transfers regulatory authority for discharges into water in the state from oil and gas exploration, production, processing, or treatment operations, or transmission facilities from the EPA and the Railroad Commission of Texas to TCEQ, upon EPA approval of NPDES authority for these discharges, which occurred on January 15, 2021.

CWA §§ 301, 304, and 401 (33 United States Code (USC), §§ 1331, 1314, and 1341) include provisions which state that NPDES permits must include effluent limitations requiring authorized discharges to: (1) meet standards reflecting levels of

technological capability; (2) comply with EPA-approved state water quality standards; and (3) comply with other state requirements adopted under authority retained by states under CWA, § 510, 33 USC § 1370. CWA § 316(b) establishes requirements related to the operation of CWISs.

Two types of technology-based effluent limitations must be included in a draft TPDES general permit. With regard to conventional pollutants, i.e., pH, biochemical oxygen demand (BOD), oil and grease, total suspended solids (TSS), and fecal coliform bacteria, CWA § 301(b)(1)(E) requires effluent limitations based on "best conventional pollutant control technology" (BCT). With regard to nonconventional and toxic pollutants, CWA, § 301(b)(2)(A), (C), and (D) require effluent limitations based on "best available technology economically achievable" (BAT), a standard that generally represents the best performing existing technology in an industrial category or subcategory. BAT and BCT effluent limitations may never be less stringent than corresponding effluent limitations based on best practicable control technology (BPT), a standard applicable to similar discharges before March 31, 1989 under CWA, § 301(b)(1)(A). Furthermore, when a category of discharge(s) authorized under an NPDES general permit is subject to new source performance standards (NSPS) established in 40 CFR Chapter I, Subchapter N, general permits must be developed to comply with such NSPS conditions.

In many cases, EPA adopts nationally applicable guidelines identifying the BPT, BCT, BAT, and NSPS standards to which specific industrial categories and subcategories (and which apply to specific waste streams within these categories and subcategories) are subject. Until such guidelines are published, CWA, § 402(a)(1) requires that appropriate BCT and BAT effluent limitations be included in permitting actions based on BPJ.

VIII. Regulatory Background

The Commission was given authority to issue general permits in place of authorizations by rule through House Bill (HB) 1542, passed during the 75th legislative session (1997). Further clarification of this general permit authority was provided in HB 1283, passed during the 76th legislative session (1999). Prior to the amendments of TWC § 26.131 via HB 2771 in the 86th Legislative Session, discharges of waste streams proposed for authorization to discharge under this TPDES general permit into water in the state from oil and gas extraction activities were under authority of the RRC. Separate authorization to discharge into waters of the U.S. and requirements on the operation of CWISs was required from EPA and the RRC because the RRC did not have NPDES authority to regulate these discharges or operation of CWISs. HB 2771 transferred the authority to regulate these discharges into water in the state to TCEQ upon the TCEQ obtaining NPDES authority from EPA, which was obtained via a revised MOA between TCEQ and EPA dated January 15, 2021.

IX. Permit Coverage

The purpose of this TPDES general permit is to: regulate the discharge of various waste streams described below; prohibit the discharge of various waste streams described below; and impose requirements on the operation of CWISs associated with oil and gas extraction activities from Stripper Well Facilities, Coastal Facilities, and Territorial Seas Facilities. This TPDES general permit consolidates separate state permitting requirements currently issued under the authority of RRC and federal permitting

requirements currently issued by EPA under the NPDES program into one combined state and federal authorization issued under the TPDES program.

To obtain authorization to discharge to water in the state under the TPDES general permit, an applicant must comply with the following requirements:

A. Applicants seeking authorization to discharge to water in the state under authority of this TPDES general permit must submit a completed NOI on a form approved by the Executive Director. Permittees authorized under NPDES General Permit No. TXG260000 effective February 8, 2012 and NPDES General Permit No. TXG330000 effective September 11, 2014 are required to submit a new NOI within 90 days of the effective date of this TPDES general permit to continue authorization to discharge. Permittees authorized to discharge to water in the state via an existing RRC authorization are also required to submit a new NOI within 90 days of the effective date of this TPDES general permit to continue authorization to discharge to surface waters. The NOI shall, at a minimum, include the legal name and address of the owner and operator, the facility name and address, specific description(s) of its location, type of facility or discharges, the name of the receiving waters, and other contents established in the NOI. Each individual facility (e.g., production platform, drilling rig, etc.) with a discharge is required to submit an individual NOI. This TPDES general permit does not authorize multiple discharges from separated facilities under a single lease to be combined into one NOI. Should a facility contain all waste streams and transport such waste streams to another facility for subsequent treatment, management, and discharge; such facility is not required to submit an NOI provided there are no resulting discharges to water in the state from such facility.

B. Submission of an NOI is an acknowledgment that the conditions of this TPDES general permit are applicable to the proposed discharges, and that the applicant agrees to comply with the conditions of this TPDES general permit. Provisional authorization to discharge under the terms and conditions of this TPDES general permit begins 48 hours after a paper NOI is postmarked for delivery to the TCEQ. If the TCEQ provides for electronic submission of NOIs during the term of this TPDES general permit, authorization begins immediately after the TCEQ confirms receipt of the electronic NOI. Following review of the NOI, the Executive Director shall: determine that the NOI is complete and confirm authorization by providing a written notification and an authorization number; determine that the NOI is incomplete, and request additional information needed to complete the NOI; or deny authorization in writing. Denial of an authorization will be made in accordance with 30 TAC § 205.4(c). Applicants seeking authorization to discharge from Stripper Well Facilities to a municipal separate storm sewer system (MS4) must provide a copy of the NOI, or electronic equivalent, to the operator of the system at the same time the NOI is submitted to the TCEQ.

C. For Stripper Well Facilities discharges located in areas regulated by 30 TAC Chapter 213, *Edwards Aquifer*, this authorization to discharge is separate from the requirements of the applicant’s responsibilities under that rule. Discharge may not commence for sites regulated under 30 TAC Chapter 213 until all applicable requirements of that chapter are met. For discharges located on or within ten

stream miles upstream of the Edwards Aquifer recharge zone, applicants must also submit a copy of the NOI to the appropriate TCEQ regional office.

Counties: Comal, Bexar, Medina, Uvalde, and Kinney
Contact: TCEQ Edwards Aquifer Program Manager
San Antonio Regional Office
14250 Judson Rd.
San Antonio, Texas 78233-4480
210-490-3096

Counties: Bell, Williamson, Travis, and Hays
Contact: TCEQ Edwards Aquifer Program Manager
Austin Regional Office
P.O. Box 13087
Austin, TX 78711-3087
512-239-2929

D. Authorization under this TPDES general permit is not transferable. If either the owner or operator of the regulated entity changes, then both the present owner and operator must submit a Notice of Termination (NOT) and the new owner and operator must submit an NOI. The NOT and NOI must be submitted no later than 10 days before the change. Stripper Well Facilities discharging to a MS4 must submit a copy of the NOT to the operator of the system at the same time the NOT is submitted to the TCEQ.

E. If the owner or operator becomes aware that he or she failed to submit any relevant facts or submitted incorrect information in an NOI, the correct information must be provided to the Executive Director in a Notice of Change (NOC) within 14 days after discovery. If relevant information provided in the NOI changes (for example, phone number, address, outfall information, type of facility or discharges, or the receiving waters) an NOC must be submitted within 14 days of the change. Stripper Well Facilities discharging to an MS4 must submit a copy of any NOC to the operator of the system at the same time the NOC is submitted to the TCEQ.

X. Technology-Based Requirements

The limitations and conditions of the draft TPDES general permit have been developed to comply with the technology-based standards of the CWA. Currently there are established nationally applicable effluent limitation guidelines identifying the BPT, BCT, BAT, and NSPS standards for a subset of discharges proposed for authorization to discharge by this draft TPDES general permit. The most restrictive of EPA established BPT, BCT, BAT, and NSPS standards are controlling and thus established as conditions in the draft TPDES general permit (e.g., when BPT standards allow discharges and establish an effluent limitation and where BAT standards outright prohibit discharge, the BAT standard is controlling). For waste streams proposed to be authorized for discharge under this draft TPDES general permit where EPA's nationally applicable effluent limitation guidelines have not developed technology-based standards, the technology-based effluent limitations are based on BPJ. The parameters selected for BCT/BAT limits using BPJ are the primary pollutants of concern for a subset of discharges proposed to be authorized in the draft TPDES general permit. Where EPA national effluent limitation guidelines are less restrictive than TCEQ

established technology-based standards, TCEQ established technology-based standards are proposed in the draft TPDES general permit (e.g., minimum secondary based treatment requirements for the discharge of sanitary waste and domestic waste established in 30 TAC Chapter 309). TCEQ has established state-wide standards for hazardous metals established in 30 TAC Chapter 319, Subchapter B. TCEQ considered application of these hazardous metal limitations in the draft TPDES general permit for the discharge of produced wastewater from Stripper Well Facilities and Territorial Seas Facilities (see further discussion below in this section of the fact sheet).

Technology-based effluent limitations are established for the three categories of discharges proposed to be authorized under the draft TPDES general permit: Stripper Well Facilities, Coastal Facilities, and Territorial Seas Facilities.

A. Stripper Well Facilities:

EPA has established technology-based effluent limitation guidelines at 40 CFR Part 435, Subpart F (Stripper Subcategory). These effluent limitation guidelines do not establish any specific numerical effluent limitations. 40 CFR § 435.60 describes stripper wells as wells which produce 10 barrels per well per calendar day or less of crude oil and which are operating at the maximum feasible rate of production and in accordance with recognized conservation practices. These facilities are engaged in production and well treatment in the oil and gas extraction point source category. 40 CFR § 435.61(c) defines the term “well” and establishes that a well does not include gas wells or wells injecting water for disposal or for enhanced recovery of oil or gas. 40 CFR § 435.61(d) defines the term “gas well” as any well which produces natural gas in a ratio to the petroleum liquids production greater than 15,000 cubic feet of gas per one barrel of petroleum liquids.

EPA’s existing NPDES General Permit No. TXG330000 has established the following technology-based permit limitations:

- Produced Wastewater
  - Flow: Monitor
  - Oil & Grease: 25 mg/L daily average and 35 mg/L daily maximum
  - Free Oil: No discharge via visual observation.
- Drilling Fluids – No discharge
- Drill Cuttings – No discharge
- Produced Sand – No discharge
- Dewatering Effluent – No discharge
- Deck Drainage
  - Free Oil: No discharge via visual observation
- Formation Test Fluids
  - No discharge, except to bays and estuaries where no chloride standards have been established
  - Free Oil: No discharge as determined by the static sheen test
  - pH: 6.0-9.0 standard units
- Well Treatment, Completion, and Workover Fluids – No discharge
- Domestic Waste
  - Floating solids: No discharge
  - Garbage: No discharge
  - Foam: No discharge

- Sanitary Waste
  - Floating solids: No discharge
  - BOD (5-day): 45 mg/L daily maximum
  - TSS: 45 mg/L daily maximum
  - Total Residual Chlorine: 1.0 mg/L (minimum) and maintained as close as possible to that level
- Miscellaneous Discharges
  - Free Oil: No discharge via visual observation

EPA proposed a new general permit, NPDES General Permit No. TXG350000, to separate Stripper Well Facilities from Coastal Facilities as authorized under TXG330000. This draft NPDES general permit did not proceed to final issuance. This draft NPDES general permit proposed to remove authorization to discharge waste streams not associated with nominal/marginal stripper wells and TCEQ is proposing those same conditions in this draft TPDES general permit to remove authorization to discharge deck drainage, formation test fluids, domestic waste, sanitary waste, and miscellaneous discharges. TCEQ practice is to establish pH technology-based effluent limitations in TPDES permits that authorize potentially contaminated waste streams. Technology-based effluent limitations of pH of 6.0-9.0 standard units for the discharge of produced wastewater (and well treatment/workover fluids) are proposed in the draft TPDES general permit. Appendix F of this fact sheet includes an assessment of pH limitations of 6.0-9.0 standard units demonstrating these proposed effluent limitations will meet instream pH water quality standards. TCEQ is also proposing to remove the Free Oil "no discharge visual observation" technology-based effluent limitation based on oil and grease technology-based effluent limitations established in EPA's existing TXG330000 at the same monitoring frequency, and a 40 CFR Part 136 approved test method for oil and grease properly controls free oil discharges. Removal of the Free Oil technology-based effluent limitation complies with anti-backsliding requirements in 40 CFR § 122.44(l) based on the technical mistake justification (oil and grease effluent limitations are already established at the same monitoring frequency of observed no free oil discharges). The discharge of well treatment and workover fluids are proposed to be authorized in the draft TPDES general permit provided they are commingled and managed with produced wastewater and discharged as a combined waste stream. For purposes of Stripper Well Facilities (conventional wells), hydraulic fracturing fluids are not considered well treatment fluids and are thus prohibited from discharge.

TCEQ has established state-wide quality levels for inland waters at 30 TAC § 319.22 which are provided in the table below. Data provided from RRC (see Part XI of this fact sheet) was compared against these levels to determine the need to establish effluent limitations in the draft TPDES general permit. Based on this evaluation no 30 TAC Chapter 319 hazardous metals effluent limitations are proposed for the discharge of produced wastewater in the draft TPDES general permit.

30 TAC Chapter 319.22 Hazardous Metals Quality Levels Discharge to Inland Waters:

Parameter	Daily Average	Daily Composite	Grab Sample
Total Arsenic	0.1 mg/L	0.2 mg/L	0.3 mg/L
Total Barium	1.0 mg/L	2.0 mg/L	4.0 mg/L

Parameter	Daily Average	Daily Composite	Grab Sample
Total Cadmium	0.05 mg/L	0.1 mg/L	0.2 mg/L
Total Chromium	0.5 mg/L	1.0 mg/L	5.0 mg/L
Total Copper	0.5 mg/L	1.0 mg/L	2.0 mg/L
Total Lead	0.5 mg/L	1.0 mg/L	1.5 mg/L
Total Manganese	1.0 mg/L	2.0 mg/L	3.0 mg/L
Total Mercury	0.005 mg/L	0.005 mg/L	0.01 mg/L
Total Nickel	1.0 mg/L	2.0 mg/L	3.0 mg/L
Total Selenium	0.05 mg/L	0.1 mg/L	0.2 mg/L
Total Silver	0.05 mg/L	0.1 mg/L	0.2 mg/L
Total Zinc	1.0 mg/L	2.0 mg/L	6.0 mg/L

B. Coastal Facilities:

EPA has established technology-based effluent limitation guidelines at 40 CFR 435, Subpart D (Coastal Subcategory). 40 CFR § 435.40 establishes this subpart is applicable to those facilities engaged in field exploration, drilling, well production, and well treatment in the oil and gas industry in areas defined as coastal. 40 CFR § 435.40(a) defines Coastal Facilities as any location in or on a water of the United States landward of the inner boundary of the territorial seas. 40 CFR § 435.40(b)(1) and (2) further define Coastal Facilities as facilities located landward from the inner boundary of the territorial seas and located inland (i.e., on land) based on latitude and longitude coordinates included in 40 CFR § 435.40.

BAT effluent limitations are established at 40 CFR § 435.43 for the following:

- Produced Wastewater – No discharge
- Drilling Fluids, Drill Cuttings, and Dewatering Effluent – No discharge
- Well Treatment, Completion, and Workover Fluids – No discharge
- Produced Sand – No discharge
- Deck Drainage
  - Free Oil: No discharge as established by visual sheen observation.
- Domestic Waste
  - Foam: No discharge

BCT effluent limitations are established at 40 CFR § 435.44 for the following:

- Produced Wastewater
  - Oil & Grease: 48 mg/L daily average and 72 mg/L daily maximum
- Drilling Fluids, Drill Cuttings, and Dewatering Effluent – No discharge
- Well Treatment, Completion, and Workover Fluids
  - Free Oil: No discharge as established by the static sheen method.
- Produced Sand – No discharge
- Deck Drainage
  - Free Oil: No discharge as established by visual sheen observation.
- Sanitary Waste (M10)
  - Total Residual Chlorine: Minimum of 1.0 mg/L (and maintained as close as possible to this level)
- Sanitary Waste (M91M)
  - Floating Solids: No discharge

- Domestic Waste
  - Floating Solids: No discharge
  - Garbage: No discharge

NSPS effluent limitations are established at 40 CFR § 435.45 for the following:

- Produced Wastewater – No discharge
- Drilling Fluids, Drill Cuttings, and Dewatering Effluent – No discharge
- Well Treatment, Completion, and Workover Fluids – No discharge
- Produced Sand – No discharge
- Deck Drainage
  - Free Oil: No discharge as established by visual sheen observation
- Sanitary Waste (M10)
  - Total Residual Chlorine: Minimum of 1.0 mg/L (and maintained as close as possible to this level)
- Sanitary Waste (M91M)
  - Floating Solids: No discharge
- Domestic Waste
  - Floating Solids: No discharge
  - Garbage: No discharge
  - Foam: No discharge

EPA's existing NPDES General Permit No. TXG330000 has established the following technology-based permit limitations for discharges not regulated by 40 CFR Part 435, Subpart D; or are more restrictive than 40 CFR Part 435, Subpart D:

- Formation Test Fluids
  - No discharge except to bays and estuaries where no chloride standards have been established
  - Free Oil: No discharge via visual observation
  - pH: 6.0-9.0 standard units.
- Sanitary Waste
  - BOD (5-day): 45 mg/L daily maximum
  - TSS: 45 mg/L daily maximum.
- Miscellaneous Discharges
  - Free Oil: No discharge as established by visual observation.

TCEQ is proposing to prohibit the discharge of formation test fluids as EPA's existing TXG260000 (Territorial Seas Facilities) does not authorize this discharge. Additionally, oil and gas extraction activities located in coastal waters or the territorial seas should consistently be regulated from a technology-based standpoint unless otherwise limited by 40 CFR Part 435.

TCEQ regulations at 30 TAC § 309.1 establish minimum state-wide secondary treatment standards for the discharge to surface waters of domestic wastewater (which includes both sanitary waste and domestic waste proposed for discharge under the draft TPDES general permit). These standards are as follows: BOD (5-day) – 20 mg/L daily average and 65 mg/L single grab; TSS – 20 mg/L daily average and 65 mg/L single grab, Dissolved Oxygen - 2.0 mg/L daily minimum, and pH 6.0-9.0 standard units. 30 TAC § 309.3(g) establishes minimum disinfection requirements for the discharge of domestic wastewater for total residual chlorine (0.5 mg/L

minimum with a product of 20 based on minutes of contact time and 4.0 mg/L maximum). 30 TAC § 319.19(a) requires flow monitoring for the discharge of domestic wastewater. TCEQ is proposing effluent limitations which are not established in EPA's existing TXG330000 as follows: daily average effluent limitations for BOD (5-day) and TSS; minimum dissolved oxygen effluent limitations; pH effluent limitations; maximum total residual chlorine effluent limitations; and flow monitoring. Appendix F of this fact sheet includes an assessment of pH limitations of 6.0-9.0 standard units demonstrating these proposed effluent limitations will meet instream pH water quality standards. Total residual chlorine effluent limitations are established at a minimum of 1.0 mg/L (based on 20-minute contact time) and 4.0 mg/L daily maximum. All proposed secondary treatment technology-based effluent limitations for sanitary waste are also being proposed for domestic waste. EPA's existing TXG330000 establishes daily maximum effluent limitations for BOD (5-day) and TSS at 45 mg/L which are being revised to the appropriate single grab effluent limitations (as established in 30 TAC Chapter 309) because EPA's existing TXG330000 requires a grab sample; this proposed revision complies with anti-backsliding requirements established in 40 CFR § 122.44(l) based on the technical mistake justification.

TCEQ is proposing to expand "miscellaneous discharges" authorized under EPA's existing TXG330000, and revise definitions associated with these discharges, from the general category of "miscellaneous discharges" to "uncontaminated miscellaneous discharges" and "contaminated miscellaneous discharges." Uncontaminated miscellaneous discharges are proposed to retain technology-based effluent limitations from EPA's existing TXG330000 (no discharge of free oil based on visual observation). Contaminated miscellaneous discharges are proposed to be subject to a technology-based effluent limitation of no discharge of free oil (visual observation), flow monitoring consistent with EPA's existing TXG260000, and an effluent limitation on pH of 6.0-9.0 standard units based on the TCEQ practice of establishing technology-based effluent limitations in TPDES permits for pH that authorize discharge of potentially contaminated waste streams. Oil and gas extraction activities located in coastal waters or the territorial seas should be regulated consistently from a technology-based standpoint unless otherwise limited by 40 CFR Part 435. Contaminated miscellaneous discharges proposed for authorization under the draft TPDES general permit are typical discharges authorized from industrial facilities regulated under the TPDES program.

C. Territorial Seas Facilities:

EPA has established technology-based effluent limitation guidelines at 40 CFR Part 435, Subpart A (Offshore Subcategory). 40 CFR § 435.10 establishes this subpart is applicable to those facilities engaged in field exploration, drilling, well production, and well treatment in the oil and gas industry which are located in waters that are seaward of the inner boundary of the territorial seas ("offshore") as defined in section 502(g) of the CWA. Under the authority of the CWA, TCEQ has jurisdiction to regulate discharge to the territorial seas under the TPDES program within three statute miles of the coastline. Discharges beyond three statute miles are considered to be to the OCS and TCEQ does not have authority to regulate these discharges under the TPDES program. A state-only general permit (WQG280000) has been developed to regulate oil and gas extraction activity discharges to the OCS out to the limit under state statutory authority (out to three leagues). Separate

authorization to discharge to the OCS is required from EPA under the NPDES program. 40 CFR Part 435, Subpart A establishes different conditions for facilities located within three miles of the coastline versus facilities located greater than three miles from the coastline. Conditions outlined below are for facilities located within three miles of the coastline.

BAT effluent limitations are established at 40 CFR § 435.13 for the following:

- Produced Wastewater
  - Oil & Grease: 29 mg/L daily average and 42 mg/L daily maximum
- Drilling Fluids and Drill Cuttings - No discharge
- Well Treatment, Completion, and Workover Fluids
  - Oil & Grease: 29 mg/L daily average and 42 mg/L daily maximum
- Deck Drainage
  - Free Oil: No discharge as established by visual sheen observation
- Produced Sand – No discharge
- Domestic Waste
  - Foam: No discharge

BCT effluent limitations are established at 40 CFR § 435.14 for the following:

- Produced Wastewater
  - Oil & Grease: 48 mg/L daily average and 72 mg/L daily maximum
- Drilling Fluids and Drill Cuttings - No discharge
- Well Treatment, Completion, and Workover Fluids
  - Free Oil: No discharge as established by the static sheen method
- Deck Drainage
  - Free Oil: No discharge as established by visual sheen observation
- Produced Sand – No discharge
- Sanitary Waste (M10)
  - Total Residual Chlorine: Minimum of 1.0 mg/L (and maintained as close as possible to this level)
- Sanitary Waste (M91M)
  - Floating Solids: No discharge
- Domestic Waste
  - Floating solids: No discharge
  - All other domestic waste: See 33 CFR Part 151

NSPS effluent limitations are established at 40 CFR § 435.15 for the following:

- Produced Wastewater
  - Oil & Grease: 29 mg/L daily average and 42 mg/L daily maximum
- Drilling Fluids and Drill Cuttings - No discharge
- Well Treatment, Completion, and Workover Fluids
  - Oil & Grease: 29 mg/L daily average and 42 mg/L daily maximum
- Deck Drainage
  - Free Oil: No discharge as established by visual sheen observation
- Produced Sand – No discharge

- Sanitary Waste (M10)
  - Total Residual Chlorine: Minimum of 1.0 mg/L (and maintained as close as possible to this level)
- Sanitary Waste (M91M)
  - Floating Solids: No discharge
- Domestic Waste
  - Floating Solids: No discharge
  - Foam: No discharge
  - All other domestic waste: See 33 CFR Part 151

TCEQ has established state-wide quality levels for tidal waters at 30 TAC § 319.23 which are provided in the table below. These effluent limitations are end-of-pipe criteria and do not consider instream dilution. EPA failed to consider this state regulation in development of TXG260000. Data included in the "Supplemental Information Report to the 2004 Final Environmental Impact Statement," dated September 2011 (see Part XI of this fact sheet) for the discharges of produced wastewater; and well treatment, completion, and workover fluids were compared against these levels to determine the need to establish 30 TAC Chapter 319 effluent limitations in the draft TPDES general permit. The Offshore Operators Committee (OOC) also provided more recent produced wastewater data which was submitted to RRC in applications for individual authorizations from the time frame between 2016-2020 in an electronic mail (email) communication with TCEQ dated May 4, 2021 (see Part XI of this fact sheet). This data was also compared against hazardous metals levels established in 30 TAC § 319.23.

Typical TPDES permitting procedures require inclusion of hazardous metals limitations in TPDES permits when available effluent data indicates potential exceedances of levels established in 30 TAC § 319.23. Based on this evaluation 30 TAC Chapter 319 effluent limitations initially were considered for inclusion in the draft TPDES general permit for the discharge of produced wastewater for total arsenic, total barium, total cadmium, total manganese, total selenium, total silver, and total zinc. 30 TAC Chapter 319 effluent limitations for the discharge of well treatment, completion, and workover fluids are not warranted based on this analysis.

30 TAC § 319.26 states, in part, that the commission may authorize less stringent quality levels than those set forth in 30 TAC § 319.23 only where the applicant demonstrates that there will be no significant adverse impact on water quality and that the less stringent quality levels are necessary based on considerations consistent with provisions of the Texas Water Code.

The OOC in a letter to TCEQ dated June 10, 2021, applied for an exception to the hazardous metals limitations established in 30 TAC § 319.23 as allowed under 30 TAC § 319.26 in the draft TPDES general permit for the discharge of produced wastewater. This letter referenced two previous produced wastewater studies on the Gulf of Mexico conducted by OOC related to conditions established in historical EPA NPDES oil and gas general permits to satisfy the no-significant-adverse-impact-on-water-quality aspect of the rule. A 2015 study entitled "OOC Produced Water and Water Based Mud Characterization Study" assessed the aquatic life chronic toxicity impacts of produced wastewater discharges. A 1997 study entitled "Gulf of Mexico Produced Water Bioaccumulation Study" assessed bioaccumulation of

chemicals in marine organisms and impacts on human consumption of marine organisms. In review of these studies, TCEQ identified shortcoming regarding applying the studies to the drafting of this TPDES general permit, which include: the sampling and analysis did not include all the metals listed in 30 TAC Chapter 319, the studies used larger mixing zones than allowed under TCEQ procedures, only chronic aquatic life toxicity was assessed (acute toxicity was not addressed), some methods utilized are not approved under 40 CFR Part 136, and sampling for dissolved metals vs. total metals as total metals are typically assessed by TCEQ. Furthermore, barium and manganese do not have established TCEQ water quality standards that would need to be considered in approving this exception request to demonstrate no significant impact on water quality. Based on TCEQ's review of these two studies and TCEQ's own water quality impact assessments outlined in Section XI of this fact sheet, TCEQ supports OOC's 30 TAC Chapter 319 metals exception request related to the no significant adverse impact on water quality aspect of 30 TAC § 319.26.

To satisfy the second condition established in 30 TAC § 319.26 (less stringent quality levels are necessary based on considerations consistent with provisions of the Texas Water Code), OOC in its June 2021 letter provided information related to the likely economic impact of imposing 30 TAC § 319.23 hazardous metals limitations in the draft TPDES general permit based on an inability of treatment technology to achieve compliance with these limitations.

