The Texas Commission on Environmental Quality (TCEQ or commission) adopts amendments to §§307.01 - 307.10, concerning the Texas Surface Water Quality Standards.

Sections 307.2 - 307.10 are adopted *with changes* to the proposed text as published in the January 29, 2010, issue of the *Texas Register* (35 TexReg 578). Section 307.1 is adopted *without change* to the proposed text and will not be republished.

The rules are amended to satisfy Texas Water Code (TWC), §26.023, which requires the commission to set water quality standards by rule for water in the state and allows the commission to amend the standards. The rules are also amended to satisfy the Clean Water Act (CWA), §303, which requires states to adopt water quality standards and to review and revise those standards at least once every three years.

BACKGROUND AND SUMMARY OF THE FACTUAL BASIS FOR THE ADOPTED RULES

The Federal Water Pollution Control Act, §303 (commonly referred to as the CWA, 1972, 33 United States Code, §1313(c)), requires all states to adopt water quality standards for surface water. A water quality standard consists of the designated beneficial use or uses of a water body or a segment of a water body and the water quality criteria that are necessary to protect the use or uses of that particular water body. Water quality standards are the basis for establishing discharge limits in wastewater and storm water discharge permits, setting instream water quality goals for total maximum daily loads (TMDLs), and providing water quality targets to assess water quality monitoring data.

The states are required under the CWA to review their water quality standards at least once every three years and revise them, if appropriate. States review standards because new scientific and technical data may be available that have a bearing on the review. Further, environmental changes over time may also warrant the need for a review. Where standards do not meet established uses, the standards must be periodically reviewed to see if uses can be attained. Additionally, water quality standards may have been previously established for the protection and propagation of aquatic life and for recreation in and on the water without sufficient data to determine whether the uses were attainable. Finally, changes in the TWC, CWA, or in the United States Environmental Protection Agency's (EPA) regulations may necessitate reviewing and revising standards to ensure compliance with current statutes and regulations.

Following adoption of revised water quality standards by the commission, the governor or designee must submit the officially adopted standards to the EPA Region 6 Administrator for review. The Regional Administrator reviews the state's standards to determine compliance with the CWA and implementing regulations. Standards are not applicable to regulatory actions under the CWA until approved by EPA.

The Texas statewide surface water quality standards were last amended in July 2000. The EPA approved the majority of the state's revised standards by 2007 and completed its final action on all revisions in October 2009.

Reviews and revisions of the water quality standards address many provisions that apply statewide, such as criteria for toxic pollutants. Other revisions address the water quality uses and/or criteria that are applicable to individual water bodies. An extensive review of water quality standards for individual water bodies is often initiated when the existing standards appear to be inappropriate for water bodies that are listed as impaired under the CWA, §303(d), or that are potentially affected by permitted wastewater discharges or other permitting actions.

States may modify non-existing designated uses when it can be demonstrated through a use-attainability analysis (UAA) that attaining the current designated uses and/or criteria is not appropriate. Most changes in designated uses are based on a demonstration that natural characteristics of a water body cannot attain the currently designated uses and/or criteria. Natural characteristics include temperature, pH, dissolved oxygen, diversity of aquatic organisms, amount of streamflow, physical conditions such as depth, or natural background pollutant levels. Conversely, a UAA might demonstrate that the currently designated uses and criteria are appropriate or that they should be more stringent.

UAAs can require several years of additional sampling studies, or they may focus on a long-term evaluation of existing historical data. For UAAs on water bodies that are potentially impacted by pollutant loadings above natural background, sampling and evaluation is often conducted on similar but relatively unimpacted water bodies in order to determine reference conditions that can be applied to the water body of concern.

The focus of UAAs depends on the uses and criteria that need to be re-evaluated. The applicable category of aquatic life use is determined by repeatedly sampling fish or invertebrates in relatively unimpacted areas and by applying quantitative indices such as indices of biotic integrity to the sampling data of the biological communities. UAAs to assign aquatic recreational uses include assessing physical and hydrological conditions; observing existing recreation; and collecting information on current and historical recreational activities. Dissolved oxygen criteria are evaluated by monitoring dissolved oxygen over numerous (usually ten) 24-hour periods in relatively unimpacted areas. Site-specific criteria for toxic pollutants are evaluated by placing selected small aquatic organisms in water samples from the site and exposing them to different doses of the toxic pollutant of concern. Criteria for pH, dissolved minerals, and temperature are often evaluated by analyzing extensive long-term recent and historical data for the water body of concern and similar water bodies in the same area.

The commission adopts changes to the general criteria that are intended to improve statewide qualitative and quantitative criteria; and to ensure that the general criteria are compatible with other revisions. Numerous revisions of toxic criteria are adopted to incorporate new data on toxicity effects, and changes are adopted to provide clarity to the basic requirements for toxicity effluent testing. Other adopted changes provide additional categories of recreational uses and provide more definition on assigning recreational uses. New criteria are adopted to protect numerous reservoirs from excessive growth of aquatic vegetation related to nutrients. The adopted changes provide clarity on how water quality standards apply under different stream flow conditions and on how attainment of water quality standards is assessed using instream monitoring data. Numerous revisions are adopted for the uses and criteria of individual water bodies in order to incorporate new data and the results of recent UAAs.

In conjunction with the adoption of the rules, the commission is completing revisions to the implementation procedures for applying the adopted standards to wastewater discharge permits. These revisions incorporate the adopted changes to the water quality standards contained in the rules. Revisions to the implementation procedures also include numerous updates to incorporate more recent data and information. The implementation procedures are contained in a guidance document entitled *Procedures to Implement the Texas Surface Water Quality Standards* (RG-194). Revisions include updates to minimum analytical levels for chemicals in wastewater effluent, whole effluent toxicity testing procedures, and critical low-flows in streams to determine standards applicability. Extensive new procedures are included to evaluate the need for nutrient effluent limits for wastewater discharges to reservoirs, streams, and rivers; and a new process is added to assess recreational uses.

An overview of the standards implementation procedures and a description of the steps to revise the procedures are presented in Series 23 of the commission's Continuing Planning Process for the Water Quality Management Program. The procedures must be approved by the commission and submitted to EPA for approval. Although not part of the regulatory action covered by the adopted revisions to the water quality standards, the revisions to the implementation procedures are being completed at the same time as the revisions to the standards to allow for a more coordinated and consistent review by the commission and the public.

SECTION BY SECTION DISCUSSION

To conform to commission and *Texas Register* formatting requirements, non-substantive revisions were adopted throughout the sections to correct citations, acronym usage, and other minor issues.

The commission adopts editorial revisions as well as substantive changes. Editorial revisions are adopted to improve clarity, to correct grammatical errors, and to renumber or reletter subdivisions, as appropriate.

§307.1, General Policy Statement

The commission adopts the amendment to §307.1 to reflect changes made in 2001 by House Bill 2912, §1.26, which amends TWC, §26.003 by adding the words "taking into consideration" before the words "economic development."

§307.2, Description of Standards

The commission adopts the amendment to §307.2 that includes adopted Appendix B in §307.2(a)(10)(B), relating to sole-source surface drinking water supplies. Adopted Appendix F in §307.2(a)(10)(F) lists numeric chlorophyll *a* criteria for selected reservoirs, and adopted Appendix G in §307.2(a)(10)(G) relates to site-specific recreational uses and criteria for unclassified water bodies. Presumed uses are adopted for inclusion with narrative provisions, designated uses, and numerical criteria as standards that can be changed to account for local conditions. Temporary variances are adopted to include storm water permits as well as discharge permits, and wording is adopted to clarify that temporary variances can only apply to existing discharge permits.

In response to comments, the adoption of amended §307.2 includes a change that deletes all references to supplemental screening levels for nutrients from the proposed language.

§307.3, Definitions and Abbreviations

Adopted changes to §307.3 include revisions to the definitions for "criteria," "designated use," "incidental fishery," "mixing zone," "nonpersistent toxic," "persistent toxic," "presumed use," "segment," "standards," "standards implementation procedures," and "surface water in the state." New definitions are adopted for "aquatic vegetation," "commission," "main pool station," "protection zone," "sole-source surface drinking water supply," "thalweg," "toxic equivalency," and "toxic equivalency factor."

Definitions are also adopted to clarify changes being adopted in the standards. The adopted changes add new abbreviations in §307.3(b) for "aquatic life use (ALU)," "Assessment Tools for the Evaluation of Risk (ASTER)," "bioconcentration factor (BCF)," "cubic feet per second (cfs, ft^3/s)," "county road (CR)," "farm to market road (FM)," "Health Effects Assessment Summary Tables (HEAST)," "International Boundary and Water Commission (IBWC)," "Integrated Risk Information System (IRIS)," "kilometer (km)," "minimal aquatic life use (M)," "multiplier (m)," "meters per kilometer (m/km)," "method detection limit (MDL)," "mile (mi)," "primary contact recreation (PCR)," "reference dose (RfD)," "ranch road (RR)," "secondary contact recreation (SCR)," "state highway (SH)," "standard units (SU)," "Texas Commission on Environmental Quality (TCEQ)," "toxic equivalency factor (TEF)," "toxicity reduction evaluation (TRE)," "United States (US)," and "water-effect ratio (WER)."

In response to comments, the commission changed the definitions of several terms in the adoption of the amendments to this section. The revised definitions are for "critical low-flow," "noncontact recreation," "nutrient criteria," "nutrient," "primary contact recreation," "secondary contact recreation 1," "secondary contact recreation 2," "total dissolved solids," and "total suspended solids."

In response to comments, the adoption of amended §307.3 includes renaming the proposed definition for "baseflow conditions" to "dry weather flows" in order to more accurately describe the normal range of conditions over which recreational surveys would be appropriate.

§307.4, General Criteria

Adopted changes to §307.4 include clarifying that general criteria apply to surface water in the state and specifically applies to substances attributed to waste discharges or human activities. "Sheen" is adopted for inclusion with the general criteria for "oil, grease, and related residue." The adopted changes include the location of site-specific numeric criteria for chlorophyll *a*. The revision of the temperature portion is adopted for clarification. The inclusion of "presumed uses" with "existing, designated, and attainable uses" for the aquatic life uses and dissolved oxygen portion of this section are adopted. In addition, language regarding perennial streams is adopted to reference applicable dissolved oxygen criteria in §307.7(b)(3)(A). The revised aquatic life uses and habitat portion is adopted for clarification. The revision to this section is adopted to clarify that intermittent streams not listed in Appendix A or D, which are located in §307.10, are considered to have a minimal aquatic life use.

The aquatic recreation portion was adopted to include four categories of recreational use (primary contact recreation, secondary contact recreation 1, secondary contact recreation 2, and noncontact recreation waters), and a reference to §307.7(b)(1). The adopted revisions to this section also include that classified segments are designated for primary contact recreation unless site-specific information, such as a UAA, demonstrates that different recreational uses and/or criteria may be justified. This section was adopted to explain that primary contact recreation is a presumed use and that secondary contact recreation 1 is a presumed use for certain types of unclassified waters if primary contact recreation does not occur and certain depth characteristics are met. Adopted changes also include descriptions for secondary contact recreation 2 and noncontact recreation, and the new provisions stipulate that no water bodies are presumed to have these two uses. The adopted section includes an explanation of how presumed recreational uses are applied and assigned, and how uses less stringent than presumed uses are assigned to water bodies.

Adopted changes to this section also include clarification that the assessment of unclassified waters pertains to aquatic life uses and that waters that are not in Appendix A or D, which are located in §307.10, are assigned specific uses that are attainable or characteristic of those waters. This section was adopted to include general criteria for pH.

In response to comments, the adoption of amended §307.4(e) and (h)(4) includes the addition of the term "presumed" and the replacement of the term "absolute" with the term "24-hour," respectively. Also, the adopted language includes changes to clarify to what water depths the secondary contact recreation 1 provision applies and replaces the term "base flow conditions" with "dry weather flows" in §307.4(j)(2)(B)(i).

§307.5, Antidegradation

Adopted changes to §307.5 are strictly editorial revisions to improve clarity. In response to comments, the adoption of amended §307.5(b)(2) and (c)(2)(B) includes changing the term "wildlife" to "terrestrial life."

§307.6, Toxic Materials

Adopted changes to §307.6 clarify that chronic aquatic life criteria apply to all water bodies with a designated aquatic life use of limited, intermediate, high, or exceptional; and to allow for the use of other methodologies for deriving data to predict the lethal concentration that has a 50% chance of causing death to aquatic organisms (LC_{50}) in order to calculate aquatic life criteria for substances not listed in Table 1 of §307.6(c)(1). The allowance of the biotic ligand model to develop site-specific aquatic life criteria for copper is also adopted.

In response to comments, the adoption of amended §307.6 includes the addition of language to further clarify under what circumstances toxic criteria would not apply where surface water, as a result of natural phenomena, exhibits characteristics beyond the limits established by this section.

Section 307.6(c)(1), Table 1, which lists numeric criteria for the protection of aquatic life, includes adopted revisions to criteria for arsenic, cadmium, chromium, copper, dieldrin, endrin, hexachlorocyclohexane, mercury, nickel, pentachlorophenol, tributlytin, and zinc. New criteria for nonylphenol and diazinon are also adopted. The conversion factors for both cadmium and lead are revised to include hardness-based equations as opposed to being calculated on a presumed hardness.

In response to comments, the adoption of amended §307.6(c)(2) clarifies that other options are available to recalculate aquatic life numeric criteria. Also, the adopted language in §307.6(c)(7)(C) corrects a typographical error.

Adopted revisions to human health criteria in §307.6(d) include: 1) changing fish consumption rates from ten grams per person per day for freshwater fish and 15 grams per person per day for saltwater fish to 17.5 grams per person per day for all types of fisheries; and 2) revising the consumption rate for incidental fisheries to 1.75 grams per person per day. Human health criteria for all noncarcinogens are adopted to incorporate childhood exposure, with a fish and shellfish consumption rate of 5.6 grams per child per day, drinking water consumption rate of 0.64 liters per child per day, and a child body weight of 15 kilograms (33.1 pounds). Adopted revisions in §307.6(d)(5), in conjunction with related adopted revisions in §307.8(a)(4), clarify the flow conditions when human health criteria are applied.

Table 2 in §307.6(d)(1), which contains human health toxic criteria, is adopted to reflect the latest data provided by the EPA. The adopted criteria for mercury, dichlorodiphenyltrichloroethane (DDT), chlordane, and dioxins/furans/polychlorinated biphenyls (PCBs) are expressed as fish tissue concentrations. Adopted mercury criteria are based on the EPA's 2001 national criteria document and the fish consumption level of concern that was established by the Texas Department of State Health Services. The arsenic criterion for fish and water consumption is adopted to reflect the new drinking water maximum contaminant level. Eight congeners for dioxin were added to the congener list, which now includes dioxin-like PCBs. The dioxin and dioxin-like PCB congener list is adopted to reflect the World Health Organization's latest updates. Human health criteria are adopted for antimony, anthracene, bis(2-chloroethyl)ether, bis(2-ethylhexyl)phthalate, m-dichlorobenzene, o-dichlorobenzene, 3-3'-dichlorobenzidine, dichloromethane, 1,2-dichloropropane, 2,4-dimethylphenol, di-n-butyl phthalate, ethylbenzene, hexachlorocyclopentadiene, nickel, 1,1,2,2-tetrachloroethane, thallium, toluene, and 1,1,2-trichloroethane, and chemical-specific human health criteria are adopted for bromodichloromethane and bromoform. Human health criteria for DDT, dichlorodiphenyldichloroethane (DDD), dichlorodiphenyldichloroethylene (DDE), dioxins/furans, mercury, and PCBs are adopted as tissue-based criteria. In the adopted Table 2, the chemical name "chlorodibromomethane" is substituted for "dibromochloromethane" in order to be consistent with 40 Code of Federal Regulations Part 122.

In response to comments, the adoption of amended Table 2 of §307.6(d)(1) includes a correction to a typographical error for n-nitro-di-n-butylamine. Also in response to comments, the adopted language includes changes from the proposed language in order to correct criteria for benzo(a)anthracene, and to clarify testing methodology in the PCB footnote.

In response to comments, the adoption of amended §307.6(e) includes further clarification that requirements will be added to permits to control toxicity and additional explanation regarding provisions that may be added to a permit if toxicity is not controlled.

§307.7, Site-Specific Uses and Criteria

Adopted changes to §307.7 include editorial changes to the general provisions in §307.7(a). Changes are adopted in §307.7(b) to expand recreational use categories to include primary contact recreation, secondary contact recreation 1, secondary contact recreation 2, and noncontact recreation waters. The adopted revisions to this section also clarify that classified segments are designated for primary contact recreation, unless site-specific information demonstrates that different recreational uses and/or criteria may be justified based on specific reasons provided in this section. Other adopted changes include the option of applying noncontact recreation to classified segments where contact recreation is considered unsafe for reasons unrelated to water quality.

Adopted changes to the freshwater criteria in §307.7(b)(1)(A) include revising the primary contact recreation single sample criterion for *Escherichia coli* (*E. coli)* based on new calculations using updated information, adding criteria for secondary contact recreation 1 and 2, and revising the noncontact recreation geometric-mean criterion for *E. coli* to be based on a higher risk level.

In response to comments, the adoption of amended §307.7(b)(1)(A) includes retaining the primary contact recreation geometric mean criterion for *E. coli* of 126 colonies per 100 milliliter (ml).

Adopted revisions to this section also include a change in the bacteria indicator for certain high saline inland classified segments from *E. coli* to Enterococci. As part of this change, freshwater criteria for Enterococci were added for the four subcategories of recreational uses.

In response to comments, the adoption of amended §307.7(b)(1)(A)(v) includes changes from proposed revisions in order to clarify when *E. coli* can be used as an indicator for unclassified water bodies in certain classified high saline inland segments. Also, in response to comments, the freshwater Enterococci geometric mean criterion for primary contact recreation was changed from 54 per 100 ml to 33 per 100 ml.

Adopted changes to the saltwater criteria in §307.7(b)(1)(B) include revising the primary contact recreation single sample number for Enterococci to the recommended federal criterion. Language is adopted to clarify that a secondary contact recreation 1 category for tidal streams and rivers can be established on a site-specific basis if a use or criteria change is justified by a UAA, and if the water body is not considered to be a coastal recreation water as defined in the Beaches Environmental Assessment and Coastal Health Act of 2000 (commonly referred to as the Beach Act). Also, a secondary contact recreation 1 geometric mean criterion for Enterococci based on a higher risk level is adopted; and the noncontact recreation geometric mean criterion for Enterococci is adopted based on a higher risk level.

Adopted changes in §307.7(b)(1)(C) specify that fecal coliform can be used as an alternative indicator in certain high saline inland water bodies for a transition period of two years after the adoption of the Standards. Adopted changes to this section include adding fecal coliform criteria for primary contact recreation and secondary contact recreation 1 and 2, rewording the noncontact recreation geometric mean language for clarification purposes, and removing fecal coliform as a surrogate indicator for effluent limits in wastewater discharge permits.

The commission adopts changes in §307.7(b)(2)(A) to add a sole-source surface drinking water supply use, as required by TWC, §26.0286. The adopted section updated the reference to the title of 30 TAC Chapter 290.

Adopted changes to §307.7(b)(3) include rewording of the general provisions that describe aquatic life uses as six categories (minimal, limited, intermediate, high, and exceptional aquatic life and oyster waters). The Aquatic Life Subcategories table was renumbered to Table 3 in §307.7(b)(3)(A)(i) and adopted to include a "minimal" aquatic life use subcategory with corresponding dissolved oxygen criteria. Adopted changes to §307.7(b)(3)(B) clarify the description of criteria for oyster waters and add additional narrative provisions that allow the consideration of other information related to human health protection instead of solely relying on federal recommendations. General provisions are adopted in §307.7(b)(4) to add numerical nutrient criteria for reservoirs.

In response to comments, the adoption of amended Table 3 of §307.7(b)(3)(A)(i) includes the replacement of the term "daily minima" with "24-hour minimum dissolved oxygen concentration." Also in response to comments, the adopted version of §307.7(b)(4)(E) deleted references to screening levels for phosphorus and transparency; and nutrient criteria are expressed as "stand-alone" concentrations of chlorophyll *a* in reservoirs.

§307.8, Application of Standards

Adopted changes to §307.8 replace the phrase "seven-day, two-year low-flows" with the term "critical low-flow," which is defined in §307.3. Adopted revisions clarify what standards do not apply below the critical low-flow, remove the rule provision stating that aquatic recreational criteria for unclassified waters do not apply below the 7Q2, refer to the new location of the low-flow values table, and clarify that the specific low-flow values were calculated from historical daily streamflow records from the United States Geological Survey or International Boundary and Water Commission. Additionally, the adopted revisions specify that these low-flow values apply only to river basin and coastal basin waters; and not to bays, gulf waters, reservoirs, or estuaries. Adopted language is added to explain that the flow values are set to 0.1 cubic foot per second when the calculated critical low-flow or harmonic mean flow is equal to or less than 0.1 cubic foot per second. Adopted revisions include an alternative method to calculate critical low-flows for classified segments that are dominated by springflow. A provision is adopted to clarify that the harmonic mean flow is the applicable upstream flow when calculating wastewater permit limits for criteria that are assessed as long-term means. The adopted revision clarifies that "discharge points" means permitted discharge points.