OOC indicated that it would be likely existing offshore oil and gas activities would cease production, new developments would not be pursued, significant cost impacts would be realized for capture of produced wastewater and onshore transport for ultimate disposal, and a reduction in state lease revenues and royalties would occur should 30 TAC § 319.23 limitations be imposed. Furthermore, the information provided by OOC discussed the health and safety impacts associated with onshore transport and disposal of produced wastewater.

TCEQ performed an assessment of OOC's request associated with this second aspect of the rule conditions and identified the regulatory history associated with the conditions established in 30 TAC § 319.26. 9 TexReg 4078, (July 27, 1984) outlines the Texas Water Development Board's (TWDB) adoption of the existing regulation and amendments to this regulation that existed prior the existing regulation. The Texas Register preamble identifies Section 26.003 of the Texas Water Code, which is the policy statement of this Chapter, as being applicable to applying less stringent levels than those established in 30 TAC § 319.26. Section 26.003 of the Texas Water Code states, in part, "taking into consideration the economic development of the state". OOC's exception request related to economic impacts falls in line with this condition established in the Texas Water Code. This Texas Register publication outlines public comment received on the rule amendments and the TWDB's position on comments received and demonstrations needed to be made by an applicant to justify less stringent hazardous metals levels. The preamble states in part "the applicant will need to show more than difficulty in paying the higher cost of treatment necessary to meet concentrations" for the TWDB to allow less stringent hazardous metals levels. The preamble further goes onto discuss three potential options an applicant could present to the TWDB to demonstrate "more than difficulty in paying higher costs". The three options presented do not have direct applicability to treatment and discharge for produced

wastewater offshore oil and gas discharges, however, the preamble does not restrict an applicant to these three options. Based on TCEQ's initial evaluation of this exception request associated with economic impacts, granting less stringent hazardous metals levels could not be supported.

The OOC submitted a supplement to its initial 30 TAC Chapter 319 metals exception request in a letter dated November 22, 2021. OOC's supplemental submission provided more detailed information related to: EPA developed national technology-based standards for offshore produced wastewater discharges, additional and detailed information on economic impacts to the State of Texas and the oil and gas offshore industry if 30 TAC Chapter 319 metals limitations were imposed in the TPDES general permit; and provided a study conducted by the American Petroleum Institute (API) of barium fate and transport in the Gulf of Mexico for offshore oil and gas discharges: "Barium in Produced Water: Fate and Effects in Marine Environment." Based on TCEQ's review of OOC's November 22, 2021, letter, TCEQ supports not imposing hazardous metals limitations as established in 30 TAC § 319.23 as allowed under 30 TAC § 319.26.

30 TAC Chapter 319 Hazardous Metals Quality Levels Discharge to Tidal Waters:

Parameter	Daily Average	Daily Composite	Grab Sample
Total Arsenic	0.1 mg/L	0.2 mg/L	0.3 mg/L
Total Barium	1.0 mg/L	2.0 mg/L	4.0 mg/L
Total Cadmium	0.1mg/L	0.2 mg/L	0.3 mg/L
Total Chromium	0.5 mg/L	1.0 mg/L	5.0 mg/L
Total Copper	0.5 mg/L	1.0 mg/L	2.0 mg/L
Total Lead	0.5 mg/L	1.0 mg/L	1.5 mg/L
Total Manganese	1.0 mg/L	2.0 mg/L	3.0 mg/L
Total Mercury	0.005 mg/L	0.005 mg/L	0.01 mg/L
Total Nickel	1.0 mg/L	2.0 mg/L	3.0 mg/L
Total Selenium	0.1 mg/L	0.2 mg/L	0.3 mg/L
Total Silver	0.05 mg/L	0.1 mg/L	0.2 mg/L
Total Zinc	1.0 mg/L	2.0 mg/L	6.0 mg/L

EPA's existing NPDES General Permit No. TXG260000 established the following technology-based permit limitations for discharges not regulated by 40 CFR Part 435, Subpart A; or are more restrictive than 40 CFR Part 435, Subpart A:

- Produced Wastewater
  - Flow: Monitor
  - Free Oil: No discharge as established by visual observation
- Well Treatment, Completion, and Workover Fluids
  - Priority Pollutants: Prohibited from discharge other than in trace amounts
- Miscellaneous Discharges
  - Free Oil: No discharge as established by visual observation.
- Miscellaneous Discharges of Seawater and Freshwater which have been Chemically Treated
  - Treatment Chemicals: Not to exceed maximum concentration specified in EPA product registration labeling, maximum manufacturer's recommended concentration, or 500 mg/L

- Free oil: No discharge as established by visual observation
- Flow: Monitor

TCEQ practice is to establish technology-based pH effluent limitations in TPDES permits that authorize potentially contaminated waste streams. Technology-based pH effluent limitations of 6.0-9.0 standard units for the discharge of produced wastewater/hydrate control fluids; well treatment, completion, and workover fluids; and contaminated miscellaneous discharge are proposed in the draft TPDES general permit. Appendix F of this fact sheet includes an assessment of pH limitations of 6.0-9.0 standard units demonstrating these proposed effluent limitations will meet instream pH water quality standards. TCEQ is proposing to revise "miscellaneous discharges" and "miscellaneous discharges of seawater and freshwater which have been chemically treated" as currently defined in EPA's existing NPDES general permits. These waste streams are proposed to be defined as "uncontaminated miscellaneous discharges" and "contaminated miscellaneous discharges", respectively in the draft TPDES general permit. TCEQ is proposing to remove effluent limitations in EPA's existing TXG260000 for treatment chemicals used in contaminated miscellaneous discharges as the draft TPDES general permit adequately controls chemical usage via WET water quality-based effluent limitations. Secondary treatment standards, flow monitoring, and disinfection requirements for the discharge of domestic waste and sanitary waste are discussed above under the Coastal Facilities section and are proposed in the draft TPDES general permit for these discharges from Territorial Seas Facilities.

D. Proposed Technology-Based Effluent Limitations:

Technology-based effluent limitations proposed in the draft TPDES general permit based on EPA's existing NPDES General Permit Nos. TXG260000 and TXG330000, 40 CFR Part 435, TCEQ established technology standards, or BPJ and anti-backsliding requirements established at 40 CFR § 122.44(l) are established as follows:

Stripper Well Facilities:

- Produced Wastewater, Well Treatment Fluids, and Workover Fluids

Parameter	Daily Maximum	Daily Average
Flow	Report, MGD	N/A
Oil and Grease	35 mg/L	25 mg/L
pH	6.0 - 9.0 standard units	N/A

- Drilling Fluids – No discharge
- Drill Cuttings – No discharge
- Produced Sand – No discharge
- Dewatering Effluent – No discharge
- Formation Test Fluids – No discharge
- Well Completion Fluids – No discharge
- Hydrate Control Fluids – No discharge
- Domestic Waste – No discharge
- Sanitary Waste – No discharge

- Contaminated Miscellaneous Discharges and Uncontaminated Miscellaneous Discharges – No discharge
- Contaminated Stormwater - No discharge

Coastal Facilities:

- Deck Drainage

Parameter	Daily Maximum	Daily Average
Free Oil[1]	No discharge	N/A

[1] As determined by the presence of a film or sheen upon or discoloration of the surface of the receiving water (visual sheen).

- Domestic Waste

Parameter	Daily Maximum	Daily Average
Flow	Report, MGD	Report, MGD
Floating Solids, Garbage, Foam	No discharge	N/A
Biochemical Oxygen Demand (5-day)	65 mg/L	20 mg/L
Total Suspended Solids	65 mg/L	20 mg/L
Dissolved Oxygen	2.0 mg/L (minimum)	N/A
Total Residual Chlorine	1.0 mg/L (minimum) and 4.0 mg/L (maximum)	N/A
pH	6.0 – 9.0 standard units	N/A

- Sanitary Waste (M10 and M91M)

Parameter	Daily Maximum	Daily Average
Flow	Report, MGD	Report, MGD
Floating Solids	No discharge	N/A
Biochemical Oxygen Demand (5-day)	65 mg/L	20 mg/L
Total Suspended Solids	65 mg/L	20 mg/L
Dissolved Oxygen	2.0 mg/L (minimum)	N/A
Total Residual Chlorine	1.0 mg/L (minimum) and 4.0 mg/L (maximum)	N/A
pH	6.0 – 9.0 standard units	N/A

- Uncontaminated Miscellaneous Discharges

Parameter	Daily Maximum	Daily Average
Free Oil[1]	No discharge	N/A

[1] As determined by the presence of a film or sheen upon or discoloration of the surface of the receiving water (visual sheen).

- Contaminated Miscellaneous Discharges

Parameter	Daily Maximum	Daily Average
Flow	Report, MGD	N/A
Free Oil[1]	No discharge	N/A
pH	6.0 -9.0 standard units	N/A

[1] As determined by the presence of a film or sheen upon or discoloration of the surface of the receiving water (visual sheen).

- Drilling Fluids – No discharge
- Drill Cuttings – No discharge
- Produced Wastewater – No discharge
- Produced Sand – No discharge
- Dewatering Effluent – No discharge
- Formation Test Fluids – No discharge
- Well Treatment, Completion, and Workover Fluids – No discharge
- Hydrate Control Fluids – No discharge
- Contaminated stormwater for inland facilities (not defined as deck drainage) – No discharge

Territorial Seas Facilities:

- Produced Wastewater and Hydrate Control Fluids

Parameter	Daily Maximum	Daily Average
Free Oil[1]	No discharge	N/A
Oil & Grease	42 mg/L	29 mg/L
pH	6.0 - 9.0 standard units	N/A

[1] As determined by the presence of a film or sheen upon or discoloration of the surface of the receiving water (visual sheen).

- Well Treatment, Completion, and Workover Fluids

Parameter	Daily Maximum	Daily Average
Flow	Report, MGD	Report, MGD
Free Oil[1]	No discharge	N/A
Oil & Grease	42 mg/L	29 mg/L
PH	6.0 – 9.0 standard units	N/A

[1] As determined by the static sheen test utilizing EPA Method 1617.

- Deck Drainage

Parameter	Daily Maximum	Daily Average
Free Oil[1]	No discharge	N/A

[1] As determined by the presence of a film or sheen upon or discoloration of the surface of the receiving water (visual sheen).

- Domestic Waste

Parameter	Daily Maximum	Daily Average
Flow	Report, MGD	Report, MGD
Floating Solids and Foam	No discharge	N/A
Biochemical Oxygen Demand (5-day)	65 mg/L	20 mg/L
Total Suspended Solids	65 mg/L	20 mg/L
Dissolved Oxygen	2.0 mg/L (minimum)	N/A
Total Residual Chlorine	1.0 mg/L (minimum) and 4.0 mg/L (maximum)	N/A
pH	6.0 – 9.0 standard units	N/A

- Sanitary Waste (M10 and M91M)

Parameter	Daily Maximum	Daily Average
Flow	Report, MGD	Report, MGD
Floating Solids	No discharge	N/A
Biochemical Oxygen Demand (5-day)	65 mg/L	20 mg/L
Total Suspended Solids	65 mg/L	20 mg/L
Dissolved Oxygen	2.0 mg/L (minimum)	N/A
Total Residual Chlorine	1.0 mg/L (minimum) and 4.0 mg/L (maximum)	N/A
pH	6.0 – 9.0 standard units	N/A

- Uncontaminated Miscellaneous Discharges

Parameter	Daily Maximum	Daily Average
Free Oil[1]	No discharge	N/A

[1] As determined by the presence of a film or sheen upon or discoloration of the surface of the receiving water (visual sheen).

- Contaminated Miscellaneous Discharges

Parameter	Daily Maximum	Daily Average
Flow	Report, MGD	N/A
Free Oil[1]	No discharge	N/A
pH	6.0 - 9.0 standard units	N/A

[1] As determined by the presence of a film or sheen upon or discoloration of the surface of the receiving water (visual sheen).

- Drilling Fluids – No discharge
- Drill Cuttings – No discharge
- Produced Sand – No discharge
- Dewatering Effluent – No discharge
- Formation Test Fluids – No discharge

XI. Water Quality-Based Requirements

TPDES permits contain technology-based effluent limitations reflecting the best controls available. Where these technology-based permit limitations do not protect water quality or the designated uses, additional water quality-based effluent limitations and/or conditions are included in TPDES permits. State narrative and numerical water quality standards are used in conjunction with EPA criteria and other toxicity data bases to determine the adequacy of technology-based permit limitations and the need for additional water-quality based controls. Furthermore, the draft TPDES general permit has been developed to comply with the Ocean Discharge Criteria, established in 40 CFR Part 125, Subpart M.

The *Texas Surface Water Quality Standards* (TSWQS) found at 30 TAC Chapter 307, state that surface waters will not be toxic to man from ingestion of water, consumption of aquatic organisms, or contact with the skin, or to terrestrial or aquatic life. The methodology outlined in the TCEQ guidance document *Procedures to Implement the Texas Surface Water Quality Standards* (*IPs*) RG-194 is designed to ensure compliance with 30 TAC Chapter 307. Specifically, the methodology is designed to ensure that no source will be allowed to discharge any wastewater that (1) results in instream aquatic toxicity; (2) causes a violation of an applicable narrative or numerical state water quality standard; (3) results in the endangerment of a drinking water supply; or (4) results in aquatic bioaccumulation that threatens human health.

A. Assessment of Individual Toxics with Established Water Quality Standards:

The Texas Toxicity Modeling Program (TEXTOX), developed by TCEQ, was used to perform a reasonable potential (RP) screening against available discharge data for this industry (oil and gas extraction) which TCEQ is regulating for the first time. TEXTOX is the method TCEQ uses to calculate water quality-based effluent limitations for toxics in accordance with the TSWQS and the IPs (RG-194). The receiving stream's physical and chemical characteristics are used to calculate what concentrations of pollutants are allowed to be discharged while ensuring that no significant degradation of any water in the state will occur and that existing uses will be maintained and protected. Segment values found in Appendix D of the IPs (RG-194), pollutant criteria found in the TSWQS, the receiving stream's critical low flow (as applicable), and the effluent flow (as applicable) are used to calculate the concentration of each pollutant the receiving stream can tolerate that would still be protective of aquatic life and human health.

Calculations of water quality-based effluent limitations for the protection of aquatic life and human health are presented in Appendices A 1-4 (Stripper Well Facilities); Appendix B (Coastal Facilities); and Appendices C, D, and E (Territorial Seas Facilities). Aquatic life criteria established in Table 1 and human health criteria established in Table 2 of the TSWQS are incorporated into the calculations. TSS, pH, Hardness, and Chloride values were obtained from segment numbers in Appendix D of the IPs (RG-194).

TCEQ practice for determining RP is to compare available analytical data from discharges against percentages of the calculated daily average water quality-based effluent limitations. Permit limitations are required when available analytical data exceeds 85 percent of the calculated daily average water quality-based effluent

limitation. Monitoring and reporting are required when available analytical data exceeds 70 percent of the calculated daily average water quality-based effluent limitation.

The underlying methodology and statistics utilized to calculate individual pollutant water quality-based effluent limitations are outlined in RG-194, section titled "Toxic Pollutants," pages 130-173.

Assessment of Produced Wastewater from Freshwater Stripper Well Facilities:

TEXTOX Menu 1 was used to calculate appropriate daily average and daily maximum water quality-based effluent limitations. TEXTOX Menu 1 was used to calculate appropriate effluent limitations for a discharge into intermittent freshwater body streams east of the 98th meridian using a 100% acute dilution which is independent of the discharge flow volume.

For freshwater bodies east of the 98th meridian, the segment numbers and segment criteria used to screen produced wastewater discharges under different discharge scenarios were determined by using criteria of segments that have the lowest and highest total suspended solids (TSS) and hardness, independent of each other.

Factors used to establish which segments are controlling related to certain pollutants to run TEXTOX are provided, as follows:

- Freshwater: Metals are more bioavailable the lower the hardness - According to the IPs (RG-194), in general, most metals toxicity increases in water that has low hardness values. Such metals include cadmium, trivalent chromium, copper, lead, nickel, and zinc. Therefore, water quality criteria for these metals are more stringent for receiving waters with a low hardness value. As hardness decreases, the applicable water quality-based effluent limitations become more stringent.

- Freshwater: One chemical, pentachlorophenol, is more bioavailable the lower the pH. Water quality criteria for pentachlorophenol depends on pH. Pentachlorophenol is more toxic in water that has low pH (acidic). Therefore, the lower the pH in a receiving water, the more stringent any applicable water quality-based effluent limitation is for pentachlorophenol.

- Freshwater: One metal, silver is more bioavailable the lower the chloride concentration. The percentage of dissolved silver that is in free ionic form depends on the concentration of chloride. More silver is present in the free ionic form (and is therefore more toxic) in water that has low chloride concentrations. Therefore, the lower the chloride concentration in the receiving water, the lower the applicable water quality-based effluent limitation is for silver.

- Freshwater: Some metals' bioavailability is affected by TSS and/or hardness. Water quality criteria for certain metals (arsenic, cadmium, trivalent chromium, copper, lead, nickel, silver, and zinc) depend on TSS. As TSS increases, the partitioning coefficient (or Kp) and dissolved fraction of the metal decreases. Therefore, a rise in TSS results in less of the metal being bioavailable to aquatic life. As TSS decreases, more of the metal is bioavailable, therefore any applicable water quality-based effluent limitations to protect aquatic life

become more stringent. However, TSS is not the only determining factor for the amount of bioavailable cadmium, trivalent chromium, copper, lead, nickel, and zinc. The effect of hardness can be stronger than the effect of TSS. Any applicable water quality-based effluent limitations for chromium, copper, lead, nickel, and zinc are most stringent when both TSS and hardness are low. An exception is cadmium, where any applicable water quality-based effluent limitations are most stringent when TSS is high and hardness is low.

For TEXTOX Menu 1, the segment number and corresponding segment-specific values, for the segment with the lowest and highest TSS and hardness (independent of each other), east of the 98th meridian, were used to evaluate appropriate water quality-based effluent limitations.

TCEQ's review of EPA's fact sheet developed in support of TXG330000 did not indicate EPA conducted an RP analysis of produced wastewater discharges from Stripper Well Facilities (note – the discharge of produced wastewater from Coastal Facilities under TXG330000 is prohibited). This is inconsistent with the approach that EPA used to authorize produced wastewater discharges to the territorial seas as outlined in the fact sheet they developed in support of TXG260000. To be consistent in rationale for the discharge of produced wastewater between Stripper Well Facilities and Territorial Seas Facilities, TCEQ contacted the RRC to inquire on the availability of effluent data for produced wastewater discharges from Stripper Well Facilities located east of the 98th meridian. RRC provided TCEQ with data for three representative permitted facilities contained from permit applications previously submitted to RRC.

Produced Wastewater Data for Stripper Well Facilities (data from RRC):

Pollutant	**Facility No. 1**	**Facility No. 2**	**Facility No. 3**
Total Aluminum	0.320 mg/L	0.153 mg/L	0.00371 mg/L
Ammonia	0.12 mg/L	0.27 mg/L	0.68 mg/L
Total Arsenic	< 0.002 mg/L	< 0.005 mg/L	< 0.005 mg/L
Total Barium	0.0474 mg/L	0.133 mg/L	< 0.003 mg/L
Benzene	< 0.0003 mg/L	0.004 mg/L	< 0.001 mg/L
Total Cadmium	< 0.0003 mg/L	< 0.0003 mg/L	< 0.0003 mg/L
Calcium	2.94 mg/L	0.08 mg/L	< 0.1 mg/L
Chloride	20.4 mg/L	24.5 mg/L	30.8 mg/L
Total Chromium	< 0.002 mg/L	< 0.003 mg/L	< 0.002 mg/L
Total Copper	< 0.002 mg/L	< 0.001 mg/L	< 0.001 mg/L
Cyanide	< 0.003 mg/L	< 0.02 mg/L	< 0.02 mg/L
Hexavalent Chromium	< 0.003 mg/L	< 0.003 mg/L	< 0.003 mg/L
Total Iron	0.177 mg/L	0.264 mg/L	< 0.007 mg/L
Total Lead	0.000312 mg/L	< 0.0003 mg/L	< 0.0003 mg/L
Total Magnesium	0.818 mg/L	3.82 mg/L	< 0.1 mg/L
Total Manganese	0.00542 mg/L	0.016 mg/L	< 0.0005 mg/L
Total Mercury	< 0.00008 mg/L	< 0.00008 mg/L	< 0.00008 mg/L
Naphthalene	< 0.00194 mg/L	< 0.00198 mg/L	< 0.004 mg/L
Total Nickel	< 0.003 mg/L	0.00108 mg/L	< 0.001 mg/L
Oil & Grease	< 5 mg/L	< 5 mg/L	< 5 mg/L
Phenol	< 0.00194 mg/L	< 0.00198 mg/L	< 0.002 mg/L

Pollutant	Facility No. 1	Facility No. 2	Facility No. 3
Potassium	3.72 mg/L	10.77 mg/L	< 0.1 mg/L
Total Selenium	< 0.002 mg/L	< 0.002 mg/L	< 0.002 mg/L
Total Silver	< 0.001 mg/L	< 0.0005 mg/L	< 0.0005 mg/L
Sodium	503 mg/L	612 mg/L	< 0.1 mg/L
Sulfate	< 1 mg/L	< 10 mg/L	10.5 mg/L
Sulfide	< 0.05 mg/L	< 0.02 mg/L	< 0.05 mg/L
Total Dissolved Solids	1195 mg/L	1210 mg/L	885 mg/L
Total Organic Carbon	11.5 mg/L	8.3 mg/L	4.3 mg/L
Total Suspended Solids	17 mg/L	7 mg/L	< 2.5 mg/L
Total Zinc	0.019 mg/L	0.0104 mg/L	< 0.002 mg/L

Screening this data against calculated water quality-based effluent limitations in Appendices A 1-4 indicated no pollutant-specific water quality-based effluent limitations are justified for discharges from Stripper Well Facilities in the draft TPDES general permit.

Assessment of Produced Wastewater and Well Treatment, Completion, and Workover Fluids from Marine Coastal and Territorial Seas Facilities:

TEXTOX Menu 5 was used to calculate appropriate daily average and daily maximum water quality-based effluent limitations. TEXTOX Menu 5 was used to calculate appropriate water quality-based effluent limitations for discharges into the Gulf of Mexico and into an appropriate bay or estuary when discharging less than 10 million gallons per day (MGD) using a zone of initial dilution (ZID) at 50 feet of 30%, an aquatic life mixing zone at 200 feet of 8%, and a human health mixing zone at 400 feet of 4% based on EPA's horizontal jet plume model for discharges to the territorial seas other than produced wastewater (see further discussion on the assessment of produced wastewater discharges to the territorial seas below in this section of the fact sheet).

For a bay or estuary anywhere on the Texas coast, the segment number and criteria used was based on the lowest TSS. When these discharges were evaluated, they were screened in a way that resulted in calculation of the most stringent water quality-based effluent limitations.

Factors used to establish which segments are controlling to run TEXTOX:

- Saltwater: Bioavailability increases as TSS decreases. According to 30 TAC § 307.6(c)(1) - Table 1- Aquatic Life Protection, hardness is used to establish the criteria for cadmium, trivalent chromium, copper, lead, nickel, and zinc (i.e., it is used in the equation to calculate the acute and chronic criteria) in freshwater only. Hardness is not used in calculating criteria in saltwater. The determining factor for water quality-based effluent limitations calculations in saltwater is TSS. A decrease in TSS results in any applicable water quality-based effluent limitations being more stringent, due to more metal being more bioavailable.

For TEXTOX Menu 5, since the determining factor is TSS, the appropriate segment number and corresponding segment-specific values for the bay or estuary with the lowest TSS was used to evaluate appropriate water quality-based effluent

limitations. Discharges to the territorial seas were evaluated using Segment No. 2501 (Gulf of Mexico).

As discussed above, TCEQ typically utilizes EPA's horizontal plume model for discharges of less than 10 MGD to calculate standard instream dilution rates to marine water bodies. In support of issuance of EPA's existing TXG260000 (effective February 8, 2012), EPA conducted an RP analysis of produced wastewater discharges to the territorial seas which is outlined in EPA's existing fact sheet for TXG260000 (dated October 4, 2011). The fact sheet indicates EPA utilized data obtained from the RRC [per table 6.1 of the 2004 final Environmental Impact Statement (EIS)] to conduct its RP analysis. This data summarized in EPA's fact sheet is included in Table 4-2 of the "Supplemental Information Report to the 2004 Final Environmental Impact Statement," dated September 2011. Data in the 2011 EIS supplement is included in the table below "Produced Wastewater for Territorial Seas Facilities." Section 4.4.2 of the 2011 EIS supplement summarizes this RP analysis. It indicates the highest pollutant concentrations for available Texas discharge data obtained from RRC and worst-case discharge scenarios [(3885 barrels per day (bbl/day)] discharge rate and depth to sea floor of 7.32 meters were utilized based on modeling results from CORMIX versions 4.2 GP and 7.0.

EPA's existing TXG260000 does not restrict flow rates or depths to sea floor for allowable produced wastewater discharges. Appendix A, Table 1 in EPA's existing TXG260000 establishes produced wastewater discharge critical dilutions at flow rates up to 25,000 bbl/day and depths to sea floor between 0 and >16 meters. Appendix A, Table 1 of EPA's existing TXG260000 establishes a maximum critical dilution at the edge of the aquatic life mixing zone of 7.8% (which is consistent with TCEQ's established critical dilution at the edge of the aquatic life mixing zone of 8%) when utilizing EPA's horizontal jet plume model. TCEQ initially performed an RP analysis of this EIS data against calculated water quality-based effluent limitations derived from using standard dilution rates from EPA's horizontal jet plume model. The TCEQ's RP analysis indicated the need to include numerous water quality-based effluent limitations not established in EPA's existing TXG260000.

Based on the TCEQ's initial RP assessment and consistent with historical EPA methodology, TCEQ initiated and completed its own CORMIX modelling assessment for produced wastewater discharges to the territorial seas. To properly assess individual water quality-based pollutants utilizing dilution modeling, permitted discharge flow is a key component in the analysis (see above discussion on issues with EPA development of existing TXG260000 related to unrestricted flow rates). TCEQ contacted the OOC to obtain acceptable produced wastewater discharge flow restrictions to be established in the TPDES general permit. OOC in coordination with its member companies agreed to a produced wastewater daily average flow restriction for discharges to the territorial seas to be included in the TPDES general permit at 3000 bbl/day (0.126 MGD when converting 1 bbl = 42 gallons). Additionally, OOC agreed to restrictions on the depth to sea floor from the discharge point of no less than 4-6 meters, and a maximum discharge pipe diameter of six inches. Furthermore, TCEQ obtained more recent produced wastewater analytical data that was submitted in recent permit applications to RRC for state authorizations to discharge from offshore oil and gas extraction facilities to water in the state. The more recent produced wastewater analytical data is

summarized in the table below "Produced Wastewater Data for Territorial Seas Facilities" (analytical data from seven offshore platforms were assessed and the highest value observed is included in the referenced table). Data in parenthesis are included to indicate non-detect values provided in the submitted data that do not meet current TCEQ minimum analytical levels (MALs).

The following is a summary of inputs, assumptions, and other factors utilized in TCEQ's territorial seas produced wastewater CORMIX assessment:

- Effluent Characterization and CORMIX Model Version
  - CORMIX model Version 11.0GTD (Version 11.0.1.0) was used for all model simulations.
  - The pollutant type was specified as a conservative pollutant, meaning the pollutant does not undergo any decay or growth processes.
  - The pollutant discharge concentration was set to 100% which is appropriate for the characterization of the discharge.
  - A range of effluent densities were considered. Specifically, a maximum effluent density value (1109.4 kg/m^3) and a minimum effluent density value (1019.64 kg/m^3) were both modeled based on produced water effluent data, as provided by the RRC (temperature and total dissolved solids data provided in the table below), "Produced Wastewater Data for Territorial Seas Facilities".

- Ambient Geometry
  - The input values for average depth and depth at discharge were presumed to be the same in the Gulf of Mexico. The depths are varied according to the modeled input parameters. The minimum depth modeled was 5 m, and the maximum depth modeled was 16 m.
  - The wind speed (Uw) parameter was set to 2 m/s which is representative of a light wind and is the recommended wind speed by the CORMIX User Manual when measured data are not available.
  - The ambient velocity (Ua) was set to 0.05 m/s, consistent with the TCEQ's guidance document, *Mixing Analyses Using CORMIX*.
  - A bottom friction (Manning *n*) value of 0.020 was assumed, consistent with TCEQ guidance for CORMIX analyses. A value of 0.020 is representative of a smooth channel bottom with no weeds.
  - The water body was considered unbounded.
  - In the ambient density data field, a non-freshwater density of 1017.65 kg/m^3 was used based on temperature and salinity measurements collected from TCEQ Surface Water Quality Monitoring Stations (SWQM) in the Gulf of Mexico (Segment No. 2501). The ambient density is the average density value based on water column averages of temperature and salinity.
  - From the SWQM data available, the median density difference from the top of the water column to the bottom of the water column was analyzed to determine whether stratification should be factored into the analysis. An additional model scenario was run on the most critical case, but it did not significantly change the model predictions.

- Discharge Geometry
  - The CORMIX1 Single Port model was utilized in this exercise.
  - The nearest bank was set to 1000 m to the left.

  - Port diameters of 4 inches and 6 inches were both used throughout the modeling exercise.
  - A submerged offshore discharge configuration was used with a submerged port height of 20 cm below the surface.
  - A vertical angle (θ) was set to -90˚, and a horizontal angle (σ) was set to 0˚. This configuration represents a downward pipe pointing towards the channel bottom and in the direction of the ambient flow (i.e., co-flowing). When the vertical angle (θ) is set to ± 90˚, the horizontal angle (σ) is automatically set to 0˚.

- Mixing Zone Specifications
  - No water quality standard was specified in the modeled iterations.
  - Model results were assessed at the edges of the regulatory mixing zone boundaries, consistent with the *Procedures to Implement the Texas Surface Water Quality Standards* (TCEQ RG-194). Mixing zone boundaries were assessed at trajectory distances of 60.96 m for the chronic aquatic life mixing zone, 15.24 m for the zone of initial dilution (ZID), and 121.92 m for the human health mixing zone.
  - The region of interest was 1000 m.

- CORMIX Modeling Dilution Results
  - Effluent Fraction at the edge of ZID (50 feet): 1.4%
  - Effluent Fraction at the edge of the Aquatic Life Mixing Zone (200 feet): 1.1%
  - Effluent Fraction at the edge of the Human Health Mixing Zone (400 feet): 0.9%

As described above, TCEQ performed an RP analysis for produced wastewater discharges to the territorial seas utilizing TCEQ's CORMIX modelling results at a daily average flow of 3000 bbl/day (0.126 MGD), depth to sea floor of a minimum of 4-6 meters, and a maximum pipe diameter of six inches. Updated/more recent data obtained from OOC (RRC individual permit application data) were screened against calculated water quality-based effluent limitations in Appendices D/E. Based on this assessment and in relation to dissolved oxygen modeling discussed below, discharges of produced wastewater are restricted to a pipe diameter of no greater than six inches and depth to sea floor of no less than five meters. This resulted in water quality-based effluent limitations or monitoring/reporting requirements for the following parameters for produced wastewater discharges from Territorial Seas Facilities in the draft TPDES general permit:

- Total Copper
- Total Manganese
- Total Mercury
- Total Zinc

Additionally, a water quality-based produced wastewater flow limitation of 0.126 MGD is proposed in the draft TPDES general permit (based on the RP analysis previously discussed), as well as monitoring and reporting requirements for TDS and temperature to obtain additional data and confirm the buoyancy of produced wastewater discharges when mixing with Gulf of Mexico ambient water.

Produced Wastewater Data for Territorial Seas Facilities:

Pollutant	EIS Data	RRC 2016 – 2020 Data
Total Aluminum	0.610 mg/L	129 mg/L
Total Arsenic	0.090 mg/L	0.152 mg/L
Total Barium	564 mg/L	1200 mg/L
Benzene	13.1 mg/L	37.7 mg/L
Total Cadmium	0.100 mg/L	0.015 mg/L (< 0.2 mg/L)
Hexavalent Chromium	0.143 mg/L	< 0.1 mg/L
Total Copper	0.260 mg/L	0.156 mg/L
Cyanide	0.030 mg/L	0.007 mg/L (< 0.05 mg/L)
Total Lead	0.400 mg/L	0.019 mg/L (< 0.120 mg/L)
Total Mercury	0.0019 mg/L	0.0002 mg/L (< 0.006 mg/L)
Total Nickel	0.639 mg/L	< 0.5 mg/L
Total Selenium	0.268 mg/L	0.292 mg/L
Total Silver	0.020 mg/L	< 0.05 mg/L
Total Zinc	0.218 mg/L	26.3 mg/L
Temperature	----	183 °F
pH	----	5.66 S.U.
Dissolved Oxygen	----	0.0 mg/L
Hardness	----	64,100 mg/L
Total Suspended Solids	----	710 mg/L
Total Dissolved Solids	----	149,000 mg/L
Chlorides	----	90,700 mg/L
Sulfates	----	1530 mg/L
Sulfides	----	0.680 mg/L (< 1.0 mg/L)
Ammonia-Nitrogen	----	68.7 mg/L
Calcium	----	25,400 mg/L
Magnesium	----	849 mg/L
Sodium	----	40,100 mg/L
Potassium	----	1250 mg/L
Iron	----	71.7 mg/L
Total Manganese	----	51.9 mg/L
Oil and Grease	----	14.3 mg/L
Total Organic Carbon	----	3050 mg/L
Phenols	----	20.4 mg/L
Naphthalene	----	65.1 mg/L

Table 2-4 of the "Supplemental Information Report to the 2004 Final Environmental Impact Statement," dated September 2011 provides data for the discharge of fluids from an acidizing well treatment. Section 2.2.2.6 of that document indicates this data was developed from two offshore wells in California. Although this data may not be representative of discharges of well treatment, completion, and workover fluids from offshore oil and gas extraction activities in Texas, TCEQ performed an RP analysis of this discharge data using both the methodology described above for discharges of less than 10 MGD and EPA's horizontal jet plume model. RRC historically only permitted discharges of produced wastewater. Thus, more recent data for well treatment, completion, and workover fluids specific to Texas offshore discharges is not available. Screening this data against calculated water quality -

based effluent limitations in Appendix C indicated no pollutant-specific water quality-based effluent limitations are justified in the draft TPDES general permit. EPA's existing NPDES General Permit No. GMG290000 for discharges from OCS facilities includes conditions requiring industry studies on the discharge of these waste streams and the impacts of these discharges to the Gulf of Mexico for acute toxicity. An industry wide study titled "Final Report: Joint Industry Project Study of Well Treatment, Completion, and Workover Effluents", submitted by Offshore Operators Committee, September 23, 2021, was reviewed by TCEQ which included analysis of specific individual pollutants, organics and metals. Based on the short duration identified in this study (median one hour) and small volume (median 473 barrels), typical procedures for screening individual pollutants for compliance with the Texas Surface Water Quality Standards developed by TCEQ are not applicable to the intermittent and low volume nature of these discharges and TCEQ is proposing water quality controls on these discharges via the establishment of 24-hour acute whole effluent toxicity (WET) limitations (see discussion below on whole effluent toxicity assessment).

Well Treatment, Completion, Workover Fluids Data for Territorial Seas Facilities

Pollutant	**EIS Data**
Total Aluminum	0.0531 mg/L
Total Antimony	< 0.0039 mg/L
Total Arsenic	< 0.0019 mg/L
Total Barium	0.0126 mg/L
Total Beryllium	< 0.0001 mg/L
Total Boron	0.0319 mg/L
Total Cadmium	0.0004 mg/L
Total Calcium	0.0353 mg/L
Total Chromium	0.019 mg/L
Total Cobalt	< 0.0019 mg/L
Total Copper	0.003 mg/L
Total Iron	0.572 mg/L
Total Lead	< 0.00982 mg/L
Total Magnesium	0.162 mg/L
Total Molybdenum	< 0.00096 mg/L
Total Nickel	0.0529 mg/L
Total Selenium	< 0.0029 mg/L
Total Silver	< 0.0007 mg/L
Sodium	1.64 mg/L
Total Thallium	0.005 mg/L
Total Tin	0.00666 mg/L
Total Titanium	0.00068 mg/L
Total Vanadium	0.0361 mg/L
Yttrium	0.00019 mg/L
Total Zinc	0.0285 mg/L
pH	2.48 S.U.
Aniline	0.434 mg/L
Naphthalene	Non-detect
o-Toluidine	1.852 mg/L

Pollutant	EIS Data
2-Methylnaphalene	Non-detect
2,4,5-Trimethylamine	2.048 mg/L
Oil and Grease	0.619 mg/L

Calculated water quality-based effluent limitations for Coastal Facilities discharges are provided in Appendix B. Analytical data is not available for waste streams proposed for authorization under the draft TPDES general permit that require water quality-based screening for Coastal Facilities (produced wastewater and well treatment/completion/workover fluids are prohibited from discharge to coastal waters). These calculations are provided for reference in the event future evaluations of the TPDES general permit would justify the need to for such water quality-based effluent limitations evaluation.

B. Assessment of Barium and Manganese, which Do Not Have Established Water Quality Standards:

Based on the OOC 30 TAC Chapter 319 metals exception request dated June 10, 2021, which is discussed above in the technology-based effluent limitations section of this fact sheet, TCEQ performed an assessment of not applying these state-wide established limitations and the potential water quality impacts of not applying these limitations for produced wastewater discharges to the territorial seas. This assessment was in addition to the previously discussed review of OOC-conducted and API-conducted aquatic toxicity and bioaccumulation studies. All metals with criteria established in 30 TAC Chapter 319 have established marine water quality standards in the TSWQS, with the exception of barium and manganese.

TCEQ's Water Quality Assessment staff conducted research into EPA nationally developed water quality criteria applicable to marine discharges in the state of Texas as well as other available and applicable marine water quality toxicity data.

The following water quality criteria were determined to be applicable to marine water bodies in the State of Texas for aquatic life toxicity and bioaccumulation of metals in marine organisms:

Barium:

Acute Aquatic Life Criteria:	150 mg/L
Chronic Aquatic Life Criteria:	25 mg/L
Human Health Bioaccumulation Criteria:	N/A

Manganese:

Acute Aquatic Life Criteria:	N/A
Chronic Aquatic Life Criteria:	N/A
Human Health Bioaccumulation Criteria:	0.100 mg/L

Calculations are presented in Appendix E of this fact sheet. Based on this assessment and comparing calculated water quality-based effluent limitations against historically reported analytical data, water quality-based effluent limitations

are being proposed in the draft TPDES general permit for total manganese for the discharge of produced wastewater to the territorial seas, effluent limitations for total barium for produced wastewater discharges to the territorial seas are not being proposed using the RP methodology described above.

Discharges from Stripper Well Facilities, Coastal Facilities, and Territorial Seas Facilities (with the exception of produced wastewater) are not expected to contain elevated levels of barium and manganese, and do not justify further assessment or establishing controls in the draft TPDES general permit.

C. Assessment of Dissolved Oxygen Impacts:

Produced wastewater from offshore oil and gas platforms may contain very high levels of oxygen-demanding substances. Available information from discharges into marine waters of the western Gulf of Mexico, off the shores of Texas and Louisiana, indicates frequent very high concentrations and extreme variability of direct oxygen-demanding substances such as Biochemical Oxygen Demand (BOD) and ammonia-nitrogen (NH_3-N). Typically, these discharges undergo minimal, if any, treatment for constituents of this type. In addition, concentrations of dissolved oxygen (DO) in these produced wastewater discharges are often near 0.0 mg/L, according to available sampling data.

Information related to: discharge flow volumes; 5-day Biochemical Oxygen Demand (BOD_5) concentrations and loadings; NH_3-N concentrations and loadings; and effluent DO concentrations was obtained from regulated facility representatives, including through the OOC. Information was also obtained from a hypoxic zone study conducted by EPA to study how produced wastewater discharges from offshore oil and gas operations may contribute to impacts on the hypoxic zone in the western Gulf of Mexico (offshore of Louisiana and the easternmost portion of Texas jurisdictional waters). Neither the hypoxic zone study nor existing EPA general permits for discharges of produced wastewater from offshore oil and gas platforms included an explicit analysis of potential localized DO impacts in relation to established state or federal water quality DO criterion standards in the vicinity of individual produced wastewater discharges. The TSWQS designates the portion of the Gulf of Mexico within Texas jurisdictional waters as having an Exceptional Aquatic Life Use with a corresponding DO criterion of 5.0 mg/L.

In order to assess the potential for more-localized and near-field DO impacts and to set corresponding effluent limits for this TPDES general permit, if necessary, an analysis methodology was developed to represent individual produced wastewater discharges and consider the highly dispersive environment of the open waters of the Gulf of Mexico. This analysis approach included the use of CORMIX modeling in combination with a Continuously Stirred Tank Reactor (CSTR) model to evaluate potential DO impacts for a range of discharge conditions that would fall within the scope of this TPDES general permit authorization.

A CORMIX modeling analysis was initially developed (using CORMIX 11.0GTD (Version 11.0.1.0) modeling software), separate from the DO modeling analysis, to determine appropriate Critical Condition dilution factor (percent effluent) values to use in the evaluation of this draft TPDES general permit. These percent effluent values were determined for the Zone of Initial Dilution (ZID), the Chronic Aquatic

Life Mixing Zone, and the Human Health Mixing Zone. These dilution factors are used for the evaluation of pollutants and other substances typically characteristic of or otherwise anticipated to potentially be present in discharges based on the category of wastewater being discharged.

The details of the CORMIX modeling analysis are available from the Critical Conditions review of this draft TPDES general permit which was discussed previously. Only the percent effluent (dilution) values corresponding to the Chronic Aquatic Life Mixing Zone portion of the Critical Conditions review are applicable to this DO modeling analysis. The TSWQS prescribe that certain water quality standards, including those applicable to a water body's DO criteria, apply at and beyond the edge of the Chronic Aquatic Life Mixing Zone associated with that discharge, which for open-water marine water bodies is typically at a radius of 200 feet from the point of discharge.

The CORMIX modeling analysis included a variety of discharge scenarios indicated to be within the scope of this draft TPDES general permit, with percent effluent predictions varying as these modeled parameter details were adjusted. Percent effluent values were derived for many cases other than the final dilution values determined to be most critical from a Critical Conditions review perspective. These fluctuating model conditions included discharge volume, discharge pipe diameter, and water body average depth (within the modeled portion of the water body). Due to the greater density of these produced wastewater discharges compared to the density of the receiving water body, all CORMIX model cases predicted the effluent plume to be negatively buoyant and that it would consequently sink towards the seafloor bottom. The same modeling scenarios and TPDES general permit coverage constraints applicable to the CORMIX analysis also apply to the DO modeling analysis, as the CORMIX modeling results are a critical component of the DO modeling analysis.

Coverage under this draft TPDES general permit will be limited to produced wastewater discharges of up to 3000 barrels/day (bbl/day), equivalent to 0.126 million gallons per day (MGD). Furthermore, the DO modeling results are only considered valid for discharges into waters with an average depth of no less than 5 meters (16.4 feet) in the general vicinity of the discharge.

For the analysis of this draft TPDES general permit, the CORMIX modeling analysis was set up to predict percent effluent values at the edge of the aquatic life mixing zones under a variety of potential discharge condition combinations - for average depths between 5 and 6 meters, between 6 and 9 meters, between 9 and 12 meters, between 12 and 14 meters, between 14 and 16 meters, and greater than 16 meters; for discharge pipe diameters of 4 inches and 6 inches; and for discharge flowrates of up to 3000 bbl/day.

For the DO modeling analysis, these CORMIX results were then incorporated into a CSTR modeling approach to assess potential DO impacts beyond the edge of the Chronic Aquatic Life Mixing Zone. The CORMIX-predicted percent effluent values were used to establish predicted levels of oxygen-demanding constituents at the edge of the Chronic Aquatic Life Mixing Zone for further analysis of a similar array of DO modeling cases with various combinations of oxygen-demanding constituent concentrations.

The CSTR modeling runs for this general permit were structured to assess discharge scenarios at 500 bbl/day, 1000 bbl/day, 2000 bbl/day, and 3000 bbl/day (using the highest flows for various flow range groupings) paired with the shallowest of the CORMIX depth range groupings (e.g., for the CORMIX percent effluent predicted value representing a 4-inch diameter discharge pipe for a discharge flowrate range between 2000 bbl/day and 3000 bbl/day at a depth range between 9 meters and 12 meters, the corresponding CSTR model run used that percent effluent with a model discharge flow input of 3000 bbl/day (converted to 0.126 MGD) at a model depth of 9 meters). These highest flow/shallowest depth cases represent higher effluent percentages for each modeled flow/depth/pipe diameter scenario and are thus the most pessimistic from a dissolved oxygen modeling perspective. Deeper scenarios did not equate to more pessimistic DO modeling results as is sometimes the case with an end-of-pipe modeling approach, since the deeper scenarios also equated to lower effluent percentages at the edge of the Chronic Aquatic Life Mixing Zone.

In order to establish ambient water quality values to pair with the effluent quality values, an analysis of data from TCEQ SWQM stations located throughout the Gulf of Mexico was performed. The analysis developed values that would represent an approximation of average conditions that could be used in a general permitting approach. A total of 27 SWQM stations were used, some with surface-only data and some with water-column profile data, and some with a mix of both. The water-column profile samples included a mix of both stratified and unstratified conditions, according to SWQM guidance concerning salinity stratification. Periods of record and data quantities also varied considerably by station.

Using this method, generalized representative ambient water quality values were established for use in the CSTR modeling analysis. These values included a summertime temperature (31.03˚C), with July, August, and September found to be the three warmest months; median summertime salinity (31.5 ppt); percent DO saturation (93.67%), using only water-column data and taking salinity stratification into account (using either water-column-average values if not stratified or mixed-surface-layer values if stratified); a baseline ambient DO value of 5.85 mg/L, based on the temperature, salinity, and percent DO saturation values; BOD_5 (3.0 mg/L); and NH_3-N (0.05 mg/L).

Edge-of-mixing-zone concentrations for BOD_5, NH_3-N, and DO were calculated using the CORMIX percent effluent values for various input combinations of end-of-pipe BOD_5 and NH_3-N concentrations, based on available oil and gas offshore facility produced wastewater sampling data, paired with calculated edge-of-mixing zone DO concentration values, using an assumed end-of-pipe effluent DO concentration of 0.0 mg/L and an ambient DO concentration of 5.85 mg/L. These edge-of-mixing-zone concentrations were then used as inputs for the CSTR modeling analysis.

The CSTR models were set up consistent with standard open-water CSTR modeling procedures, using 10-acre model cells (three consecutive 10-acre cells), with average depths set in all cells (different depth scenarios) at depths of 5 meters, 6 meters, 9 meters, 12 meters, 14 meters, and 16 meters. Temperature and salinity in the models were set at 31.03˚C and 31.5 ppt, respectively, representing summertime conditions, when DO conditions are typically expected to be most pessimistic, at least in terms of factors that can be represented in this modeling approach.

The CORMIX analysis percent effluent calculations included a presumed small ambient flow (due to currents, tidal action, etc.) of 0.05 meters/second (0.164 feet/second). To be additionally conservative, especially considering the generalized nature of this assessment approach, as well as due to limitations of the CSTR model itself, no additional dilution, dispersion, or ambient flow was included in the CSTR portion of the modeling analysis.

The CSTR models were run at various discharge flows, using mass-balance-calculated BOD_5, NH_3-N, and DO concentration values, derived from the CORMIX percent effluent calculations, for flows of up to 3000 bbl/day for the analysis of this draft TPDES general permit. The most pessimistic CSTR modeling cases, in regard to predicted DO impacts were determined to be the combinations of overall highest discharge flows and overall shallowest discharge conditions, which corresponded to the highest predicted percent effluent values from the CORMIX modeling analysis.

It should be noted that the CSTR model is not able to simulate temperature or salinity impacts of these discharges beyond the edge of the Chronic Aquatic Life Mixing Zone. However, mass-balance calculations using the percent effluent calculations with available discharge temperature and salinity values in combination with ambient (summertime) values indicates that resultant temperatures and salinities at the edge of the Chronic Aquatic Life Mixing Zone are expected to remain within the range of observed ambient data and are not expected to have a significant impact on predicted DO concentrations beyond the edge of the Chronic Aquatic Life Mixing Zone.

Comparison of these CSTR DO modeling results with available effluent quality data indicates that inclusion of effluent limits for BOD_5 and NH_3-N is warranted in the draft TPDES general permit. As different combinations of BOD_5 and NH_3-N effluent limits would achieve similar modeling results, a menu of possible effluent set combinations was discussed with OOC representatives before the final effluent limit recommendations for this draft TPDES general permit were determined.

Based on the results of the modeling analysis, end-of-pipe concentration effluent limits of 6,483 mg/L BOD_5 and 112 mg/L NH_3-N are predicted to be adequate for discharge flows of up to 3000 bbl/day to ensure that dissolved oxygen levels beyond the edge of the Chronic Aquatic Life Mixing Zone will be maintained above the criterion established by the Standards Implementation Team for the Gulf of Mexico (Segment No. 2501) (5.0 mg/L). Other effluent set combinations may also be adequate and can be evaluated in future permitting actions.

Discharges of low volumes of produced wastewater from nominal/marginal Stripper Well Facilities are not expected to contain elevated levels of oxygen demanding substances, thus further evaluation of this discharge is not justified. In relation to the quality of produced wastewater from Stripper Well Facilities vs. Territorial Seas Facilities, total organic carbon (TOC) and Ammonia-Nitrogen values were assessed, indicating produced wastewater discharges from Stripper Well Facilities do not present a significant concern on receiving stream dissolved oxygen impacts. Secondary treatment levels for BOD (5-day) and minimum dissolved oxygen effluent limitations discussed in the technology-based section of this fact sheet should ensure protection for instream dissolved oxygen criteria for

discharges of domestic waste and sanitary waste authorized under the draft TPDES general permit assumed at volumes less than 0.1 MGD. Likewise, additional waste streams authorized under the draft TPDES general permit from Coastal Facilities and Territorial Seas Facilities (other than produced wastewater) are not expected to contain elevated levels of oxygen demanding substances, thus further analysis of these discharges is not justified.

D. Assessment of Thermal/Temperature Impacts:

Based on new/updated analytical data obtained from the OOC (individual permit application data submitted to RRC) for produced wastewater discharges to the territorial seas that indicated significantly elevated temperature levels (see "Produced Wastewater Data for Territorial Seas Facilities" table above indicating values up to 183 °F), TCEQ performed an assessment on acceptable temperature levels for produced wastewater discharges to the territorial seas. No temperature assessment was performed by EPA in development of the existing TXG260000 NPDES general permit.

In order to determine an acceptable produced wastewater temperature at which the TSWQS will not be exceeded at the maximum discharge volume for produced wastewater to the territorial seas allowed by this draft TPDES general permit (3000 bbl/day), simple, conservative heat-balance calculations were run. The results indicate that temperature limits are not required to ensure TSWQS for temperature are met at the edge of the chronic aquatic life mixing zone. These calculations are based on draft Thermal Evaluation Procedures, which have undergone two revisions based on stakeholder input received from five public meetings as well as initial comments from EPA. Though these procedures are still draft and have not been officially incorporated in the Texas Procedures to Implement the TSWQS (RG-194), in a letter dated April 1, 2020, the EPA agreed to allow their use in development of standard operating procedures (SOPs) to establish permitting controls and conditions for thermal discharges.

The screening approach in the draft Thermal Procedures uses a risk-based approach. Screening procedures progress from simple, conservative analyses to more complex, site-specific approaches as necessary. In this case, the simple, conservative analysis was used. There are two thermal criteria applicable to this draft TPDES general permit - thermal maximum and maximum temperature differential (rise over ambient). The thermal maximum criterion for Segment 2501 is 95 degrees Fahrenheit (F). The maximum differential applicable to Segment 2501 is 4 degrees F September through May, and 1.5 degrees F for June, July, and August. The screening calculations are as follows:

Screening for compliance with Maximum Temperature Criterion:

Equation 1 below compares the maximum temperature at the edge of the chronic aquatic life mixing zone (right side of equation) with the maximum temperature criterion (T_C) for Segment 2501 (left side of equation). A permit limit is not usually required when Equation 1 is satisfied (that is, $T_C \geq$ right side of equation).

Equation 1: $T_C \geq (E_F)(T_E) + (1 - E_F)(T_A)$

Where: T_C = segment maximum temperature criterion (°F)

E_F = effluent fraction at the edge of the aquatic life mixing zone

T_E = maximum effluent temperature (˚F)

T_A = ambient temperature (˚F)

The following items explain the variables used in Equation 1:

T_C The maximum temperature criterion for the segment is found in Appendix A of the TSWQS.

E_F Effluent fraction at the edge of the aquatic life mixing zone as described in the "Mixing Zones and ZIDs for Aquatic Life Protection" in the Procedures to Implement the Texas Surface Water Quality Standards (2010).

T_E The effluent temperature is (1) the daily maximum permitted temperature (when evaluating existing limits), (2) the maximum of self-reported temperature data for the months of June, July, and August for the preceding two years of available data (when evaluating the need for a temperature limit when the permit only includes monitoring and reporting requirements), or (3) the expected maximum effluent temperature provided in the permit application.

T_A The ambient temperature is initially set at 86.9 °F (30.5 ˚C), which is the same critical summer temperature used in dissolved oxygen modeling. A site-specific value may be used in lieu of the default temperature by calculating the 90th percentile using ambient temperature data for the months of June, July, and August from the Surface Water Quality Monitoring Information System (SWQMIS) database or other available data.

Screening for compliance with rise over ambient temperature criterion:

Equation 2 below compares the temperature at the edge of the aquatic life mixing zone (right side of equation) with the sum of the ambient temperature (T_A) and the rise over ambient temperature criterion (ΔT_C) (left side of equation). A permit limit is usually not required when Equation 2 is satisfied (that is, $T_A + \Delta T_C \geq$ right side of equation).

Equation 2: $(T_A+\Delta T_C) \geq (E_F)(T_E)+(1-E_F)(T_A)$

Where: T_A = ambient temperature (˚F)

ΔT_C = rise over ambient temperature criterion (˚F)

E_F = effluent fraction at the edge of the aquatic life mixing zone

T_E = maximum effluent temperature (˚F)

The following items explain the variables used in Equation 2:

T_A The ambient temperature is initially set at 86.9 ˚F (30.5 ˚C), which is the same critical summer temperature used in dissolved oxygen modeling. A site-specific value may be used in lieu of the default temperature by calculating the 90th percentile using ambient temperature data for the months of June, July, and August from the SWQMIS database or other available data.