In response to comments, the adoption of amended §307.8(a)(2)(A) includes changing the term "probability" to "percentile." Also, the adopted language includes the addition of a cross-reference to §307.9 to clarify under what flow conditions criteria can be used for assessment purposes in §307.8(a)(4).

§307.9, Determination of Standards Attainment

Adopted changes to §307.9 clarifies that procedures listed in this section would be solely for the purpose of assessing water quality monitoring data to determine if water quality standards are attained in individual water bodies. A reference to laboratory accreditation requirements is adopted in this section.

Adopted revisions also include an elaboration on what makes a sample representative of a water body, clarification of depth collection for bacteria and temperature, and depth collection for chlorophyll *a* samples. Procedures are adopted to simplify collection of dissolved oxygen samples for non-tidal flowing streams, impoundments, and tidal water. Another adopted revision clarifies that the term "radioactive discharges" refers to radioactive sources; and this revision also stipulates that impacts of radioactive sources are evaluated in accordance with applicable rules in 30 TAC Chapter 290 and Chapter 336.

Revised procedures are adopted to assess standards attainment for recreation criteria; and bacteria samples are now assessed using the geometric mean criteria, rather than both geometric mean and single-sample criteria. A high-flow exemption for bacteria is adopted in this section so that samples taken during extreme hydrologic conditions immediately after heavy rains would not be used for assessment purposes.

Adopted revisions to standards attainment for dissolved oxygen clarify that the minimum criteria are based on the lowest measurement observed during a 24-hour period. New provisions are adopted to describe how new criteria for nutrients for reservoirs would be assessed. A new provision is adopted to clarify that site-specific criteria for certain constituents (aquatic recreation indicators, total dissolved solids (TDS), chloride, and sulfate) do not apply when perennial streams are flowing below 0.1 cubic feet per second, or when intermittent streams have pools that cover less than 20% of the stream bed in a 500 meter reach, or when extremely dry conditions are indicated by comparable observations of flow severity.

Adopted revisions on assessing biological integrity specify that water bodies that are not meeting the applicable index of biotic integrity or dissolved oxygen criteria for a presumed high aquatic life use are not listed as impaired until a site-specific study confirms that the presumed use is appropriate. The adopted revisions clarify how impairment listings would be deferred, specify the timeframe that water bodies might be deferred from listing as impaired, and describe how site-specific aquatic life use standards will be established.

In response to comments, the adoption of amended §307.9 includes the removal of all proposed references to screening levels for total phosphorus and transparency and the removal of all references to the minimum number of samples and the minimum period of record required for assessment purposes. Also, the adopted language indicates that dissolved minerals criteria and human-health toxic criteria will be based on a "mean," rather than the proposed "median."

In response to comments, the adoption of amended §307.9(e)(3)(B) includes clarification as to how a high-flow exemption applies to freshwater and tidal streams; and the proposed phrase "indicates that swimming is not practical or safe" is replaced with "of flood or an equivalent category."

§307.10, Appendices A - G

Adopted changes to §307.10 include the addition of a new Appendix B, Sole-source Surface Drinking Water Supplies; the addition of Appendix F, Site-specific Nutrient Criteria for Selected Reservoirs; and Appendix G, Site-specific Recreational Uses and Criteria for Unclassified Water Bodies.

Adopted changes to the narrative section in Appendix A of §307.10 clarify that dissolved oxygen absolute minima and seasonal criteria are listed in §307.7, unless different criteria are specified in Appendix A. The language for recreational use is adopted to reflect the revisions in §307.7 and language regarding segments that include reaches that are dominated by springflow are also adopted.

Additional adopted changes to Appendix A of §307.10 include changes to aquatic life uses for Black Bayou (Segment 0406) and James' Bayou (Segment 0407) from intermediate to high and from high to intermediate for the West Fork Trinity River Above Bridgeport Reservoir (Segment 0812), the Clear Fork Trinity River Above Lake Weatherford (Segment 0833), and the North Sulphur River (Segment 0305). A footnote is adopted to clarify that a limited aquatic life use is appropriate for assessment of the benthic community located in the North Sulphur River. In addition, site-specific dissolved oxygen criteria for the following segments are adopted: Little Wichita River (Segment 0211), Black Bayou (Segment 0406), James' Bayou (Segment 0407), Little Cypress Bayou (Creek) (Segment 0409), West Fork Trinity River Above Bridgeport Reservoir (Segment 0812), Clear Fork Trinity River Above Lake Weatherford (Segment 0833), Clear Fork Trinity River Below Lake Weatherford (Segment 0831), Upper Oyster Creek (Segment 1245), Caney Creek Above Tidal (Segment 1305), Oso Bay (Segment 2485), and Laguna Madre (Segment 2491). An adopted footnote includes a site-specific multiple regression equation that must be used for predicting dissolved oxygen in Black Bayou, James' Bayou, Little Cypress Bayou (Creek), and Black Cypress Bayou (Creek). Additional footnotes are adopted to explain that the North Sulphur River, Black Bayou, James' Bayou, West Fork Trinity River above Bridgeport Reservoir, and Clear Fork Trinity River above Lake Weatherford are intermittent streams with perennial pools. Adopted footnotes also provide the site-specific 24-hour dissolved oxygen criteria for Little Wichita River, West Fork Trinity River above Bridgeport Reservoir, Clear Fork Trinity River below Lake Weatherford, Clear Fork Trinity River above Lake Weatherford, Upper Oyster Creek, Caney Creek above Tidal, Oso Bay, and Laguna Madre.

In response to comments regarding the use of the regression equation in the Cypress Creek Basin, the adoption of amended Appendix A of §307.10 includes clarification on the notation for the average 24-hour dissolved oxygen concentrations and modifications in the footnote to the minimum 24-hour dissolved oxygen concentrations, including a watershed size limitation where the regression equation is applied. Also, the adopted language includes modifications to the minimum 24-hour dissolved oxygen concentrations for Oso Bay (Segment 2485) and Laguna Madre (Segment 2491).

Adopted aquatic life use and dissolved oxygen criteria changes to the Angelina River/Sam Rayburn Reservoir (Segment 0615) from intermediate to high are due to the EPA's disapproval of the intermediate aquatic life use and associated dissolved oxygen criteria for the segment in the 2000 Texas Surface Water Quality Standards.

The critical low-flows for 15 spring-fed segments (Segments 0218, 1243, 1415, 1424, 1430, 1808, 1811, 1813, 1814, 1817, 1905, 2109, 2113, 2309, and 2313) and the method for calculating those critical low-flows are adopted.

Adopted changes in Appendix A of §307.10 include the creation of a new segment (Black Cypress Bayou (Creek)) (Segment 0410) and name changes in three segments (Segments 0307, 1428, and 1429). An acute aquatic life use criterion for zinc is adopted for the Nueces Bay (Segment 2482) for assessment purposes only after the completion and approval of a TMDL and TMDL Implementation Plan. Mission Lake is adopted as an addition to the name for Segment 2462. The maximum temperature criteria are adopted for specified portions of the Comal River (Segment 1811) and Upper San Marcos River (Segment 1814). Dissolved minerals criteria changes are adopted for the following 20 segments: Cooper

Lake (Jim L. Chapman Lake) (Segment 0307), Lake Tawakoni (Segment 0507), Lake Livingston (Segment 0803), West Fork Trinity River above Bridgeport Reservoir (Segment 0812), Lavon Lake (Segment 0821), Brazos River below Possum Kingdom Lake (Segment 1206), Nolan River (Segment 1227), Salt Fork Brazos River (Segment 1238), White River Lake (Segment 1240), Double Mountain Fork Brazos River (Segment 1241), Brazos River Below Whitney Lake (Segment 1257), E.V. Spence Reservoir (Segment 1411), Colorado River below Lake J.B. Thomas (Segment 1412), Lake J.B. Thomas (Segment 1413), Concho River (Segment 1421), Colorado River Below E.V. Spence Reservoir (Segment 1426), O.H. Ivie Reservoir (Segment 1433), Nueces/Lower Frio River (Segment 2106), and Choke Canyon Reservoir (Segment 2116). A footnote for Segment 0507 is also adopted.

In response to comments, the adoption of amended Appendix A of §307.10 includes a change that deletes the revisions to the dissolved minerals criteria for White River (Segment 1239). Also, the adopted language includes a change in the footnote for Nueces/Lower Frio River (Segment 2106) to note that a site-specific conversion factor was used in the dissolved minerals calculation.

The pH range for Upper South Sulphur River (Segment 0306), Cooper Lake (Jim L. Chapman Lake) (Segment 0307), Caddo Lake (Segment 0401), Big Cypress Creek below Lake O' the Pines (Segment 0402), Black Bayou (Segment 0406), James' Bayou (Segment 0407), and Village Creek (Segment 0608) are adopted.

In response to comments, the adoption of amended Appendix A of §307.10 includes retaining the freshwater primary contact recreation geometric mean criterion for *E. coli* of 126 colonies per 100 ml. Also in response to comments, the adoption of amended Appendix A of §307.10 includes the freshwater

Enterococci geometric mean of 33 per 100 ml for the following 15 classified high saline inland water bodies: Red River above Lake Texoma (Segment 0204), Red River below Pease River (Segment 0205), Red River above Pease River (Segment 0206), Lower Prairie Dog Town Fork Red River (Segment 0207), Lake Kemp (Segment 0217), Wichita/North Fork Wichita River (Segment 0218), Upper Pease/North Fork Pease River (Segment 0220), South Fork Wichita River (Segment 0226), Pease River (Segment 0230), Brazos River above Possum Kingdom Lake (Segment 1208), Salt Fork Brazos River (Segment 1238), Double Mountain Fork Brazos River (Segment 1241), Colorado River below Lake J.B. Thomas (Segment 1412), Upper Pecos River (Segment 2311), and Red Bluff Reservoir (Segment 2312).

The primary contact recreation use and corresponding Enterococci geometric mean criterion (35 colonies/100 ml) for tidal waters, bays, and estuaries is adopted. A footnote is adopted for bays, estuaries, and Gulf of Mexico to clarify that in oyster waters, Enterococci is the indicator bacteria to measure recreational suitability and fecal coliform is the indicator bacteria for oyster waters purposes only. A footnote is adopted for segments that are high saline inland waters to clarify that Enterococci are the indicator bacteria, but that fecal coliform may still be used as an alternate indicator during a transition period of two years until sufficient data are available for Enterococci for monitoring purposes.

In response to comments, the adoption of amended Appendix B of §307.10 includes language to clarify that the same level of protection that applies to sole-source surface drinking water supplies designated in Appendix B of §307.10 may be applied to a water body that has been identified as a sole-source surface drinking water supply, but is not yet included in Appendix B. Also, the adopted language includes a modification to one entry in Appendix B replacing "Guadalupe River" with "Terminal Reservoir" and replacing Segment "(1801)" with "(1802)."

Adopted changes to Appendix C of §307.10 include descriptions for new segments, revisions due to name changes, updated normal pool elevations, and revised descriptions for those segments affected by the creation of the new segments in Appendix A of §307.10. Black Cypress Bayou (Creek) is adopted as new Segment 0410 and segment boundary revisions are adopted for Clear Fork Trinity River above Lake Weatherford (Segment 0833), Spring Creek (Segment 1008), Lavaca River above Tidal (Segment 1602), and Salado Creek (Segment 1910). The description of the Neches River above Lake Palestine (Segment 0606), Lake Weatherford (Segment 0832), Lake Waco (Segment 1255), the Neches River Tidal (Segment 0601), the Neches River below B.A. Steinhagen Lake (Segment 0602), Bastrop Bayou Tidal (Segment 1105), Tres Palacios Creek Tidal (Segment 1501), Tres Palacios Creek above Tidal (Segment 1502), Gulf of Mexico (Segment 2501), and South, Middle, and North Bosque rivers (Segments 1246 and 1226) are adopted. The normal pool elevations are adopted for Farmers Creek Reservoir (Segment 0210), Diversion Lake (Segment 0215), Wright Patman Lake (Segment 0302), Sam Rayburn Reservoir (Segment 0610), Lake Worth (Segment 0807), Lake Palo Pinto (Segment 1230), Lake Graham (Segment 1231), Fort Phantom Hill Reservoir (Segment 1236), White River Lake (Segment 1239), Lake Lyndon B. Johnson (Segment 1406), Lake Buchanan (Segment 1408), Lake Brownwood (Segment 1418), and Medina Lake (Segment 1904). The name or description for the Sulphur/South Sulphur River (Segment 0303), Cooper Lake (Segment 0307), Colorado River below Town Lake (Segment 1428), Town Lake (Segment 1429), and Barton Creek (Segment 1430) are adopted.

In response to comments, the adoption of amended Appendix C of §307.10 includes changes to the county name for the upper boundary of Caney Creek above Tidal (Segment 1305).

Adopted changes to Appendix D of §307.10 include updating the title and narrative language to further clarify the purpose of this appendix. Designated aquatic life uses, dissolved oxygen criteria, and descriptions for where these apply are adopted for numerous water bodies. All water bodies are tributaries within the watershed of the listed segment numbers. Adopted new entries are: Dixon Creek (Segment 0101); Anderson Creek (Segment 0302); White Oak Creek (Segment 0303); Harrison Bayou (Segment 0401); Meddlin Creek (Segment 0403); Black Cypress Bayou/Creek (Segment 0410); Prairie Creek (Segment 0504); Campbells Creek (Segment 0505); Mill Creek and No. 5 Branch (Segment 0506); Sandy and Shawnee Creeks (Segment 0604); Linney Creek and Spring Branch (Segment 0801); Crooked Creek and an unnamed tributary of Crooked Creek (Segment 0802); Bassett Creek, Town Creek, and Walnut Creek (Segment 0804); Walnut Creek and Ash Creek (Segment 0809); Spring Creek (Segment 0840); Woodsons Gully and an unnamed tributary to Woodsons Gully (Segment 1004); Arnold Branch, Mink Branch, and Sulphur Branch (Segment 1008); Mound Creek (Segment 1009); Dry Creek and White Oak Creek (Segment 1010); Mound Creek (Segment 1015); Big Creek, Bessies Creek, and Clear Creek (Segment 1202); North Fork Rocky Creek (Segment 1217); Gonzales Creek (Segment 1232); Deer Creek (Segment 1242); Cluck Creek (Segment 1244); Tonk Creek (Segment 1246); Dry Creek, Harris Branch, and an unnamed tributary of Harris Branch (Segment 1428); Maha Creek (Segment 1434); Wilson Creek (Segment 1501); Lavaca River (Segment 1602); Camp Meeting Creek (Segment 1806); Salado Creek (Segment 1910); and West Prong Atascosa River (Segment 2107).

Site-specific dissolved oxygen criteria for the following water bodies are adopted based on the results of UAAs. The water bodies are: Dixon Creek (Segment 0101); Harrison Bayou (Segment 0401); Black Cypress Bayou/Creek (Segment 0410); North Fork Rocky Creek (Segment 1217); Lavaca River

(Segment 1602); Camp Meeting Creek (Segment 1806); and Salado Creek (Segment 1910). Footnotes are adopted that define site-specific dissolved oxygen criteria for these water bodies.

In response to comments regarding the use of the regression equation for Harrison Bayou and Black Cypress Creek/Bayou in the Cypress Creek Basin, the adoption of amended Appendix D of §307.10 includes clarification on the notation for the average 24-hour dissolved oxygen concentrations and modifications in the footnote to the minimum 24-hour dissolved oxygen concentrations; and the watershed size limitation where the regression equation is applied.

Adopted changes to Appendix D of §307.10 also include: segment number updates for water bodies in Segments 0402, 0501, 0503, and 0610; the addition of newly described portions of Gilleland Creek in Segment 1428 and Thompsons Creek in Segment 1242; and a change in aquatic life use from limited to high for Sandy Creek in Segment 0604.

Other adopted changes to Appendix D of §307.10 include boundaries for existing entries. Corrections are adopted for the description of the following water bodies: Rocky Creek (Segment 0505); Turkey Creek (Segment 0803); Pin Oak Creek (Segment 0836); Dry Creek (Segment 1009); South Mayde Creek (Segment 1014); Garners Bayou (Segment 1016); Rabbs Bayou, Brookshire and New Year Creeks (Segment 1202); Comanche Creek (Segment 1221); Palo Pinto Creek (Segment 1230); and Gilleland Creek (Segment 1428). Lake Fayette is adopted as another name for Cedar Creek Reservoir (Segment 1402).

Channelized streams in Harris County that drain to the San Jacinto Basin (Basin 1000), the San Jacinto-Brazos Coastal Basin (Basin 1100), and Bays and Estuaries (Basin 2400), were described in a UAA sent to the EPA for the 1995 standards. Specific streams were listed in the 1995 standards; however, a generic listing to cover these types of streams in the county was inadvertently excluded. A generic list with uses, criteria, and descriptions is adopted for channelized water bodies in Harris County that drain to these basins.

Adopted changes to Appendix E of §307.10 include revising the title and narrative language to further clarify the purpose of this appendix. The commission adopts the new format of the Appendix E table in §307.10 and the enhanced water body descriptions for 11 entries that better define where the site-specific studies are applied. Footnotes are adopted for the "Parameter" column to clearly state if the site-specific parameter applies to an entire water body or only a portion of the water body. The commission also adopts the column that describes additional site-specific considerations (such as hardness and total suspended solids).

The commission adopts the single copper water-effect ratio entry for five segments that make up the Houston Ship Channel. Twenty new site-specific copper water-effect ratio results are adopted in addition to four site-specific aluminum water-effect ratio results.

In response to comments, the adoption of amended Appendix E in §307.10 includes a change that adjusts the lower boundary for the site description for Buck Creek located in the watershed of Segment 0604. The adopted lower boundary is located at the confluence with Clayton Creek in Angelina County.

In response to comments, the adoption of amended Appendix F of §307.10 includes stand-alone chlorophyll *a* criteria and modifications to the narrative and footnote to reflect the use of stand-alone chlorophyll *a* criteria that were calculated using a 0.01 confidence level. Also, the adopted table includes the default criterion and the chlorophyll *a* calculated values are shown in parentheses.

In response to the comments concerned about trends over time in reservoirs, the commission re-evaluated the data used for criteria calculations. This re-evaluation indicated trends over time that appears to be anomalous and potentially artificial for fifteen reservoirs; and as a result fifteen reservoirs were removed. The adoption of amended Appendix F of §307.10 includes changes that delete the following fifteen reservoirs: Lake Meredith (Segment 0102), Farmers Creek Reservoir (Segment 0210), Diversion Lake (Segment 0215), Lake O' the Pines (Segment 0403), Lake Mackenzie (Segment 0228), Lake Arlington (Segment 0828), Lake Weatherford (Segment 0832), Lake Amon G. Carter (Segment 0834), Lake Houston (Segment 1002), Leon Reservoir (Segment 1224), Lake Palo Pinto (Segment 1230), Fort Phantom Hill Reservoir (Segment 1236), Inks Lake (Segment 1407), E. V. Spence Reservoir (Segment 1411), Lake Brownwood (Segment 1418).

Also, the adoption of amended Appendix F of §307.10 includes changes that delete Buffalo Springs Lake, an unclassified water body in Segment 1241; and two boundary waters, International Falcon Reservoir (Segment 2303) and International Amistad Reservoir (Segment 2305). In response to the comments that the commission received that setting criteria on these three reservoirs may not be appropriate at this time; the commission removed these water bodies from Appendix F of §307.10.

Appendix G of §307.10 is adopted to track site-specific changes to recreational uses and criteria for unclassified water bodies where recreational UAAs or other sufficient site-specific information exists to provide a recreational use designation. Three unclassified water bodies are incorporated into Appendix G. The commission adopts changing the presumed contact recreation use and corresponding criteria of 126 colonies per 100 ml for these water bodies to a secondary contact recreation use and corresponding criteria of 630 colonies per 100 ml based on results from a Recreational UAA.

FINAL REGULATORY IMPACT ANALYSIS

The commission reviewed the rulemaking in light of the regulatory analysis requirements of Texas Government Code, §2001.0225, and determined that the rule changes are not subject to §2001.0225, because they do not meet the criteria for a "major environmental rule" as defined in that statute.

A "major environmental rule" is defined in Texas Government Code, §2001.0225(a) as applying to rules adopted by a state agency that: 1) exceed a standard set by federal law, unless the rule is specifically required by state law; 2) exceed an express requirement of state law, unless the rule is specifically required by federal law; 3) exceed a requirement of a delegation agreement or contract between the state and an agency or representative of the federal government to implement a state and federal program; or 4) adopt a rule solely under the general powers of the agency instead of under a specific state law.

The amendments were developed in order to be consistent with the water quality standard rules in the CWA and the TWC. The amendments do not exceed a standard set by federal law, exceed an express requirement of state law, nor exceed a requirement of the National Pollutant Discharge Elimination System (NPDES) delegation agreement between TCEQ and EPA. The amendments were not developed solely under the general powers of the agency, but were specifically developed to meet water quality standards established under federal and state law. In addition, the standards are under authority of the TWC, which authorizes the commission to set water quality standards by rule. The TWC directs TCEQ to consider the existence and effects of nonpoint source pollution, toxic materials, and nutrient loading in developing water quality standards. Therefore, the rulemaking is not subject to the regulatory analysis provisions in Texas Government Code, §2001.0225(b).