ΔT_C The rise over ambient temperature criteria are found in 30 TAC § 307.4(f). These criteria are water body specific. In this case:

Tidal rivers, bays, and gulf water:

Summer (June, July, and August): 1.5˚F

Fall, winter, and spring (September – May): 4˚F

E_F Effluent fraction at the edge of the aquatic life mixing zone as described in the "Mixing Zones and ZIDs for Aquatic Life Protection" in the Procedures to Implement the Texas Surface Water Quality Standards (2010).

T_E The effluent temperature is (1) the daily maximum permitted temperature (when evaluating existing limits), (2) the maximum of self-reported temperature data for the months of June, July, and August for the preceding two years of available data (when evaluating the need for a temperature limit when the permit only includes monitoring and reporting requirements), or (3) the expected maximum effluent temperature provided in the permit application.

Coverage under this draft TPDES general permit will be limited to discharges of up to 3000 barrels/day (bbl/day), equivalent to 0.126 million gallons per day (MGD).

In order to establish ambient water quality values for use in these two thermal evaluation equations, an analysis of data from TCEQ SWQM stations located throughout the Gulf of Mexico was performed to develop values that would represent an approximation of average conditions that could be used in a general permitting approach. A total of 27 SWQM stations were used: some stations had surface-only data, some stations had water-column profile data, and some stations had a mix of both surface data and water-column profile data. The water-column profile samples included a mix of both stratified and unstratified conditions, according to SWQM guidance concerning salinity stratification. Periods of record and quantities of data also varied considerably by station. The data from the SWQM stations was used to obtain the 90th percentile temperature for June, July, and August in accordance with draft Thermal Evaluation Procedures. As a safeguard, additional data for the 90th and 10th percentiles of the lowest winter temperatures were used in the thermal evaluation calculations.

Effluent temperature data from existing facilities that are currently permitted by EPA and/or RRC showed one outlier temperature of 183˚F, with the remaining temperatures less than 150˚F. The facility reporting the one data point of 183˚F was contacted regarding this temperature value. They indicated that this did not appear to be typical and subsequent data obtained from this facility showed temperatures to be less than 150˚F.

A range of temperatures was used in the draft Thermal Procedure equations to determine whether the effluent discharged from produced wastewater facilities would violate TSWQS thermal criteria for discharge flows of up to 3000 bbl/day. The most conservative equation in this case was equation 2, rise over ambient. Based on the results of the draft Thermal Evaluation Procedure equations, it was determined that effluent temperatures up to 194˚F would meet TSWQS temperature criteria for the Gulf of Mexico in Segment 2501 at the edge of the chronic aquatic

life mixing zone. Because 194˚F is well above the highest temperatures observed from these produced wastewater discharges, an end-of-pipe effluent temperature limit is not being proposed for this draft TPDES general permit.

Discharges from Stripper Well Facilities, Coastal Facilities, and Territorial Seas Facilities, (with the exception of produced wastewater) are not expected to contain elevated temperature levels, thus no limitations and/or monitoring requirements are proposed in the draft TPDES general permit for these discharges.

E. Assessment of Bacteria:

The TSWQS establish bacteria criteria for water in the state. Specifically, 30 TAC § 307.4(j) establishes criteria for pathogens, 30 TAC § 307.7(b)(1) establishes criteria for contact recreation, and 30 TAC § 307.7(b)(3)(B) establishes bacteria criteria for the protection of oyster waters. The discharges of sanitary waste and domestic waste for Coastal Facilities and Territorial Seas Facilities proposed in the draft TPDES general permit have the potential to contain human pathogens and *Enterococci* and Fecal Coliform water quality-based effluent limitations are proposed to control these discharges. 30 TAC § 309.3(h) requires that bacteria effluent limitations be established in TPDES permits for the discharge of domestic wastewater (sanitary waste and domestic waste proposed in the draft TPDES general permit). 30 TAC § 319.9(b) establishes bacteria monitoring frequencies based on permitted flow (for the purpose of this draft TPDES general permit, flows are presumed to be less than 0.1 MGD). The TCEQ is proposing to revise/add to bacteria water quality-based effluent limitations contained in existing EPA General Permit Nos. TXG260000 and TXG330000 for the discharge of domestic waste and sanitary waste.

The discharge of sanitary waste and domestic waste is prohibited from Stripper Well Facilities thus, no bacteria limitations are proposed in the draft TPDES general permit for Stripper Well Facilities.

F. Assessment of Dissolved Solids:

30 TAC § 307.4(g)(1) establishes that concentrations of dissolved minerals such as total dissolved solids (TDS) must be maintained such that uses of receiving waters are not impaired. The IP's (RG-194) (pages 174-186) contain established screening procedures and effluent limitation calculation procedures for the control of TDS for discharges to freshwater bodies. Existing EPA General Permit No. TXG330000 has an established daily maximum water quality-based effluent limitation for Total Dissolved Solids of 3000 mg/L applicable to discharges of produced wastewater from Stripper Well Facilities. Using the IP's (RG-194) procedures for the minimum TDS screening value of 2500 mg/L to protect freshwater intermittent streams and applying the 2.12 factor to convert from a daily average effluent limitation to daily maximum effluent limitation (2500 mg/L x 2.12 = 5300 mg/L) indicates the existing daily maximum effluent limitation of 3000 mg/L in EPA's existing TXG330000 is more stringent and is being proposed to be retained in the draft TPDES general permit.

TCEQ has not established numeric TDS standards in the TSWQS for marine water bodies. Nor has EPA established such controls in TXG260000 or TXG330000 for discharges to marine water bodies. The TSWQS establishes narrative criteria for

dissolved solids and proper restrictions of impacts of discharges to marine water bodies are established in the draft TPDES general permit. TDS effluent limitations or other requirements are not proposed in the draft TPDES general permit for discharges from Coastal Facilities or Territorial Seas Facilities to marine water bodies.

G. Whole Effluent Toxicity (WET) Assessment:

The TSWQS in 30 TAC § 307.6(e) establishes requirements for total toxicity [e.g., whole effluent toxicity (WET)]. This section of the TSWQS establishes WET conditions for both acute and chronic WET. The IPs (RG-194) establish conditions when WET is appropriate or applicable to certain discharges. 30 TAC § 307.6(e)(2)(A) establishes that facilities whose discharges have a significant potential for exerting toxicity in receiving waters as described in the IP's (RG-194) are required to conduct WET biomonitoring at appropriate dilutions. 30 TAC § 307.6(e)(2)(B) also requires that discharges shall not be acutely toxic to aquatic life, as determined by requiring greater than 50% survival in 100% effluent using a 24-hour acute toxicity test. WET biomonitoring requirements are typically required for continuously flowing discharges or discharges with the potential to exert toxicity in the receiving water body, according to the IP's (RG-194).

Based on information available to TCEQ, conditions contained in EPA's existing general permits (TXG260000 and TXG330000), and anti-backsliding requirements established in 40 CFR § 122.44(l), TCEQ has determined that there may be pollutants present in a subset of discharges proposed in the draft TPDES general permit that may have the potential to cause toxic conditions in the receiving water body and are required to be controlled via WET conditions.

Produced wastewater; well treatment, completion, and workover fluids; hydrate control fluids; and contaminated miscellaneous discharges authorized for discharge under this draft TPDES general permit may be continuously flowing and/or have the potential to exert toxicity in the receiving stream. Discharges other than those identified above authorized for discharge under this draft TPDES general permit either are not typically continuously flowing discharges or do not have the potential to exert toxicity in the receiving water body, and the effluent limitations for pollutants of concern in the draft TPDES general permit will preclude toxicity in the water body.

WET limitations proposed in the TPDES general permit differ from those established in EPA's existing TXG260000 and TXG330000, as follows:

- Contaminated miscellaneous discharges are authorized from Coastal Facilities (with applicable WET limitations and applicable compliance schedules) under the draft TPDES general permit, however they are not authorized in EPA's existing TXG33000. 24-hour acute WET limitations are established in the draft TPDES general permit to regulate contaminated miscellaneous discharges.

- Produced wastewater and hydrate control fluids for Territorial Seas Facilities discharges include 7-day chronic and 24-hour acute WET limitations as established in EPA's existing TXG260000. One single 7-day chronic critical dilution (with its associated dilution series) is established in the draft TPDES

general permit based on a daily average discharge rate of 3000 bbl/day, where EPA's existing TXG260000 authorized continually varying WET limitations based on the most recent reported flow in monthly DMRs. Compliance schedules for existing permitted discharges is established.

- WET limitations and associated compliance schedules for the discharge of contaminated miscellaneous discharges from Territorial Seas Facilities are proposed in the draft TPDES general permit for 24-hour acute tests (100% effluent), as opposed to 48-hour acute tests established in EPA's existing TXG260000 (where 48-hour acute tests include varying dilutions based on varying discharge rate and pipe diameter). This revision is consistent with RG-194 and TCEQ practice where 48-hour acute WET testing is normally reserved for discharges with extremely low dilution percentages that would typically require 7-day chronic WET conditions.

- Well treatment, completion, and workover fluids from Territorial Seas Facilities discharges are proposed to require 24-hour acute WET limitations with associated compliance schedules to replace conditions established in EPA's existing TXG26000 that prohibit discharges of priority pollutants other than in trace amounts to improve enforceability of the TPDES general permit. EPA's existing NPDES General Permit No. GMG290000 for discharges from OCS facilities includes conditions requiring industry studies on the discharge of these waste streams and the impacts of these discharges to the Gulf of Mexico for acute toxicity. An industry wide study titled "Final Report: Joint Industry Project Study of Well Treatment, Completion, and Workover Effluents", submitted by Offshore Operators Committee, September 23, 2021 was reviewed by TCEQ and supports the addition of the 24-hour acute WET limitation. The study indicated discharges of these waste streams are short in duration (median duration of one hour) and small in volume (median 473 barrels). EPA's draft GMG290000 is proposing 48-hour acute WET limitations at varying dilutions specific to each platform which TCEQ does not support in this general permit and specific conditions established for 24-hour acute WET conditions established in the Texas Surface Water Quality Standards.

- Compliance schedules justification for WET limitations is provided in the response to comments (RTC) prepared for this general permit as a result of publishing the draft general permit to solicit public comments and public comments received following publication.

WET testing (biomonitoring) is the most direct measure of potential toxicity, which incorporates the effects of synergism of effluent components and receiving stream water quality characteristics. Biomonitoring and WET limitations of a subset of discharges proposed for authorization are, therefore, required as conditions of this draft TPDES general permit to control potential toxicity.

H. Proposed Water Quality-Based Effluent Limitations:

Water quality-based effluent limitations and monitoring/reporting requirements proposed in the draft TPDES general permit based on the TSWQS are established as follows:

Stripper Well Facilities:

- Produced Wastewater, Well Treatment Fluids, and Workover Fluids

Parameter	Daily Maximum	Daily Average
Total Dissolved Solids	3000 mg/L	N/A
Lethal Whole Effluent Toxicity (WET) limit > 100% (Parameter 51711) *Daphnia pulex* (24-hour acute LC50 [1])	> 100%	> 100%
Lethal Whole Effluent Toxicity (WET) limit > 100% (Parameter 51714) *Pimephales promelas* (24-hour acute LC50 [1])	> 100%	> 100%

[1] The LC50 (Lethal Concentration 50) is defined as the effluent dilution at which 50% of the organisms survive.

[2] Should well treatment or workover fluids be discharged with produced wastewater, testing of the effluent on such combined discharges shall occur within the once/six months monitoring frequency.

24-hour acute toxicity tests shall be performed in accordance with protocols described in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, Fifth Edition (EPA-821-R-02-012) or the latest revision.

Coastal Facilities:

- Domestic Waste

Parameter	Daily Maximum	Daily Average
Enterococci	130 cfu or MPN/100 mL	35 cfu or MPN/100 mL
Fecal Coliform	43 cfu or MPN/100 mL	14 cfu or MPN/100 mL

- Sanitary Waste (M10 and M91M)

Parameter	Daily Maximum	Daily Average
Enterococci	130 cfu or MPN/100 mL	35 cfu or MPN/100 mL
Fecal Coliform	43 cfu or MPN/100 mL	14 cfu or MPN/100 mL

- Contaminated Miscellaneous Discharges

Parameter	Daily Maximum	Daily Average
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51712) *Menidia beryllina* (LC50 [1])	> 100%	> 100%
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51713) *Americamysis bahia* (Acute LC50 [1])	> 100%	> 100%

[1] The LC50 (Lethal Concentration 50) is defined as the effluent dilution at which 50% of the organisms survive.

24-hour acute toxicity tests shall be performed in accordance with protocols described in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, Fifth Edition (EPA-821-R-02-012) or the latest revision.

Territorial Seas Facilities:

- Produced Wastewater and Hydrate Control Fluids

Parameter	Daily Maximum	Daily Average
Flow (MGD)	N/A	0.126 MGD
Carbonaceous Biochemical Oxygen Demand (5-day)	N/A	6483 mg/L
Ammonia (as N)	N/A	112 mg/L
Temperature	Report, °F	N/A
Total Dissolved Solids	Report, mg/L	N/A
Total Copper	0.371 mg/L	0.175 mg/L
Total Manganese	32.14 mg/L	15.19 mg/L
Total Mercury	Report, mg/L	N/A
Total Zinc	11.57 mg/L	5.47 mg/L
Sublethal Whole Effluent Toxicity (WET) limit (Parameter 51712) *Menidia beryllina* (Chronic NOEC [1])	1.1%	1.1%
Sublethal Whole Effluent Toxicity (WET) limit (Parameter 51713) *Americamysis bahia* (Chronic NOEC [1])	1.1%	1.1%
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51712) *Menidia beryllina* (24-hour acute LC50 [2])	> 100%	> 100%
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51713) *Americamysis bahia* (24-hour acute LC50 [2])	> 100%	> 100%

[1] The NOEC is defined as the greatest effluent dilution at which no significant sublethality is demonstrated. Significant sublethality is defined as a statistically significantly difference between a specified effluent dilution and the control for a sublethal endpoint. The daily maximum limitation established above is a 7-day minimum limitation.

[2] The LC50 (Lethal Concentration 50) is defined as the effluent dilution at which 50% of the organisms survive.

7-day chronic toxicity tests are required to be performed in accordance with protocols described in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms,* Third Edition (EPA-821-R-02-014). The stipulated test species are appropriate to measure the toxicity of the effluent consistent with the requirements of the state water quality standards. The biomonitoring frequency has been established to reflect the likelihood of ambient toxicity and to provide data representative of the toxic potential of the waste stream discharge. The draft TPDES general permit requires five (5) dilutions in addition to the control (0% effluent) to be used in the toxicity tests. These additional effluent concentrations are 0.5%, 0.6%, 0.8%, 1.1%, and 1.5%. The low-flow effluent concentration (critical dilution) is defined as 1.1% effluent. The dilution series outlined above was calculated using a 0.75 factor applied to the critical dilution. The critical dilution is the estimated effluent dilution at the edge of the aquatic life mixing zone. If none of the first four consecutive quarterly tests demonstrates significant lethal or sublethal effects, the permittee may submit this information in writing and, upon approval and submittal of an NOC, reduce the testing frequency to once per six months for the invertebrate test species and once per year for the vertebrate test species. If one or more of the first four consecutive quarterly tests demonstrates significant sublethal effects, the permittee is required by the draft TPDES general permit to continue quarterly testing for that species until four consecutive quarterly tests demonstrate no significant sublethal effects. At that time, the permittee may apply for the appropriate testing frequency reduction for that species. If one or more of the first four consecutive quarterly tests demonstrates significant lethal effects, the permittee is required by the draft TPDES general permit to continue quarterly testing for that species until the TPDES general permit is reissued.

24-hour acute toxicity tests shall be performed in accordance with protocols described in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, Fifth Edition (EPA-821-R-02-012) or the latest revision.

- Well Treatment, Completion, and Workover Fluids

Parameter	Daily Maximum	Daily Average
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51712) *Menidia beryllina* (24-hour acute LC50 [1])	> 100%	> 100%
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51713) *Americamysis bahia* (24-hour acute LC50 [1])	> 100%	> 100%

[1] The LC50 (Lethal Concentration 50) is defined as the effluent dilution at which 50% of the organisms survive.

24-hour acute toxicity tests shall be performed in accordance with protocols described in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, Fifth Edition (EPA-821-R-02-012) or the latest revision.

- Contaminated Miscellaneous Discharges

Parameter	Daily Maximum	Daily Average
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51712) *Menidia beryllina* (LC50 [1])	> 100%	> 100%
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51713) *Americamysis bahia* (Acute LC50 [1])	> 100%	> 100%

[1] The LC50 (Lethal Concentration 50) is defined as the effluent dilution at which 50% of the organisms survive.

24-hour acute toxicity tests shall be performed in accordance with protocols described in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, Fifth Edition (EPA-821-R-02-012) or the latest revision.

- Domestic Waste

Parameter	Daily Maximum	Daily Average
Enterococci	130 cfu or MPN/100 mL	35 cfu or MPN/100 mL
Fecal Coliform	43 cfu or MPN/100 mL	14 cfu or MPN/100 mL

- Sanitary Waste (M10 and M91M)

Parameter	Daily Maximum	Daily Average
Enterococci	130 cfu or MPN/100 mL	35 cfu or MPN/100 mL
Fecal Coliform	43 cfu or MPN/100 mL	14 cfu or MPN/100 mL

I. Anti-degradation review:

Part II, Section B.2(a) and (b) of the draft TPDES general permit addresses discharges prohibited by the Watershed Protection and Edwards Aquifer and Contributing Zone rules related to Stripper Well Facilities. Part II, Section B.4 of the draft TPDES general permit states that the Executive Director may require an application for an individual TPDES permit to authorize a discharge from any activity that will not maintain existing uses of the receiving waters. Part II, Section B.6 of the draft TPDES general permit prohibits new sources or new dischargers of constituents of concern to impaired waters (CWA Section 303(d)-listed water bodies) unless otherwise allowable under 30 TAC Chapter 305. Part II, Section B.7 of the draft TPDES general permit states that the Executive Director may require an applicant to apply for an individual TPDES permit based on conditions of an approved TMDL and TMDL implementation plan. Part II, Section B.8 of the draft TPDES general permit prohibits discharges that would adversely affect a listed endangered or threatened species or its critical habitat. Part II, Section B.15 of the draft TPDES general permit prohibits discharges into areas of biological concern, including marine sanctuaries and live bottom areas. Part II, Section B.16 of the draft TPDES general permit prohibits the discharge of radioactive materials or substances in excess of the amount regulated by 30 TAC Chapter 336. See

additional considerations associated with the anti-degradation assessment provided in the TCEQ's Water Quality Assessment Section interoffice memorandum dated December 29, 2021.

In accordance with 30 TAC §307.5, effective February 7, 2018, and TCEQ's *IP's* (RG-194), an antidegradation review of this draft TPDES general permit was performed in order to ensure that no significant degradation of any water in the state will occur and that existing uses will be maintained and protected. It has been preliminarily determined that if the draft TPDES general permit requirements are properly implemented, no significant degradation is expected, and existing uses will be maintained and protected.

XII. Cooling Water Intake Structure Requirements

Section § 316(b) of the CWA requires that the location, design, construction and capacity of CWISs reflect the Best Technology Available (BTA) for minimizing Impingement Mortality and Entrainment. EPA promulgated 316(b) Phase III regulations at 40 CFR Part 125, Subpart N, which require new offshore oil and gas facilities (coastal and territorial seas) to take measures to reduce entrainment and impingement of aquatic life. Inland coastal facilities as defined in 40 CFR §435.40(b)(1) and (2) are considered to be offshore for the purposes of applying 316(b) Phase III regulations.

316(b) Phase III regulations apply to new facilities which intake 2 million gallons per day of water and use at least 25 percent for cooling. Phase III regulations also apply on a BPJ basis to new and existing offshore facilities which use a CWIS but do not meet these minimum threshold requirements. The facilities which are affected by these requirements include: 1) new facilities which are regulated by the Offshore or Coastal Subcategories of the Oil and Gas Extraction Point Source Category Effluent Limitation Guidelines in 40 CFR Part 435 and commenced construction after July 17, 2006; and 2) existing facilities which are regulated by the Offshore or Coastal Subcategories of the Oil and Gas Extraction Point Source Category Effluent Limitation Guidelines in 40 CFR Part 435 and commenced construction on or prior to July 17, 2006. EPA regulations for Cooling Water Intake Structures for New Offshore Oil and Gas Extraction Facilities under Section 316(b) are established in 40 CFR Part 125, Subpart N, Effluent Guidelines and Standards. In general, EPA's regulations require operators to submit information demonstrating that 316(b) Phase III facilities will be designed so that the water intake velocity is less than 0.5 feet per second and other measures such as screens are employed to reduce entrainment when feasible. Every new or existing offshore oil and gas facility (coastal or territorial seas) which meets the criteria above must comply with the CWIS requirements even when more than one facility (new and/or existing) are working at the same site.

The 316(b) Phase III regulations also require baseline and periodic biological monitoring. Baseline monitoring is required to characterize the biological community which could be impacted by the intake of cooling water. Periodic monitoring is intended to measure the number of organisms and types of species entrained in the system. As proposed, the draft TPDES general permit will require certain 316(b) Phase III facilities to conduct this biological monitoring. Such a study will need to include sufficient detail to demonstrate the intake structure designs are sufficient to minimize impacts due to entrainment and impingement and that no additional measures are warranted.

TCEQ is proposing to expand CWIS requirements in this draft TPDES general permit, as compared to the equivalent existing EPA general permits. EPA's existing TXG260000 and TXG330000 only applied requirements to new CWIS's. EPA regulations at 40 CFR § 125.130(c), 40 CFR § 125.90(b), and 40 CFR § 125.91(d) apply to existing and below-threshold offshore oil and gas CWIS's. TCEQ is proposing to subject these operations to the requirements established in EPA regulations.

XIII. Monitoring and Reporting

Monitoring is required by 40 CFR § 122.44(i) for each pollutant limited in an NPDES permit to ensure compliance with the permit limitations. The draft TPDES general permit has the following criteria established for monitoring.

A. Samples shall be collected, measurements shall be taken, and visual observations shall be made at times and in a manner so as to be representative of the monitored and/or observed discharge.

B. All samples shall be collected according to the latest edition of "Standard Methods for the Examination of Water and Wastewater" (prepared and published jointly by the American Public Health Association, the American Water Works Association, and the Water Environment Federation), or the EPA's, "Methods for Chemical Analysis of Water and Wastes" (1979), or the EPA's, "Biological Field and Laboratory Methods for Measuring the Quality of Surface Waters and Effluents" (1973). The effluent limitations for the observation of free oil, floating solids, foam, and garbage are not subject to this condition.

C. Sample containers, holding times, and preservation methods shall either follow the requirements specified in 40 CFR Part 136 or the latest edition of "Standard Methods for the Examination of Water and Wastewater." The effluent limitations for the observation of free oil, floating solids, foam, and garbage are not subject to this condition.

D. The permittee shall ensure that properly trained and authorized personnel monitor, sample, and as applicable, observe the discharge.

E. The sampling point and observation point (as applicable) must be "downstream" of any treatment unit or treatment technique that is used to improve or otherwise alter the quality of the discharge.

F. Analytical results for determining compliance with effluent limitations shall be submitted online using the NetDMR reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver. Permittees that are issued an electronic reporting waiver shall submit analytical results to the TCEQ Enforcement Division (MC-224) on an approved DMR form (EPA No. 3320-1). Effluent sampling shall be conducted in accordance with the monitoring frequencies specified in this draft TPDES general permit. The DMR for any given month shall be due by the 20th day of the following month. The DMR for annual testing must be submitted to TCEQ by March 31st of the following year. All DMRs shall be signed in accordance with the requirements in Part IV.8 of this draft TPDES general permit. If non-compliance with a discharge limitation occurs, the

permittee shall provide notification according to Part III.B.6 of this TPDES general permit.

G. All laboratory tests submitted to demonstrate compliance with this draft TPDES general permit must meet the requirements of 30 TAC Chapter 25, Environmental Testing Laboratory Accreditation and Certification. The effluent limitations for the observation of free oil, floating solids, foam, and garbage are not subject to this condition.

H. Records of monitoring and observation activities shall include:

1. date, time, and place of sample, measurement, or observation;

2. identity of individual who collected the sample, made the measurement, or made the observation;

3. date and time of laboratory analysis (the effluent limitations for the observation of free oil, floating solids, foam, and garbage are not subject to this condition);

4. identity of the individual and laboratory who performed the analysis (the effluent limitations for the observation of free oil, floating solids, foam, and garbage are not subject to this condition);

5. the technique or method of analysis (the effluent limitations for the observation of free oil, floating solids, foam, and garbage are not subject to this condition);

6. the results of the analysis, measurement, or observation; and

7. quality assurance/quality control records (the effluent limitations for the observation of free oil, floating solids, foam, and garbage are not subject to this condition).

I. If the permittee monitors any pollutant in a discharge more frequently than required by the draft TPDES general permit using approved analytical methods as specified in Part IV.7 of the draft TPDES general permit, all results of such monitoring shall be included in the calculation and recording of the values on the DMR. Increased frequency of sampling shall be indicated on the DMR.

J. Any effluent violation which deviates from the permitted effluent limitation by more than 40% shall be reported by the permittee in writing to the appropriate TCEQ Regional Office and the Enforcement Division (MC-224) within five working days of becoming aware of the noncompliance.

XIV. Procedures for Final Decision

The MOA for the TPDES program between the EPA and TCEQ provides that the EPA has no more than 90 days to comment, object, or make recommendations to the draft TPDES general permit before it is published in the *Texas Register*. According to 30 TAC Chapter 205, *General Permits for Waste Discharges*, when the draft TPDES general permit is proposed, notice shall be published, at a minimum, in at least one newspaper of statewide or regional circulation. The Commission may also publish notice in

additional newspapers of statewide or regional circulation. Mailed notice shall also be provided to the following:

- the county judge of the county or counties in which the discharges under the draft TPDES general permit could be located;
- if applicable, state and federal agencies for which notice is required in 40 CFR § 124.10(c);
- persons on a relevant mailing list kept under 30 TAC § 39.407, relating to Mailing Lists; and
- any other person the Executive Director or Chief Clerk may elect to include.

After notice of the draft TPDES general permit is published in the *Texas Register* and the newspaper(s), the public will have 30 days to provide public comment on the draft TPDES general permit.

Any person may request a public meeting on the draft TPDES general permit to the Executive Director before the end of the public comment period. A public meeting will be granted if the Executive Director determines, on the basis of requests, that a significant degree of public interest in the draft TPDES general permit exists. A public meeting is intended for the taking of public comment and is not a contested case proceeding under the Texas Administrative Procedure Act.

If the Executive Director holds a public meeting, the Commission will give notice of the date, time, and place of the meeting, as required by Commission rule. The Executive Director is required to prepare a response to all significant public comments on the draft TPDES general permit raised during the public comment period. The Executive Director is required to make the response available to the public. The draft TPDES general permit will then be filed with the Commission to consider final authorization of the draft TPDES general permit. The Executive Director's response to public comment is required to be made available to the public and filed with the Chief Clerk at least ten days before the Commission acts on the draft TPDES general permit.