TAKINGS IMPACT ASSESSMENT

The commission prepared a takings impact assessment for these rules pursuant to Texas Government Code, §2007.043. The following is a summary of that assessment. The Texas Surface Water Quality Standards (Chapter 307) establishes instream water quality standards for Texas streams, rivers, lakes, estuaries, and other water bodies such as wetlands. The commission is required to establish water quality standards in TWC, §26.023. The CWA, §303 requires states to publicly review and revise their surface water quality standards every three years. The revisions will satisfy the federal requirement for a triennial review.

These revised criteria are more protective of human health and provide a public benefit. The site-specific standards were needed to incorporate new sampling data and to establish the appropriate revisions in the rules so that permit issues related to specific water bodies may be resolved. Site-specific standards more accurately describe the ambient quality of the water body. These site-specific standards also provide more accurate permit requirements that are protective of human health and, in most cases, economically affordable. Additionally, these site-specific standards should enhance water quality.

The specific purpose of the rule changes are to satisfy state statute requirements, TWC, §26.023 and CWA, §303(d) requirements, and to more accurately assess water quality in the state; and revise requirements to protect human health and water quality. The rules would substantially advance this stated purpose by adopting water quality criteria and requirements that are supported by site-specific studies, federal and state research, and statewide monitoring and sampling data. Promulgation and enforcement of these rules will not burden private real property that is the subject of the rules because the amendments revising the state's surface water quality standards do not limit or restrict a person's rights in private real property.

CONSISTENCY WITH THE COASTAL MANAGEMENT PROGRAM

The executive director determined that this rulemaking will affect an action/authorization identified in the Coastal Coordination Act Implementation Rules, 31 TAC §505.11, and considered applicable goals and policies of the Texas Coastal Management Plan (CMP) during the rulemaking process.

The commission prepared a consistency determination for the proposed rules pursuant to 31 TAC §505.22 and found the rulemaking is consistent with the applicable CMP goals and policies. The following is a summary of that determination. The rulemaking is consistent with the CMP goal of protecting, preserving, restoring, and enhancing the diversity, quality, quantity and functions, and values of coastal natural resources by establishing standards and criteria for instream water quality for Texas streams, rivers, lakes, estuaries, and other water bodies such as wetlands. These adopted water quality standards and criteria will provide parameters for permitted discharges that will protect, preserve, restore, and enhance the quality, functions, and value of coastal natural resources. The rulemaking also provides for clearer and more protective conditions for variances that should ensure sound management of all coastal resources by allowing for compatible economic development and multiple human uses of the coastal zone. These variance conditions allow dischargers an opportunity to examine options for upgrades while maintaining water quality that will allow for human uses of coastal waters.

The rulemaking will require wastewater discharge permit applicants to provide information and monitoring data to the commission so that the commission may make an informed decision in authorizing a discharge permit. This will ensure that the authorized activities in a wastewater discharge permit comply with all applicable requirements, thus making the rulemaking consistent with the administrative policies of the CMP. The rulemaking also provides clarity and identifies the circumstances where the commission will consider and grant variances from water quality standards.

The rulemaking considers information gathered through the biennial assessments of water quality in the commission's Water Quality Inventory to prioritize those coastal waters for studies and analysis in reviewing and revising the state's surface water quality standards. The standards are established to protect designated uses of coastal waters, including protection of uses for recreational purposes and propagation and protection of terrestrial and aquatic life. The rulemaking is consistent with the CMP's policies for discharges of municipal and industrial wastewater to coastal waters and how they relate to specific activities and coastal natural resource areas.

The adopted revisions to §§307.1 - 307.10 as they pertain to designated tidal segments within the CMP boundary, will be submitted to the Coastal Coordination Council for recertification.

The commission invited public comment regarding the consistency with the coastal management program during the public comment period. No comments were received on the coastal management program.

PUBLIC COMMENT

A public hearing was held in Austin, Texas on March 11, 2010 to receive public comments on the proposed revisions to Chapter 307. Commission staff members were available before and after the hearing to address specific questions from those who attended the hearing. The comment period for the proposed revisions ended on March 17, 2010.

The commission received timely public comments from: Albion, Alkylphenols & Ethoxylates Research Council (APERC), Aransas County, City of Austin (Austin), Association of Electric Companies of Texas, Inc. (AECT), Barton Springs/Edwards Aquifer Conservation District (BSEACD), Travis County Judge Samuel T. Biscoe, Blackburn Carter, P.C., Texas State Representative Valinda Bolton, Bosque County Farm Bureau/Whiskey Canyon Ranch (BCFB), Brazos River Authority (BRA), The Caddo Lake Area Chamber of Commerce (CLACC), Caddo Lake Institute (CLI), The Greater Caddo Lake Association of Texas (GCLAT), The Louisiana Greater Caddo Lake Association (LGCLA), The Friends of the Caddo Lake National Wildlife Refuge (FCLNWR), Clean Water Action (CW Action), City of Cleburne (Cleburne), Children's Environmental Health Institute (CEHI), Honorable Dickie Clary - Precinct 4 Hamilton County Commissioner, Coastal Bend Bays Foundation (CBBF), Dallas County Park Cities Municipal Utility District (DCPC MUD), Edwards Aquifer Authority, Environment Texas, The Environmental Integrity Project (EIP), City of Farmers Branch (Farmers Branch), Fox Dairy LTD, Galveston Bay Foundation (GBF), Gulf Coast Waste Disposal Authority (GCA), City of Hamilton (Hamilton), Harris County, Harris County Flood Control District (HCFCD), Harris County Public Health and Environmental Services (HCPHES), Heifer Ranch at Arroyo Seco, High Plains Dairy Counsel, Highland Lakes Group, Highland Lakes Political Action Committee (Highland Lakes PAC), Independent Cattlemen's Association of Texas (ICA), United States Section: International Boundary and Water Commission (IBWC), International Paper Company; submitted by Integral Consulting, Inc. (IPC), Lake Austin Collective (LAC), Lake Austin Snorkeling Club, City of Lakeway (Lakeway), Legacy Farms, Live Oak County Farm Bureau (LOCFB), Lone Star Chapter of the Sierra Club (Sierra Club), Lower Colorado River Authority (LCRA), Lowerre, Frederick, Perales, Allmon & Rockwell (Lowerre Frederick), City of Lubbock (Lubbock), McGinnes Industrial Maintenance Corporation; submitted by Integral Consulting, Inc. (McGinnes Corp.), Texas State Representative Sid Miller, Harrison County Judge Randy Mills, National Wildlife Federation (NWF), North Texas Municipal Water District (North Texas MWD), Nueces River Authority (NRA), Plains Cotton Growers, Inc. (PCG), Port of Corpus Christi Authority (PCCA), Port of Houston Authority (PHA), Protect Lake Travis Association (PLTA), Parkhill, Smith and Cooper, Inc. (PSC), Public Citizen, Sabine River Authority (SRA), Samsung Austin Semiconductor (Samsung), San Antonio River Authority (SARA), San Antonio Water System (SAWS), San Marcos River Foundation (SMRF), Sanderson Farms, Save Our Springs Alliance (SOSA), Sustainable Energy and Economic Development Coalition (SEED), Texas Campaign for the Environment (TCE), Texas and Southwestern Cattle Raisers Association (TSCRA), Texas Association of Clean Water Agencies (TACWA), Texas Association of Dairymen (TAD), Texas Black Bass Unlimited (TBBU), Texas Catholic Conference, Texas Cattle Feeders Association (TCFA), Texas Commission on Environmental Quality – Office of Public Interest Counsel (OPIC), Texas Chemical Counsel (TCC), Texas Comptroller of Public Accounts; Susan Combs (TCPA), Texas Conservation Alliance (TCA), Texas Department of Agriculture (TDA), Texas Department of Transportation (TXDOT), Texas Farm Bureau (TFB), Texas Industry Project; submitted by Baker Botts LLP (TIP), Texas Parks & Wildlife Department (TPWD), Texas

Poultry Federation, Texas State Soil & Water Conservation Board (TSSWCB), Texas Wade Paddle and Pole (TWPP), Texas Water Conservation Association (TWCA), Texas Water Resources Institute (TWRI), Tischler/Kocurek Environmental Engineers (T/K), City of Uncertain (Uncertain), EPA, Upper Trinity Regional Water District; submitted by Lloyd Gosselink (UTRWD), Village of Volente (Volente), Water Environment Association of Texas (WEAT), Texas State Senator Kirk Watson, White River Municipal Water District, submitted by Lloyd Gosselink (White River MWD), Working Effectively for Clean Air Now (WE CAN), and over one thousand individuals.

Comments were also received from the Association of Texas Soil and Water Conservation Districts and the following Soil and Water Conservation Districts: Andrew Kent #170, Andrews #246, Atascosa County #307, Austin County #347, Bastrop County #340, Bedias Creek #428, Big Bend #227, Calhoun #345, Central Colorado #550, Coke County #219, Concho #201, Dawson County #124, Denton County #547, Fayette #341, Gaines County #166, Gillespie County #220, Gonzales County #338, Gray County #125, Hall-Childress #109, Howard #243, Hutchinson #146, Jack #549, Jackson #336, Jim Wells County #355, Johnson County #541, Karnes County #343, Kendall #216, Lamar #415, Lamb County #130, LaSalle County #354, Limestone-Falls #501, Live Oak #323, Llano County #233, Loma Blanca #328, Lubbock County #108, Lynn County #119, Marion-Cass #433, Mason County #223, McCulloch #249, McLennan County #512, Menard County #215, Middle Clear Fork #206, Middle Concho #234, Midland #244, Monte Mucho #331, Navasota #440, Nolan County #245, Nueces-Frio-Sabinal #221, Oldham County #153, Palo Pinto #518, Panola #448, Parmer #140, Piney Woods #429, Salt Fork #133, San Saba #250, Sandhills #241, San Patricio #324, Shelby #449, Sherman County #159, Starr County #332, Sulphur-Cypress #419, Tierra Blanca #143, Upper Clear Fork #165, Upper Elm-Red #524, Upper Pease

#164, Upper Pecos #213, Upshur-Gregg #417, Victoria #346, Washington #348, Waters-Davis #318, Wharton County #342, Wilson County #301, Wise #548, and Wood #444.

RESPONSE TO COMMENTS

General Comments Related to the Water Quality Standards Changes

Comment: TSSWCB supports the added text throughout the standards that references TCEQ's laboratory accreditation requirements as specified in Chapter 25.

Response: The commission notes the comment in support of the references to the commission's laboratory accreditation requirements. The commission adopts the revisions as proposed.

Comment: AECT and a number of individuals filed comments supporting the overall proposed revisions to the water quality standards for Texas streams and rivers. Harris County recommends expeditious adoption of the proposed water quality standards.

Response: The commission notes the comment in support of the overall proposed revisions to the water quality standards.

Comment: Farmers Branch comments that further study is needed to determine the ecological benefit in comparison with the financial impacts to wastewater treatment plants. Farmers Branch notes that in some water bodies treated effluent discharges can make up to 90% of its base flow. Therefore, additional *studies need to be performed on a case-by-case basis before requiring costly improvements to a wastewater treatment plant.*

Response: The commission acknowledges that many wastewater treatment facilities in Texas have very little instream dilution, and a fiscal note analysis in accordance with rulemaking procedures was conducted in the proposal preamble and included some of these requested considerations. The commission is aware that new or more stringent effluent limitations may require expensive treatment plant upgrades and will carefully consider new or more stringent effluent limitations requirements for wastewater treatment plants.

Comment: TAD recommends TCEQ consider how the proposed water quality standards change would impact both urban and rural business, including a business continuity impact analysis. Samsung supports changes to the standards unless they will result in increased costs for dischargers.

Response: The commission appreciates the concern from the regulated community about potential increased costs for all types of business due to changes in the Texas Surface Water Quality Standards. The commission notes that a fiscal note analysis was conducted in accordance with rulemaking procedures and it included a small business analysis of the potential cost impacts of the proposed changes to the water quality standards.

Comment: One individual noted in the Public Benefits and Cost section that during the first five years the proposed rules are in effect, water quality and protection of the public and aquatic life resources would be increased. The individual notes that this statement is illogical given the proposed action to make *bacteria standards attainment less stringent. A number of commenters noted that the potential cost savings to the state of approximately $1 million over a three-year period was not an adequate trade-off for lowering water quality standards. CEHI also objected to a cost-benefit analysis for making environmental decisions.*

Response: The commission acknowledges the comment regarding the Public Benefits and Cost section and clarifies that this section of the preamble is in reference to all the changes in the proposed Texas Surface Water Quality Standards. A variety of the proposed revisions increase protective levels for numerous pollutants.

The primary purpose in the changes to the recreational standards is to more appropriately assign recreational uses to water bodies in Texas and to effectively apply those standards to protect the assigned uses. The costs savings identified in the fiscal note addressed a few of the immediate activities associated with the recreational revisions. However, the primary purpose of these changes were to ensure that all the resources for water quality management available in Texas are more effectively directed to water bodies that need restoration.

Comment: BSEACD reminds TCEQ of the need to honor the special hydrologic relationship between groundwater and certain surface water resources. In particular, BSEACD requests that any surface water body that is now designated by TCEQ for uses that include aquifer protection, be assured of the highest level of water quality as TCEQ applies its new standards and implementation guidance. BSEACD comments that it is appropriate to treat these designated aquifer protection segments as drinking water supplies.

Response: The commission acknowledges this comment and notes that the commission did not propose changes to the designated aquifer protection use.

§307.3 – Definitions and Abbreviations

Comment: Albion comments that a definition for "dissolved trace metals" should be included in either the standards rule or implementation guidance. Without an established or EPA deferred definition of dissolved trace metals, it is unclear what dissolved metals data complies with TCEQ standards, compliance monitoring, or monitoring programs for the purpose of assessment.

Response: While there is no specific definition for "dissolved trace metals" in either the standards rule or implementation guidance, the *Surface Water Quality Monitoring Procedures, Volume 1* (RG-415) specifically states that a 0.45 microgram filter is to be used when obtaining dissolved metals data. The commission continues to evaluate these procedures and may determine it is appropriate to add a definition to the standards rule in future revisions. No changes were made in response to this comment.

Comment: TWRI requests that the term "warm-weather" be removed from the definition of "baseflow conditions" because base flows can occur year-round and are not exclusive to warm months. TWRI suggests modifying the definition to read: "The usual, reliable, background level of a river, maintained generally by seepage from groundwater storage and through flow." TPWD comments that the new definition should be consistent with the Texas Instream Flow Program, which is that base flows *"represent normal flow conditions (including variability) between precipitation events." TPWD noted that the term "baseflow" also appears as "base flow" in the rules.*

Response: The commission is concerned that the use of the Texas Instream Flow definition of "base flow" might be inadvertently restrictive in terms of the normal range of conditions over which recreational surveys would be appropriate. The commission notes that the definition of "base flow conditions" was added for recreational purposes only, and this definition was renamed to "dry weather flows" in order to prevent confusion.

Comment: NWF comments that the definition of "critical low flow" is ambiguous due to the use of the word "include." NWF recommends use of the phrase "consists of" as a better fit in this definition.

Response: The commission agrees with this comment and adopts the definition as modified.

Comment: WEAT suggested modifying the definitions of "E. coli" and "Enterococci" to include the phrase "and other environmental sources" at the end of the first sentence to acknowledge there are sources other than warm-blooded animals and to make the definition consistent with the definition of "fecal coliform." TSSWCB opposes this suggested change, noting that its understanding is that there is little evidence to support it.

Response: The commission acknowledges the comment in support and opposition to adding the term "and other environmental sources." The commission responds that the current definition of

E. coli **and** ***Enterococci*** **adequately describes these bacteria indicators. The commission adopts the definitions as proposed.**

Comment: TWRI suggests adding a definition of "high saline inland waters" because this term is used throughout the standards, but lacks a clear definition.

Response: For this revision, the commission's purpose is to provide clear designations water-body-by-water-body for the appropriate criteria. More evaluation is needed to develop a numerical definition that could be consistently applied to additional water bodies. The adoption of this provision on a water-body-by-water-body basis prevents confusion as to what is considered a high saline inland water body. No change was made in response to the comment.

Comment: Sierra Club, Public Citizen, TBBU, SEED, and WE CAN oppose the proposed changes to the definition of "noncontact recreation" since the proposed criteria for secondary contact recreation 1 would be set at a less protective level than the current noncontact recreation criteria. TSSWCB comments that the definition would be strengthened by clarifying that noncontact recreation is appropriate for either "activities not involving a significant risk of water ingestion" or (not "and") "where primary and secondary are considered unsafe…" Farmers Branch recommends revising the definition to include concrete channels that do not support fish or substantial aquatic life. TPWD comments that to be consistent with other recreation definitions "noncontact recreation" should list types of activities. TPWD suggests rewording to read:

"Activities that do not involve a significant risk of water ingestion, such as those with limited body contact incidental to shoreline activity including birding, hiking, and biking. Noncontact recreation use may also be assigned where primary and secondary contact recreation should not occur because of unsafe conditions, such as ship and barge traffic."

Response: The commission acknowledges the recommended changes and the opposition of the noncontact recreation definition. It is appropriate to expand the current recreational use categories into four categories (primary contact, secondary contact 1 and 2, and noncontact recreation) with corresponding criteria in an effort to better characterize the different levels of water recreation activities that can occur in Texas.

The commission responds that a noncontact recreation designation for concrete channels may be too broad because the extent of concrete channelization can vary on a case-by-case basis. In addition, a water body, including those that are concrete lined, cannot be designated as noncontact recreation without a recreational UAA and without being publically proposed during a rule revision process.

The commission agrees that the noncontact recreation definition should be clarified to be consistent with other recreation definitions by listing the types of activities and modified the language as recommended by these comments. The commission adopts the revisions as modified.

Comment: TPWD comments that the modified definition of "nonpersistent toxic" could be less protective of aquatic life for those toxic substances that move out of the "persistent toxic" category and recommend *leaving the definitions at 96 hours. One individual asks why the proposed half-life period is being increased from 96 hours to 60 days in the definitions of "nonpersistent toxic" and "persistent toxic."*

Response: The revision to the definitions of "nonpersistent toxic" and "persistent toxic" are based on EPA's Persistent Bioaccumulative Toxic (PBT) Chemicals; Final Rule (64 *Federal Register* 58666; October 29, 1999). Under "Summary of Proposal" (Section IV.B1, Page 58668), EPA states that a half-life criterion of two months for water was used for the purpose of determining whether a toxic chemical is persistent in the environment. EPA further explains (Page 58381) ". . .that application of lower criteria would include so many substances as to be impractical. Further, given the uncertainties that often exist regarding physical properties and environmental behavior of chemicals, caution is especially appropriate for substances with shorter half-lives, since they are (all other things being equal) less likely to build up in the environment than more persistent substances." Therefore, the commission adopts the definitions of "nonpersistent toxic" and "persistent toxic" as proposed.

Comment: Sierra Club, Public Citizen, TBBU, SEED, and WE CAN recommend deletion of the last sentence in the definition of "nutrient criteria" consistent with their position for determining violations of nutrient numeric standards. TPWD notes that the definition includes associated screening levels for total phosphorus and secchi depth. TPWD further notes that the criteria itself in §307.4(e), references only the chlorophyll a standard.

Response: The commission concurs with this comment and adopts the stand alone chlorophyll *a* nutrient criteria for reservoirs. The last sentence in the definition of "nutrient criteria," which relates to screening levels, was deleted. The modified definition is adopted.

Comment: NWF and TIP comment that the proposed definition refers to "aquatic plants that includes phytoplankton, floating algae, floating vascular plants, attached algae, and rooted plants" and recommends using the newly defined term "aquatic vegetation" in order to assure consistency. TIP recommends for consistency with the definition of "nutrient" that the first sentence of the definition of "nutrient criteria" be revised to read: "Numeric and narrative criteria that are established to protect existing, attainable or designated uses of surface water from excessive growth of aquatic vegetation."

Response: The commission concurs with these comments and adopts the language.

Comment: NWF comments that the proposed definition of "nutrient" includes the term "nuisance aquatic vegetation" that is undefined and unclear. NWF suggests replacing with the phrase "can contribute to undesirable growth of aquatic vegetation."

Response: The commission concurs with these comments and adopts the language cited above.

Comment: TWRI asks that in the definition of "primary contact recreation" whether the term "whitewater" applies to kayaking, canoeing, and rafting or just to kayaking. TWRI also noted that the definition does not seem appropriate for intermittent streams and nontidal wetlands, which are more appropriate for secondary contact recreation 1 and 2. Sierra Club, Public Citizen, TBBU, SEED, and WE

CAN comment that the definition should also include tubing, kayaking, canoeing, and rafting (the latter three not qualified as whitewater) and that wading should not be limited to "wading by children." TSSWCB comments that canoeing, kayaking, and rafting should be included in the definition of secondary contact recreation rather than in this definition. TSSWCB indicates that this use should only apply to recreational uses that may result in prolonged and direct contact with the water.

TPWD questions the distinction between whitewater kayaking, canoeing and rafting. TPWD indicates that based on current knowledge, it is impossible to draw a meaningful distinction between risks of ingestion based on "whitewater" conditions. TPWD indicates that all canoeing, kayaking and rafting are activities that carry an elevated risk of ingestion and should receive the full protection of the primary contact recreation use category. Therefore, TPWD recommends that the word "whitewater" be removed from the definition of "primary contact recreation."

Response: The commission responds that in the primary contact recreation definition, the term "whitewater" applies to kayaking, canoeing, and rafting. The definition has been modified to clarify this.

In response to comments requesting that primary contact recreation apply to all kayaking, canoeing, and rafting, no changes were made based on this comment in the definition. The distinction of the term "whitewater" recognizes that these activities carry an elevated risk of water ingestion.

There are common types of wading by adults, such as wade fishing, that do not involve a significant risk of ingestion. Therefore, these activities would not be appropriate for primary contact recreation.

The commission responds that intermittent streams and nontidal wetlands have a presumed contact recreation use and this presumption is not changed from the existing rules. Site-specific information for each intermittent stream or nontidal wetland would be required in order to consider a presumed secondary contact recreation 1 use.

Comment: TWRI comments that the definition of "secondary contact recreation 1" should include canoeing, kayaking, and rafting under normal flow conditions. TWRI notes that the risk of ingesting water under normal flow conditions is inherently less than under "whitewater" conditions. Sierra Club, Public Citizen, TBBU, SEED, and WE CAN oppose adoption of this definition, but if adopted, qualifying the term "boating" by specifying "motor boating." TPWD also recommends replacing "boating" with "motor boating" or some other language to clarify that all kayaking, canoeing, and rafting activities fall under primary contact recreation.

Response: The commission responds that the term "boating" was intended to include canoeing, rafting, kayaking, and motor boating. In response, the commission changed "boating" to "canoeing, kayaking, rafting, and motor boating" and adopts the language as modified.

Comment: GBF comments that the definition of "secondary recreation 1" allows lowering use as a result of man-made degradation. GBF comments that the physical characteristics may be the result of man-

made degradation, such as reduced base/stream flows and limited public access that may be remedied in the future.

Response: The commission will thoroughly evaluate water bodies to determine if recreational activities are occurring and where recreational use may be inappropriate through a Recreational UAA. A Recreational UAA involves coordination with local stakeholders and landowners, data collection, and an evaluation of water recreation activities. In addition, it includes an evaluation of the physical characteristics of the water body and historical uses. Any change to a recreational use less stringent than primary contact recreation will require public notification and the opportunity for public comment. The commission can re-evaluate, as needed, the recreation use of a water body if there are future changes in use as sometimes occurs now with UAAs for other parameters, such aquatic life uses. The commission adopts the definition as proposed.

Comment: Sierra Club, Public Citizen, TBBU, SEED, and WE CAN oppose the adoption of the definition of "secondary contact recreation 2," but if adopted, recommend eliminating the term "limited public access" from the definition.

Response: The commission acknowledges the opposition to the adoption of the secondary contact recreation 2 definition. However, there is utility in having a secondary contact recreation 2 category that takes physical characteristics of the water body and limited public access into consideration. The commission adopts the definition as proposed.

Comment: TWRI comments that the phrase "less frequently" in the definition of "secondary contact recreation 2" needs to be better described and clarified.

Response: The commission explored a more specific definition with respect to "less frequently" with the water quality advisory stakeholder group and others, but a clear consensus was not achieved. The commission may continue to work with stakeholders during the process of evaluating recreational UAAs to better apply these definitions.

Comment: TWRI comments that the definitions of "secondary recreation 1 and 2" and "non-contact recreation" should be standardized to the extent possible between freshwater and saltwater. One individual commented that there appeared to be little difference between the two secondary contact recreation standards and that only one was needed.

Response: The commission responds that the secondary contact and noncontact recreation language for freshwater and saltwater in §307.7 were standardized to the extent possible. Detailed information was provided in §307.4(j) regarding how recreational uses would be assigned; therefore, this information was not re-stated in §307.7. The additional language in the saltwater portion in §307.7 was to provide further clarification that these uses cannot apply to a coastal recreation water as defined in the Beach Act.

Comment: TACWA, TIP, TCC, and TWCA comment that the definition of "sustainable fisheries" should be revised so that very small, tidally-influenced ditches are excluded. GCA comments that the definition needs further clarification. GCA and TCC are concerned that proposed definition will be extended to *tidally-influenced small ditches that discharge into a tidal water body and these ditches should not be considered sustainable fisheries. T/K, TCC, and TIP recommend the addition of the following sentence to the definition: "Tidal rivers do not include small tributaries of bays and estuaries that do not have the potential for sufficient fish production or fishing activity to create significant long-term human consumption of fish and/or shellfish."*

Response: Tidal water bodies are some of the state's most productive fisheries and these water bodies generally have ample public access. For this reason, all tidal water bodies were considered to support sustainable fisheries, regardless of size. The commission notes this comment and recognizes that some tidal ditches may be so small or have such limited public access that this blanket coverage of all tidal water bodies may be unnecessary. However, at this time the commission proposes no change.

Comment: TPWD comments that an apparently arbitrary size limit has been established to define "sustainable fisheries." TPWD notes that there are many water bodies smaller than 50 surface acres that are managed as community fishing lakes. TPWD is concerned that local and subsistence users consuming fish from these waters may not be appropriately protected, since human health criteria are approximately an order of magnitude lower for these water bodies (based on 1.75 grams per day (g/day) consumption for incidental fisheries versus 17.5 g/day consumption for sustainable fisheries). TPWD recommends that the definition be changed to less than 10 acres or 30 acre-feet.

Response: At this time the commission proposes no change regarding the size of a surface water that is presumed to support a sustainable fishery. However, this definition does not prohibit smaller

water bodies from being considered a sustainable fishery. Local factors, such as fish stocking practices and local fishing activities, are considered when determining if a water body should be treated as a sustainable fishery. No change to this definition was proposed or is adopted in the rules at this time.

Comment: One individual commented that in the definitions of "total dissolved solids" and "total suspended solids" the use of the phrase "filterable residue" is archaic and misleading and recommends revising this term in both definitions.

Response: The definitions of "total dissolved solids" and "total suspended solids" were modified to clarify that the phrase "filterable residue" is also equivalent to "filterable residue" as the term is used in 40 Code of Federal Regulations (CFR), Part 136.

Comment: Sierra Club, Public Citizen, TBBU, SEED, and WE CAN commented that the definition of "wetland water quality functions" should include habitat for "wildlife" and not just habitat for aquatic life.

Response: The commission acknowledges this comment. Since this recommendation could potentially affect regulatory programs, additional coordination with stakeholders is needed. After additional development, changes to these definitions may be publicly considered in the next revision of the standards.

Comment: TPWD requests that the standards include a definition of "wildlife" in §307.3. TPWD notes that common usage of the term "wildlife" conflicts with the statutory definition, in that the statutory definition excludes exotic species, while common use includes species such as feral hogs. TPWD states that this discrepancy has led to confusion and it would appreciate clarification in the standards.

Response: The commission responds that due to potential conflicts with the definition of this term in statutes and regulations, the commission adopted the term "aquatic and terrestrial life" as used in §307.1 rather than the term "wildlife." However, the commission did not change the term "wildlife" in §307.7(b)(1) because bacteria sources could be from any warm-blooded animal. The commission adopts the term as modified.

§307.4 – General Criteria

Comment: Harrison County Judge Randy Mills, Hamilton County Commissioner Dickie Clary, WEAT, SAWS, TSCRA, and one individual filed comments supporting the site-specific UAAs to determine proper water body use. SAWS comments that this approach will more appropriately classify a segments recreational use. SARA comments that not only should a UAA be used to assess current use, but public notice and public meetings should be held within the watershed prior to changing an aquatic recreation classification. Sierra Club, Public Citizen, TBBU, SEED, and WE CAN are concerned that due to difficulties, the result of these studies will result in many streams being characterized as not used for recreation use when they actually are. Sierra Club, Public Citizen, TBBU, SEED, and WE CAN also object to revising the presumed uses for unclassified streams solely through a UAA, without going through a revision of the water quality standards, with public notice and comment requirements. One individual commented that the proposed rules do not mention any sort of periodic review or re-evaluation *of UAA results to re-assess changed stream conditions that may justify changes in designated uses. OPIC notes the conducting UAAs on all waterways that would have less stringent bacteria standards is being proposed. GBF expressed concerns that a recreational UAA cannot predict future contact recreation uses.*

One individual comments that the language in §307.4(j)(2)(D) and (3)(A), suggests the need for a periodic review of designated uses. TPWD comments that the language in §307.4(j)(3)(A) - (C) appears to allow assignment of secondary contact recreation 1 use to intermittent and perennial freshwaters based on what, in TCEQ's judgment, is a "reasonable level of inquiry," provided the water body meets conditions specified in §307.4(j)(2)(B). Effectively, this language will allow a standards change in a permit, CWA, §303(d) listing, or TMDL action, without a UAA, statewide notice, or a rulemaking action. TPWD does not think this is appropriate at this time. Perhaps after the scientific adequacy of recreational UAA procedures have been demonstrated it will be justifiable to allow the suggested procedure, but there is no evidence to allow these changes without thorough review at this time. NWF opposes the proposed standards that would allow perennial stream and river segments to be presumed to support only a secondary contact recreation 1 level of use.

Response: The commission acknowledges the comments in support of UAAs. The commission notes that EPA has indicated that the recreational UAA procedures, which are not part the proposed rule, are acceptable.

The commission responds that all classified water bodies have a designated primary contact recreation (PCR) use. All unclassified water bodies have a presumed PCR use, except where site-

specific information indicates that recreational activities that involve a significant risk of ingestion have little to no likelihood of occurring as described in §307.4(j). The commission will thoroughly evaluate water bodies to determine if recreational activities are occurring and where recreational use may be inappropriate through a recreational UAA. A recreational UAA involves coordination with local stakeholders and landowners, data collection, and an evaluation of water recreation activities. Any change to a recreational use less stringent than PCR will require public notification and the opportunity for public comment. The commission can re-evaluate the recreation use of a water body, as needed, if there are future developments that would justify possible recreational use changes.

Comment: One individual asks for clarification regarding what the numbers in this phrase mean: "…for the proposed site-specific bacteria criteria to protect recreation, one is new, none are more stringent, and 293 are less stringent." The individual notes that this language, by itself, does not lend itself to interpretation that recreation is being protected, since all changes are less stringent.

Response: The commission responds that the phrase referenced the proposed change in *E. coli* criterion for primary contact recreation from 126 colony-forming unit (cfu) per 100 ml to 206 cfu/100 ml. This proposed change was not adopted in the final rulemaking. The commission notes that the EPA has indicated that *E. coli* concentrations of up to 206 cfu per 100 ml can be considered protective of primary contact recreation.

Comment: One individual commented that in §307.4(b)(2) the use of the term "floating debris" suggests that trash may be a pollutant and recommends addressing this issue.

Response: The commission responds that the narrative specifications in §307.4(b) address a broad range of adverse conditions in water that might affect water quality uses. These specifications intentionally include a variety of effects beyond the purview of specifically defined pollutants that is typical of more quantitative standards. No change from the existing language is made at this time.

Comment: One individual commented that the use of the term "aesthetically attractive condition" in §307.4(b)(4) is not defined and notes some perceptions of this term may be environmentally harmful.

Response: The commission acknowledges that this term is open to interpretation, as is generally the case with the narrative criteria in §307.4(b). The wide variety of aquatic environments in Texas creates difficulties in establishing a uniform application of this term. The general narrative criteria were not a focus of this revision, but changes such as these can be considered for the next triennial revision. No change from the existing language was made in response to the comment.

Comment: TPWD notes that the site-specific criteria section, §307.7(b)(4)(E), includes associated screening levels for total phosphorus and secchi depth and questions whether the criteria in §307.4(e) should include discussion of associated screening levels.

Response: The commission notes that the selected nutrient criteria for reservoirs no longer include associated screening values, so no additional discussion of them in this section is needed.

Comment: NWF comments that the term "presume" should be added to the list of the types of uses that must be protected from excessive growth of aquatic vegetation in §307.4(e).

Response: The commission concurs and adopts the language as modified.

Comment: NWF comments §307.4(f) includes a phrase "discharges of treated domestic (sanitary) effluent" that is too broad. NWF states that it is inappropriate to exempt every discharge of treated domestic effluent from compliance with the temperature standard. NWF comments that to the extent that temperature excursions resulting from discharges of treated domestic effluent are reasonably avoidable, the standards should require that the excursion be avoided.

Response: In general, the temperature exemption in §307.4(f) for domestic wastewater discharges is appropriate. The commission responds that this might be an appropriate consideration for the next revision of the standards pending additional stakeholder review.

Comment: HCFCD notes that the addition of the aquatic life subcategory of "minimal" is appropriate. TPWD notes that a new category of aquatic life use, termed "minimal," is proposed that replaces "no significant aquatic life use" in §307.4(h)(4) and §307.7(b)(3)(A)(i). No attributes are listed in either §307.7(b)(3)(A)(i), Table 3, or Table 1 of the Implementation Procedures, unlike the existing aquatic life use categories (exceptional, high, intermediate and limited). This raises the question of how to distinguish between a limited aquatic life use and a minimal aquatic life use. TPWD recommends that references to minimal aquatic life use be stricken from the standards and implementation procedures until these *attributes are developed and that TCEQ continue to use the "no significant aquatic life use" designation until such attributes are developed.*

Response: The commission agrees that additional evaluations of biological categories and indices to delineate a "minimal aquatic life use" may be useful, but this change and the requested deletion of references to this use are beyond the proposed scope of these revisions. The commission notes that "minimal aquatic life use" has been historically known as "no significant aquatic life use" and is only used when assigning presumed aquatic life uses to intermittent streams without perennial pools. This use is based on flow characteristics and not aquatic life attributes. The commission currently assigns "no significant aquatic life uses" as the presumed use for intermittent streams without perennial pools in permitting. The term "minimal" is also being added to §307.4(h)(4) and §307.7(b)(3)(A)(i) to be consistent with the Surface Water Quality Monitoring Program, who use the term "minimal" in their aquatic life use designation for the Integrated Report. Commission staff will continue to coordinate with TPWD staff to improve procedures to assign aquatic life use categories. The commission adopts the revision as proposed

Comment: One individual comments that the phrase "higher uses are protected where they are attainable" in §§307.4(h)(3) and (4) is not defined and can be interpreted in multiple ways.

Response: The commission responds that the intent of this phrase is to facilitate assigning uses that are more protective than presumed, but additional clarification can be reviewed and proposed in the next revision of the standards, if appropriate.

Comment: One individual noted that §307.4(h) states that when water is present in the streambed of intermittent streams, a 24-hour dissolved oxygen mean of at least 2.0 mg/L and an absolute minimum dissolved oxygen of 1.5 mg/L must be maintained. This individual notes that the term "absolute minimum" is not defined and asks whether it means that the dissolved oxygen can never drop below 1.5 m/L even in a grab sample. If so, it would helpful if this provision also referenced §307.9(e)(6). This individual also asks whether the 1.5 mg/L is also limited to the eight-hour duration referenced in other tables and finally asks, whether a concentration just over the minimum, e.g. 1.51 mg/L, be acceptable for 16 hours as long as the average of 2.0 mg/L met.

Response: The commission responds that the term "absolute" in §307.4(h) was replaced with "24-hour" and the term "daily minima" was replaced with "24-hour minimum dissolved oxygen concentrations" in §307.7(b)(3)(A)(i), Table 3 (footnote), for consistency purposes. The eight-hour language is only applied when a dissolved oxygen concentration remains right at the 24-hour minimum criterion and this phrase is not intended to allow dissolved oxygen concentrations to go below the daily minimum at any time. The commission adopts this language as modified, but can review these provisions in the next revision of the standards.

Comment: OPIC objects to the process in §307.4(j) governing the assignment of presumed recreational uses to unclassified water bodies. OPIC notes that the process in the rule is very general, but that the specifics are included only in the guidance of the Implementation Procedures and recommends referencing the recreational UAA procedure included in the draft guidance document and require that a recreational UAA be conducted as part of an inquiry into a possible deviation from the presumed use of primary contact recreation.

Response: The procedures for the inquiry are established in the commission's recreational UAA and this document is referenced on the commission's Web site and in multiple Quality Assurance Project Plans. Therefore, the commission respectfully declines to adopt the proposed change.

Comment: TSSWCB comments that it is inappropriate to apply contact recreation use (primary or secondary) where political subdivisions have established enforceable ordinances and rules that forbid contact recreation in water bodies within their jurisdiction. For that reason, TSSWCB encourages the inclusion of a third form of the applicable application of noncontact recreation that would address this issue.

Response: The commission responds that this recommendation is outside the scope of the proposed rulemaking. However, these kinds of ordinances are major factors in assessing recreational uses with a UAA.

Comment: BRA, Fox Dairy, Hamilton County Commissioner Dickie Clary, Heifer Ranch at Arroyo Seco, High Plains Dairy Counsel, Legacy Farms, Texas State Representative Sid Miller, Harrison County Judge Randy Mills, ICA, NRA, Sanderson Farms, 74 Soil and Water Conservation Districts, Hamilton, PCA, SAWS, TCFA, Texas Poultry Federation, TSCRA, T/K, TFB, TSSWCB, TIP, TCC, TDA, TCPA, WEAT, and a number of individuals filed comments supporting the proposed contact recreation standard changes that would allow TCEQ to apply a tiered set of water quality standards to streams depending upon their site-specific characteristics. PHA comments that all four proposed use categories include some type of recreation.

PLTA, Sierra Club, Public Citizen, TBBU, SEED, WE CAN, SOSA, TCA, SMRF, Environment Texas, and NWF oppose the revision to the recreational use categories. OPIC generally supports the new categories, but objects to the indicator bacteria levels associated with the new subcategories because they are less restrictive than current rules. GBF states that great care should be given before lowering a water body's presumed primary contact use and that care has to be taken in the recreational UAA process. GBF is also concerned that a recreational use UAA may not predict future use of a water body.

Response: The commission notes comments in support and opposition to the new recreational use categories. The commission responds that it is appropriate to expand the two current categories for recreational uses (contact and noncontact recreation) into four categories (primary contact, secondary contact 1 and 2, and noncontact recreation) in an effort to better characterize the different levels of water recreation activities that can occur in Texas. In the 1980's and 1990's, a contact recreation use was broadly presumed for all surface waters in Texas, with the exception of eight distinct water bodies, e.g. ship channels. As a result of these broad optimistic presumptions, there may be numerous water bodies with inappropriate recreational uses. The expanded recreational use categories will provide the commission the ability to better assign appropriate recreational use on water bodies. The commission notes that EPA has indicated that recreational use categories and criteria, such as secondary contact recreation with a geometric mean criterion five times the primary contact geometric mean, are acceptable.

Comment: TSSWCB comments that designated swimming areas are more adequately addressed in the recreational UAA protocols and a discussion of parks should not be included in the standards. TPWD *comments that all parks with water bodies, whether federal, state, or local, with or without designated swimming areas, are likely to have wading by children. TPWD requests that language be added to §307.4(j)(3)(A) - (C) that specifically designates water bodies in parks as having primary contact recreation use and that requires a rulemaking action to change that use.*

Response: The commission responds that designating all water bodies in parks as having a primary contact recreation use is not appropriate and could result in inappropriate water quality standards for numerous water bodies throughout the state. The commission responds that it will evaluate water bodies on a site-specific basis to establish the appropriate recreation use. The commission notes that it considers all parks in the evaluation of recreational UAAs.

Comment: One individual asks for an explanation of use of the phrase "substantial pools" in §307.4(j)(2)(B)(i). TPWD asks whether the phrase "or greater" should be included as it relates to the depth of one meter in this section.

Response: The commission recognizes that the term "substantial pools" is not quantitatively defined in the rule. The size and extent of pools is considered in the evaluation of recreational UAAs. In response to comments, the commission editorially revised the language to include "or greater." The commission adopts this language as modified.

Comment: One individual notes the phrase "existing recreational activities that create a significant risk of ingestion" in §307.4(j)(2)(B)(ii) and asks what the time frame is in this case. Also, the individual asks how an area that previously harbored contact recreation, but now does not, is addressed.

Response: The commission notes that the time frames for evaluating recreational uses are specified in the recreational UAA procedures. In addition, these procedures include an evaluation of historical recreation.

Comment: One individual comments that in §307.4(j)(2)(C), secondary contact recreation 2 is vague and not very different from secondary contact recreation 1.

Response: The commission responds that the differences between secondary contact recreation 1 and 2 is the frequency of occurrence of these activities due to physical characteristics of the water body or limited public access.

Comment: EPA comments that the process for assigning recreational uses to unclassified water bodies in §307.4(j)(3) does not meet the public participation requirements in 40 CFR §131.10(e), which provides the opportunity for a public hearing under 40 CFR §131.20(b). EPA notes that if public notification on a downgraded recreational use occurs through the CWA, §303(d) process there is no opportunity to request a public hearing on the proposed change; and if public notification occurs during the permitting process, only an "affected person" under Texas law may request "a public (‘contested case') hearing."

Response: The commission respectfully disagrees that the proposed process for assigning presumed recreational uses does not have adequate public notification requirements. The commission notes that the commission's Integrated Report for the CWA, §303(d) List is noticed in the *Texas Register* for public comment, which accomplishes the same purpose as a public hearing because the public is

able to provide comments and submit evidence for consideration by the commission. That process gives the opportunity for the public to comment on and provide evidence regarding any downgraded recreational uses. The commission then responds to the comments received when they propose the final version of the CWA, §303(d) list.

In the permitting process, the general public does have an opportunity to request a "public meeting," which is the Texas equivalent to a federal "public hearing" under 40 CFR §131.20(b). A "public meeting" is held during the permitting process for the same reason as a federal "public hearing," the taking of public comment, (*See* 30 TAC §55.154). The executive director or Office of Public Assistance will hold a public meeting if: (1) the executive director determines that there is a substantial or significant degree of public interest in an application; (2) a member of the legislature who represents the general area where the facility is located or proposed to be located requests that a public meeting be held; or (3) when a public meeting is otherwise required by law. There is no requirement that the requestors be "affected persons" under §55.203 and the executive director is required to respond in writing in the form of a Response to Public Comment "all relevant and material or significant public comments," (*See* 30 TAC §39.551(e)(3)(E)).