XV. Administrative Record

The following section is a list of the fact sheet citations to applicable statutory or regulatory provisions and appropriate supporting references.

A. NPDES and TPDES General Permits

NPDES General Permit No. TXG260000 for Discharges from the Offshore Subcategory of the Oil and Gas Extraction Point Source Category to the Territorial Seas effective February 8, 2012.

NPDES General Permit No. TXG330000 for Discharges from the Oil and Gas Extraction Point Source Category to Coastal Waters of Texas and Onshore Stripper Well Category East of the 98th Meridian effective September 11, 2014.

NPDES General Permit No. GMG290000 for New and Existing Sources and New Discharges in the Offshore Subcategory of the Oil and Gas Extraction Point Source

Category for the Western Portion of the Outer Continental Shelf of the Gulf of Mexico effective October 1, 2017.

Draft NPDES General Permit No. TXG350000 for Discharges from the Oil and Gas Extraction Point Source Category, Stripper Subcategory in Texas, undated.

TPDES General Permit No. TXG670000 for Hydrostatic Test Discharges effective October 21, 2020.

B. 40 CFR Citations

40 CFR Parts 122, 124, 125, 136, 435, and 437

C. TCEQ Rules

30 TAC Chapters 39, 205, 281, 305, 307, 309, 311, 319, 331, 335, and 336

D. Letters/Memoranda/Records of Communication

Analytical data obtained from the Railroad Commission of Texas for Onshore Stripper Wells Located East of the 98th Meridian for: Market Street Energy (printed 7/19/2018), Sellers Lease Service (printed 1/2/2020), and Sellers Lease Service (printed 1/30/2020).

Letter dated April 1, 2020, from C. Maguire (EPA) to L. Stepney (TCEQ) with attached "Draft Evaluating Thermal Discharges dated July 27, 2017."

Electronic mail (email) from M. Lutz (J. Conner Consulting, Inc.) to Chris Linendoll (TCEQ) with attached Excel spreadsheet dated May 4, 2021, related to produced wastewater data submitted to RRC for produced wastewater discharges.

Letter dated June 10, 2021, from Greg Southworth, Associate Director, Offshore Operators Committee to Earl Lott, Director, Office of Water, TCEQ.

Letter dated June 17, 2021, from Earl Lott, Director, Office of Water, TCEQ to Greg Southworth, Associate Director, Offshore Operators Committee.

Notice to Oil and Gas Operators, prepared by Texas Railroad Commission of Texas, Oil and Gas Division, dated August 2021.

TCEQ Interoffice Memorandum dated August 10, 2021, from M. Pfeil (Water Quality Assessment Section) to Industrial Permits Team related to barium/manganese marine water quality criteria for development of the TPDES oil and gas general permit.

TCEQ Interoffice Memorandum dated September 15, 2021, from K. Cunningham (Water Quality Assessment Section) to Industrial Permits Team related to critical conditions assessment and CORMIX modeling for development of the TPDES oil and gas general permit.

TCEQ Interoffice Memorandum dated September 17, 2021, from J. Michalk (Water Quality Assessment Section) to Industrial Permits Team related to dissolved oxygen impact assessment for development of the TPDES oil and gas general permit.

TCEQ Interoffice Memorandum dated October 6, 2021, from P. Schaefer (Water Quality Assessment Section) to Industrial Permits Team related to temperature/thermal impact assessment for development of the TPDES oil and gas general permit.

Letter dated November 22, 2021, from Greg Southworth, Associate Director, Offshore Operators Committee to Earl Lott, Director, Office of Water, TCEQ.

TXG310000 Antidegradation Review, Interoffice Memorandum from the Standards Implementation Team to Wastewater Permitting Section dated December 29, 2021.

Letter dated November 14, 2022, from Maria L. Martinez, U.S. EPA Region 6 to Matthew Udenenwu, TCEQ.

Letter dated May 9, 2016, from B. Larsen, U.S. EPA Region 6 to Stephen Robinson, Tradition Resources Offshore LLC.

Letter dated June 8, 2023, from M. Lutz, J. Connor Consulting to Office of Chief Clerk, TCEQ.

E. Miscellaneous

EPA, National Recommended Water Quality Criteria: 2002, EPA-822-R-02-047, November 2002.

EPA, Quality Criteria for Water 1986 (EPA 440/5-86-001)

TCEQ, *Implementation Procedures of the Texas Surface Water Quality Standards*, (RG-194), January 2010.

“Supplemental Information Report to the 2004 Final Impact Statement, New Source NPDES General Permit for Discharges from the Offshore Subcategory of the Oil and Gas Extraction Point Source Category to the Territorial Seas of Texas (Permit No. TXG260000”, September 2011.

Fact Sheet and Supplemental Information for the Proposed Reissuance of the NPDES General Permit for Discharges from the Oil and Gas Extraction Point Source Category to Coastal Waters in Texas (TXG330000), March 7, 2012.

Fact Sheet and Supplemental Information for the Proposed NPDES General Permit for Discharges from the Offshore Subcategory of the Oil and Gas Extraction Point Source Category to the Territorial Seas of Texas (Permit Number TXG260000), October 4, 2011.

Fact Sheet for the Proposed Modification of the NPDES General Permit for Discharges from the Oil and Gas Extraction Point Source Category to Coastal Waters

of Texas and Onshore Striper Well Category East of the 98th Meridian (TXG330000), November 6, 2013.

Fact Sheet and Supplemental Information for the Final Reissuance of the NPDES General Permit for New and Existing Sources in the Offshore Subcategory of the Oil and Gas Extraction Point Source Category for the Western Portion of the Outer Continental Shelf of the Gulf of Mexico (GMG290000), September 18, 2017.

Draft Fact Sheet and Supplemental Information for the Proposed Reissuance of the NPDES General Permit for Discharges from the Oil and Gas Extraction Point Source Onshore Stripper Well Category in Texas (TXG350000), February 24, 2017.

"Characteristics of Produced Water Discharged to the Gulf of Mexico Hypoxic Zone", prepared by Environmental Assessment Division Argonne National Laboratory, ANL/EAD/05-3, August 2005.

"OOC Produced Water and Water Based Mud Characterization Study" – Final Report, prepared by Tetra Tech, September 2015.

"Gulf of Mexico Produced Water Bioaccumulation Study", prepared by Continental Shelf Associates, Inc., April 1997.

Texas Register Publication, 9 TexReg 405, published January 20, 1984, amendments to 31 TAC Section 329.46.

"Barium in Produced Water: Fate and Effects in the Marine Environment", American Petroleum Institute, September 1995, Publication Number 4633.

CORMIX Model Version 11.0 GTD (Version 11.0.1.0).

CORMIX User Manual (published December 2007 and updated February 2017 by Robert L. Doneker and Gerhard H. Jirka).

TCEQ's Guidance Manual for Mixing Analyses Using CORMIX (revised on October 2, 2018 by Mark Rudolph, P.E.).

SWQM data for the Gulf of Mexico: TCEQ Surface Water Quality Monitoring Stations (SWQM) in the Gulf of Mexico (Segment No. 2501).

"Final Report: Joint Industry Project Study of Well Treatment, Completion, and Workover Effluents", submitted by Offshore Operators Committee, September 23, 2021.

Appendix A-1: Water Quality-Based Effluent Limitations Calculations

TEXTOX MENU #1 - INTERMITTENT STREAM

The water quality-based effluent limitations developed below are calculated using:

Table 1, 2014 Texas Surface Water Quality Standards (30 TAC 307) for Freshwater Aquatic Life
"Procedures to Implement the Texas Surface Water Quality Standards," TCEQ, June 2010

PERMIT INFORMATION

Permittee Name:	TPDES Oil and Gas General Permit
TCEQ Permit No:	TXG310000
Outfall No:	N/A
Prepared by:	Water Quality Division
Date:	9/22/2020

DISCHARGE INFORMATION

Receiving Waterbody:	intermittent stream
Segment No:	0407
TSS (mg/L):	5
pH (Standards Units)	5.9
Hardness (mg/L as $CaCO_3$):	12
Chloride (mg/L):	15
Effluent Flow for Aquatic Life (MGD)	N/A
Critical Low Flow [7Q2] (cfs):	0
% Effluent for Acute Aquatic Life (ZID):	100

CALCULATE DISSOLVED FRACTION (AND ENTER WATER EFFECT RATIO IF APPLICABLE):

Stream/River Metal	*Intercept (b)*	*Slope (m)*	*Partition Coefficient (Kp)*	*Dissolved Fraction (Cd/Ct)*	*Source*	*Water Effect Ratio (WER)*	Source
Aluminum	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Arsenic	5.68	-0.73	147826.36	0.575		1.00	Assumed
Cadmium	6.60	-1.13	645897.93	0.236		1.00	Assumed
Chromium (total)	6.52	-0.93	741238.38	0.212		1.00	Assumed
Chromium (trivalent)	6.52	-0.93	741238.38	0.212		1.00	Assumed
Chromium (hexavalent)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Copper	6.02	-0.74	318245.45	0.386		1.00	Assumed
Lead	6.45	-0.80	777721.31	0.205		1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Nickel	5.69	-0.57	195698.32	0.505		1.00	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Silver	6.38	-1.03	457152.29	0.304		1.00	Assumed
Zinc	6.10	-0.70	408057.15	0.329		1.00	Assumed

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS FOR THE PROTECTION OF AQUATIC LIFE:

Parameter	*FW Acute Criterion (µg/L)*	*WLAa (µg/L)*	*LTAa (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Aldrin	3.0	3.00	1.72	2.52	5.34
Aluminum	991	991	568	834	1765
Arsenic	340	591	339	498	1053
Cadmium	1.0876735	4.60	2.64	3.87	8.19
Carbaryl	2.0	2.00	1.15	1.68	3.56
Chlordane	2.4	2.40	1.38	2.02	4.27
Chlorpyrifos	0.083	0.0830	0.0476	0.0699	0.147
Chromium (trivalent)	100.35616	472	271	397	841
Chromium (hexavalent)	15.7	15.7	9.00	13.2	27.9
Copper	1.9264078	4.99	2.86	4.20	8.89
Cyanide (free)	45.8	45.8	26.2	38.5	81.6
4,4'-DDT	1.1	1.10	0.630	0.926	1.96
Demeton	N/A	N/A	N/A	N/A	N/A
Diazinon	0.17	0.170	0.0974	0.143	0.302
Dicofol [Kelthane]	59.3	59.3	34.0	49.9	105
Dieldrin	0.24	0.240	0.138	0.202	0.427
Diuron	210	210	120	176	374
Endosulfan I (*alpha*)	0.22	0.220	0.126	0.185	0.392
Endosulfan II (*beta*)	0.22	0.220	0.126	0.185	0.392
Endosulfan sulfate	0.22	0.220	0.126	0.185	0.392
Endrin	0.086	0.0860	0.0493	0.0724	0.153
Guthion [Azinphos Methyl]	N/A	N/A	N/A	N/A	N/A
Heptachlor	0.52	0.520	0.298	0.438	0.926
Hexachlorocyclohexane (*gamma*) [Lindane]	1.126	1.13	0.645	0.948	2.00
Lead	6.0408833	29.5	16.9	24.8	52.6
Malathion	N/A	N/A	N/A	N/A	N/A
Mercury	2.4	2.40	1.38	2.02	4.27
Methoxychlor	N/A	N/A	N/A	N/A	N/A
Mirex	N/A	N/A	N/A	N/A	N/A
Nickel	77.884661	154	88.3	129	274
Nonylphenol	28	28.0	16.0	23.5	49.8
Parathion (ethyl)	0.065	0.0650	0.0372	0.0547	0.115
Pentachlorophenol	2.8878145	2.89	1.65	2.43	5.14
Phenanthrene	30	30.0	17.2	25.2	53.4
Polychlorinated Biphenyls [PCBs]	2.0	2.00	1.15	1.68	3.56
Selenium	20	20.0	11.5	16.8	35.6
Silver	0.8	4.83	2.77	4.07	8.61
Toxaphene	0.78	0.780	0.447	0.657	1.38
Tributyltin [TBT]	0.13	0.130	0.0745	0.109	0.231
2,4,5 Trichlorophenol	136	136	77.9	114	242
Zinc	19.437726	59.1	33.9	49.7	105

CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS:

Aquatic Life	*70% of Daily Avg.*	*85% of Daily Avg.*
Parameter	***(µg/L)***	***(µg/L)***
Aldrin	1.76	2.14
Aluminum	584	709
Arsenic	348	423
Cadmium	2.71	3.29

Aquatic Life	***70% of Daily Avg.***	***85% of Daily Avg.***
Parameter	***(µg/L)***	***(µg/L)***
Carbaryl	1.17	1.43
Chlordane	1.41	1.71
Chlorpyrifos	0.0489	0.0594
Chromium (trivalent)	278	338
Chromium (hexavalent)	9.25	11.2
Copper	2.94	3.57
Cyanide (free)	27.0	32.7
4,4'-DDT	0.648	0.787
Demeton	N/A	N/A
Diazinon	0.100	0.121
Dicofol [Kelthane]	34.9	42.4
Dieldrin	0.141	0.171
Diuron	123	150
Endosulfan I (*alpha*)	0.129	0.157
Endosulfan II (*beta*)	0.129	0.157
Endosulfan sulfate	0.129	0.157
Endrin	0.0507	0.0615
Guthion [Azinphos Methyl]	N/A	N/A
Heptachlor	0.306	0.372
Hexachlorocyclohexane (*gamma*) [Lindane]	0.663	0.806
Lead	17.4	21.1
Malathion	N/A	N/A
Mercury	1.41	1.71
Methoxychlor	N/A	N/A
Mirex	N/A	N/A
Nickel	90.8	110
Nonylphenol	16.5	20.0
Parathion (ethyl)	0.0383	0.0465
Pentachlorophenol	1.70	2.06
Phenanthrene	17.6	21.4
Polychlorinated Biphenyls [PCBs]	1.17	1.43
Selenium	11.7	14.3
Silver	2.85	3.46
Toxaphene	0.459	0.558
Tributyltin [TBT]	0.0766	0.0930
2,4,5 Trichlorophenol	80.1	97.3
Zinc	34.8	42.3

Appendix A-2: Water Quality-Based Effluent Limitations Calculations

TEXTOX MENU #1 - INTERMITTENT STREAM

The water quality-based effluent limitations developed below are calculated using:

Table 1, 2014 Texas Surface Water Quality Standards (30 TAC 307) for Freshwater Aquatic Life
"Procedures to Implement the Texas Surface Water Quality Standards," TCEQ, June 2010

PERMIT INFORMATION

Permittee Name:	TPDES Oil and Gas General Permit
TCEQ Permit No:	TXG310000
Outfall No:	N/A
Prepared by:	Water Quality Division
Date:	9/22/2020

DISCHARGE INFORMATION

Receiving Waterbody:	intermittent stream
Segment No:	0513
TSS (mg/L):	5
pH (Standards Units)	6.1
Hardness (mg/L as $CaCO_3$):	12
Chloride (mg/L):	5
Effluent Flow for Aquatic Life (MGD)	N/A
Critical Low Flow [7Q2] (cfs):	0
% Effluent for Acute Aquatic Life (ZID):	100

CALCULATE DISSOLVED FRACTION (AND ENTER WATER EFFECT RATIO IF APPLICABLE):

Stream/River Metal	*Intercept (b)*	*Slope (m)*	*Partition Coefficient (Kp)*	*Dissolved Fraction (Cd/Ct)*	*Source*	*Water Effect Ratio (WER)*	Source
Aluminum	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Arsenic	5.68	-0.73	147826.36	0.575		1.00	Assumed
Cadmium	6.60	-1.13	645897.93	0.236		1.00	Assumed
Chromium (total)	6.52	-0.93	741238.38	0.212		1.00	Assumed
Chromium (trivalent)	6.52	-0.93	741238.38	0.212		1.00	Assumed
Chromium (hexavalent)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Copper	6.02	-0.74	318245.45	0.386		1.00	Assumed
Lead	6.45	-0.80	777721.31	0.205		1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Nickel	5.69	-0.57	195698.32	0.505		1.00	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Silver	6.38	-1.03	457152.29	0.304		1.00	Assumed
Zinc	6.10	-0.70	408057.15	0.329		1.00	Assumed

CALCULATED DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS FOR AQUATIC LIFE PROTECTION:

Parameter	*FW Acute Criterion (µg/L)*	*WLAa (µg/L)*	*LTAa (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Aldrin	3.0	3.00	1.72	2.52	5.34
Aluminum	991	991	568	834	1765
Arsenic	340	591	339	498	1053
Cadmium	1.0876735	4.60	2.64	3.87	8.19
Carbaryl	2.0	2.00	1.15	1.68	3.56
Chlordane	2.4	2.40	1.38	2.02	4.27
Chlorpyrifos	0.083	0.0830	0.0476	0.0699	0.147
Chromium (trivalent)	100.35616	472	271	397	841
Chromium (hexavalent)	15.7	15.7	9.00	13.2	27.9
Copper	1.9264078	4.99	2.86	4.20	8.89
Cyanide (free)	45.8	45.8	26.2	38.5	81.6
4,4'-DDT	1.1	1.10	0.630	0.926	1.96
Demeton	N/A	N/A	N/A	N/A	N/A
Diazinon	0.17	0.170	0.0974	0.143	0.302
Dicofol [Kelthane]	59.3	59.3	34.0	49.9	105
Dieldrin	0.24	0.240	0.138	0.202	0.427
Diuron	210	210	120	176	374
Endosulfan I (*alpha*)	0.22	0.220	0.126	0.185	0.392
Endosulfan II (*beta*)	0.22	0.220	0.126	0.185	0.392
Endosulfan sulfate	0.22	0.220	0.126	0.185	0.392
Endrin	0.086	0.0860	0.0493	0.0724	0.153
Guthion [Azinphos Methyl]	N/A	N/A	N/A	N/A	N/A
Heptachlor	0.52	0.520	0.298	0.438	0.926
Hexachlorocyclohexane (*gamma*) [Lindane]	1.126	1.13	0.645	0.948	2.00
Lead	6.0408833	29.5	16.9	24.8	52.6
Malathion	N/A	N/A	N/A	N/A	N/A
Mercury	2.4	2.40	1.38	2.02	4.27
Methoxychlor	N/A	N/A	N/A	N/A	N/A
Mirex	N/A	N/A	N/A	N/A	N/A
Nickel	77.884661	154	88.3	129	274
Nonylphenol	28	28.0	16.0	23.5	49.8
Parathion (ethyl)	0.065	0.0650	0.0372	0.0547	0.115
Pentachlorophenol	3.5307136	3.53	2.02	2.97	6.29
Phenanthrene	30	30.0	17.2	25.2	53.4
Polychlorinated Biphenyls [PCBs]	2.0	2.00	1.15	1.68	3.56
Selenium	20	20.0	11.5	16.8	35.6
Silver	0.8	3.32	1.90	2.79	5.91
Toxaphene	0.78	0.780	0.447	0.657	1.38
Tributyltin [TBT]	0.13	0.130	0.0745	0.109	0.231
2,4,5 Trichlorophenol	136	136	77.9	114	242
Zinc	19.437726	59.1	33.9	49.7	105

CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS:

Aquatic Life	*70% of Daily Avg.*	*85% of Daily Avg.*
Parameter	***(µg/L)***	***(µg/L)***
Aldrin	1.76	2.14
Aluminum	584	709
Arsenic	348	423
Cadmium	2.71	3.29
Carbaryl	1.17	1.43

Aquatic Life	***70% of Daily Avg.***	***85% of Daily Avg.***
Parameter	***(µg/L)***	***(µg/L)***
Chlordane	1.41	1.71
Chlorpyrifos	0.0489	0.0594
Chromium (trivalent)	278	338
Chromium (hexavalent)	9.25	11.2
Copper	2.94	3.57
Cyanide (free)	27.0	32.7
4,4'-DDT	0.648	0.787
Demeton	N/A	N/A
Diazinon	0.100	0.121
Dicofol [Kelthane]	34.9	42.4
Dieldrin	0.141	0.171
Diuron	123	150
Endosulfan I (*alpha*)	0.129	0.157
Endosulfan II (*beta*)	0.129	0.157
Endosulfan sulfate	0.129	0.157
Endrin	0.0507	0.0615
Guthion [Azinphos Methyl]	N/A	N/A
Heptachlor	0.306	0.372
Hexachlorocyclohexane (*gamma*) [Lindane]	0.663	0.806
Lead	17.4	21.1
Malathion	N/A	N/A
Mercury	1.41	1.71
Methoxychlor	N/A	N/A
Mirex	N/A	N/A
Nickel	90.8	110
Nonylphenol	16.5	20.0
Parathion (ethyl)	0.0383	0.0465
Pentachlorophenol	2.08	2.52
Phenanthrene	17.6	21.4
Polychlorinated Biphenyls [PCBs]	1.17	1.43
Selenium	11.7	14.3
Silver	1.95	2.37
Toxaphene	0.459	0.558
Tributyltin [TBT]	0.0766	0.0930
2,4,5 Trichlorophenol	80.1	97.3
Zinc	34.8	42.3

Appendix A-3: Water Quality-Based Effluent Limitations Calculations

TEXTOX MENU #1 - INTERMITTENT STREAM

The water quality-based effluent limitations developed below are calculated using:

Table 1, 2014 Texas Surface Water Quality Standards (30 TAC 307) for Freshwater Aquatic Life
"Procedures to Implement the Texas Surface Water Quality Standards," TCEQ, June 2010

PERMIT INFORMATION

Permittee Name:	TPDES Oil and Gas General Permit
TCEQ Permit No:	TXG310000
Outfall No:	N/A
Prepared by:	Water Quality Division
Date:	9/22/2020

DISCHARGE INFORMATION

Receiving Waterbody:	intermittent stream
Segment No:	0614
TSS (mg/L):	1
pH (Standards Units)	7.1
Hardness (mg/L as $CaCO_3$):	27
Chloride (mg/L):	7
Effluent Flow for Aquatic Life (MGD)	N/A
Critical Low Flow [7Q2] (cfs):	0
% Effluent for Acute Aquatic Life (ZID):	100

CALCULATE DISSOLVED FRACTION (AND ENTER WATER EFFECT RATIO IF APPLICABLE):

Stream/River Metal	*Intercept (b)*	*Slope (m)*	*Partition Coefficient (Kp)*	*Dissolved Fraction (Cd/Ct)*	*Source*	*Water Effect Ratio (WER)*	Source
Aluminum	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Arsenic	5.68	-0.73	478630.09	0.676		1.00	Assumed
Cadmium	6.60	-1.13	3981071.71	0.201		1.00	Assumed
Chromium (total)	6.52	-0.93	3311311.21	0.232		1.00	Assumed
Chromium (trivalent)	6.52	-0.93	3311311.21	0.232		1.00	Assumed
Chromium (hexavalent)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Copper	6.02	-0.74	1047128.55	0.488		1.00	Assumed
Lead	6.45	-0.80	2818382.93	0.262		1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Nickel	5.69	-0.57	489778.82	0.671		1.00	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Silver	6.38	-1.03	2398832.92	0.294		1.00	Assumed
Zinc	6.10	-0.70	1258925.41	0.443		1.00	Assumed

CALCULATED DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS FOR AQUATIC LIFE PROTECTION:

Parameter	*FW Acute Criterion (µg/L)*	*WLAa (µg/L)*	*LTAa (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Aldrin	3.0	3.00	1.72	2.52	5.34
Aluminum	991	991	568	834	1765
Arsenic	340	503	288	423	895
Cadmium	2.398942	11.9	6.85	10.0	21.2
Carbaryl	2.0	2.00	1.15	1.68	3.56
Chlordane	2.4	2.40	1.38	2.02	4.27
Chlorpyrifos	0.083	0.0830	0.0476	0.0699	0.147
Chromium (trivalent)	194.9762	841	482	708	1497
Chromium (hexavalent)	15.7	15.7	9.00	13.2	27.9
Copper	4.135944	8.47	4.85	7.13	15.0
Cyanide (free)	45.8	45.8	26.2	38.5	81.6
4,4'-DDT	1.1	1.10	0.630	0.926	1.96
Demeton	N/A	N/A	N/A	N/A	N/A
Diazinon	0.17	0.170	0.0974	0.143	0.302
Dicofol [Kelthane]	59.3	59.3	34.0	49.9	105
Dieldrin	0.24	0.240	0.138	0.202	0.427
Diuron	210	210	120	176	374
Endosulfan I (*alpha*)	0.22	0.220	0.126	0.185	0.392
Endosulfan II (*beta*)	0.22	0.220	0.126	0.185	0.392
Endosulfan sulfate	0.22	0.220	0.126	0.185	0.392
Endrin	0.086	0.0860	0.0493	0.0724	0.153
Guthion [Azinphos Methyl]	N/A	N/A	N/A	N/A	N/A
Heptachlor	0.52	0.520	0.298	0.438	0.926
Hexachlorocyclohexane (*gamma*) [Lindane]	1.126	1.13	0.645	0.948	2.00
Lead	15.13817	57.8	33.1	48.6	103
Malathion	N/A	N/A	N/A	N/A	N/A
Mercury	2.4	2.40	1.38	2.02	4.27
Methoxychlor	N/A	N/A	N/A	N/A	N/A
Mirex	N/A	N/A	N/A	N/A	N/A
Nickel	154.6672	230	132	194	410
Nonylphenol	28	28.0	16.0	23.5	49.8
Parathion (ethyl)	0.065	0.0650	0.0372	0.0547	0.115
Pentachlorophenol	9.645582	9.65	5.53	8.12	17.1
Phenanthrene	30	30.0	17.2	25.2	53.4
Polychlorinated Biphenyls [PCBs]	2.0	2.00	1.15	1.68	3.56
Selenium	20	20.0	11.5	16.8	35.6
Silver	0.8	3.73	2.14	3.13	6.64
Toxaphene	0.78	0.780	0.447	0.657	1.38
Tributyltin [TBT]	0.13	0.130	0.0745	0.109	0.231
2,4,5 Trichlorophenol	136	136	77.9	114	242
Zinc	38.64112	87.3	50.0	73.5	155

CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS:

Aquatic Life	*70% of Daily Avg.*	*85% of Daily Avg.*
Parameter	***(µg/L)***	***(µg/L)***
Aldrin	1.76	2.14

Aquatic Life	***70% of Daily Avg.***	***85% of Daily Avg.***
Parameter	***(µg/L)***	***(µg/L)***
Aluminum	584	709
Arsenic	296	359
Cadmium	7.04	8.55
Carbaryl	1.17	1.43
Chlordane	1.41	1.71
Chlorpyrifos	0.0489	0.0594
Chromium (trivalent)	495	601
Chromium (hexavalent)	9.25	11.2
Copper	4.99	6.06
Cyanide (free)	27.0	32.7
4,4'-DDT	0.648	0.787
Demeton	N/A	N/A
Diazinon	0.100	0.121
Dicofol [Kelthane]	34.9	42.4
Dieldrin	0.141	0.171
Diuron	123	150
Endosulfan I (*alpha*)	0.129	0.157
Endosulfan II (*beta*)	0.129	0.157
Endosulfan sulfate	0.129	0.157
Endrin	0.0507	0.0615
Guthion [Azinphos Methyl]	N/A	N/A
Heptachlor	0.306	0.372
Hexachlorocyclohexane (*gamma*) [Lindane]	0.663	0.806
Lead	34.0	41.3
Malathion	N/A	N/A
Mercury	1.41	1.71
Methoxychlor	N/A	N/A
Mirex	N/A	N/A
Nickel	135	164
Nonylphenol	16.5	20.0
Parathion (ethyl)	0.0383	0.0465
Pentachlorophenol	5.68	6.90
Phenanthrene	17.6	21.4
Polychlorinated Biphenyls [PCBs]	1.17	1.43
Selenium	11.7	14.3
Silver	2.19	2.66
Toxaphene	0.459	0.558
Tributyltin [TBT]	0.0766	0.0930
2,4,5 Trichlorophenol	80.1	97.3
Zinc	51.4	62.4