The "contested case hearing" process noted by EPA in their comment is not analogous to a "public hearing" under the cited federal rules. A "contested case hearing" is an evidentiary proceeding before an administrative law judge (ALJ), where all parties, e.g. the executive director, the permit applicant, TCEQ's OPIC, "affected persons," and any other party granted party status by the commission or the ALJ may offer evidence in a trial-like proceeding. A contested case hearing is limited to factual issues relating to the particular permit application at issue.

Comment: NWF also comments that TCEQ has failed to show how impacts on downstream waters with higher use would be adequately protected. Volente expressed concerns that tributaries with a higher contact recreation use will contribute to increased bacteria in downstream water bodies with a primary contact recreation use.

Response: The commission's water quality management program has a framework to address protection of downstream water quality standards that are more stringent than upstream. This is a common occurrence with other kinds of criteria, such as those for dissolved oxygen and toxic pollutants. Under this approach, in permits and TMDLs, pollutant sources are evaluated and controlled so that different standards in affected water bodies are attained.

Comment: NWF comments that TCEQ needs to improve narrative criteria for nutrient standards to provide immediate protection to those water bodies that still do not have applicable numerical criteria.

Response: The commission responds that the existing narrative criteria for nutrients provide reasonable latitude to address nutrient problems where they occur. In addition, the commission is proposing a new section in the *Procedures to Implement the Texas Surface Water Quality Standards* to evaluate and control nutrient impacts from wastewater discharges. The commission is also devoting substantial resources to develop numerical nutrient criteria for streams, rivers, and estuaries.

§307.5 – Antidegradation

Comment: Lowerre Frederick comment that the proposed rules contain an exemption from its Tier 2 protection for de minimis changes in water quality that is not supported by the CWA. Austin comments that the term de minimis needs a technically accurate, scientifically based, quantitative definition in the rules because the lack of a clear definition has created a loophole that has been exploited by permit applicants for wastewater discharges that would otherwise not be permitted. One individual comments that the phrase "important economic or social development" in §307.5(b)(2) is exceedingly vague and sets a very dangerous precedent.

Response: The commission responds that the antidegradation provisions in §307.5 are in accordance with federal regulation and guidance. The commission acknowledges that some of the considerations of the antidegradation policy have been difficult to define at both the state and federal level. An expanded section, Antidegradation, was put in the *Procedures to Implement the Texas Surface Water Quality Standards* to provide guidelines and examples on how antidegradation is addressed and defined.

§307.6 – Toxic Materials

Comment: Sierra Club, Public Citizen, TBBU, SEED, WE CAN, and EPA support narrowing the language in §307.6(a) regarding instances where the toxic criteria do not apply to instances where surface water, solely as a result of natural phenomena, exhibits characteristics beyond the limits of this section. EPA notes that EPA's policy regarding this does not apply to human health issues.

Response: This provision was intended to be analogous to the similar provision found in §307.7(a). The commission recognizes that EPA's 1997 policy regarding natural background conditions does

not apply to human health numeric criteria, unless site-specific justification, such as a UAA, is provided to support a site-specific change. In response to comments, the commission adopts adding the phrase "with the exception of numeric human health criteria" at the beginning of the second sentence in §307.6(a) to clarify that the provision does not apply to human health criteria.

Comment: TPWD asks for clarification in §307.6(a) of the language when toxic criteria do not apply. For instance, TPWD asks whether toxic criteria apply to inter-basin water transfers of raw water, storm water runoff, surface discharges of groundwater, or to once-through cooling water discharges.

Response: This provision only applies to conditions and sources that are entirely due to natural phenomena.

Comment: NWF comments that "presumed" uses must be added as an additional category of uses to be protected from chronic toxicity in §307.6(b)(2).

Response: The commission notes the comment, but specifies the presumed use to be the designated use, unless a site-specific study has determined otherwise.

Comment: TPWD comments that §307.6(c)(1) and (2) was revised so that the determination of numeric criteria for the protection of aquatic life was limiting the dataset to only native species. TPWD comments that they stock and manage several species of non-native game fish in Texas water bodies. TPWD asks that these non-native fish also be protected and requests that datasets used to derive numeric criteria for protection of aquatic life include non-native stocked species.

Response: In accordance with the recalculation procedures provided by the EPA in Guidelines for Deriving Numerical Site-Specific Water Quality Criteria (EPA 600/3-84-099) and Appendix B of the draft guidance document entitled Interim Guidance on the Determination and Use of Water-Effect Ratios for Metals (EPA-823-B-94-001), states are allowed to recalculate national criteria based on native species. However, a minimum of eight families must be represented and no taxonomic grouping (including subgroups) may be completely eliminated from the national dataset. These protocols were followed when recalculating the site-specific aquatic life criteria in Table 1 of §307.6.

Comment: TIP is concerned that the language in §307.6(c)(2) may imply that the only valid basis that TCEQ can recalculate EPA nationally recommended criteria is to eliminate the effects of toxicity data for aquatic organisms that are not native to Texas. To avoid confusion regarding the scope of alternatives available to TCEQ, TIP recommends a sentence be added at the end of this section that states: "EPA guidance criteria may be used to establish numerical values as provided in 40 Code of Federal Regulations §131.1(b)."

Response: The purpose of §307.6(c)(2) is not to note all of the EPA approved methods for recalculating national criteria. Instead, §307.6(c)(2) refers to how numerical criteria contained in Table 1 of this section were recalculated. All recalculations were conducted by removing non-native fish from the dataset used to calculate the national criteria. However, in order to avoid restricting the future development of criteria, the commission adds a statement to this effect at the end of §307.6(c)(2).

Comment: EPA notes a typographical error in the proposed equation for persistent toxic materials in §307.6(c)(7)(C). EPA comments that the factor should be 0.05 instead of 0.5.

Response: The commission notes and corrects this typographic error and adopts the language as modified.

Comment: T/K, TCC, and TIP supported adding the biotic ligand model (BLM) to Table 1 of §307.6 as an alternative method for calculating site-specific criteria for copper in fresh water.

Response: The commission notes this comment in support of adding the biotic ligand model for calculating site-specific criteria for copper in fresh water.

Comment: T/K and TCC recommend that TCEQ consider using the "m" designator in lieu of the "w" multiplier in the equations for all metals in Table 2 of §307.6 in anticipation of EPA's adoption of a BLM approach for one or more of these metals. T/K and TCC recommends that the definition of the multiplier in §307.6(c)(10) be expanded to use the multiplier for all metals where it is applicable.

Response: The commission notes this comment and agrees that the "m" designator will be added to additional metals when EPA approves this approach. However, in order to avoid confusion regarding when this approach may be used in lieu of a water-effect ratio study, the commission will consider adding this designation to individual metals through triennial revisions as they are approved by the EPA.

Comment: APERC and TIP support the TCEQ's proposal to adopt EPA's water quality criteria for nonylphenol. APERC notes that their review of the available studies and data support adoption of the criteria.

Response: The commission notes this comment of support for the addition of nonylphenol numeric criteria.

Comment: EPA comments that the appropriate n-nitroso-di-n-butylamine human health criterion in §307.6(d)(1) for consumption of water and fish should be 0.119 µg/L rather than 0.19 µg/L.

Response: The commission corrected this typographic error and adopts the language as modified.

Comment: AECT, T/K, TCC, and TIP support the proposed fish tissue concentration of 700 mg/L for methyl mercury.

Response: The commission notes this comment of support of the fish tissue criterion for mercury.

Comment: EPA, Sierra Club, Public Citizen, TBBU, SEED, WE CAN, OPIC, NWF, CLI, ,Uncertain, CLACC, EIP, Environment Texas, TCE, CW Action, GCLA, LGCLA, FCLNWR, TCA, TPWD, Environment Texas, and Texas Catholic Conference support adoption of the stricter federal mercury standard of 300 mg/L rather than the TCEQ proposed standard of 700 mg/L in §307.6(d)(1) due to the danger posed by this metal, rather than the standard in the proposed rules.

TPWD supports adopting a water quality criterion of 0.3 mg/kg in §307.6(d)(1) of the standards for implementation in regulatory actions, but using a screening level (e.g., 0.7 mg/kg) to trigger a risk assessment for determining the need for fish consumption advisories and bans.

Response: The Texas Department of State Health Services (TDSHS) uses 0.7 mg/kg for issuing fish consumption advisories to protect public health. The TDSHS has extensive experience with fish tissue contamination as it relates to human health. When developing the fish consumption advisory level, the TDSHS applied an acceptable mercury exposure level developed by the federal Agency for Toxic Substances and Disease Registry. This exposure level is based on human studies that result in safe exposure to mercury in all populations, including sensitive subgroups.

The EPA recommends a slightly lower value of 0.3 mg/kg as the national criterion for the protection of human health. This value is based on similar but different studies of mercury exposure in humans.

The TDSHS issued a fish advisory for largemouth bass and freshwater drum from Caddo Lake in 1995 due to elevated levels of mercury in fish tissue. In 2003, the TDSHS began to receive anecdotal reports that residents, possibly including subsistence fishermen, were continuing to consume these fish species from Caddo Lake. In response to these reports, the TDSHS studied residents of Caddo Lake in May of 2004 to assess low level mercury exposure. Results of this study are captured in the report *Health Consultation: Mercury Exposure Investigation Caddo Lake Area*. The Caddo Lake study showed that while participants were consuming fish with mercury concentrations of 0.7

mg/kg and greater, participants had blood level concentrations of mercury at levels below where any adverse affects would be expected. This study supports the TDSHS approach.

TCEQ toxicologists have evaluated the studies used by the Agency for Toxic Substances and Disease Registry, the EPA, and the Caddo Lake study, and the basis for the TDSHS fish tissue advisory level have been determined scientifically sound. Therefore, the commission supports the criterion of 0.7 mg/kg as being health protective and scientifically defensible. The commission adopts the criterion as proposed.

Comment: TPWD notes that TCEQ in §307.6(d)(1) chose to use an EPA-sanctioned bioconcentration factor (BCF) to convert tissue mercury to water-column mercury concentrations. TPWD concurs that the scientific community does not agree on a bioaccumulation factor (BAF), but notes with concern that use of the proposed BCF will in every instance result in a larger criterion than if any of the BAFs were used. TPWD wonders if the fish-consuming public is adequately protected by the proposed BCF and recommends use of a more conservative interim value.

Response: The numeric standard for the protection of human health is the fish tissue-based criterion of 700µg/kg (0.7 mg/kg), not the translated water-column number, which is used for permitting purposes only.

The commission notes the concern regarding the use of a BCF instead of a BAF, but supports using a translation factor with the widest margin of acceptance among the scientific community. The commission encourages the use of BAFs for the translation between tissue-based and water-column

based criteria; and these factors will be updated in future revisions as the science of developing BAFs progresses. The assumed BCF used in this translation is comparable to the BCFs used to derive the mercury criteria in the 2000 Texas Surface Water Quality Standards.

Comment: IPC and McGinnes Corp. comment that the procedures to derive the proposed tissue-based water criterion for polychlorinated dibenzo-p-dioxins and dibenzofurans in §307.6(d)(1) should be reconsidered. A 10^{-4} risk level, similar to what TDSHS uses, or the noncancer minimum risk level should be used to calculate the tissue-based criterion. Another suggestion is to use the fish threshold developed by TDSHS as the water quality standard.

Response: The primary assumptions used to derive the proposed fish tissue concentrations were chosen for specific reasons. The excess cancer risk level of 1×10^{-5} is the risk level used by the commission. It is stated on page 65 of the *Procedures to Implement the Texas Surface Water Quality Standards* (RG-194) that: "Water quality criteria for human health protection are derived as stated in §307.6(d)(8) and (9). For known or suspected carcinogens, a cancer risk of 10^{-5} (1 in 100,000) is applied to the most recent numerical criteria adopted by EPA and published in the *Federal Register*." This is also in accordance with §1.6 of EPA's guidance document *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)* (EPA-822-B-00-004). Even though EPA uses a risk level of 10^{-6} when calculating national human health criteria, states are allowed to use a less stringent risk level of 10^{-5} when calculating human health criteria as long as states can ensure that the risk to more highly exposed subgroups, such as subsistence fishermen, is no greater than 10^{-4}. A 10^{-5} risk level can also be useful in helping prevent TDSHS fish

consumption advisories that use a 10^{-4} risk level. Therefore, the commission recommends using a risk level of 10^{-5} when calculating human health criteria.

The body weight scaling factor of 3/4 is the appropriate default scaling method for carcinogens; as stated in *Methods for Identifying a Default Cross-Species Scaling Factor,* prepared by L. Rhomberg and T. Lewandowski for a 2004 EPA Risk Assessment Forum: "In the absence of chemical-specific information sufficient to do otherwise, the guidance of the EPA for carcinogen risk assessment is to apply a default animal-to-human oral dose extrapolation based on presumed toxicological equivalence of daily doses scaled by the 3/4-power of body weight (i.e., $mg/kg^{3/4}$/day doses are presumed equivalent)." Therefore, the commission uses a body weight scaling factor of 3/4 for criteria development for carcinogens.

A fish tissue consumption rate of 0.0175 kg/day, as stated in EPA's *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)* (EPA-822-B-00-004), is recommended as a default fish intake rate to adequately protect the general population of fish consumers, based on the 1994 to 1996 data from the USDA's *Continuing Survey of Food Intake by Individuals* (CSFII). This value is the 90th percentile of the 1994-96 CSFII data and is very similar to the mean intake for all fish, which is 0.018 kg/day. Therefore, the commission uses 0.0175 kg/day as the default fish tissue consumption rate.

Carcinogens can often cause noncarcinogenic, as well as carcinogenic effects. The commission evaluates both carcinogenic and noncarcinogenic effects of chemicals and sets human health criteria based on the most conservative approach to protect against all potential effects. In the case

of dioxins and furans, criteria based on the carcinogenic effects presented the most conservative approach for protection of human health. Therefore, the commission supports deriving the criterion to protect human health based on the carcinogenic potency factor of 156,000 mg/kg/day, which is the same carcinogenic potency factor used by TDSHS and is also found in EPA's *Health Effects Assessment Summary Tables* (EPA 540-R-97-036), as opposed to the noncancer minimum risk level of 1 pg/kg/day. The commission adopts the criterion as proposed.

Comment: IPC and McGinnes Corp. comment that the use of a BCF for establishing water quality criteria for mixtures of polychlorinated dibenzo-p-dioxins and dibenzofurans is inappropriate. IPC and McGinnes Corp. comment that there is currently no reliable way to translate polychlorinated dibenzo-p-dioxins and dibenzofurans from a fish tissue concentration to a water column concentration.

Response: The commission acknowledges there can be high variability in BCFs. However, the use of a fish tissue criterion is one way to improve applicability of a water quality criterion. The commission encourages the development of site-specific BAF. However, even in light of variability, there must be an assumed BCF in order to conduct water quality management programs. The commission proposed using the BCF found in the EPA's *Ambient Water Quality Criteria for Polychlorinated Biphenyls* (EPA 440/5-80-068); and the commission will continue to update this BCF in future rule revisions as additional BCF/BAF development continues. The commission adopts the language as proposed.

Comment: T/K supports the proposed fish tissue-based human health water quality criteria for various compounds in Table 2 of §307.6 and would like to see that approach be extended to all constituents that *have bioconcentration or bioaccumulation factors greater than 1,000. TIP and AECT also support the fish tissue-based human health water quality criteria for specified highly bioaccumulative pollutants. TWCA and TCC support the proposed changes to adopt fish tissue-based criteria for highly bioaccumulative pollutants such as mercury, dioxins, furans, PCBs, and DDT.*

Response: The commission notes this comment in support of fish tissue-based criteria and the comment regarding the development of similar criteria for other highly bioaccumulative constituents. This recommendation may be considered for the next triennial revision.

Comment: TCC and TIP comment that the proposed criteria of benzo(a)anthracene in Table 2 of §307.6 of 0.007 mg/L (fish and water) and 0.03 mg/L fish are incorrect. TCC's review of available data shows that the water quality criteria for benzo(a)anthracene should be identical to those of benzo(a)pyrene because the benzo(a)pyrene ql applies to both chemicals. Therefore, TCC, and TIP stated that the proposed limits should be 0.068 mg/L (fish and water) and 0.33 mg/L (fish).*

Response: The commission acknowledges the error in calculation. The necessary correction was made to Table 2 in §307.6 and adopts the criterion as modified.

*Comment: TIP comments that footnote "**" in Table 2 of §307.6 states that PCB criteria apply to the sum of all congeners or all isomers or homologs or Arochlor analysis. TIP contends that this footnote is not yet supported by analytical methods necessary for its application. TIP recommends the footnote be revised to read: "Until Method 1668 or an equivalent method to measure PCB congeners is approved at 40 CFR Part 136, compliance with the PCB criteria shall be determined using Arochlor data." TCC* *comments that the proposed fish tissue criterion for PCBs in the proposed rules is unworkable and recommends determining compliance with water quality criteria for PCBs with Arochlor data, until EPA promulgates Method 1668.*

Response: The commission edited and adopted the footnote as follows: "Until Method 1668 or equivalent method to measure PCB congeners is approved in 40 CFR Part 136, compliance with PCB criteria is determined using Arochlor data or any alternate method listed in a TCEQ approved Quality Assurance Plan."

Comment: In Table 2 of §307.6, TPWD recommends changing "Polychlorinated Biphenyls PCBs)" to "Polychlorinated Biphenyls (PCBs)."

Response: The commission agrees with this comment and the recommended change was made.

Comment: TIP recommends that TCEQ review the numeric notation format for BCF factors that it uses in its footnotes to Table 2. In some footnotes, TIP notes that TCEQ uses two different forms of scientific notation. For consistency, TIP recommends selecting one format and using it throughout.

Response: The commission agrees with the comment and revised the form of scientific notation for consistency in the adopted rules.

Comment: TPWD comments that in certain instances in §307.6(d)(1), default criteria or calculations are based on United States Food and Drug Administration (USFDA) action levels for contaminants in fish *tissue. USFDA action levels are not based only on risk assessment, but also on risk management (i.e., economic impacts) and are set to protect the general public from contaminants in fish shipped in interstate commerce. These action levels are not designed to protect sport or subsistence anglers from eating contaminated fish from local waters. Therefore, TPWD suggests it would be more appropriate to use action levels that are based on local consumer consumption, rather than interstate commerce.*

Response: USFDA action levels were used in previous water quality standards revisions for the calculation of human health mercury criteria. However, USFDA action levels were not utilized in this revision to calculate human health criteria listed in Table 2 of this section. Criteria, including fish tissue-based criteria, were calculated in accordance with the procedures described in §307.6(d)(3).

Comment: Sierra Club, Public Citizen, TBBU, SEED, and WE CAN support the consideration of childhood exposure in the setting of human health criteria for noncarcinogens in §307.6(d)(2).

Response: The commission notes this comment in support of childhood exposure in the setting of human health criteria for noncarcinogens and adopts the language as proposed.

Comment: TPWD notes that in §307.6(d)(7) and §307.9(e)(4) the reference to an average life span of 70 years was deleted. TPWD supported of this change, since the average longevity of Americans exceeds 70 years. However, TPWD comments that a new value for average lifespan was not included and recommends that a new value be included, along with the appropriate references.

Response: The Center for Disease Control (CDC) currently lists the average life expectancy of 77.7 years. However, the CDC also notes that the average life expectancy varies widely between gender and race. Since the average life expectancy continues to increase as medical technologies and treatments advance, no specific number was included in this revision of the standards.

Comment: TPWD supports requirements in §307.6(e) to address sublethal effects in toxicity testing requirements, particularly in light of recent findings regarding the effects of pharmaceuticals and personal care products on aquatic biota.

Response: The commission notes this comment in support of sublethal effects in toxicity testing requirements.

Comment: NWF notes that the third sentence in §307.6(c)(1) is a confusing circular statement that basically states, "Chronic total toxicity…must be…controlled to preclude chronic toxicity." NWF recommends deleting the term "chronic" the first time it appears in the third sentence.

Response: The word "chronic" is included in the first portion of the sentence because it refers to a specific type (category) of toxicity testing. The purpose of the statement is to clarify that this type of test is used to protect all waters in the state with a designated aquatic life use of limited or greater from chronic toxicity. The commission adopts the language as proposed.

Comment: In regards to §307.6(d)(5), NWF notes that the proposed reference to "stream flow conditions as specified in §§307.8" could be read as making human health concentration criteria inapplicable when *any one of those stream flow conditions are not satisfied. NWF recommends a more narrow reference be included.*

Response: The commission proposed this change in §307.6(d)(5) in order to indicate that although harmonic mean flows are used as the assumed instream flow when calculating permit limits for human health toxic criteria, the criteria are still applicable, as a long-term average, at flows below the harmonic mean flow. The commission added a sentence to this effect in §307.8(4).

Comment: NWF comments that the proposed revisions to §307.6(e)(2)(D) appear to create an unacceptable situation, such that demonstrated toxic impacts may not be addressed. The proposed language makes the requirement of a toxicity reduction evaluation (TRE) discretionary and then goes on to state that permit amendments are dependent on the results of a TRE. The section does not appear to have any language describing what happens when acute or chronic toxicity is not precluded, but a toxicity reduction evaluation is not required.

Response: The commission agrees clarification of §307.6(e)(2)(D) is needed and adopts the modified language as follows: "If toxicity biomonitoring results indicate that a discharge is not sufficiently controlled to preclude acute or chronic toxicity as described in this subsection, then the permittee will be required to eliminate sources of toxicity and may be required to conduct a toxicity reduction evaluation (TRE) in accordance with the permitting procedures of the commission. In accordance with the implementation procedures, permits are amended to include appropriate provisions to eliminate toxicity."

Comment: TIP is concerned that language in §307.6(e)(2)(D) that refers only to a chemical-specific limit is confusing and recommends the second to last sentence in the section be revised as follows: "Where sufficient to attain and maintain applicable numeric and narrative state water quality standards, a chemical-specific limit, best management practices, or other actions designed to reduce or eliminate toxicity, rather than a total toxicity limit, may be established in the permit."

Response: The commission agrees with this clarification and changed the language as recommended.

Comment: One individual comments that the variance included in §307.6(e)(2)(E)(i) is not clear whether it refers to natural conditions or human impacts. The individual notes that issuing variances based on the latter is in opposition to the antidegradation policy.

Response: The purpose of this section is intended to describe some of the justifications that might be appropriate in the development of site-specific standards for toxicity and toxic pollutants. This type of site-specific standard requires a revision to the standards rule for it to be fully incorporated into water quality management programs.

§307.7 – Site-Specific Uses and Criteria

Comment: BRA supports changing the indicator bacteria for certain high saline inland waters from E. coli to Enterococci.

Response: The commission acknowledges this comment in support of changing the indicator bacteria for certain high saline inland waters.

Comment: LCRA questions the use of Enterococci as an indicator of pathogenic bacteria in tidally-influenced surface water because their review of the data indicates that Enterococci may not always be the appropriate indicator of pathogenic contamination in tidal streams. LCRA suggests analyzing bacteria samples in tidal streams for both Enterococci and E.coli.

Response: The commission acknowledges that during certain times tidal water bodies may exhibit levels below the thresholds where *E. coli* could be used. However, for consistency with monitoring and assessment purposes, Enterococcus will continue to be applied as the indicator for recreational suitability in tidal waters.

Comment: Austin, Uncertain, CLACC, EIP, Environment Texas, TCE, CW Action, GCLA, LGCLA, FCLNWR, CLI, DCPC MUD, Highland Lakes Group, Highland Lakes PAC, PLTA, Lakeway, State Senator Kirk Watson, Texas State Representative Valinda Bolton, SMRF, TCA, CEHI, Environment Texas, NWF, and Volente oppose relaxing the bacteria standard from 126 cfu/100 ml to 206 cfu/100 ml. Travis County Judge Samuel T. Biscoe comments that it is inappropriate to make this change statewide and recommends retaining the current standard on each classified and unclassified segment in Travis County. Volente is concerned that the proposed rules will allow for increased bacteria levels in some *tributaries to the Highland Lakes. Senator Watson recommended that the rules be written to allow for consideration of potential impact of setting even less stringent requirements for tributaries of the Highland Lakes that risk being classified as secondary contact recreation under the proposed rules.*

OPIC suggests the current bacteria limits for both fresh and saltwater be maintained. Sierra Club, Public Citizen, TBBU, SEED, and WE CAN oppose raising the standard to EPA's standard at this time because EPA is working under a consent order to revise their recreational water quality criteria by October, 2012. Sierra Club, Public Citizen, TBBU, SEED, and WE CAN recommend that TCEQ wait until those standards are published prior to making changes at this time to weaken the state's current standards. Sierra Club, Public Citizen, TBBU, SEED, WE CAN, and NWP also oppose the proposed higher allowable bacteria levels in the proposed secondary contact recreation 1 of 630 cfu/100 ml and noncontact recreation of 2,060 cfu/100 ml. HCPHES asks for additional information regarding relaxing the bacteria standards for contact recreation. CLACC, GCLAT, LGCLA, FCLNWR, EIP, CW Action, Uncertain, TCE, and CLI generally do not support any changes to the bacteria criteria. DCPC MUD asked why there is an across the board relaxation of bacteria criteria from 126 cfu/100 ml to 206 cfu/100 ml.

Numerous individuals objected to the redefinition of the contact recreation standards and setting weaker clean water standards by increasing the allowed levels of bacteria in water bodies used for recreation.

BRA, Fox Dairy, Hamilton County Commissioner Dickie Clary, Heifer Ranch at Arroyo Seco, HCFCD, High Plains Dairy Counsel, IBWC, ICA, Legacy Farms, Sanderson Farms, Texas State Representative Sid Miller, 74 Soil and Water Conservation Districts, the Texas Poultry Federation, Hamilton, TCFA, PCG, TSCRA, T/K, TFA, TSSWCB, TCC, TCPA, and numerous individuals filed comments in support of changing the bacteria standard from 126 cfu/100 ml to 206 cfu/100 ml. SARA comments that all reservoirs, perennial streams, and intermittent streams with pools should be classified as primary contact recreation with a standard E. coli of 206 cfu/100 ml. Other individuals filed comments supporting the *proposed change because it was consistent with EPA guidance for fresh water and would not adversely affect water quality in Texas streams and rivers. HCFCD agrees with the proposed revisions to §307.7(b)(3).*

Sierra Club and 9 individuals commented that a major factor in the proposed changes is a reduction in TCEQ workload. TSSWCB does not agree that these changes are being made to address workload, but to determine the appropriate use and criteria.

Response: The intention of the revisions is to better assign appropriate recreational uses and criteria to water bodies in Texas. Currently, recreational waters can have two types of recreational uses – contact and noncontact recreation. In the 1980's and 1990's, a contact recreation use was broadly presumed for all surface waters in Texas, with the exception of eight specific water bodies, e.g. ship channels. As a result of these broad optimistic presumptions, there may be numerous water bodies with inappropriate recreational uses.

The commission will thoroughly evaluate water bodies to determine if recreational activities are occurring and where recreational use may be inappropriate through a recreational UAA. A recreational UAA involves coordination with local stakeholders and landowners, data collection, and an evaluation of water recreation activities.

In response to comments, the commission adopts modified §307.7(b)(1)(A) and Appendix A that retains the freshwater primary contact recreation geometric mean criterion of 126 *E. coli* per 100

ml and modifies the freshwater primary contact recreation geometric mean criterion from 54 to 33 Enterococci per 100 ml for high saline inland water bodies.

The commission notes that the EPA has indicated that states may adopt a secondary contact recreation use and less stringent criterion (such as five times the primary contact criterion).

Comment: TSSWCB suggests minor alterations in the factors to calculate the limits for inland fresh E. coli, inland salt Enterococci, inland salt (alternative) fecal coliform, and coastal salt Enterococci. Based on their calculations, it suggests the following criteria for various uses and parameters. TSSWCB also suggests establishing bacteria criteria for secondary contact recreation 2 for Enterococci in coastal marine waters in §307.7. TSSWCB's recommendations are as follows:

Figure: 30 TAC Chapter 307 - Preamble

	Inland fresh E. coli	*Inland salt Enterococci*	*Inland Salt (Alt) Fecal Coliform*	*Coastal Salt Enterococci*
Primary Contact	*206*	*54*	*200*	*35*
Sec. Contact 1	*618*	*162*	*600*	*105*
Sec. Contact 2	*1,030*	*270*	*1,000*	*175*
Noncontact	*2,060*	*540*	*2,000*	*350*

Response: The commission acknowledges these suggestions. The secondary contact recreation criteria for freshwater is based on EPA's November 2003 draft guidance document entitled *Implementation Guidance for Ambient Water Quality Criteria for Bacteria*, which indicates that states may adopt a secondary contact recreation use and less stringent criterion (such as five times the primary contact criterion). Different fecal coliform criteria for secondary contact recreation 1 and 2 were not proposed because fecal coliform, as an alternative indicator, is only applicable to high saline inland freshwaters for a period of two years after the adoption of the rule. The commission did not propose a secondary contact recreation 2 use for saltwater due to compliance concerns regarding the Beach Act. The commission adopts the language as proposed.

Comment: TSSWCB strongly supports the elimination of fecal coliform as an alternative instream indicator for E. coli in fresh inland waters and for Enterococcus in coastal waters. Additionally, TSSWCB strongly supports the elimination of the use of fecal coliform as an indicator for wastewater effluent discharges.

Response: The commission acknowledges these comments of support.

Comment: TSSWCB comments that certain water bodies in the Panhandle and West Texas have a natural high salt content that makes E. coli detection unreliable. Therefore, TSSWCB supports the use of Enterococcus as the applicable indicator bacteria for high saline waters. TSSWCB supports the use of fecal coliform as a temporary alternative indicator, for a two-year time frame, only until sufficient Enterococcus data are collected.

Response: The commission acknowledges the support for the use of Enterococcus as an applicable indicator bacteria for high saline inland freshwaters.

Comment: GBF comments that the relationship between E. coli and human pathogens has not been established in Houston area bayous and streams and recommends TCEQ immediately undertake research to clarify this relationship. In the future, in order to further refine the standards, WEAT suggests that TCEQ conduct studies to improve the quantitative measures of risk that should inform the criteria for specific uses. For future revisions, Harris County suggests TCEQ could consider adjusting the criteria for bacteria to better correlate with human health risk.

Response: The commission acknowledges these comments and notes that the EPA is in the process of developing new or revising bacteria criteria by October 15, 2012, that are to be based on recent epidemiological studies. The commission will re-evaluate the recreation criteria in subsequent standards revisions when the EPA's new or revised bacteria criteria become available.

Comment: TSSWCB comments that there are conflicting numbers regarding what constitutes high saline inland waters and requests TCEQ explain the disparity between the numbers.

Response: The commission will evaluate provisions in guidance documents where this discrepancy might occur.

Comment: TSSWCB comments that they do not support the unsubstantiated statement that designates Enterococcus as the recreational indicator bacteria for unclassified segments in high saline inland water *bodies. TSSWCB suggests adding the following language to §307.7: "…unless specific conductance data indicate that a particular unclassified water body is not high saline."*

Response: The commission revised the language as recommended.

Comment: Sierra Club, Public Citizen, TBBU, SEED, and WE CAN object to the language in §307.7(b)(1) that would allow a classified segment to be designated for less than contact recreation on the basis that "wildlife sources of bacteria are unavoidably high." TPWD appreciates that in §307.7(b)(1) TCEQ has made a provision in the contact recreation standards for wildlife management areas, coastal birding trail sites, and similar venues by including language, " . . .unless . . .wildlife sources of bacteria are unavoidably high and there is limited aquatic recreation potential. . .."

Response: The commission acknowledges the comments of support and opposition to the term "wildlife sources of bacteria" in §307.7(b)(1). The commission responds that there is utility in having this language in the standards that takes wildlife sources into account. The commission adopts the language as proposed.

Comment: One individual asks for an explanation of the phrase in §307.7(b)(1) regarding sources of pollution that cannot be controlled by existing regulations.

Response: The commission responds that the language in §307.7(b)(1) is not intended to relax bacteria criteria for regulatory purposes. There may be instances where there are elevated

concentrations of indicator bacteria in state or international border waters from sources that are outside the jurisdiction of existing regulations in Texas.

Comment: One individual notes that the reference to the single sample criterion of E. coli in §307.7(b)(1)(A)(i) is inconsistent with the statements on page 16 of the proposal preamble that discusses attainment based on samples taken over a two-year period.

Response: The commission responds that the single sample criterion in §307.7 is provided for non-assessment purposes such as swimmer safety notification and wastewater permit compliance.

Comment: One individual asks what the interpretation of §307.7(b)(1)(A)(v) is where the unclassified segments are not characteristically high saline, but freshwater. The individual also comments that Enterococci levels for high saline inland waters and saltwater in §307.7(b)(1)(B)(i) - (iii) are not consistent and the reason for the discrepancies are not apparent. In addition, the individual asks why there is no secondary contact recreation 2 listing for saltwater.

Response: The commission responds that the intent was for Enterococcus to be applied as an indicator uniformly to unclassified water bodies that are within the watershed of certain high saline inland classified segments. This was done to prevent potential confusion from having two indicators within the watershed of a segment, particularly when determining when one indicator is used instead of the other for monitoring and assessment purposes. The proposed language was modified and adopted as changed to allow *E. coli* to be used on certain unclassified water bodies when it is demonstrated that they are not highly saline.

The commission responds that the freshwater and saltwater Enterococci criteria are based on EPA's recommended 1986 bacteria criteria. EPA's criteria were derived using *E. coli* and Enterococci concentrations from epidemiological studies that are roughly correlated to the estimated illness rate associated with EPA's previously recommended fecal coliform criteria. EPA estimated these illness rates to be approximately 1% of swimmers exposed in freshwater and 1.9% of swimmers exposed in marine water. EPA's recommended risk level and geometric mean for Enterococci to protect for primary contact recreation in saltwater is 1.9% and 35 cfu/100 ml, respectively. Their recommended risk level and geometric mean for enterococci to protect for primary contact recreation in freshwater are 1% and 54 cfu/100 ml, respectively. The commission did not propose a secondary contact recreation 2 use for saltwater due to compliance concerns regarding the Beach Act.

Comment: One individual notes that §307.7(b)(1)(C)(ii) indicates that the fecal coliform criterion for both secondary contact recreation uses is 1,000 cfu/100 ml, but the E. coli criterion between these uses are 630 cfu/100 ml and 1,030 cfu/100 ml and states that this does not follow.

Response: The commission responds that different fecal coliform criteria for secondary contact recreation 1 and 2 were not proposed since fecal coliform, as an alternative indicator, is only applicable to high saline inland freshwaters for a period of two years after the adoption of the rules.

Comment: One individual noted that §307.7(b)(3) refers to "minimum" in the column heading, but "daily minima" in the footnotes, and asks if these terms are synonymous. This individual also asks if "daily *minima" is the same as the "absolute minimum" mentioned in other provisions (see §307.4(h)(4)). The individual asks whether it means that the dissolved oxygen can never drop below 1.5 m/L even in a grab sample. If so, it would be helpful if this provision also referenced §307.9(e)(6). This individual also asks whether a concentration just over the minimum (e.g. 1.51 mg/L) would be acceptable for 16 hours, as long as the 24-hour mean dissolved oxygen was met.*

Response: The commission responds that the term "absolute" in §307.4(h) was replaced with "24-hour" and the term "daily minima" was replaced with "24-hour minimum dissolved oxygen concentrations" in §307.7, Table 3, (footnote) for consistency purposes. The eight-hour language is only applied when a dissolved oxygen concentration remains right at the 24-hour minimum criterion. This phrase is not intended to allow dissolved oxygen concentrations to go below the daily minimum at any time. The commission adopts this language as modified from the existing rule. The commission may review these provisions at the next revision of the standards.

NOTE: There were comments that directly addressed nutrients in §307.7. However, most of the comments are in reference to §307.10, Appendix F. These comments will be included in that discussion.

Comment: Aransas County, Blackburn Carter, CBBF, NWF, TPWD, TWPP, and a number of individuals commented that the standards do not enhance the protection of seagrasses. Aransas County notes that the county contains all or part of six inland bay systems that are major tourism attractions and that the seagrass habitat must be maintained to protect the environmental integrity of the bays. Blackburn Carter noted that a version of the water quality standards that circulated in January, 2009 included language for the protection of seagrasses. Blackburn Carter notes that these provisions were removed in the proposed *standards and recommends reinserting the 2009 language into the standards. Sierra Club, Public Citizen, TBBU, SEED, WE CAN, and NWF also support the previously proposed seagrass standards.*

TXDOT and TSSWCB support future setting of seagrass water quality standards, but at this time, all basic uses associated with seagrass propagation have not been clarified. Therefore, TXDOT and TSSWCB support the decision to eliminate any significant revisions at this time. PCCA supports not proposing changes for seagrass at this time, but are strongly committed to addressing issues related to seagrass in the future.

Response: The commission acknowledges the interest in designating individual segments for seagrass use, and because of that interest, draft designations were presented to the Water Quality Standards Advisory Workgroup. The commission was unable to resolve substantial stakeholder concerns about unintended negative regulatory impacts of these designations on navigation in coastal waterways. Provisions that were added in the previous standards revisions, such as the specification of seagrass as a protected use in §307.7(b)(5), remain in place so that an important tier of protection is still provided. The commission will continue to coordinate with stakeholders to better monitor, assess, and protect seagrasses along the Texas coast.

Comment: TWRI recommends providing a definition of the term "natural phenomena" used in §307.7(a) because it is a general term that can be interpreted in many different ways. TWRI recommends providing a definition of the term.

Response: The commission acknowledges that a definition of the term "natural phenomena" might be useful. However, more investigation and expert opinion are needed to develop a definition of that term that is broadly applicable. At this time, the commission does not incorporate this suggestion into the adopted rules.

Comment: TACWA notes that reuse of treated effluent is increasing and that may make the use of historical data, which has worked in the past, problematic. TWCA comments that the procedure for setting chemical parameters is different from all other parameters and is inconsistent with the CWA. TACWA and TWCA recommend inserting the following language at the end of §307.7(b)(4)(a): "It is recognized that criteria developed with the objective of maintaining historical water quality may be different than criteria developed with the objective of maintaining the quality needed to support designated, attainable, and presumed uses. To facilitate that process, the TCEQ encourages the regulated community to develop use-based, site-specific criteria where appropriate."

Response: The commission acknowledges that the use of historical data to establish criteria for parameters such as TDS, chlorides, and sulfates can be problematic at specific sites. For this reason, the commission has actively developed adjustments of these site-specific criteria at individual sites, including in the proposed changes for this standards revision. The language that TWCA and TACWA suggest may be a useful consideration for these adjustments, but it should be more carefully developed over time to evaluate for future changes in the water quality standards or related procedures.

§307.8 – Application of Standards

Comment: One individual asks in §307.8(a)(1)(F) whether the aquatic recreation criteria for unclassified waters apply to classified waters above 7Q2.

Response: The aquatic recreation language was removed from §307.8(a)(1)(F) so that aquatic recreation geometric mean criterion for unclassified and classified water bodies will apply not only above critical low flows, but also below critical low flows.

Comment: T/K and TCC comment that the provision in §307.8(a)(2)(A) relating to critical low flows in spring flow dominated streams with federally listed endangered species is stated to be "0.1% probability value" of a lognormal distribution of flows for the period of record used in the calculation. T/K and TCC comment that this terminology is inconsistent with the typical interpretation of probability, which is normally expressed as a decimal fraction, rather than a percentile. T/K and TCC state that this section should be changed to express probability consistent with §307.8(a)(2)(B), which uses the 5th percentile value of the flow data. TPWD, Sierra Club, Public Citizen, TBBU, SEED, and WE CAN recommend that the critical low-flow for streams or rivers dominated by streamflows should be determined using a 0.1% probability value.

Response: The commission agrees that the terminology in §307.8(a)(2)(A) would be clearer as "0.1% percentile value" rather than "0.1% probability value," and this change is adopted as suggested. In §307.8(a)(2)(B), the commission responds that the use of a 5th percentile provides a significant degree of additional protection to springflow dominated streams and rivers that's supported by currently available information and evaluations. For some springflow dominated

streams, the feasibility of establishing critical low flows below 5th percentile flows has not been demonstrated.

Comment: TPWD recommends removing the "new clause" in §307.8(a)(4) that relates to calculation of human health, TDS, chlorides, and sulfates permit limits. TPWD comments that the language appears out of place in the application of standards section, which otherwise focuses on flows below which standards do not apply. The information is already in the Implementation Procedures.

Response: The commission responds that the added language in §307.8(a)(4) is a part of several changes, including §307.6(d)(5), and are being made to clarify the applicability of human health criteria with respect to streamflow. In response to this and other comments, the language in §307.8(a)(4) was adopted as proposed to clarify the applicability of human health criteria at streamflows below the harmonic mean flow. For additional clarity and in response to the comment, the commission adds a sentence to §307.8(a)(4) to indicate that these criteria are still applicable as a long term average at flows below the harmonic mean flow.

Comment: One individual asks whether the reference to periodically recalculating flows in §307.8(a)(8) applies to increased flows due to permitted discharges.

Response: The commission responds that in practice; the flows at gauging sites are recalculated based on measured flows, including those from wastewater discharges. There are no practical means of partitioning permitted discharge flows in a complex watershed.

§307.9 – Determination of Standards Attainment

Comment: TIP supports changes made regarding representative samples in §307.9(b).

Response: The commission notes the comment and the proposed provision that addresses representative samples is adopted.

Comment: TPWD comments that a more appropriate means of chlorophyll a sampling than what is proposed in §307.9(b)(2), would be to take samples from throughout the euphotic zone or solely from the water layer with the highest dissolved oxygen concentration (during daylight hours). However, if the criteria for chlorophyll a developed for lentic water bodies were based upon near-surface water samples, then near-surface samples should be used.

Response: The commission responds that there are some advantages to obtaining a vertical composite sample of chlorophyll *a* within the euphotic zone. However, using this approach creates complications since varying depths would be used as individual samples and it would be difficult to implement in the field. Routine sampling would need to be conducted on vertical profiles and based on taking discrete interval measurements from top to bottom so that the integration over a prescribed layer can occur "after the fact" during data analysis. However, historical data are based on near-surface single-grab samples. Therefore, criteria based on historical data, and to a large extent assessment of those criteria in the future, are constrained to near-surface samples.