Appendix A-4: Water Quality-Based Effluent Limitations Calculations

TEXTOX MENU #1 - INTERMITTENT STREAM

The water quality-based effluent limitations developed below are calculated using:

Table 1, 2014 Texas Surface Water Quality Standards (30 TAC 307) for Freshwater Aquatic Life
"Procedures to Implement the Texas Surface Water Quality Standards," TCEQ, June 2010

PERMIT INFORMATION

Permittee Name:	TPDES Oil and Gas General Permit
TCEQ Permit No:	TXG310000
Outfall No:	N/A
Prepared by:	Water Quality Division
Date:	9/22/2020

DISCHARGE INFORMATION

Receiving Waterbody:	intermittent stream
Segment No:	0804
TSS (mg/L):	41
pH (Standards Units)	7.2
Hardness (mg/L as $CaCO_3$):	122
Chloride (mg/L):	42
Effluent Flow for Aquatic Life (MGD)	N/A
Critical Low Flow [7Q2] (cfs):	0
% Effluent for Acute Aquatic Life (ZID):	100

CALCULATE DISSOLVED FRACTION (AND ENTER WATER EFFECT RATIO IF APPLICABLE):

Stream/River Metal	*Intercept (b)*	*Slope (m)*	*Partition Coefficient (Kp)*	*Dissolved Fraction (Cd/Ct)*	*Source*	*Water Effect Ratio (WER)*	Source
Aluminum	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Arsenic	5.68	-0.73	31817.63	0.434		1.00	Assumed
Cadmium	6.60	-1.13	59917.58	0.289		1.00	Assumed
Chromium (total)	6.52	-0.93	104739.62	0.189		1.00	Assumed
Chromium (trivalent)	6.52	-0.93	104739.62	0.189		1.00	Assumed
Chromium (hexavalent)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Copper	6.02	-0.74	67071.80	0.267		1.00	Assumed
Lead	6.45	-0.80	144468.42	0.144		1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Nickel	5.69	-0.57	58981.15	0.293		1.00	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Silver	6.38	-1.03	52339.87	0.318		1.00	Assumed
Zinc	6.10	-0.70	93551.62	0.207		1.00	Assumed

CALCULATED DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS FOR AQUATIC LIFE PROTECTION:

Parameter	*FW Acute Criterion (µg/L)*	*WLAa (µg/L)*	*LTAa (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Aldrin	3.0	3.00	1.72	2.52	5.34
Aluminum	991	991	568	834	1765
Arsenic	340	784	449	659	1396
Cadmium	10.4123	36.0	20.6	30.3	64.1
Carbaryl	2.0	2.00	1.15	1.68	3.56
Chlordane	2.4	2.40	1.38	2.02	4.27
Chlorpyrifos	0.083	0.0830	0.0476	0.0699	0.147
Chromium (trivalent)	670.5379	3550	2034	2990	6326
Chromium (hexavalent)	15.7	15.7	9.00	13.2	27.9
Copper	17.12821	64.2	36.8	54.1	114
Cyanide (free)	45.8	45.8	26.2	38.5	81.6
4,4'-DDT	1.1	1.10	0.630	0.926	1.96
Demeton	N/A	N/A	N/A	N/A	N/A
Diazinon	0.17	0.170	0.0974	0.143	0.302
Dicofol [Kelthane]	59.3	59.3	34.0	49.9	105
Dieldrin	0.24	0.240	0.138	0.202	0.427
Diuron	210	210	120	176	374
Endosulfan I (*alpha*)	0.22	0.220	0.126	0.185	0.392
Endosulfan II (*beta*)	0.22	0.220	0.126	0.185	0.392
Endosulfan sulfate	0.22	0.220	0.126	0.185	0.392
Endrin	0.086	0.0860	0.0493	0.0724	0.153
Guthion [Azinphos Methyl]	N/A	N/A	N/A	N/A	N/A
Heptachlor	0.52	0.520	0.298	0.438	0.926
Hexachlorocyclohexane (*gamma*) [Lindane]	1.126	1.13	0.645	0.948	2.00
Lead	80.13757	555	318	467	988
Malathion	N/A	N/A	N/A	N/A	N/A
Mercury	2.4	2.40	1.38	2.02	4.27
Methoxychlor	N/A	N/A	N/A	N/A	N/A
Mirex	N/A	N/A	N/A	N/A	N/A
Nickel	554.0195	1894	1085	1595	3374
Nonylphenol	28	28.0	16.0	23.5	49.8
Parathion (ethyl)	0.065	0.0650	0.0372	0.0547	0.115
Pentachlorophenol	10.66535	10.7	6.11	8.98	19.0
Phenanthrene	30	30.0	17.2	25.2	53.4
Polychlorinated Biphenyls [PCBs]	2.0	2.00	1.15	1.68	3.56
Selenium	20	20.0	11.5	16.8	35.6
Silver	0.8	9.42	5.40	7.93	16.7
Toxaphene	0.78	0.780	0.447	0.657	1.38
Tributyltin [TBT]	0.13	0.130	0.0745	0.109	0.231
2,4,5 Trichlorophenol	136	136	77.9	114	242
Zinc	138.6845	671	384	564	1195

CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS:

Aquatic Life	*70% of Daily Avg.*	*85% of Daily Avg.*
Parameter	***(µg/L)***	***(µg/L)***
Aldrin	1.76	2.14

Aquatic Life	***70% of Daily Avg.***	***85% of Daily Avg.***
Parameter	***(µg/L)***	***(µg/L)***
Aluminum	584	709
Arsenic	461	560
Cadmium	21.2	25.7
Carbaryl	1.17	1.43
Chlordane	1.41	1.71
Chlorpyrifos	0.0489	0.0594
Chromium (trivalent)	2093	2541
Chromium (hexavalent)	9.25	11.2
Copper	37.8	45.9
Cyanide (free)	27.0	32.7
4,4'-DDT	0.648	0.787
Demeton	N/A	N/A
Diazinon	0.100	0.121
Dicofol [Kelthane]	34.9	42.4
Dieldrin	0.141	0.171
Diuron	123	150
Endosulfan I (*alpha*)	0.129	0.157
Endosulfan II (*beta*)	0.129	0.157
Endosulfan sulfate	0.129	0.157
Endrin	0.0507	0.0615
Guthion [Azinphos Methyl]	N/A	N/A
Heptachlor	0.306	0.372
Hexachlorocyclohexane (*gamma*) [Lindane]	0.663	0.806
Lead	327	397
Malathion	N/A	N/A
Mercury	1.41	1.71
Methoxychlor	N/A	N/A
Mirex	N/A	N/A
Nickel	1116	1355
Nonylphenol	16.5	20.0
Parathion (ethyl)	0.0383	0.0465
Pentachlorophenol	6.28	7.63
Phenanthrene	17.6	21.4
Polychlorinated Biphenyls [PCBs]	1.17	1.43
Selenium	11.7	14.3
Silver	5.55	6.74
Toxaphene	0.459	0.558
Tributyltin [TBT]	0.0766	0.0930
2,4,5 Trichlorophenol	80.1	97.3
Zinc	395	480

Appendix B: Water Quality-Based Effluent Limitations Calculations

TEXTOX MENU #5 - BAY OR WIDE TIDAL RIVER

The water quality-based effluent limitations developed below are calculated using:

Table 1, 2014 Texas Surface Water Quality Standards (30 TAC 307) for Saltwater Aquatic Life
Table 2, 2018 Texas Surface Water Quality Standards for Human Health
"Procedures to Implement the Texas Surface Water Quality Standards," TCEQ, June 2010

PERMIT INFORMATION

Permittee Name:	TPDES Oil and Gas General Permit
TCEQ Permit No:	TXG310000
Outfall No:	N/A
Prepared by:	Water Quality Division
Date:	9/22/2020

DISCHARGE INFORMATION

Receiving Waterbody:	Sabine River Tidal
Segment No:	0501
TSS (mg/L):	6
Effluent Flow for Aquatic Life (MGD)	<10
% Effluent for Chronic Aquatic Life (Mixing Zone):	8
% Effluent for Acute Aquatic Life (ZID):	30
Oyster Waters?	**No**
Effluent Flow for Human Health (MGD):	<10
% Effluent for Human Health:	4

CALCULATE DISSOLVED FRACTION (AND ENTER WATER EFFECT RATIO IF APPLICABLE):

Estuarine Metal	*Intercept (b)*	*Slope (m)*	*Partition Coefficient (Kp)*	*Dissolved Fraction (Cd/Ct)*	*Source*	*Water Effect Ratio (WER)*	*Source*
Aluminum	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Arsenic	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Cadmium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Chromium (total)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Chromium (trivalent)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Chromium (hexavalent)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Copper	4.85	-0.72	19486.38	0.895		1.00	Assumed
Lead	6.06	-0.85	250363.74	0.400		1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Nickel	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Silver	5.86	-0.74	192383.61	0.464		1.00	Assumed
Zinc	5.36	-0.52	90232.16	0.649		1.00	Assumed

CALCULATED DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS FOR AQUATIC LIFE PROTECTION:

Parameter	*SW Acute Criterion (µg/L)*	*SW Chronic Criterion (µg/L)*	*WLAa (µg/L)*	*WLAc (µg/L)*	*LTAa (µg/L)*	*LTAc (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Acrolein	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Parameter	*SW Acute Criterion (µg/L)*	*SW Chronic Criterion (µg/L)*	*WLAa (µg/L)*	*WLAc (µg/L)*	*LTAa (µg/L)*	*LTAc (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Aldrin	1.3	N/A	4.33	N/A	1.39	N/A	2.03	4.31
Aluminum	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic	149	78	497	975	159	595	233	494
Cadmium	40.0	8.75	133	109	42.7	66.7	62.7	132
Carbaryl	613	N/A	2043	N/A	654	N/A	961	2033
Chlordane	0.09	0.004	0.300	0.0500	0.0960	0.0305	0.0448	0.0948
Chlorpyrifos	0.011	0.006	0.0367	0.0750	0.0117	0.0458	0.0172	0.0364
Chromium (trivalent)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium (hexavalent)	1090	49.6	3633	620	1163	378	555	1176
Copper	13.5	3.6	50.3	50.3	16.1	30.7	23.6	50.0
Copper (oyster waters)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide (free)	5.6	5.6	18.7	70.0	5.97	42.7	8.78	18.5
4,4'-DDT	0.13	0.001	0.433	0.0125	0.139	0.00763	0.0112	0.0237
Demeton	N/A	0.1	N/A	1.25	N/A	0.763	1.12	2.37
Diazinon	0.819	0.819	2.73	10.2	0.874	6.24	1.28	2.71
Dicofol [Kelthane]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dieldrin	0.71	0.002	2.37	0.0250	0.757	0.0153	0.0224	0.0474
Diuron	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Endosulfan I (*alpha*)	0.034	0.009	0.113	0.113	0.0363	0.0686	0.0533	0.112
Endosulfan II (*beta*)	0.034	0.009	0.113	0.113	0.0363	0.0686	0.0533	0.112
Endosulfan sulfate	0.034	0.009	0.113	0.113	0.0363	0.0686	0.0533	0.112
Endrin	0.037	0.002	0.123	0.0250	0.0395	0.0153	0.0224	0.0474
Guthion [Azinphos Methyl]	N/A	0.01	N/A	0.125	N/A	0.0763	0.112	0.237
Heptachlor	0.053	0.004	0.177	0.0500	0.0565	0.0305	0.0448	0.0948
Hexachlorocyclohexane (*gamma*) [Lindane]	0.16	N/A	0.533	N/A	0.171	N/A	0.250	0.530
Lead	133	5.3	1109	166	355	101	148	314
Malathion	N/A	0.01	N/A	0.125	N/A	0.0763	0.112	0.237
Mercury	2.1	1.1	7.00	13.8	2.24	8.39	3.29	6.96
Methoxychlor	N/A	0.03	N/A	0.375	N/A	0.229	0.336	0.711
Mirex	N/A	0.001	N/A	0.0125	N/A	0.00763	0.0112	0.0237
Nickel	118	13.1	393	164	126	99.9	146	310
Nonylphenol	7	1.7	23.3	21.3	7.47	13.0	10.9	23.2
Parathion (ethyl)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pentachlorophenol	15.1	9.6	50.3	120	16.1	73.2	23.6	50.0
Phenanthrene	7.7	4.6	25.7	57.5	8.21	35.1	12.0	25.5
Polychlorinated Biphenyls [PCBs]	10	0.03	33.3	0.375	10.7	0.229	0.336	0.711
Selenium	564	136	1880	1700	602	1037	884	1870
Silver	2	N/A	14.4	N/A	4.60	N/A	6.75	14.2
Toxaphene	0.21	0.0002	0.700	0.00250	0.224	0.00153	0.00224	0.00474
Tributyltin [TBT]	0.24	0.0074	0.800	0.0925	0.256	0.0564	0.0829	0.175
2,4,5 Trichlorophenol	259	12	863	150	276	91.5	134	284
Zinc	92.7	84.2	476	1622	152	990	224	474

CALCULATED DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS FOR HUMAN HEALTH PROTECTION:

Parameter	*Fish Only Criterion (µg/L)*	*WLAh (µg/L)*	*LTAh (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Acrylonitrile	115	2875	2674	3930	8315
Aldrin	1.147E-05	0.000287	0.000267	0.000392	0.000829
Anthracene	1317	32925	30620	45011	95228

Parameter	*Fish Only Criterion (µg/L)*	*WLAh (µg/L)*	*LTAh (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Antimony	1071	26775	24901	36604	77441
Arsenic	N/A	N/A	N/A	N/A	N/A
Barium	N/A	N/A	N/A	N/A	N/A
Benzene	581	14525	13508	19857	42010
Benzidine	0.107	2.68	2.49	3.65	7.73
Benzo(*a*)anthracene	0.025	0.625	0.581	0.854	1.80
Benzo(*a*)pyrene	0.0025	0.0625	0.0581	0.0854	0.180
Bis(chloromethyl)ether	0.2745	6.86	6.38	9.38	19.8
Bis(2-chloroethyl)ether	42.83	1071	996	1463	3096
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthalate]	7.55	189	176	258	545
Bromodichloromethane [Dichlorobromomethane]	275	6875	6394	9398	19884
Bromoform [Tribromomethane]	1060	26500	24645	36228	76645
Cadmium	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	46	1150	1070	1572	3326
Chlordane	0.0025	0.0625	0.0581	0.0854	0.180
Chlorobenzene	2737	68425	63635	93543	197905
Chlorodibromomethane [Dibromochloromethane]	183	4575	4255	6254	13232
Chloroform [Trichloromethane]	7697	192425	178955	263064	556550
Chromium (hexavalent)	502	12550	11672	17157	36298
Chrysene	2.52	63.0	58.6	86.1	182
Cresols [Methylphenols]	9301	232525	216248	317884	672532
Cyanide (free)	N/A	N/A	N/A	N/A	N/A
4,4'-DDD	0.002	0.0500	0.0465	0.0683	0.144
4,4'-DDE	0.00013	0.00325	0.00302	0.00444	0.00939
4,4'-DDT	0.0004	0.0100	0.00930	0.0136	0.0289
2,4'-D	N/A	N/A	N/A	N/A	N/A
Danitol [Fenpropathrin]	473	11825	10997	16165	34201
1,2-Dibromoethane [Ethylene Dibromide]	4.24	106	98.6	144	306
m-Dichlorobenzene [1,3-Dichlorobenzene]	595	14875	13834	20335	43022
o-Dichlorobenzene [1,2-Dichlorobenzene]	3299	82475	76702	112751	238542
p-Dichlorobenzene [1,4-Dichlorobenzene]	N/A	N/A	N/A	N/A	N/A
3,3'-Dichlorobenzidine	2.24	56.0	52.1	76.5	161
1,2-Dichloroethane	364	9100	8463	12440	26319
1,1-Dichloroethylene [1,1-Dichloroethene]	55114	1377850	1281401	1883658	3985155
Dichloromethane [Methylene Chloride]	13333	333325	309992	455688	964075
1,2-Dichloropropane	259	6475	6022	8851	18727
1,3-Dichloropropene [1,3-Dichloropropylene]	119	2975	2767	4067	8604
Dicofol [Kelthane]	0.30	7.50	6.98	10.2	21.6
Dieldrin	2.0E-05	0.000500	0.000465	0.000683	0.00144
2,4-Dimethylphenol	8436	210900	196137	288321	609986
Di-*n*-Butyl Phthalate	92.4	2310	2148	3158	6681
Dioxins/Furans [TCDD Equivalents]	7.97E-08	0.0000020	0.0000019	0.0000027	0.0000058
Endrin	0.02	0.500	0.465	0.683	1.44
Epichlorohydrin	2013	50325	46802	68799	145554
Ethylbenzene	1867	46675	43408	63809	134998
Ethylene Glycol	1.68E+07	420000000	390600000	574182000	1214766000
Fluoride	N/A	N/A	N/A	N/A	N/A
Heptachlor	0.0001	0.00250	0.00233	0.00341	0.00723
Heptachlor Epoxide	0.00029	0.00725	0.00674	0.00991	0.0209
Hexachlorobenzene	0.00068	0.0170	0.0158	0.0232	0.0491
Hexachlorobutadiene	0.22	5.50	5.12	7.51	15.9
Hexachlorocyclohexane (*alpha*)	0.0084	0.210	0.195	0.287	0.607
Hexachlorocyclohexane (*beta*)	0.26	6.50	6.05	8.88	18.7

Parameter	*Fish Only Criterion (µg/L)*	*WLAh (µg/L)*	*LTAh (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Hexachlorocyclohexane (*gamma*) [Lindane]	0.341	8.53	7.93	11.6	24.6
Hexachlorocyclopentadiene	11.6	290	270	396	838
Hexachloroethane	2.33	58.3	54.2	79.6	168
Hexachlorophene	2.90	72.5	67.4	99.1	209
4,4'-Isopropylidenediphenol [Bisphenol A]	15982	399550	371582	546224	1155618
Lead	3.83	240	223	327	692
Mercury	0.0250	0.625	0.581	0.854	1.80
Methoxychlor	3.0	75.0	69.8	102	216
Methyl Ethyl Ketone	9.92E+05	24800000	23064000	33904080	71729040
Methyl *tert*-butyl ether [MTBE]	10482	262050	243707	358248	757927
Nickel	1140	28500	26505	38962	82430
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	1873	46825	43547	64014	135431
N-Nitrosodiethylamine	2.1	52.5	48.8	71.7	151
N-Nitroso-di-*n*-Butylamine	4.2	105	97.7	143	303
Pentachlorobenzene	0.355	8.88	8.25	12.1	25.6
Pentachlorophenol	0.29	7.25	6.74	9.91	20.9
Polychlorinated Biphenyls [PCBs]	6.4E-04	0.0160	0.0149	0.0218	0.0462
Pyridine	947	23675	22018	32366	68475
Selenium	N/A	N/A	N/A	N/A	N/A
1,2,4,5-Tetrachlorobenzene	0.24	6.00	5.58	8.20	17.3
1,1,2,2-Tetrachloroethane	26.35	659	613	900	1905
Tetrachloroethylene [Tetrachloroethylene]	280	7000	6510	9569	20246
Thallium	0.23	5.75	5.35	7.86	16.6
Toluene	N/A	N/A	N/A	N/A	N/A
Toxaphene	0.011	0.275	0.256	0.375	0.795
2,4,5-TP [Silvex]	369	9225	8579	12611	26681
1,1,1-Trichloroethane	784354	19608850	18236231	26807258	56714676
1,1,2-Trichloroethane	166	4150	3860	5673	12003
Trichloroethylene [Trichloroethene]	71.9	1798	1672	2457	5198
2,4,5-Trichlorophenol	1867	46675	43408	63809	134998
TTHM [Sum of Total Trihalomethanes]	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	16.5	413	384	563	1193

CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS:

Aquatic Life	*70% of Daily Avg.*	*85% of Daily Avg.*
Parameter	***(µg/L)***	***(µg/L)***
Acrolein	N/A	N/A
Aldrin	1.42	1.73
Aluminum	N/A	N/A
Arsenic	163	198
Cadmium	43.9	53.3
Carbaryl	672	817
Chlordane	0.0313	0.0381
Chlorpyrifos	0.0120	0.0146
Chromium (trivalent)	N/A	N/A
Chromium (hexavalent)	389	472
Copper	16.5	20.0
Copper (oyster waters)	N/A	N/A
Cyanide (free)	6.14	7.46

Aquatic Life	***70% of Daily Avg.***	***85% of Daily Avg.***
Parameter	***(µg/L)***	***(µg/L)***
4,4'-DDT	0.00784	0.00952
Demeton	0.784	0.952
Diazinon	0.898	1.09
Dicofol [Kelthane]	N/A	N/A
Dieldrin	0.0156	0.0190
Diuron	N/A	N/A
Endosulfan I (*alpha*)	0.0373	0.0453
Endosulfan II (*beta*)	0.0373	0.0453
Endosulfan sulfate	0.0373	0.0453
Endrin	0.0156	0.0190
Guthion [Azinphos Methyl]	0.0784	0.0952
Heptachlor	0.0313	0.0381
Hexachlorocyclohexane (*gamma*) [Lindane]	0.175	0.213
Lead	104	126
Malathion	0.0784	0.0952
Mercury	2.30	2.79
Methoxychlor	0.235	0.285
Mirex	0.00784	0.00952
Nickel	102	124
Nonylphenol	7.68	9.32
Parathion (ethyl)	N/A	N/A
Pentachlorophenol	16.5	20.1
Phenanthrene	8.45	10.2
Polychlorinated Biphenyls [PCBs]	0.235	0.285
Selenium	619	751
Silver	4.72	5.74
Toxaphene	0.00156	0.00190
Tributyltin [TBT]	0.0580	0.0705
2,4,5 Trichlorophenol	94.1	114
Zinc	156	190

Human Health	***70% of Daily Avg.***	***85% of Daily Avg.***
Parameter	***(µg/L)***	***(µg/L)***
Acrylonitrile	2751	3340
Aldrin	0.000274	0.000333
Anthracene	31508	38260
Antimony	25622	31113
Arsenic	N/A	N/A
Barium	N/A	N/A
Benzene	13899	16878
Benzidine	2.55	3.10
Benzo(*a*)anthracene	0.598	0.726
Benzo(*a*)pyrene	0.0598	0.0726
Bis(chloromethyl)ether	6.56	7.97
Bis(2-chloroethyl)ether	1024	1244
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthalate]	180	219
Bromodichloromethane [Dichlorobromomethane]	6579	7988
Bromoform [Tribromomethane]	25359	30793
Cadmium	N/A	N/A
Carbon Tetrachloride	1100	1336

Human Health	***70% of Daily Avg.***	***85% of Daily Avg.***
Parameter	***(µg/L)***	***(µg/L)***
Chlordane	0.0598	0.0726
Chlorobenzene	65480	79512
Chlorodibromomethane [Dibromochloromethane]	4378	5316
Chloroform [Trichloromethane]	184144	223604
Chromium (hexavalent)	12009	14583
Chrysene	60.2	73.2
Cresols [Methylphenols]	222519	270202
Cyanide (free)	N/A	N/A
4,4'-DDD	0.0478	0.0581
4,4'-DDE	0.00311	0.00377
4,4'-DDT	0.00956	0.0116
2,4'-D	N/A	N/A
Danitol [Fenpropathrin]	11316	13741
1,2-Dibromoethane [Ethylene Dibromide]	101	123
m-Dichlorobenzene [1,3-Dichlorobenzene]	14234	17285
o-Dichlorobenzene [1,2-Dichlorobenzene]	78926	95838
p-Dichlorobenzene [1,4-Dichlorobenzene]	N/A	N/A
3,3'-Dichlorobenzidine	53.5	65.0
1,2-Dichloroethane	8708	10574
1,1-Dichloroethylene [1,1-Dichloroethene]	1318561	1601109
Dichloromethane [Methylene Chloride]	318982	387335
1,2-Dichloropropane	6196	7524
1,3-Dichloropropene [1,3-Dichloropropylene]	2846	3457
Dicofol [Kelthane]	7.17	8.71
Dieldrin	0.000478	0.000581
2,4-Dimethylphenol	201824	245073
Di-*n*-Butyl Phthalate	2210	2684
Dioxins/Furans [TCDD Equivalents]	0.0000019	0.0000023
Endrin	0.478	0.581
Epichlorohydrin	48159	58479
Ethylbenzene	44666	54237
Ethylene Glycol	401927400	488054700
Fluoride	N/A	N/A
Heptachlor	0.00239	0.00290
Heptachlor Epoxide	0.00693	0.00842
Hexachlorobenzene	0.0162	0.0197
Hexachlorobutadiene	5.26	6.39
Hexachlorocyclohexane (*alpha*)	0.200	0.244
Hexachlorocyclohexane (*beta*)	6.22	7.55
Hexachlorocyclohexane (*gamma*) [Lindane]	8.15	9.90
Hexachlorocyclopentadiene	277	336
Hexachloroethane	55.7	67.6
Hexachlorophene	69.3	84.2
4,4'-Isopropylidenediphenol [Bisphenol A]	382357	464291
Lead	229	278
Mercury	0.598	0.726
Methoxychlor	71.7	87.1

Human Health	***70% of Daily Avg.***	***85% of Daily Avg.***
Parameter	***(µg/L)***	***(µg/L)***
Methyl Ethyl Ketone	23732856	28818468
Methyl *tert*-butyl ether [MTBE]	250773	304511
Nickel	27273	33117
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A
Nitrobenzene	44810	54412
N-Nitrosodiethylamine	50.2	61.0
N-Nitroso-di-*n*-Butylamine	100	122
Pentachlorobenzene	8.49	10.3
Pentachlorophenol	6.93	8.42
Polychlorinated Biphenyls [PCBs]	0.0153	0.0185
Pyridine	22656	27511
Selenium	N/A	N/A
1,2,4,5-Tetrachlorobenzene	5.74	6.97
1,1,2,2-Tetrachloroethane	630	765
Tetrachloroethylene [Tetrachloroethylene]	6698	8134
Thallium	5.50	6.68
Toluene	N/A	N/A
Toxaphene	0.263	0.319
2,4,5-TP [Silvex]	8828	10719
1,1,1-Trichloroethane	18765081	22786170
1,1,2-Trichloroethane	3971	4822
Trichloroethylene [Trichloroethene]	1720	2088
2,4,5-Trichlorophenol	44666	54237
TTHM [Sum of Total Trihalomethanes]	N/A	N/A
Vinyl Chloride	394	479

Appendix C: Water Quality-Based Effluent Limitations Calculations

TEXTOX MENU #5 - BAY OR WIDE TIDAL RIVER - STANDARD DILUTIONS USING EPA HORIZONTAL JET PLUME MODEL AT DISCHARGES LESS THAN 10 MGD INTO THE GULF OF MEXICO

The water quality-based effluent limitations developed below are calculated using:

Table 1, 2014 Texas Surface Water Quality Standards (30 TAC 307) for Saltwater Aquatic Life
Table 2, 2018 Texas Surface Water Quality Standards for Human Health
"Procedures to Implement the Texas Surface Water Quality Standards," TCEQ, June 2010

PERMIT INFORMATION

Permittee Name:	TPDES Oil and Gas General Permit
TCEQ Permit No:	TXG310000
Outfall No:	N/A
Prepared by:	Water Quality Division
Date:	9/22/2020

DISCHARGE INFORMATION

Receiving Waterbody:	Gulf of Mexico
Segment No:	2501
TSS (mg/L):	12
Effluent Flow for Aquatic Life (MGD)	<10
% Effluent for Chronic Aquatic Life (Mixing Zone):	8
% Effluent for Acute Aquatic Life (ZID):	30
Oyster Waters?	**Yes**
Effluent Flow for Human Health (MGD):	<10
% Effluent for Human Health:	4

CALCULATE DISSOLVED FRACTION (AND ENTER WATER EFFECT RATIO IF APPLICABLE):

Estuarine Metal	*Intercept (b)*	*Slope (m)*	*Partition Coefficient (Kp)*	*Dissolved Fraction (Cd/Ct)*	*Source*	*Water Effect Ratio (WER)*	*Source*
Aluminum	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Arsenic	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Cadmium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Chromium (total)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Chromium (trivalent)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Chromium (hexavalent)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Copper	4.85	-0.72	11830.13	0.876		1.00	Assumed
Lead	6.06	-0.85	138897.98	0.375		1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Nickel	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Silver	5.86	-0.74	115187.64	0.420		1.00	Assumed
Zinc	5.36	-0.52	62925.37	0.570		1.00	Assumed

CALCULATED DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS FOR AQUATIC LIFE PROTECTION:

Parameter	*SW Acute Criterion (µg/L)*	*SW Chronic Criterion (µg/L)*	*WLAa (µg/L)*	*WLAc (µg/L)*	*LTAa (µg/L)*	*LTAc (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Acrolein	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aldrin	1.3	N/A	4.33	N/A	1.39	N/A	2.03	4.31
Aluminum	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic	149	78	497	975	159	595	233	494
Cadmium	40.0	8.75	133	109	42.7	66.7	62.7	132
Carbaryl	613	N/A	2043	N/A	654	N/A	961	2033
Chlordane	0.09	0.004	0.300	0.0500	0.0960	0.0305	0.0448	0.0948
Chlorpyrifos	0.011	0.006	0.0367	0.0750	0.0117	0.0458	0.0172	0.0364
Chromium (trivalent)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium (hexavalent)	1090	49.6	3633	620	1163	378	555	1176
Copper	13.5	3.6	51.4	51.4	16.4	31.3	24.1	51.1
Copper (oyster waters)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide (free)	5.6	5.6	18.7	70.0	5.97	42.7	8.78	18.5
4,4'-DDT	0.13	0.001	0.433	0.0125	0.139	0.00763	0.0112	0.0237
Demeton	N/A	0.1	N/A	1.25	N/A	0.763	1.12	2.37
Diazinon	0.819	0.819	2.73	10.2	0.874	6.24	1.28	2.71
Dicofol [Kelthane]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dieldrin	0.71	0.002	2.37	0.0250	0.757	0.0153	0.0224	0.0474
Diuron	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Endosulfan I (*alpha*)	0.034	0.009	0.113	0.113	0.0363	0.0686	0.0533	0.112
Endosulfan II (*beta*)	0.034	0.009	0.113	0.113	0.0363	0.0686	0.0533	0.112
Endosulfan sulfate	0.034	0.009	0.113	0.113	0.0363	0.0686	0.0533	0.112
Endrin	0.037	0.002	0.123	0.0250	0.0395	0.0153	0.0224	0.0474
Guthion [Azinphos Methyl]	N/A	0.01	N/A	0.125	N/A	0.0763	0.112	0.237
Heptachlor	0.053	0.004	0.177	0.0500	0.0565	0.0305	0.0448	0.0948
Hexachlorocyclohexane (*gamma*) [Lindane]	0.16	N/A	0.533	N/A	0.171	N/A	0.250	0.530
Lead	133	5.3	1182	177	378	108	158	335
Malathion	N/A	0.01	N/A	0.125	N/A	0.0763	0.112	0.237
Mercury	2.1	1.1	7.00	13.8	2.24	8.39	3.29	6.96
Methoxychlor	N/A	0.03	N/A	0.375	N/A	0.229	0.336	0.711
Mirex	N/A	0.001	N/A	0.0125	N/A	0.00763	0.0112	0.0237
Nickel	118	13.1	393	164	126	99.9	146	310
Nonylphenol	7	1.7	23.3	21.3	7.47	13.0	10.9	23.2
Parathion (ethyl)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pentachlorophenol	15.1	9.6	50.3	120	16.1	73.2	23.6	50.0
Phenanthrene	7.7	4.6	25.7	57.5	8.21	35.1	12.0	25.5
Polychlorinated Biphenyls [PCBs]	10	0.03	33.3	0.375	10.7	0.229	0.336	0.711
Selenium	564	136	1880	1700	602	1037	884	1870
Silver	2	N/A	15.9	N/A	5.08	N/A	7.47	15.8
Toxaphene	0.21	0.0002	0.700	0.00250	0.224	0.00153	0.00224	0.00474
Tributyltin [TBT]	0.24	0.0074	0.800	0.0925	0.256	0.0564	0.0829	0.175
2,4,5 Trichlorophenol	259	12	863	150	276	91.5	134	284
Zinc	92.7	84.2	542	1847	174	1127	255	539

CALCULATED DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS FOR AQUATIC LIFE PROTECTION:

Parameter	*Fish Only Criterion (µg/L)*	*WLAh (µg/L)*	*LTAh (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Acrylonitrile	115	2875	2674	3930	8315
Aldrin	1.147E-05	0.000287	0.000267	0.000392	0.000829
Anthracene	1317	32925	30620	45011	95228
Antimony	1071	26775	24901	36604	77441
Arsenic	N/A	N/A	N/A	N/A	N/A
Barium	N/A	N/A	N/A	N/A	N/A
Benzene	581	14525	13508	19857	42010
Benzidine	0.107	2.68	2.49	3.65	7.73
Benzo(*a*)anthracene	0.025	0.625	0.581	0.854	1.80
Benzo(*a*)pyrene	0.0025	0.0625	0.0581	0.0854	0.180
Bis(chloromethyl)ether	0.2745	6.86	6.38	9.38	19.8
Bis(2-chloroethyl)ether	42.83	1071	996	1463	3096
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthalate]	7.55	189	176	258	545
Bromodichloromethane [Dichlorobromomethane]	275	6875	6394	9398	19884
Bromoform [Tribromomethane]	1060	26500	24645	36228	76645
Cadmium	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	46	1150	1070	1572	3326
Chlordane	0.0025	0.0625	0.0581	0.0854	0.180
Chlorobenzene	2737	68425	63635	93543	197905
Chlorodibromomethane [Dibromochloromethane]	183	4575	4255	6254	13232
Chloroform [Trichloromethane]	7697	192425	178955	263064	556550
Chromium (hexavalent)	502	12550	11672	17157	36298
Chrysene	2.52	63.0	58.6	86.1	182
Cresols [Methylphenols]	9301	232525	216248	317884	672532
Cyanide (free)	N/A	N/A	N/A	N/A	N/A
4,4'-DDD	0.002	0.0500	0.0465	0.0683	0.144
4,4'-DDE	0.00013	0.00325	0.00302	0.00444	0.00939
4,4'-DDT	0.0004	0.0100	0.00930	0.0136	0.0289
2,4'-D	N/A	N/A	N/A	N/A	N/A
Danitol [Fenpropathrin]	473	11825	10997	16165	34201
1,2-Dibromoethane [Ethylene Dibromide]	4.24	106	98.6	144	306
m-Dichlorobenzene [1,3-Dichlorobenzene]	595	14875	13834	20335	43022
o-Dichlorobenzene [1,2-Dichlorobenzene]	3299	82475	76702	112751	238542
p-Dichlorobenzene [1,4-Dichlorobenzene]	N/A	N/A	N/A	N/A	N/A
3,3'-Dichlorobenzidine	2.24	56.0	52.1	76.5	161
1,2-Dichloroethane	364	9100	8463	12440	26319
1,1-Dichloroethylene [1,1-Dichloroethene]	55114	1377850	1281401	1883658	3985155
Dichloromethane [Methylene Chloride]	13333	333325	309992	455688	964075
1,2-Dichloropropane	259	6475	6022	8851	18727
1,3-Dichloropropene [1,3-Dichloropropylene]	119	2975	2767	4067	8604
Dicofol [Kelthane]	0.30	7.50	6.98	10.2	21.6
Dieldrin	2.0E-05	0.000500	0.000465	0.000683	0.00144
2,4-Dimethylphenol	8436	210900	196137	288321	609986
Di-*n*-Butyl Phthalate	92.4	2310	2148	3158	6681
Dioxins/Furans [TCDD Equivalents]	7.97E-08	0.0000020	0.0000019	0.0000027	0.0000058
Endrin	0.02	0.500	0.465	0.683	1.44
Epichlorohydrin	2013	50325	46802	68799	145554
Ethylbenzene	1867	46675	43408	63809	134998
Ethylene Glycol	1.68E+07	420000000	390600000	574182000	1214766000
Fluoride	N/A	N/A	N/A	N/A	N/A

Parameter	*Fish Only Criterion (µg/L)*	*WLAh (µg/L)*	*LTAh (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Heptachlor	0.0001	0.00250	0.00233	0.00341	0.00723
Heptachlor Epoxide	0.00029	0.00725	0.00674	0.00991	0.0209
Hexachlorobenzene	0.00068	0.0170	0.0158	0.0232	0.0491
Hexachlorobutadiene	0.22	5.50	5.12	7.51	15.9
Hexachlorocyclohexane (*alpha*)	0.0084	0.210	0.195	0.287	0.607
Hexachlorocyclohexane (*beta*)	0.26	6.50	6.05	8.88	18.7
Hexachlorocyclohexane (*gamma*) [Lindane]	0.341	8.53	7.93	11.6	24.6
Hexachlorocyclopentadiene	11.6	290	270	396	838
Hexachloroethane	2.33	58.3	54.2	79.6	168
Hexachlorophene	2.90	72.5	67.4	99.1	209
4,4'-Isopropylidenediphenol [Bisphenol A]	15982	399550	371582	546224	1155618
Lead	3.83	255	237	349	738
Mercury	0.0250	0.625	0.581	0.854	1.80
Methoxychlor	3.0	75.0	69.8	102	216
Methyl Ethyl Ketone	9.92E+05	24800000	23064000	33904080	71729040
Methyl *tert*-butyl ether [MTBE]	10482	262050	243707	358248	757927
Nickel	1140	28500	26505	38962	82430
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	1873	46825	43547	64014	135431
N-Nitrosodiethylamine	2.1	52.5	48.8	71.7	151
N-Nitroso-di-*n*-Butylamine	4.2	105	97.7	143	303
Pentachlorobenzene	0.355	8.88	8.25	12.1	25.6
Pentachlorophenol	0.29	7.25	6.74	9.91	20.9
Polychlorinated Biphenyls [PCBs]	6.4E-04	0.0160	0.0149	0.0218	0.0462
Pyridine	947	23675	22018	32366	68475
Selenium	N/A	N/A	N/A	N/A	N/A
1,2,4,5-Tetrachlorobenzene	0.24	6.00	5.58	8.20	17.3
1,1,2,2-Tetrachloroethane	26.35	659	613	900	1905
Tetrachloroethylene [Tetrachloroethylene]	280	7000	6510	9569	20246
Thallium	0.23	5.75	5.35	7.86	16.6
Toluene	N/A	N/A	N/A	N/A	N/A
Toxaphene	0.011	0.275	0.256	0.375	0.795
2,4,5-TP [Silvex]	369	9225	8579	12611	26681
1,1,1-Trichloroethane	784354	19608850	18236231	26807258	56714676
1,1,2-Trichloroethane	166	4150	3860	5673	12003
Trichloroethylene [Trichloroethene]	71.9	1798	1672	2457	5198
2,4,5-Trichlorophenol	1867	46675	43408	63809	134998
TTHM [Sum of Total Trihalomethanes]	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	16.5	413	384	563	1193

CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS:

Aquatic Life	*70% of Daily Avg.*	*85% of Daily Avg.*
Parameter	***(µg/L)***	***(µg/L)***
Acrolein	N/A	N/A
Aldrin	1.42	1.73
Aluminum	N/A	N/A
Arsenic	163	198
Cadmium	43.9	53.3
Carbaryl	672	817
Chlordane	0.0313	0.0381

Aquatic Life	***70% of Daily Avg.***	***85% of Daily Avg.***
Parameter	***(µg/L)***	***(µg/L)***
Chlorpyrifos	0.0120	0.0146
Chromium (trivalent)	N/A	N/A
Chromium (hexavalent)	389	472
Copper	16.9	20.5
Copper (oyster waters)	N/A	N/A
Cyanide (free)	6.14	7.46
4,4'-DDT	0.00784	0.00952
Demeton	0.784	0.952
Diazinon	0.898	1.09
Dicofol [Kelthane]	N/A	N/A
Dieldrin	0.0156	0.0190
Diuron	N/A	N/A
Endosulfan I (*alpha*)	0.0373	0.0453
Endosulfan II (*beta*)	0.0373	0.0453
Endosulfan sulfate	0.0373	0.0453
Endrin	0.0156	0.0190
Guthion [Azinphos Methyl]	0.0784	0.0952
Heptachlor	0.0313	0.0381
Hexachlorocyclohexane (*gamma*) [Lindane]	0.175	0.213
Lead	110	134
Malathion	0.0784	0.0952
Mercury	2.30	2.79
Methoxychlor	0.235	0.285
Mirex	0.00784	0.00952
Nickel	102	124
Nonylphenol	7.68	9.32
Parathion (ethyl)	N/A	N/A
Pentachlorophenol	16.5	20.1
Phenanthrene	8.45	10.2
Polychlorinated Biphenyls [PCBs]	0.235	0.285
Selenium	619	751
Silver	5.22	6.35
Toxaphene	0.00156	0.00190
Tributyltin [TBT]	0.0580	0.0705
2,4,5 Trichlorophenol	94.1	114
Zinc	178	216

Human Health	***70% of Daily Avg.***	***85% of Daily Avg.***
Parameter	***(µg/L)***	***(µg/L)***
Acrylonitrile	2751	3340
Aldrin	0.000274	0.000333
Anthracene	31508	38260
Antimony	25622	31113
Arsenic	N/A	N/A
Barium	N/A	N/A
Benzene	13899	16878
Benzidine	2.55	3.10
Benzo(*a*)anthracene	0.598	0.726
Benzo(*a*)pyrene	0.0598	0.0726
Bis(chloromethyl)ether	6.56	7.97
Bis(2-chloroethyl)ether	1024	1244

Human Health	***70% of Daily Avg.***	***85% of Daily Avg.***
Parameter	***(µg/L)***	***(µg/L)***
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthalate]	180	219
Bromodichloromethane [Dichlorobromomethane]	6579	7988
Bromoform [Tribromomethane]	25359	30793
Cadmium	N/A	N/A
Carbon Tetrachloride	1100	1336
Chlordane	0.0598	0.0726
Chlorobenzene	65480	79512
Chlorodibromomethane [Dibromochloromethane]	4378	5316
Chloroform [Trichloromethane]	184144	223604
Chromium (hexavalent)	12009	14583
Chrysene	60.2	73.2
Cresols [Methylphenols]	222519	270202
Cyanide (free)	N/A	N/A
4,4'-DDD	0.0478	0.0581
4,4'-DDE	0.00311	0.00377
4,4'-DDT	0.00956	0.0116
2,4'-D	N/A	N/A
Danitol [Fenpropathrin]	11316	13741
1,2-Dibromoethane [Ethylene Dibromide]	101	123
m-Dichlorobenzene [1,3-Dichlorobenzene]	14234	17285
o-Dichlorobenzene [1,2-Dichlorobenzene]	78926	95838
p-Dichlorobenzene [1,4-Dichlorobenzene]	N/A	N/A
3,3'-Dichlorobenzidine	53.5	65.0
1,2-Dichloroethane	8708	10574
1,1-Dichloroethylene [1,1-Dichloroethene]	1318561	1601109
Dichloromethane [Methylene Chloride]	318982	387335
1,2-Dichloropropane	6196	7524
1,3-Dichloropropene [1,3-Dichloropropylene]	2846	3457
Dicofol [Kelthane]	7.17	8.71
Dieldrin	0.000478	0.000581
2,4-Dimethylphenol	201824	245073
Di-*n*-Butyl Phthalate	2210	2684
Dioxins/Furans [TCDD Equivalents]	0.0000019	0.0000023
Endrin	0.478	0.581
Epichlorohydrin	48159	58479
Ethylbenzene	44666	54237
Ethylene Glycol	401927400	488054700
Fluoride	N/A	N/A
Heptachlor	0.00239	0.00290
Heptachlor Epoxide	0.00693	0.00842
Hexachlorobenzene	0.0162	0.0197
Hexachlorobutadiene	5.26	6.39
Hexachlorocyclohexane (*alpha*)	0.200	0.244
Hexachlorocyclohexane (*beta*)	6.22	7.55
Hexachlorocyclohexane (*gamma*) [Lindane]	8.15	9.90

Human Health	***70% of Daily Avg.***	***85% of Daily Avg.***
Parameter	***(µg/L)***	***(µg/L)***
Hexachlorocyclopentadiene	277	336
Hexachloroethane	55.7	67.6
Hexachlorophene	69.3	84.2
4,4'-Isopropylidenediphenol [Bisphenol A]	382357	464291
Lead	244	296
Mercury	0.598	0.726
Methoxychlor	71.7	87.1
Methyl Ethyl Ketone	23732856	28818468
Methyl *tert*-butyl ether [MTBE]	250773	304511
Nickel	27273	33117
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A
Nitrobenzene	44810	54412
N-Nitrosodiethylamine	50.2	61.0
N-Nitroso-di-*n*-Butylamine	100	122
Pentachlorobenzene	8.49	10.3
Pentachlorophenol	6.93	8.42
Polychlorinated Biphenyls [PCBs]	0.0153	0.0185
Pyridine	22656	27511
Selenium	N/A	N/A
1,2,4,5-Tetrachlorobenzene	5.74	6.97
1,1,2,2-Tetrachloroethane	630	765
Tetrachloroethylene [Tetrachloroethylene]	6698	8134
Thallium	5.50	6.68
Toluene	N/A	N/A
Toxaphene	0.263	0.319
2,4,5-TP [Silvex]	8828	10719
1,1,1-Trichloroethane	18765081	22786170
1,1,2-Trichloroethane	3971	4822
Trichloroethylene [Trichloroethene]	1720	2088
2,4,5-Trichlorophenol	44666	54237
TTHM [Sum of Total Trihalomethanes]	N/A	N/A
Vinyl Chloride	394	479

Appendix D: Water Quality-Based Effluent Limitations Calculations

TEXTOX MENU #5 - BAY OR WIDE TIDAL RIVER - USING TCEQ DEVELOPED CORMIX MODELING FOR DISCHARGE RATE OF 3000 BARREL/DAY (0.126 MGD) INTO THE GULF OF MEXICO

The water quality-based effluent limitations developed below are calculated using:

Table 1, 2014 Texas Surface Water Quality Standards (30 TAC 307) for Saltwater Aquatic Life
Table 2, 2018 Texas Surface Water Quality Standards for Human Health
"Procedures to Implement the Texas Surface Water Quality Standards," TCEQ, June 2010

PERMIT INFORMATION

Permittee Name:	TPDES Oil and Gas General Permit
TCEQ Permit No:	TXG310000
Outfall No:	N/A
Prepared by:	Water Quality Division
Date:	6/27/2021

DISCHARGE INFORMATION

Receiving Waterbody:	Gulf of Mexico
Segment No:	2501
TSS (mg/L):	12
Effluent Flow for Aquatic Life (MGD)	0.126
% Effluent for Chronic Aquatic Life (Mixing Zone):	1.1
% Effluent for Acute Aquatic Life (ZID):	1.4
Oyster Waters?	**Yes**
Effluent Flow for Human Health (MGD):	0.126
% Effluent for Human Health:	0.9

CALCULATE DISSOLVED FRACTION (AND ENTER WATER EFFECT RATIO IF APPLICABLE):

Estuarine Metal	*Intercept (b)*	*Slope (m)*	*Partition Coefficient (Kp)*	*Dissolved Fraction (Cd/Ct)*	*Source*	*Water Effect Ratio (WER)*	*Source*
Aluminum	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Arsenic	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Cadmium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Chromium (total)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Chromium (trivalent)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Chromium (hexavalent)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Copper	4.85	-0.72	11830.13	0.876		1.00	Assumed
Lead	6.06	-0.85	138897.98	0.375		1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Nickel	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Silver	5.86	-0.74	115187.64	0.420		1.00	Assumed
Zinc	5.36	-0.52	62925.37	0.570		1.00	Assumed

CALCULATED DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS FOR AQUATIC LIFE PROTECTION:

Parameter	*SW Acute Criterion (µg/L)*	*SW Chronic Criterion (µg/L)*	*WLAa (µg/L)*	*WLAc (µg/L)*	*LTAa (µg/L)*	*LTAc (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Acrolein	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aldrin	1.3	N/A	92.9	N/A	29.7	N/A	43.6	92.4
Aluminum	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic	149	78	10643	7091	3406	4325	5006	10591
Cadmium	40.0	8.75	2857	795	914	485	713	1509
Carbaryl	613	N/A	43786	N/A	14011	N/A	20596	43575
Chlordane	0.09	0.004	6.43	0.364	2.06	0.222	0.326	0.689
Chlorpyrifos	0.011	0.006	0.786	0.545	0.251	0.333	0.369	0.781
Chromium (trivalent)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium (hexavalent)	1090	49.6	77857	4509	24914	2751	4043	8554
Copper	13.5	3.6	1101	374	352	228	335	709
Copper (oyster waters)	3.6	N/A	374	N/A	120	N/A	175	371
Cyanide (free)	5.6	5.6	400	509	128	311	188	398
4,4'-DDT	0.13	0.001	9.29	0.0909	2.97	0.0555	0.0815	0.172
Demeton	N/A	0.1	N/A	9.09	N/A	5.55	8.15	17.2
Diazinon	0.819	0.819	58.5	74.5	18.7	45.4	27.5	58.2
Dicofol [Kelthane]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dieldrin	0.71	0.002	50.7	0.182	16.2	0.111	0.163	0.344
Diuron	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Endosulfan I (*alpha*)	0.034	0.009	2.43	0.818	0.777	0.499	0.733	1.55
Endosulfan II (*beta*)	0.034	0.009	2.43	0.818	0.777	0.499	0.733	1.55
Endosulfan sulfate	0.034	0.009	2.43	0.818	0.777	0.499	0.733	1.55
Endrin	0.037	0.002	2.64	0.182	0.846	0.111	0.163	0.344
Guthion [Azinphos Methyl]	N/A	0.01	N/A	0.909	N/A	0.555	0.815	1.72
Heptachlor	0.053	0.004	3.79	0.364	1.21	0.222	0.326	0.689
Hexachlorocyclohexane (*gamma*) [Lindane]	0.16	N/A	11.4	N/A	3.66	N/A	5.37	11.3
Lead	133	5.3	25334	1285	8107	784	1152	2437
Malathion	N/A	0.01	N/A	0.909	N/A	0.555	0.815	1.72
Mercury	2.1	1.1	150	100	48.0	61.0	70.5	149
Methoxychlor	N/A	0.03	N/A	2.73	N/A	1.66	2.44	5.17
Mirex	N/A	0.001	N/A	0.0909	N/A	0.0555	0.0815	0.172
Nickel	118	13.1	8429	1191	2697	726	1067	2259
Nonylphenol	7	1.7	500	155	160	94.3	138	293
Parathion (ethyl)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pentachlorophenol	15.1	9.6	1079	873	345	532	507	1073
Phenanthrene	7.7	4.6	550	418	176	255	258	547
Polychlorinated Biphenyls [PCBs]	10	0.03	714	2.73	229	1.66	2.44	5.17
Selenium	564	136	40286	12364	12891	7542	11086	23455
Silver	2	N/A	340	N/A	109	N/A	160	338
Toxaphene	0.21	0.0002	15.0	0.0182	4.80	0.0111	0.0163	0.0344
Tributyltin [TBT]	0.24	0.0074	17.1	0.673	5.49	0.410	0.603	1.27
2,4,5 Trichlorophenol	259	12	18500	1091	5920	665	978	2069
Zinc	92.7	84.2	11621	13435	3719	8195	5466	11565

CALCULATED DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS FOR HUMAN HEALTH PROTECTION:

Parameter	*Fish Only Criterion (µg/L)*	*WLAh (µg/L)*	*LTAh (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Acrylonitrile	115	12778	11883	17468	36957
Aldrin	1.147E-05	0.00127	0.00119	0.00174	0.00368
Anthracene	1317	146333	136090	200052	423239
Antimony	1071	119000	110670	162684	344183
Arsenic	N/A	N/A	N/A	N/A	N/A
Barium	N/A	N/A	N/A	N/A	N/A
Benzene	581	64556	60037	88253	186714
Benzidine	0.107	11.9	11.1	16.2	34.3
Benzo(*a*)anthracene	0.025	2.78	2.58	3.79	8.03
Benzo(*a*)pyrene	0.0025	0.278	0.258	0.379	0.803
Bis(chloromethyl)ether	0.2745	30.5	28.4	41.6	88.2
Bis(2-chloroethyl)ether	42.83	4759	4426	6505	13764
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthalate]	7.55	839	780	1146	2426
Bromodichloromethane [Dichlorobromomethane]	275	30556	28417	41772	88375
Bromoform [Tribromomethane]	1060	117778	109533	161014	340648
Cadmium	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	46	5111	4753	6987	14782
Chlordane	0.0025	0.278	0.258	0.379	0.803
Chlorobenzene	2737	304111	282823	415750	879580
Chlorodibromomethane [Dibromochloromethane]	183	20333	18910	27797	58810
Chloroform [Trichloromethane]	7697	855222	795357	1169174	2473559
Chromium (hexavalent)	502	55778	51873	76253	161326
Chrysene	2.52	280	260	382	809
Cresols [Methylphenols]	9301	1033444	961103	1412821	2989031
Cyanide (free)	N/A	N/A	N/A	N/A	N/A
4,4'-DDD	0.002	0.222	0.207	0.303	0.642
4,4'-DDE	0.00013	0.0144	0.0134	0.0197	0.0417
4,4'-DDT	0.0004	0.0444	0.0413	0.0607	0.128
2,4'-D	N/A	N/A	N/A	N/A	N/A
Danitol [Fenpropathrin]	473	52556	48877	71848	152006
1,2-Dibromoethane [Ethylene Dibromide]	4.24	471	438	644	1362
m-Dichlorobenzene [1,3-Dichlorobenzene]	595	66111	61483	90380	191213
o-Dichlorobenzene [1,2-Dichlorobenzene]	3299	366556	340897	501118	1060188
p-Dichlorobenzene [1,4-Dichlorobenzene]	N/A	N/A	N/A	N/A	N/A
3,3'-Dichlorobenzidine	2.24	249	231	340	719
1,2-Dichloroethane	364	40444	37613	55291	116977
1,1-Dichloroethylene [1,1-Dichloroethene]	55114	6123778	5695113	8371816	17711802
Dichloromethane [Methylene Chloride]	13333	1481444	1377743	2025282	4284781
1,2-Dichloropropane	259	28778	26763	39342	83233
1,3-Dichloropropene [1,3-Dichloropropylene]	119	13222	12297	18076	38242
Dicofol [Kelthane]	0.30	33.3	31.0	45.5	96.4
Dieldrin	2.0E-05	0.00222	0.00207	0.00303	0.00642
2,4-Dimethylphenol	8436	937333	871720	1281428	2711049
Di-*n*-Butyl Phthalate	92.4	10267	9548	14035	29694
Dioxins/Furans [TCDD Equivalents]	7.97E-08	0.0000089	0.0000082	0.0000121	0.0000256
Endrin	0.02	2.22	2.07	3.03	6.42
Epichlorohydrin	2013	223667	208010	305774	646911
Ethylbenzene	1867	207444	192923	283597	599991
Ethylene Glycol	1.68E+07	1866666667	1736000000	2551920000	5398960000
Fluoride	N/A	N/A	N/A	N/A	N/A