Comment: EPA comments that the use of §307.9(c)(2) confines measurement of dissolved oxygen in all water body types to a single sample taken near the surface. EPA recommends that the rule maintain some measure of specificity on the applicability of measurements taken at depth in deep water systems.

Response: The commission appreciates these comments and concurs that additional specificity may be needed for dissolved oxygen sampling depths, and additional guidance may be developed as appropriate in the *Surface Water Quality Monitoring Procedures*. In terms of data collection, the commission intends to continue measuring vertical profiles of dissolved oxygen in addition to measuring dissolved oxygen over 24-hour periods at a single depth.

Comment: TSCRA supports the clarification of depth and temperature requirements for collection of bacteria and chlorophyll a samples in §307.9(c)(2).

Response: The commission acknowledges this comment in support of the clarification of depth and temperature requirements for collection of bacteria and chlorophyll *a* samples.

Comment: A number of comments were received concerning proposed revisions in §307.9(e)(1) - (7) to define the minimum sample number minimum time period for applying data to assess standards attainment. T/K, TIP, TCC, and AECT support the proposal in §307.9(e)(1) to determine attainment for chlorides, sulfates, and TDS using sample measurements collected over a period of at least two years. TWRI comments that the inclusion of samples "collected over at least a two-year period" in §307.9(e)(3) directly contradicts TCEQ's Assessment Guidance, which states that assessments should be based on samples collected over a seven-year period. EPA commented that flexibility has to be allowed to consider *shorter time frames in certain circumstances, as in the current assessment guidance. TWRI states that the provision should be changed from a two-year to a seven-year monitoring period. BRA comments that two years of data is not enough, and that due to changing stream conditions over time, a minimum of five years of data should be required for water quality assessments. OPIC asks for additional information regarding the intended purpose and anticipated effects of the two-year time frame. TCA opposes increasing the amount of sampling prior to determining a segment as impaired. One individual notes the revised specification of a minimum sampling period in §307.9(e)(3) - (5), but expresses concern that there is not a discussion on the number of samples in these paragraphs. In §307.9(e)(3), TSSWCB requests that a minimum dataset be codified in the rules regarding how many bacteria samples are necessary to assess use attainment. TSSWCB and TDA both expressed concern that the minimum number of samples for bacteria that are needed to assess for impairment are insufficient. TDA suggests a minimum of 50-75 bacteria samples over five - seven years to evaluate whether a water body is impaired. Numerous individuals also recommended that the number of samples required to classify a water body as impaired not be increased. TCC and T/K also support the proposals in §307.9(e)(3) and (4) to determine attainment for bacteria and toxic materials. Sierra Club, SOSA, Environment Texas, Public Citizen, TBBU, SEED, and WE CAN oppose the proposal in §307.9(e)(3) to require two years of water quality sampling data to demonstrate that the geometric mean for bacteria levels violates the water quality standards. One individual comments that there are no minimum number of samples indicated for §307.9(e)(4), (5), or (7)(A). WEAT, TIP, TCC, and T/K support the proposed use of at least ten samples in determining attainment in §307.9(e)(7)(B) related to nutrient criteria. With respect to nutrient criteria in §307.9(e)(7)(B), GBF asks how the standards will be enforced if determining a violation takes five years and states that there should be a way to have immediate enforcement when obvious violations are present.*

Response: The commission responds that the intent of these proposed revisions was to provide a consistent framework for minimum sample numbers and sampling period. The proposal was also intended to be compatible with current assessment procedures. In the assessment procedures, the overall period of assessment is seven years when data are available for that period, but the minimum time frame that is considered usable for assessment is two years except in prescribed, unusual circumstances. In addition, the assessment procedures specify that a minimum of ten data points is generally required, unless a statistically significant result is clearly available from fewer data. However, because there were a large variety of comments expressing concern with these proposed revisions and additions, and because there were also concerns with clarity, the commission adopts modified proposed and existing language that removes all references to minimum sample numbers and sampling period. The requirements for numbers of samples and sampling period for assessment purposes will be addressed in the Surface Water Quality Monitoring Program's *Guidance for Assessing and Reporting Surface Water Quality in Texas.*

Comment: TPWD questions the decision in §307.9(e)(1) to base standards attainment determinations for chloride, sulfate, and TDS on median values. TCC favors the proposed approach. T/K, TIP, TCC, and AECT support the proposal in §307.9(e)(1) to determine attainment for chlorides, sulfates, and TDS using the median of sample measurements. TPWD notes that §307.10, Appendix A still appropriately refers to TDS, chloride, and sulfate values as "maximum annual averages" for the segments.

Response: The commission acknowledges that the criteria for dissolved solids were derived as the upper prediction interval around the historical mean of sampling data. Therefore, using the mean

for assessing compliance is the more statistically rigorous procedure. However, there are practical advantages for assessing compliance using a median as the measure of a central value of sampling data, in order to minimize the effects of outliers, errors, and non-detect values when the available dataset for assessment is small. In the case of dissolved solids, the variability over time at a single sampling station is generally not extremely high; and the measured concentrations are well above detection limits and minimum quantification levels. Therefore, the practical advantages for assessing compliance using a median are not as substantial as with some of the other kinds of long-term criteria. The commission concurs that additional review is needed before making this proposed change, and in §307.9(e)(1) the mean will remain as the measure of standards attainment for dissolved solids criteria.

Comment: The Sierra Club, Public Citizen, TBBU, SEED, WE CAN, Environment Texas, and NWF oppose the proposal in §307.9(e)(3) to eliminate the consideration of a single maximum water sample showing high bacteria levels in determining whether the water quality standard for the stream has been violated. TSSWCB comments that the reasoning used by those opposed to eliminate the single sample is flawed. EPA recommends more flexibility to allow for more limited datasets to be used and recommend addressing sampling period requirements or options in the assessment procedures, rather than in the water quality standards.

Response: The commission responds that a geometric mean is more appropriate to determine water quality attainment for assessment purposes rather than single sample numbers. The commission notes that the EPA has indicated that the geometric mean is the more relevant value for ensuring that appropriate actions are taken to protect and improve water quality. Single sample numbers for

primary contact recreation in freshwater and saltwater will be retained for the purposes of swimming advisory programs and wastewater permit compliance.

Comment: BRA, Fox Dairy, Hamilton County Commissioner Dickie Clary, Heifer Ranch at Arroyo Seco, High Plains Dairy Counsel, Legacy Farms, Texas State Representative Sid Miller, Hamilton, Harrison County Judge Randy Mills, ICA, Sanderson Farms, 74 Soil and Conservation Water Districts, TCFA, Texas Poultry Federation, PCG, TSCRA, TSSWCB, TFA, WEAT, and a number of individuals filed comments in favor of a high-flow exemption since it was highly unlikely that recreational activities would be occurring during high-flow conditions and that samples taken during these events should not be used for assessment purposes. WEAT suggests that TCEQ develop specific procedures to implement the high flow exclusion in §307.9.

NWF comments that the high-flow exemption, as drafted, is too broad. NWF comments that if this exemption is going to be included, what constitutes a "high-flow" needs to be defined and described in a very clear manner. TPWD recognizes the basis for a high-flow exemption, but thinks it is not well-defined. TPWD recommends that the language be revised to read: " . . .estimated flow severity index of "flood."" TSSWCB suggests that when using the estimated flow severity index, for consistency purposes, TCEQ should define this high-flow exclusion at the severity index of "flood."

CLACC, EIP, Environment Texas, Uncertain, TCE, CW Action, GCLA, LGCLA, FCLNWR, CLI, Sierra Club, Public Citizen, TBBU, SEED, WE CAN, EPA, Environment Texas, SOSA, and TCA oppose the high-flow exemption for samples because high-flow conditions are representative of the variable condition of Texas streams and rivers; and to exclude those samples render the attainment determination *unrepresentative of the true conditions. EPA disagrees with the automatic exclusion of sample results. OPIC asks for additional information regarding the intended purpose and anticipated effects of the high-flow exemption. One individual commented that low-flow situations in segments whose only source is treated wastewater also needs attention.*

Response: The commission notes the comments in support and opposition to the high-flow exemption for bacteria. The commission responds that there is utility in having a high-flow exemption for bacteria at times when contact recreation activities are not practical or safe. The commission also notes that while a high-flow exemption is added, the commission also revised language in §307.8 that results in recreation criteria applying below critical low-flows when contact recreational activities are more likely to occur. The commission agrees with the recommendations to better define the estimated flow severity index. In response to the comments, the term "indicates that swimming is not practical or safe" in §307.9(e)(3)(B) was removed and the term "flood or an equivalent category" was substituted for adoption.

The adopted standards establish a reasonable and defined framework for the bacteria high-flow exemption, and further details on recommended procedures for assessing standards attainment will be provided in the Surface Water Quality Monitoring Program's *Guidance for Assessing and Reporting Surface Water Quality in Texas.*

Comment: TSSWCB comments that for consistency, instead of characterizing the high-flow exclusion as "data exclusion" under assessing attainment, it should be addressed like the low-flow exclusion (7Q2) by stating that the use/criteria do not apply under these conditions.

Response: The commission notes that uses apply under all conditions. The proposed high-flow exemption of above the 90th percentile is roughly equivalent to a 7Q2 frequency and it is more straight-forward to apply. The commission adopts the language as proposed.

Comment: TSSWCB asks for clarification in the standards or implementation procedures on how the high flow exclusion would apply to lentic systems and coastal waterbodies.

Response: The commission revised the proposed high-flow exemption language to clarify that §307.9(e)(3)(A) applies to freshwater streams and rivers only and that §307.9(e)(3)(B) applies to tidal and freshwater stream and rivers. The commission adopts the revisions as modified.

Comment: TSSWCB cautions against uniformly applying high flow values across the state. TSSWCB suggests TCEQ establish a public process to examine the statistical validity of a uniform value versus regional values based on an isopluvial map.

Response: The commission is evaluating instream flows in several programs, including water uses, and will continue to coordinate improving evaluations of both high- and low-flow levels that determine standards applicability. The language is adopted as proposed.

Comment: In regards to §307.9(e)(4), EPA recommends the use of the mean or an upper percentile value of a dataset when assessing human health criteria. TPWD questions the decision to base standards attainment determinations for human health criteria in §307.9(e)(4) on median values. TPWD comments *that the proposed new method of determining standards attainment does seem not to be statistically accurate or as protective as the current procedure. TPWD asks for an explanation regarding why this change was made. CLACC, EIP, Environment Texas, TCE, CW Action, GCLA, LGCLA, FCLNWR, CLI, Sierra Club, Uncertain, SOSA, Public Citizen, TBBU, SEED, and WE CAN also oppose the requirement in §307.9(e)(4) that standards attainment for human health criteria for toxics be based on the median rather than the average of samples.*

Response: The commission concurs that means rather than medians may be more appropriate for some parameters that are assessed over a long time period. For human health criteria, there is some advantage in using a median in order to dampen the effect of non-detect measurements. However, assessing with a mean ensures that unusually high concentrations of a toxic pollutant are afforded substantial weight in the long-term calculations. For human health criteria, the long-term weighted exposure is important in assessing potential health risk. For this reason, in §307.9(e)(4) the commission deletes the proposed change to median values for assessment of human health criteria, and the assessment will continue to be based on mean values.

Comment: Sierra Club, Public Citizen, TBBU, SEED, WE CAN, PLTA, TPWD, Austin, Volente, SOSA, and NWF oppose the use of the median rather than the mean to determine impairment of nutrient criteria in §307.9(e)(7). They are concerned that the use of a median when the statistic was calculated using the mean, is not statistically valid; and the median will tend to minimize the impact of algal blooms in the assessment process. WEAT, TIP, T/K, TCC, and SRA are in general support of the use of median values to assess nutrient criteria.

Response: The commission concurs that the proposed use of the median is not strictly rigorous in terms of statistical applicability of a mean and a median, since the criteria were initially derived based on the upper prediction interval around the mean. However, assessment of chlorophyll *a* is complicated by: (1) measurements that are below detection limits or quantification levels, (2) the effect of single high value outliers in an assessment dataset, and (3) the relatively small datasets that are often available for assessment purposes. For these reasons, the procedures to assess attainment of chlorophyll *a* criteria will be based on the median of assessment samples, as proposed. The commission will continue to explore ways to improve the development and assessment of nutrient criteria in the future.

Comment: EPA, Sierra Club, Public Citizen, TBBU, SEED, and WE CAN comment that they understand the rationale for using the main pool of a reservoir for sampling, but that TCEQ needs to develop a process for addressing nutrient concerns in the arms and coves of reservoirs. NWF comments that the numerical standards applicable to the main pool must be considered in context with other parts of the reservoir, such as the arms and coves that are likely to experience higher levels of nutrient loading. CLACC, GCLAT, LGCLA, FCLNWR, EIP, CW Action, TCE, Volente, Uncertain, and CLI are also concerned how the criteria will or will not be applied to coves. TWPD comments that reservoir nutrient criteria is applicable only to the main pool stations, which react relatively slower than coves and riverine areas in showing effects of increasing nutrient concentrations. Because of this weakness in the suggested approach, very large increases in the nutrients will occur before a reservoir would be declared impaired. To protect reservoirs from eutrophication, TPWD believes a more sensitive process should be developed.

Response: The commission agrees that nutrient concerns need to be addressed in the arms and coves of reservoirs. At this time the commission has developed nutrient criteria only for main pool stations, these criteria are only applicable at the main pool due to the way in which they were derived. The commission will be addressing nutrient criteria for coves and arms of reservoirs in the future.

Comment: T/K and TCC support the proposal in §307.9(e)(8) that clarifies TCEQ policy with respect to streams that have low or no flow during significant periods of most years. Sierra Club, Public Citizen, TBBU, SEED, and WE CAN oppose the proposed language that would exempt use of site-specific criteria under certain conditions.

Response: The commission responds that this change, concerning the assessment of criteria that are applied as long term averages (TDS, chlorides, sulfates, indicator bacteria, and human health toxic criteria), is intended to limit the applicability of these criteria when streamflow in perennial streams becomes negligible or when residual pools in intermittent streams shrink during very dry periods. During these periods, water quality tends to become degraded even under natural conditions. The commission notes that these provisions apply only to sampling data to assess standards attainment, and not to regulatory actions such as permitting calculations. Previously, §307.8(a)(1)(A) indicated that site-specific criteria for dissolved solids (TDS, chlorides, sulfates) did not apply at flows less than the seven-day, two-year low-flows; and §307.6(d)(5) exempted human health toxic criteria below harmonic mean stream flows. These exemptions were considered to be inadvertently applicable to streamflows that could be inappropriately high; and the commission adopts the language as proposed. Therefore, the proposed additions in §307.9(e)(8) are needed to

provide clear, limited exemptions of long-term criteria during very dry conditions; and these provisions are adopted as proposed.

Comment: Sierra Club, Public Citizen, TBBU, SEED, and WE CAN oppose the deferment in §307.9(f) of listing a stream as impaired for a presumed high aquatic life use until a UAA is conducted. EPA comments that the proposed language for deferment of listing for presumed aquatic life use is unacceptable. EPA expects the same standards to apply to both unclassified and classified waters. EPA comments that category 5B of the state's existing Integrated Report provides adequate flexibility to address standards issues prior to development of a TMDL for a given water body.

NWF comments that the failure to assess impairments based on presumed uses is not justified and is not consistent with the CWA. At minimum, NWF states that this must be limited to situations when there is significant evidence to suggest that the presumed use may not be appropriate. NWF comments that this could be accomplished by revising language in the sentence that starts: "Instead, the listing can be deferred. . ." and making the sentence read: "Instead, if there is credible evidence indicating that the presumed use may not be appropriate, the listing can be deferred. . .."

OPIC comments that in order to prevent potential degradation of water quality during UAA preparation, the provision clarify that individual permitting decisions and permit limits will continue to be based on presumed high aquatic life use while the UAA is being conducted. TPWD comments that they do not understand the need to defer CWA, §303(d) listing of water bodies that do not attain a presumed high aquatic life use, but appreciate that this deferral was limited to a maximum of two listing cycles.

Response: The commission acknowledges the concerns that were expressed regarding the proposed temporary deferral of potential listings based on presumed high aquatic life uses (as assessed by indices of biotic integrity) and dissolved oxygen criteria. The purpose of this proposed revision is to preclude inappropriate listings of water bodies as impaired and to avoid associated regulatory actions that may be unnecessary. The intent of the commission is not to change the presumption of high aquatic life use for unclassified perennial streams. The commission will continue to conduct studies and assess site-specific aquatic life uses for unclassified water bodies whenever needed by water quality management programs. The proposed revision explicitly expresses that commitment for purposes of assessing standards attainment, and any deferral under this provision must be evaluated within four years of the initial deferral. This provision in §307.9(f) is adopted as proposed, and the commission will continue to coordinate with stakeholders to explore ways to streamline and improve assessment of aquatic life uses in Texas.

§307.10 – Appendices A – G

General Comments

Comment: OPIC comments that based on the information in the proposal, it is unable to fully evaluate each proposed site-specific change.

Response: The commission responds that detailed documentation on site-specific standards revisions have been provided upon request throughout the rulemaking process.

Appendix A – Site-specific Uses and Criteria for Classified Segments

General Comments

Comment: EPA comments that they have received UAAs or other documentation on the following segments and will initiate review in the near future: Segments 0306, 0307, 0401, 0402, 0406, 0407, 0409, 0410, 0608, 0812, 1245, 1305, 1603, 1811, 1814, and 2308. EPA notes that UAAs for the following segments are still to be submitted to EPA for review: Segments 0305, 2485, and 2491.

Response: The commission acknowledges this comment.

Comment: OPIC recommends TCEQ proceed with full TMDL studies in impaired waters under current limits, rather than relying on UAAs to determine the naturally occurring levels of dissolved oxygen and the water bodies potential to achieve a particular use.

Response: UAAs are essential to establish water quality goals for specific water bodies. In addition, some water bodies are listed based on presumed uses. A UAA indicates that the water body is not actually impaired and can be used to determine whether the actual use is due to natural conditions and not due to human induced factors. In other cases, the presumption is confirmed and the UAA serves a function of establishing an appropriate goal for a TMDL.

Comment: TSSWCB supports designating different aquatic life use categories for fish versus benthic communities on the same water body, as long as data analysis indicates those different designations are appropriate. However, TSSWCB believes that attainment should not be based on only one of these two metrics.

Response: The commission acknowledges the support of the proposed revision.

Comment: TSSWCB comments that if water bodies are included on the CWA, §303(d) list at the sub-segment level, then the water quality standards should allow for establishment of uses and criteria at the sub-segment level. TSSWCB suggests adding text that would allow for designation of site-specific uses and criteria at the assessment unit (AU) level.

Response: The commission responds that the AUs used by the Surface Water Quality Monitoring team are described in the 2008 Surface Water Quality Monitoring Program's *Guidance for Assessing and Reporting Surface Water Quality in Texas* and exist for the purpose of assessing water bodies. AUs are used to describe individual or groups of monitoring stations within a segment. Also, AUs need to be flexible in order to change when monitoring stations are no longer active or new stations are created. Some criteria (TDS, chlorides, and sulfates) are not assessed by AU, but are assessed on a segment wide basis. If water quality standards were set at the AU level, a rule revision would be necessary every time a monitoring station was discontinued or added.

Comment: TPWD notes that TCEQ uses a regionalized index of biotic integrity for the fish community, while a statewide index is used for the benthic macroinvertebrate community. TPWD questions whether the disparity between the observed aquatic life uses arises from the use of a statewide index of biotic integrity for the benthic macroinvertebrate community. TPWD urges TCEQ to prioritize development of regionalized indices of biotic integrity for benthic macroinvertebrates because doing so could help resolve apparent differences between fish and benthic macroinvertebrate community assessments.

Response: The commission responds that a statewide index of biotic integrity continues to be used by the commission for benthic macroinvertebrates because regionalized indices have not been developed to date. The commission acknowledges this comment and notes that the commission has established this as a priority and will continue to work on developing regionalized indices of biotic integrity for benthic macroinvertebrates in coordination with TPWD.

Comment: TPWD comments that the second paragraph of the introduction to Appendix A states that critical low-flows apply at or downstream of the springs providing the flows, but that "critical low-flows upstream of these springs may be considerably smaller." TPWD states that this calls into question why the area upstream would not be defined as a separate segment given a substantial hydrologic change to the system.

Response: In most of these situations, spring flow is usually associated with the upper reach of a stream. Typically the application of the spring flow systems would be overprotective of the upper reaches above the springs. In the future, the commission can consider adjusting low-flow criteria or segment boundaries on a case-by-case basis. The commission adopts the language as proposed.

Comment: PSC asks whether the standard changes would remove Segment 2311 – Upper Pecos River from the CWA, §303(d) list. If so, will the City of Pecos be able to discharge treated effluent into this segment provided they meet the discharge requirements.

Response: The proposed revisions by the commission will not change the CWA, §303(d) listing status of Segment 2311 - Upper Pecos River.

Comment: CLACC, GCLAT, LGCLA, FCLNWR, EIP, CW Action, TCE, Uncertain, and CLI comment that they support the creation of Segment 0410 – Black Cypress Bayou if it is done for the purposes of protecting water quality; and does not cause degradation of Black Cypress or Big Cypress Bayous, but suggest that the new segment be given an exceptional aquatic life use.