Parameter	*Fish Only Criterion (µg/L)*	*WLAh (µg/L)*	*LTAh (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Heptachlor	0.0001	0.0111	0.0103	0.0151	0.0321
Heptachlor Epoxide	0.00029	0.0322	0.0300	0.0440	0.0931
Hexachlorobenzene	0.00068	0.0756	0.0703	0.103	0.218
Hexachlorobutadiene	0.22	24.4	22.7	33.4	70.7
Hexachlorocyclohexane (*alpha*)	0.0084	0.933	0.868	1.27	2.69
Hexachlorocyclohexane (*beta*)	0.26	28.9	26.9	39.4	83.5
Hexachlorocyclohexane (*gamma*) [Lindane]	0.341	37.9	35.2	51.7	109
Hexachlorocyclopentadiene	11.6	1289	1199	1762	3727
Hexachloroethane	2.33	259	241	353	748
Hexachlorophene	2.90	322	300	440	931
4,4'-Isopropylidenediphenol [Bisphenol A]	15982	1775778	1651473	2427665	5136082
Lead	3.83	1135	1055	1551	3282
Mercury	0.0250	2.78	2.58	3.79	8.03
Methoxychlor	3.0	333	310	455	964
Methyl Ethyl Ketone	9.92E+05	110222222	102506667	150684800	318795733
Methyl *tert*-butyl ether [MTBE]	10482	1164667	1083140	1592215	3368565
Nickel	1140	126667	117800	173166	366358
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	1873	208111	193543	284508	601919
N-Nitrosodiethylamine	2.1	233	217	318	674
N-Nitroso-di-*n*-Butylamine	4.2	467	434	637	1349
Pentachlorobenzene	0.355	39.4	36.7	53.9	114
Pentachlorophenol	0.29	32.2	30.0	44.0	93.1
Polychlorinated Biphenyls [PCBs]	6.4E-04	0.0711	0.0661	0.0972	0.205
Pyridine	947	105222	97857	143849	304334
Selenium	N/A	N/A	N/A	N/A	N/A
1,2,4,5-Tetrachlorobenzene	0.24	26.7	24.8	36.4	77.1
1,1,2,2-Tetrachloroethane	26.35	2928	2723	4002	8468
Tetrachloroethylene [Tetrachloroethylene]	280	31111	28933	42532	89982
Thallium	0.23	25.6	23.8	34.9	73.9
Toluene	N/A	N/A	N/A	N/A	N/A
Toxaphene	0.011	1.22	1.14	1.67	3.53
2,4,5-TP [Silvex]	369	41000	38130	56051	118584
1,1,1-Trichloroethane	784354	87150444	81049913	119143372	252065230
1,1,2-Trichloroethane	166	18444	17153	25215	53346
Trichloroethylene [Trichloroethene]	71.9	7989	7430	10921	23106
2,4,5-Trichlorophenol	1867	207444	192923	283597	599991
TTHM [Sum of Total Trihalomethanes]	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	16.5	1833	1705	2506	5302

CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS:

Aquatic Life	*70% of Daily Avg.*	*85% of Daily Avg.*
Parameter	***(µg/L)***	***(µg/L)***
Acrolein	N/A	N/A
Aldrin	30.5	37.1
Aluminum	N/A	N/A
Arsenic	3504	4255
Cadmium	499	606
Carbaryl	14417	17507
Chlordane	0.228	0.277

Aquatic Life	***70% of Daily Avg.***	***85% of Daily Avg.***
Parameter	***(µg/L)***	***(µg/L)***
Chlorpyrifos	0.258	0.314
Chromium (trivalent)	N/A	N/A
Chromium (hexavalent)	2830	3436
Copper	234	284
Copper (oyster waters)	123	149
Cyanide (free)	131	159
4,4'-DDT	0.0570	0.0692
Demeton	5.70	6.92
Diazinon	19.2	23.3
Dicofol [Kelthane]	N/A	N/A
Dieldrin	0.114	0.138
Diuron	N/A	N/A
Endosulfan I (*alpha*)	0.513	0.623
Endosulfan II (*beta*)	0.513	0.623
Endosulfan sulfate	0.513	0.623
Endrin	0.114	0.138
Guthion [Azinphos Methyl]	0.570	0.692
Heptachlor	0.228	0.277
Hexachlorocyclohexane (*gamma*) [Lindane]	3.76	4.56
Lead	806	979
Malathion	0.570	0.692
Mercury	49.3	59.9
Methoxychlor	1.71	2.07
Mirex	0.0570	0.0692
Nickel	747	907
Nonylphenol	97.0	117
Parathion (ethyl)	N/A	N/A
Pentachlorophenol	355	431
Phenanthrene	181	219
Polychlorinated Biphenyls [PCBs]	1.71	2.07
Selenium	7760	9423
Silver	112	136
Toxaphene	0.0114	0.0138
Tributyltin [TBT]	0.422	0.512
2,4,5 Trichlorophenol	684	831
Zinc	3826	4646

Human Health	***70% of Daily Avg.***	***85% of Daily Avg.***
Parameter	***(µg/L)***	***(µg/L)***
Acrylonitrile	12227	14848
Aldrin	0.00121	0.00148
Anthracene	140036	170044
Antimony	113879	138282
Arsenic	N/A	N/A
Barium	N/A	N/A
Benzene	61777	75015
Benzidine	11.3	13.8
Benzo(*a*)anthracene	2.65	3.22
Benzo(*a*)pyrene	0.265	0.322
Bis(chloromethyl)ether	29.1	35.4
Bis(2-chloroethyl)ether	4554	5529

Human Health	***70% of Daily Avg.***	***85% of Daily Avg.***
Parameter	***(µg/L)***	***(µg/L)***
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthalate]	802	974
Bromodichloromethane [Dichlorobromomethane]	29240	35506
Bromoform [Tribromomethane]	112709	136861
Cadmium	N/A	N/A
Carbon Tetrachloride	4891	5939
Chlordane	0.265	0.322
Chlorobenzene	291025	353387
Chlorodibromomethane [Dibromochloromethane]	19458	23628
Chloroform [Trichloromethane]	818422	993798
Chromium (hexavalent)	53377	64815
Chrysene	267	325
Cresols [Methylphenols]	988975	1200898
Cyanide (free)	N/A	N/A
4,4'-DDD	0.212	0.258
4,4'-DDE	0.0138	0.0167
4,4'-DDT	0.0425	0.0516
2,4'-D	N/A	N/A
Danitol [Fenpropathrin]	50294	61071
1,2-Dibromoethane [Ethylene Dibromide]	450	547
m-Dichlorobenzene [1,3-Dichlorobenzene]	63266	76823
o-Dichlorobenzene [1,2-Dichlorobenzene]	350782	425950
p-Dichlorobenzene [1,4-Dichlorobenzene]	N/A	N/A
3,3'-Dichlorobenzidine	238	289
1,2-Dichloroethane	38704	46997
1,1-Dichloroethylene [1,1-Dichloroethene]	5860271	7116044
Dichloromethane [Methylene Chloride]	1417697	1721490
1,2-Dichloropropane	27539	33440
1,3-Dichloropropene [1,3-Dichloropropylene]	12653	15364
Dicofol [Kelthane]	31.8	38.7
Dieldrin	0.00212	0.00258
2,4-Dimethylphenol	896999	1089214
Di-*n*-Butyl Phthalate	9824	11930
Dioxins/Furans [TCDD Equivalents]	0.0000085	0.0000102
Endrin	2.12	2.58
Epichlorohydrin	214042	259908
Ethylbenzene	198518	241057
Ethylene Glycol	1786344000	2169132000
Fluoride	N/A	N/A
Heptachlor	0.0106	0.0129
Heptachlor Epoxide	0.0308	0.0374
Hexachlorobenzene	0.0723	0.0877
Hexachlorobutadiene	23.3	28.4
Hexachlorocyclohexane (*alpha*)	0.893	1.08
Hexachlorocyclohexane (*beta*)	27.6	33.5
Hexachlorocyclohexane (*gamma*) [Lindane]	36.2	44.0
Hexachlorocyclopentadiene	1233	1497

Human Health	***70% of Daily Avg.***	***85% of Daily Avg.***
Parameter	***(µg/L)***	***(µg/L)***
Hexachloroethane	247	300
Hexachlorophene	308	374
4,4'-Isopropylidenediphenol [Bisphenol A]	1699366	2063515
Lead	1086	1318
Mercury	2.65	3.22
Methoxychlor	318	387
Methyl Ethyl Ketone	105479360	128082080
Methyl *tert*-butyl ether [MTBE]	1114551	1353383
Nickel	121216	147191
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A
Nitrobenzene	199156	241832
N-Nitrosodiethylamine	223	271
N-Nitroso-di-*n*-Butylamine	446	542
Pentachlorobenzene	37.7	45.8
Pentachlorophenol	30.8	37.4
Polychlorinated Biphenyls [PCBs]	0.0680	0.0826
Pyridine	100694	122271
Selenium	N/A	N/A
1,2,4,5-Tetrachlorobenzene	25.5	30.9
1,1,2,2-Tetrachloroethane	2801	3402
Tetrachloroethylene [Tetrachloroethylene]	29772	36152
Thallium	24.4	29.6
Toluene	N/A	N/A
Toxaphene	1.16	1.42
2,4,5-TP [Silvex]	39235	47643
1,1,1-Trichloroethane	83400360	101271866
1,1,2-Trichloroethane	17650	21433
Trichloroethylene [Trichloroethene]	7645	9283
2,4,5-Trichlorophenol	198518	241057
TTHM [Sum of Total Trihalomethanes]	N/A	N/A
Vinyl Chloride	1754	2130

Appendix E: Water Quality-Based Effluent Limitations Calculations

TEXTOX MENU #5 - BAY OR WIDE TIDAL RIVER - USING TCEQ DEVELOPED CORMIX MODELING FOR DISCHARGE RATE OF 3000 BARREL/DAY (0.126 MGD) INTO THE GULF OF MEXICO SPECIFIC FOR BARIUM AND MANGANESE

The water quality-based effluent limitations developed below are calculated using:

Table 1, 2014 Texas Surface Water Quality Standards (30 TAC 307) for Saltwater Aquatic Life
Table 2, 2018 Texas Surface Water Quality Standards for Human Health
"Procedures to Implement the Texas Surface Water Quality Standards," TCEQ, June 2010

PERMIT INFORMATION

Permittee Name:	TPDES Oil and Gas General Permit
TCEQ Permit No:	TXG310000
Outfall No:	N/A
Prepared by:	Water Quality Division
Date:	9/16/2021

DISCHARGE INFORMATION

Receiving Waterbody:	Gulf of Mexico
Segment No:	2501
TSS (mg/L):	12
Effluent Flow for Aquatic Life (MGD)	0.126
% Effluent for Chronic Aquatic Life (Mixing Zone):	1.1
% Effluent for Acute Aquatic Life (ZID):	1.4
Oyster Waters?	**Yes**
Effluent Flow for Human Health (MGD):	0.126
% Effluent for Human Health:	0.9

CALCULATE DISSOLVED FRACTION (AND ENTER WATER EFFECT RATIO IF APPLICABLE):

Estuarine Metal	*Intercept (b)*	*Slope (m)*	*Partition Coefficient (Kp)*	*Dissolved Fraction (Cd/Ct)*	*Source*	*Water Effect Ratio (WER)*	*Source*
Barium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Manganese	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed

CALCULATED DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS FOR AQUATIC LIFE PROTECTION:

Parameter	*SW Acute Criterion (µg/L)*	*SW Chronic Criterion (µg/L)*	*WLAa (µg/L)*	*WLAc (µg/L)*	*LTAa (µg/L)*	*LTAc (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Barium	150,000	25,000	10,714,286	2,272,727	3,428,571	1,386,364	2,037,955	4,311,591

CALCULATED DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS FOR HUMAN HEALTH PROTECTION:

Parameter	*Fish Only Criterion (µg/L)*	*WLAh (µg/L)*	*LTAh (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Manganese	100	11,111	10,333	15,190	32,137

CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS:

Aquatic Life	*70% of Daily Avg.*	*85% of Daily Avg.*
Parameter	***(µg/L)***	***(µg/L)***
Barium	1,426,568	1,732,261

Human Health	*70% of Daily Avg.*	*85% of Daily Avg.*
Parameter	***(µg/L)***	***(µg/L)***
Manganese	10,633	12,912

Appendix F: pH Screening

Calculation of pH of a mixture of two flows. Based on the procedure in EPA's DESCON program (EPA, 1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington D.C.)

Freshwater pH screening for TXG310000 (Produced Water from oil and gas facilities)

INPUT		
		Effluent Flow (cfs) / Segment Flow (cfs) / % effluent at edge of mixing zone / Reciprical of % effluent (dilution factor)
1. DILUTION FACTOR AT MIXING ZONE BOUNDARY	201.000	0.0005 / 0.1 / 0.497512438 / 201
		based on stripper well flow of 10 barrels per day (315 gallos per day) or less into the minumum flow value for a
RECEIVING WATER CHARACTERISTICS		classified segment (0.1 CFS)
2. Temperature (deg C):	33.00	
3. pH:	6.70	Lowest avg pH value from draft 2022 IPs Table D where low end pH criterion was 6.5.
4. Alkalinity (mg CaCO3/L):	14.00	Lowest alkalinity from draft 2022 Ips Table D where segment low end pH criterion was 6.5.
EFFLUENT CHARACTERISTICS		
5. Temperature (deg C):	33.00	
6. pH:	6.00	Low permitted pH value
7. Alkalinity (mg CaCO3/L):	4.00	estimated low alkalinity

OUTPUT	
1. IONIZATION CONSTANTS	
Upstream/Background pKa:	6.31
Effluent pKa:	6.31
2. IONIZATION FRACTIONS	
Upstream/Background Ionization Fraction:	0.71
Effluent Ionization Fraction:	0.33
3. TOTAL INORGANIC CARBON	
Upstream/Background Total Inorganic Carbon (mg CaCO3/L):	19.72
Effluent Total Inorganic Carbon (mg CaCO3/L):	12.19
4. CONDITIONS AT MIXING ZONE BOUNDARY	
Temperature (deg C):	33.00
Alkalinity (mg CaCO3/L):	13.95
Total Inorganic Carbon (mg CaCO3/L):	19.68
pKa:	6.31
pH at Mixing Zone Boundary:	**6.70**

Calculation of pH of a mixture in seawater.
Based on the CO2SYS program (Lewis and Wallace, 1998)
http://cdiac.esd.ornl.gov/oceans/co2rprt.html

Saltwater pH screening for TXG310000 (Produced Water from oil and gas facilities)

INPUT

1. MIXING ZONE BOUNDARY CHARACTERISTICS		
Dilution factor at mixing zone boundary	71.429	Enter the reciprocal of the percentage of effluent at the mixing zone boundary as the dilution factor.
Depth at plume trapping level (m)	2.000	Therefore, divide the chronic effluent percentage for aquatic life protection by 100.
		Ex. Chronic no. is 15%, 100/15 = 6.67
2. BACKGROUND RECEIVING WATER CHARACTERISTICS		
Temperature (deg C):	20.00	
pH:	7.20	Draft 2022 IPs appendix D
Salinity (psu):	36.00	average salinity in Gulf of Mexico
Total alkalinity (meq/L)	1.80	used alkalinity from draft 2022 IPs appendix D and divided by 50.44 to get mg/meq
3. EFFLUENT CHARACTERISTICS		
Temperature (deg C):	20.00	
pH:	6.00	
Salinity (psu)	1.00	range of values tested from 1 to 100
Total alkalinity (meq/L):	10.00	range of values tested from 0.5 to 10

OUTPUT

CONDITIONS AT THE MIXING ZONE BOUNDARY	
Temperature (deg C):	20.00
Salinity (psu)	35.51
Density (kg/m^3)	1025.16
Alkalinity (mmol/kg-SW):	1.87
Total Inorganic Carbon (mmol/kg-SW):	2.08
pH at Mixing Zone Boundary:	6.82

Notes:
To convert from units of mgCaCO3/L to meq/L divide by 50.044 mg/meq
PSU refers to the Practical Salinity Scale (PSS) and is approximately equivalent to parts per thousand (ppt)

COMMISSIONERS' RESPONSE TO PUBLIC COMMENT ON GENERAL PERMIT NO. TXG310000

The Executive Director (ED) of the Texas Commission on Environmental Quality (commission or TCEQ) files this Response to Public Comment on new Texas Pollutant Discharge Elimination System (TPDES) General Permit Number TXG310000 which authorizes the discharge into water in the state of various waste streams associated with oil and gas extraction activities from new and existing onshore stripper well facilities, coastal facilities, and territorial seas facilities (located within 3.0 statute miles of the Texas coastline in the Gulf of Mexico).

As required by Texas Water Code (TWC), §26.040(d) and 30 Texas Administrative Code §205.3(e), before a general permit is issued, the Executive Director must prepare a response to all timely, relevant and material, or significant comments. The response must be made available to the public and filed with the Office of the Chief Clerk at least ten days before the commission considers the approval of the general permit. This response addresses all timely received public comments, whether or not withdrawn. Timely public comments were received from J. Connor Consulting Inc.

Background

The proposed Oil and Gas Extraction Activities TPDES General Permit Number TXG310000 authorizes the discharge into water in the state of and/or prohibition of discharge for the following waste streams: produced wastewater; well treatment, completion, and workover fluids; drilling fluids; drill cuttings; produced sand; dewatering effluent; formation test fluids; hydrate control fluids; domestic waste; sanitary waste; contaminated miscellaneous discharges; uncontaminated miscellaneous discharges; contaminated stormwater; and deck drainage. Discharges authorized versus being prohibited are based on the geographical location of the facility in the state or based on U.S Environmental Protection Agency (EPA) regulations established in Title 40 Code of Federal Regulations (CFR) Part 435 – Oil and Gas Extraction Point Source Category. The proposed new TPDES general permit implements House Bill 2771, 86th Legislative Session, which transfers permitting authority for discharges of certain waste streams (including waste streams proposed for authorization under the new TPDES general permit from crude oil and natural gas facilities into water in the state from the Railroad Commission of Texas (RRC) to TCEQ. This new proposed TPDES general permit will provide one combined authorization to discharge into water in the state under the TPDES program versus the previous need to obtain state authorization from the RRC and separate federal authorization from EPA. Discharges of the waste streams identified above would be eligible for authorization under this TPDES general permit upon issuance of the TPDES general permit.

Eligible applicants seeking authorization to discharge waste streams identified above into water in the state under this TPDES general permit must submit a completed Notice of Intent (NOI). Discharges adjacent to water in the state (e.g., land application via irrigation or evaporation) from crude oil and natural gas extraction operations are not authorized under the TPDES general permit and would remain under the authority of the RRC.

All waste streams authorized for discharge under the TPDES general permit are subject to numeric effluent limitations (or no discharge of the identified pollutant based on visual observation) for varying pollutants with associated established monitoring and reporting requirements. The TPDES general permit also establishes prohibitions on discharges of various waste streams based on the geographical location of the facility. These effluent limitations and prohibitions on discharges are primarily based on EPA's two existing National Pollutant Discharge Elimination System (NPDES) oil and gas extraction activities general permits (TXG260000 and TXG330000) and conditions in EPA's effluent limitation guidelines established at 40 CFR Part 435. Additional effluent limitations are proposed in the TPDES general permit based on TCEQ regulations and conditions established in the Texas Surface Water Quality Standards. Narrative requirements and best management practices are established for all discharges authorized under the TPDES general permit.

Procedural Background

TCEQ published notice of the draft TPDES general permit to solicit public comment in the *Texas Register* on May 5, 2023; and in the *Dallas Morning News* and the *Houston Chronicle* on May 12, 2023. The public comment period ended on June 12, 2023. This TPDES general permit is subject to the procedural requirements adopted pursuant to House Bill 801, 76th Texas Legislature, 1999. The TPDES general permit is not subject to the procedural requirements adopted pursuant to House Bill 709, 84th Texas Legislature, 2015.

Comments and Responses

Comment:

J. Conner Consulting, Inc. requested a three-year interim compliance schedule for 24-hour acute lethal and 7-day chronic sublethal whole effluent toxicity (WET) limitations for the discharge of produced wastewater from territorial seas facilities. The commenter included justification based on EPA suspending 24-hour acute WET testing for such discharges via correspondence in its existing NPDES TXG260000 general permit (this TPDES general permit is replacing EPA's existing NPDES general permit), as well as impacts that could potentially be realized by oil and gas extraction operations located in offshore Texas Gulf of Mexico waters, and economic impacts on the State of Texas should such compliance schedules not be supported.

Response:

The draft general permit has been revised to allow a three-year compliance schedule to achieve compliance related to WET limitations for existing permitted territorial seas produced water (wastewater) discharges; well treatment, completion, and workover fluids discharges, and contaminated miscellaneous discharges (from both territorial seas and coastal facilities discharges). Any discharges from new oil and gas extraction operations are subject to compliance with the proposed WET limitations upon initiation of discharge(s) following obtaining authorization to discharge under the TPDES general permit.

In the comment letter, the commenter alluded to EPA suspending 24-hour acute lethal WET testing/effluent limitations for territorial seas produced water (wastewater discharges) and replacing that condition with 48-hour acute WET testing and establishing WET limitations at varying critical dilutions based on site specific dilution modeling conducted at each production platform. The ED obtained the referenced correspondence established in a letter dated May 9, 2016 from B. Larsen (EPA) to S. Robinson (Tradition Resources Offshore LLC) which confirmed EPA's suspension of 24-hour acute lethal WET testing/limitations. The ED is re-establishing the 24-hour acute lethal WET testing/limitations in the draft general permit and allowing a three-year compliance schedule based on EPA's previous suspension of these conditions and discharge platforms not being subject to such conditions for the past seven years. The ED further supports the three-year compliance schedule for 7-day chronic sublethal WET limitations for territorial seas produced water (wastewater) discharges. EPA's existing TXG260000 allows site specific critical dilutions (with the associated WET limitation) based on varying discharge volumes and site-specific dilution factors. The draft general permit subjects produced water (wastewater) discharges to one single critical dilution and associated 7-day chronic sublethal WET limitation at the full permitted produced water (wastewater) flow of 3,000 barrels per day (0.126 million gallons per day). This condition is more restrictive than conditions established in EPA's existing TXG260000, and thus justifies the three-year compliance schedule for 7-day chronic sublethal WET limitations.

TCEQ has revised the draft general permit to establish compliance schedules for 24-hour acute lethal WET limitations for the discharge of well treatment, completion, and workover fluids for territorial seas discharges and 24-hour acute lethal WET limitations for contaminated miscellaneous discharges from both territorial seas facilities and coastal facilities. These WET limitations are being newly established in the draft general permit and are more stringent than conditions established in EPA's existing TXG260000. Three-year compliance schedules for newly established metals water quality-based effluent limitations in the publicly noticed general permit, and establishing these additional compliance schedules makes conditions in the draft general permit consistent.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

A RESOLUTION in the matter of new Texas Pollutant Discharge Elimination System General Permit Authorizing Discharges from Oil and Gas Extraction Activities; General Permit No. TXG310000; TCEQ Docket No. 2020-1601-MIS

WHEREAS, under Texas Water Code (TWC), § 26.121, no person may discharge waste or pollutants into any water in the state except as authorized by a rule, permit, or order issued by the Texas Commission on Environmental Quality (TCEQ or Commission);

WHEREAS, under TWC, § 26.027, the TCEQ has the authority to issue permits and amendments to permits for the discharge of waste or pollutants into water in the state;

WHEREAS, under TWC, § 26.040, the TCEQ has the authority to issue a general permit to authorize the discharge of waste into water in the state;

WHEREAS, under TWC, § 26.131, TCEQ has the authority to regulate discharges into water in the state of produced water, hydrostatic test water, and gas plant effluent resulting from oil and gas extraction activities;

WHEREAS, a new Texas Pollutant Discharge Elimination System (TPDES) general permit authorizing discharges into water in the state associated with oil and gas extraction activities from new and existing onshore stripper well facilities, coastal facilities, and territorial seas facilities (located within 3.0 statute miles of the Texas coastline in the Gulf of Mexico), was drafted and proposed by the Executive Director and is attached as Exhibit A;

WHEREAS, the TCEQ received public comments on the general permit, and drafted a Response to Public Comment, which is attached as Exhibit B;

WHEREAS, the Commission reviewed in accordance with Texas Natural Resources Code, § 33.205 and 30 Texas Administrative Code (TAC) § 205.5(f) the new general permit for consistency with the Texas Coastal Management Program (CMP) and found that the general permit is consistent with applicable CMP goals and policies and that the general permit will not adversely affect any applicable coastal natural resource areas as identified in the CMP;

WHEREAS, the Commission determined in accordance with TWC, § 26.040(a)(1) - (4) that the general permit would authorize dischargers who engage in the same or substantially similar types of operations, discharge the same types of waste, are subject to the same requirements regarding effluent limitations or operating conditions, and are subject to the same or similar monitoring requirements;

WHEREAS, the Commission finds in accordance with TWC, § 26.040(a)(5) that the general permit would apply to dischargers who are more appropriately regulated under a general permit than under individual permits and that:

(A) the general permit has been drafted to assure that it can be readily enforced and that the Commission can adequately monitor compliance with the terms of the general permit; and

(B) the category of discharges covered by the general permit will not include a discharge of pollutants that will cause significant adverse effects to water quality; and

THEREFORE, after consideration of all public comments and the responses to such comments, the Commission, by this resolution, hereby issues the general permit, attached as Exhibit A, as recommended by the Executive Director and as approved by the Commission during its January 10, 2024, public meeting. The Commission, by this resolution, also hereby issues the Executive Director's Response to Comments as approved by the Commission during its January 10, 2024, public meeting as the Commission's Response to Public Comment, attached as Exhibit B.

Furthermore, the Commission directs staff to make any non-substantive changes to the general permit and the Commission's Response to Public Comments to satisfy *Texas Register* format requirements and requests that the general permit and Commission's Response to Public Comments be made available to the public in accordance with the requirements of TWC, § 26.040(d) and 30 TAC § 205.3(e).

It is so **RESOLVED**.

TEXAS COMMISSION ON
ENVIRONMENTAL QUALITY

_____
Jon Niermann, Chairman

_____
Date Signed