Response: The commission acknowledges the support of the creation of Segment 0410 – Black Cypress Bayou. The commission concurs that Segment 0410 is an "Ecologically Unique Stream Segment." However, this designation does not automatically warrant the assumption that the water body can support an exceptional aquatic life use. A UAA was performed on Segment 0410 and the results of this UAA indicate that this segment is a perennial water body that supports a high aquatic life use. In quantitative terms, the fish index of biotic integrity scores for this segment was on the high end of high. However, when considering the benthic index of biotic integrity scores the appropriate overall use was a high.

Bacteria

Comment: Sierra Club, Public Citizen, TBBU, SEED, and WE CAN oppose the downgrading of water quality in 293 stream segments proposed as "primary contact recreation" that would set a less stringent bacteria requirement of 206 cfu/100 ml. LCRA supports the proposal that designates all classified segments as primary contact use and recommends retaining the current contact standard for bacteria of 126 cfu/100 in classified reservoirs because reservoirs typically have lower ambient concentrations of bacteria than flowing water. Volente is concerned about the increase in acceptable level of indicator *bacteria (126 cfu/100 ml to 206 cfu/100 ml) especially in classified segments, like the Highland Lakes. Lakeway recommends the criterion of 126 cfu/100 ml be maintained for the Highland Lakes. Senator Watson requested that the commission keep the current criterion (126 cfu/100 ml) for primary contact recreation in Lake Austin and Lake Travis.*

Response: In response to comments, the commission adopts modified Appendix A that retains the freshwater primary contact recreation geometric mean criterion of 126 *E. coli* per 100 ml and modifies the freshwater primary contact recreation geometric mean criterion from 54 to 33 Enterococci per 100 ml for high saline inland water bodies.

Comment: BRA supports the change in indicator bacteria to Enterococci for Segment 1208 – Brazos River above Possum Kingdom Lake, Segment 1238 – Salt Fork Brazos River, and Segment 1241 – Double Mountain Fork Brazos River.

Response: The commission acknowledges the support of the proposed revisions.

Comment: IBWC agrees with the primary contact recreation designation and the proposed change of the bacteria indicator to 206 cfu/100 ml for Segments 2301-07, 2309-10, and 2313-14; in the Rio Grande Basin, the sole-source drinking water designation for Segments 2302-04, the primary contact recreation designation and the proposed change of the bacteria indicator to Enterococci and alternative indicator to fecal coliform for Segments 2310-11; and the removal of the public water supply designation from Segment 2308.

Response: The commission acknowledges the support of the proposed revisions.

Comment: IBWC comments that Segment 2301 – Rio Grande Tidal should be added to footnote 1.

Response: The commission responds that the appropriate indicator bacteria is identified in both §307.7(b)(1)(B) as well as in footnote 1 in Appendix A. While other water bodies are specifically written into these footnotes, these are water bodies that have been identified as high saline inland water bodies where fecal coliform can be used as an alternative indicator for two years after the adoption of these rules. No other marine or fresh water bodies are listed in these footnotes, because fecal coliform is no longer used as an alternate indicator for recreational purposes. The commission adopts the language as proposed.

Comment: IBWC comments that the indicator bacteria for Segment 2308 – Rio Grande below International Dam should be changed from the proposed 605 cfu/100 ml to 2,060 cfu/100 ml to reflect changes in standards for noncontact recreation proposed in the rules.

Response: The commission acknowledges that the newly adopted geometric mean criterion for noncontact criterion is 2060 cfu/100 ml. However, the definition of noncontact recreation and the way the criteria are applied have changed since the existing use and criteria were evaluated. Therefore, additional UAAs would be needed in order to support a major criterion change for this segment.

Comment: IBWC comments that the alternative indicator bacteria of fecal coliform for Segment 2310 – Lower Pecos River and Segment 2311 – Upper Pecos River should be listed beside the primary indicator bacteria (54/200).

Response: The commission responds that the criterion for the alternate fecal coliform indicator was removed from Appendix A because the commission transitioned to new indicators, *E. coli* and Enterococci, in 2000. Since fecal coliform can only be used in high saline inland water bodies for two years after the adoption of this title in order to allow time to collect sufficient data for Enterococcus, the commission did not include fecal coliform criterion in Appendix A.

Dissolved Oxygen

Comment: One individual notes that Appendix A has a dissolved oxygen criteria of 2.0 mg/L and are allowed a daily variation down to 1.5 mg/L for no more than eight hours per 24-hour period and that a dissolved oxygen criteria of 1.0 mg/L will be considered the minimum value at any time. This individual notes that this minimum appears to be in conflict with the allowable daily variation in a previous sentence in the appendix as well as the "daily minima" listed in Table 3 in §307.7(b)(3(A)(i). This individual notes the use of the words "down to" seems to be slightly different than used elsewhere. In Appendix A, it appears to mean that a concentration of less than 2.0 mg/L lasting longer than eight hours would be a violation and asks whether that interpretation is correct.

Response: The commission responds that the term "absolute" in §307.4(h) was replaced with "24-hour" and the term "daily minima" was replaced with "24-hour minimum dissolved oxygen

concentrations" in §307.7, Table 3, (footnote) for consistency purposes. The eight-hour language is only applied when a dissolved oxygen concentration remains right at the 24-hour minimum criterion and this phrase is not intended to allow dissolved oxygen concentrations to go below the daily minimum at any time. The commission adopts this language as modified from the proposed language.

Comment: NRA, TACWA, and TWCA recommend the use of the current increments for dissolved oxygen, i.e. 5.0 mg/L, 4.0 mg/L, 3.0 mg/L, etc. and do not support the proposed use of fractional increments. TSSWCB support the proposed fractional dissolved oxygen criteria.

Response: The commission agrees that it is generally appropriate to apply dissolved oxygen criteria in 1.0 mg/L increments. However, in cases where there is sufficient information, it can be reasonable to adjust criteria in half mg increments. The commission has utilized this approach in prior Texas Surface Water Quality Standards for dissolved oxygen criteria in Segment 0805 – Upper Trinity River and the Segment 0841 – Lower West Fork Trinity River. The commission adopts the language as proposed.

Comment: Sierra Club, Public Citizen, TBBU, SEED, and WE CAN oppose the weakening of the dissolved oxygen criteria from 5.0 mg/L to 3.0 mg/L in Segment 0211 - Little Wichita River and lowering the water quality standards for dissolved oxygen, and lowering the aquatic life designation in Segment 0833 - Clear Fork Trinity River above Lake Weatherford.

Response: The commission responds that UAAs were performed on Segment 0211 – Little Wichita River and Segment 0833 - Clear Fork Trinity River Above Lake Weatherford. The results of these UAAs indicate that Segment 0211 is a perennial water body that supports a high aquatic life use. However, the mean and minimum dissolved oxygen concentrations were extremely low during several sampling events; and did not meet the presumed corresponding dissolved oxygen criteria associated with a high aquaticlife use. A recommendation of an average dissolved oxygen criterion of 3.0 mg/L and a minimum dissolved oxygen criterion of 2.0 mg/L are made in the UAA. These criteria best describe the observed data in this segment. Segment 0833 is an intermittent water body with perennial pools that supports an intermediate aquatic life use. However, the UAA demonstrates that during periods of low flow, the presumed corresponding dissolved oxygen concentration of 4.0 mg/L cannot be achieved. A recommendation for a mean dissolved oxygen value of 2.0 mg/L and an minimum of 1.0 mg/L when flow values are below 1 cubic feet per second are made in the UAA. The UAA better describes the current conditions in Segment 0833. EPA has indicated that the findings of both UAAs are appropriate and the commission adopts the changes as proposed.

Comment: NRA recommends a dissolved oxygen standard of 4.0 mg/L in Segment 2485 - Oso Bay and Segment 2491 - Laguna Madre rather than the proposed 4.5 mg/L or current standard of 5.0 mg/L. NRA notes that one of the justifications for proposing a 4.5 mg/L standard for dissolved oxygen was due to the large date set for Segment 2491. However, NRA notes that this large data set is the result of a large data collection program over a two-year period and that the time frame may not necessarily representative of a wide range of conditions.

Response: The commission acknowledges that a large dataset was used in the evaluation of Segment 2485 - Oso Bay and Segment 2491 - Laguna Madre; and that the majority of the data used to establish the proposed criteria was collected over a two-year period. The commission notes that data collected over a two-year period is typically used to determine site-specific conditions of waterbodies through the UAA process in accordance to *Surface Water Quality Monitoring Procedures Volume 2* (Appendix E). The minimum requirements for a UAA are five dissolved oxygen samples over a two-year period. However, this UAA uses many more data points than the minimum and an evaluation of historical data was considered as well. This UAA far exceeds the minimum requirements necessary to develop site-specific criteria. The commission adopts the language as proposed.

Comment: Sierra Club, Public Citizen, TBBU, SEED, WE CAN, TPWD, and NWF oppose lowering the current dissolved oxygen in Segment 2485 - Oso Bay and Segment 2491 - Laguna Madre and urges the adoption of a 24-hour minimum dissolved oxygen criterion of 2.0 mg/L instead of 1.5 mg/L. TPWD recommends that no changes to the dissolved oxygen criteria for either Oso Bay or the Laguna Madre until: 1) it is demonstrated that low dissolved oxygen levels are not due to pollutants, 2) it is demonstrated that the change will not have a deleterious impact on aquatic life, and 3) appropriate reference and AUs have been established.

Response: The commission acknowledges the concern that a dissolved oxygen concentration of 1.5 mg/L in Segment 2485 – Oso Bay and Segment 2495 – Laguna Madre may have adverse effects to the aquatic biota. During the course of the studies used in the determination of dissolved oxygen criteria, multiple sampling events occurred when dissolved oxygen levels were low under least

impacted conditions. The commission initiated further review of the dissolved oxygen criteria for these segments. The commission concluded that, while no effects were seen in either segment during the course of the studies, the available biological data were limited. Therefore, a 2.0 mg/L minimum dissolved oxygen criteria may be more appropriate at this time.

The commission further responds that although the Laguna Madre is a fairly unique system, it shares chemical and physical parameters with Oso Bay. Both of the water bodies are very shallow, hyper saline, and support communities of seagrasses. The commission also recognizes that portions of Oso Bay are potentially impacted by anthropogenic effects. This is not generally the case for the Laguna Madre. While the Laguna Madre receives fresh water inflows from the Arroyo Colorado, which has point and nonpoint sources of pollution, over 80% of the coastline is sparsely populated, if it is populated at all. It is because of this that the Laguna Madre is one of the least impacted marine water bodies in Texas. The commission asserts that Laguna Madre is sufficiently similar to Oso Bay to be used as a reference site.

The large amount of data provided in these studies demonstrated that 98% of the 24-hour average dissolved oxygen data sets for the Laguna Madre are above 4.5 mg/L and 89% of the Oso Bay data are above 4.5 mg/L. The commission concluded that a 4.5 mg/L average 24-hour dissolved oxygen criterion and a 2.0 mg/L minimum 24-hour dissolved oxygen criterion are appropriate for both Oso Bay and Laguna Madre. The commission adopts the criteria as modified from the proposed language.

TDS, chlorides, sulfate

Comment: TPWD comments that TCEQ has proposed significant changes in the TDS, chlorides and sulfate criteria for Segment 1206, 1238-41, 1411, 1421, 1426, and 2106. TPWD is concerned that the proposed changes are to accommodate increases of TDS, chlorides, and sulfate whether from natural or human activities. If current data indicate increasing TDS, chlorides, and sulfates, TPWD would like TCEQ to identify whether the increases are anthropogenic or natural in origin because their understanding is that the purpose of these criteria is to maintain ambient conditions, and requests that TCEQ provide a rationale for these changes. TPWD does not support changing TDS, chloride, and sulfate criteria in response to anthropogenic influences. Sierra Club, Public Citizen, TBBU, SEED, and WE CAN oppose lowering the water quality standards for TDS in Segment 0833 - Clear Fork Trinity River above Lake Weatherford.

Response: The commission recognizes the possibility for increased TDS, chloride, and sulfate in waterbodies due to anthropogenic effects as well as a need to maintain ambient conditions. The determination for changes in the above mentioned criteria was based on the full history of data available to the commission at the time of calculation. The secondary constituent levels are: chloride (300 mg/L); sulfate (300 mg/L); and TDS (1000 mg/L). Current federal guidance contained in the EPA document entitled *Ambient Water Quality Criteria for Chloride-1988* recommends 230 mg/L of chloride for chronic protection of freshwater aquatic life. A concentration of 230 mg/L of chloride is protective of most aquatic invertebrate and vertebrate communities. Of the 19 segments with a proposed change to at least one of the dissolved mineral criteria, 13 are designated as a public water supply. Of these, only four segments (1411, 1421, 1426, and 1433) were proposed with one or more of the dissolved mineral criteria higher than the secondary constituent levels or

chloride criteria higher than 230 mg/L. Segments 1411, 1421, and 1426 currently have dissolved minerals criteria higher than the commission's secondary constituent levels. The new dissolved minerals criteria for Segment 1433 exceed secondary drinking water quality standards and the federal chronic chloride criterion. Our evaluation indicates that there are no anthropogenic trends in the dissolved minerals criteria for Segment 1433. This reservoir receives water from Segment 1421 and Segment 1426 that are both high saline inland water bodies with criteria greater than secondary constituent levels and the federal chronic chloride criterion. The current dissolved minerals criteria for Segments 1421 and 1426 are also higher than the proposed criteria for Segment 1433. The recommended criteria changes for Segments 1413 and 1426 are based on data that incorporates a wider range of lake level and stream flow conditions, respectively. The chloride criterion for Segment 1426 currently exceeds the federal chronic chloride criterion. The commission's evaluation indicates there are no anthropogenic induced trends in the data used to calculate the criteria in these two water bodies.

Comment: Sierra Club, Public Citizen, TBBU, SEED, WE CAN, TPWD, and NWF object to the proposed lowering of water quality standards for TDS in Segments 0507, 0812, 0821, and 1227 in order to accommodate a water reuse project. OPIC asks for additional information on the effects on water quality and aquatic life from the proposed change. TPWD specifically asks that TCEQ prepare a UAA prior to approving these standards changes. TPWD asks that TCEQ provide a rationale for why certain entities must meet existing standards and bear the cost of doing so while others may achieve lower operating costs by meeting a lesser water quality standard. TPWD further requests that TCEQ initiate policy discussions involving water quality and regional water planning stakeholders, prior to approving these standards changes.

Response: The commission recognizes the need to maintain ambient conditions for TDS, chloride, and sulfate in water bodies. However, the commission also recognizes the importance of water reuse as a viable approach for managing the state's water resources. EPA does not require a UAA to be performed when a change in criteria, such as TDS, chloride, sulfate, and pH is requested.

The proposed increases in dissolved minerals criteria for Segment 0507, Segment 0821, and Segment 1227 are due to water reuse projects. The proposed criteria change in Segment 1227 is in response to Cleburne's request that the Segment 1227's dissolved minerals criteria reflect Cleburne's projected future conditions, which includes adding water sources that have higher dissolved minerals concentrations than the current criteria for the Segment 1227. These sources include Segment 1203, which has TDS, chloride, and sulfate criterion of 1500 mg/L, 670 mg/L, and 320 mg/L, respectively. The re-evaluation of dissolved minerals criteria development for Segment 1227 is based on the assumptions that: (1) the effects of increased flow from future projected sources would be additive (rather than proportional or multiplicative); (2) that Cleburne's effluent will be virtually the entire dry-weather flow of the Nolan River at projected future conditions; and (3) a confidence level of 0.99 was used because effluent variability was very low and because the effluent samples were collected over a short time frame and was likely to underestimate the long-term variability. The criteria are the projected instream concentrations using a simple mass balance calculation to determine a prediction interval around the mean. If the calculated criterion was higher than the Segment 1203 criterion downstream, then the criterion for Segment 1203 was substituted as the criterion for that parameter. Data obtained by the BRA on Segment 1227 was also reviewed to determine if differences in fish communities exist between Segments 1227 and

1203. The data demonstrated that similar communities exist and increases in dissolved solids in Segment 1227 would not cause a negative impact.

The proposed criteria change in Segment 0821 is in response to a request from the North Texas MWD and are to account for the high saline inland water it receives from the Red River Basin as a result of a North Texas MWD permitted inter-basin transfer. The recommended criteria for Segment 0821 were established to be equivalent to dissolved minerals criteria in downstream Segments 0820 and 0819. The proposed criteria are well below the secondary constituent levels of 300 mg/L for chloride and sulfate and 1000 mg/L for TDS.

The proposed criteria changes to Segment 0507 are in response to a request from the SRA that the dissolved minerals criteria be increased in anticipation of a water reuse project in Segment 0507's watershed. The Lake Tawakoni Recycled Water Study, which was initiated by SRA and the City of Dallas, evaluated the feasibility of increasing the overall raw water supply in the Upper Sabine Basin by delivery of highly treated water. The proposed criteria are based on data provided by SRA in a February 22, 2008, Alan Plummer and Associates, Inc. technical memorandum with subject "Request to increase Segment 0507 Texas Surface Water Quality Standards criteria for Total Dissolved Solids, Chloride and Sulfate."

The proposed criteria change in Segment 0812 was not in response to a reuse project. The criteria were based on the full history of data available to the commission at the time of calculation and the evaluation indicates there are no anthropogenic induced trends in the criteria in this water body. These changes were discussed during the January 2009 Standards Workgroup Meeting, but the

commission may look into further avenues for public participation in future dissolved minerals changes. No other entities have requested further examination of site-specific dissolved solids criteria, but considerations to those requests would be evaluated on a case-by-case basis.

Comment: North Texas MWD supports the proposed changes to the criteria for chlorides, sulfates, and TDS for Segment 0821 - Lavon Lake. Cleburne supports the proposed changes to the criteria for chlorides, sulfates, and TDS for Segment 1227 - Nolan River. BRA supports the proposed changes to the criteria for chlorides, sulfates, and TDS for Segment 1238 - Salt Fork Brazos River, Segment 1240 – White River Lake, and Segment 1241 - Double Mountain Fork Brazos River.

Response: The commission acknowledges the support of the proposed revisions.

Comment: White River MWD comments that the proposed TDS standard of 780 mg/L in Segment 1239 - White River does not reflect actual conditions based on the data they have reviewed. White River MWD comments that the natural hydrology of the watershed has changed significantly over the last decade, and as such, the adopted standards need to reflect those changed conditions.

Response: The commission developed this criterion using available data, primarily from the upstream reservoir, which is an approach that is sometimes used to develop TDS criteria and is a reasonable approach. However, this additional information indicates that this approach may be incorrect in this instance. Therefore, the commission withdraws this proposal at this time and the existing language in the current rules will remain in place.

Comment: NRA would like to see consideration of site specific conversion factors for specific conductance of TDS in Segment 2106. NRA notes that analysis has shown that the overall ratio of TDS for Segment 2106 is 0.58, rather than the state-wide conversion factor of 0.65.

Response: The commission clarified in the footnote that a site specific conversion factor for TDS of 0.58 was used in the calculation of the proposed standards change for Segment 2106 - Nueces/Lower Frio River. The commission adopts the footnote as modified.

Uses

Comment: LCRA comments that Segment 1431, Mid Pecan Bayou, is the only classified water body in the state without an aquatic life use. LCRA recommends that TCEQ conduct the appropriate studies to designate the aquatic life use for this segment.

Response: The commission plans to begin a UAA on Segment 1431 - Mid Pecan Bayou the summer of 2010. The results are anticipated to be completed for consideration in the next triennial revision of the Texas Surface Water Quality Standards.

Comment: UTRWD suggests a Limited Aquatic Life Use for Segment 0305 - North Sulphur River is more appropriate than the proposed Intermediate Aquatic Life Use. Sierra Club, Public Citizen, TBBU, SEED, and WE CAN oppose the reclassification of Segment 0305 - North Sulphur River from "high" aquatic life use to "intermediate" aquatic life use for the fish community and "limited aquatic life use" for the benthic community. TPWD questions the UAA conclusion on this segment that it is not feasible to restore the *river's habitat to a point where it will support a high aquatic life use for fish and benthic communities, thus warranting a revision of the aquatic life use. TPWD requests that prior to lowering the aquatic life use, TCEQ conduct an analysis of the feasibility of restoring the river.*

Response: The commission responds that the data available supported intermediate and limited aquatic life uses for the fish and benthic communities, respectively. A separate feasibility analysis of restoring the North Sulphur River is outside the requirements of a UAA. The commission considered the following factors from EPA's regulation 40 Code of Federal Regulations §131.10 (g)(4), relevant: "Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use." Specifically, the North Sulphur River was channelized to alleviate flooding in the watershed and the widths and depths of the river before and after channelization became severely enlarged after channelization. The commission adopts the language as proposed.

Comment: TPWD supports the proposed high aquatic life designation for Segment 0406 - James' Bayou, Segment 0407 - Black Bayou, and Segment 0410 - Black Cypress Bayou.

Response: The commission acknowledges the support of the proposed revisions.

Comment: TPWD, Uncertain, CLACC, GCLAT, LGCLA, FCLNWR, EIP, CW Action, TCE, and CLI oppose the use of a regression equation in Segment 0406 - James' Bayou, Segment 0407 - Black Bayou, Segment 0410 - Black Cypress Bayou, and Segment 0409 – Little Cypress Bayou. They specifically *oppose the possibility of dissolved oxygen levels set at 1.5 mg/L during certain conditions, as well as several particular comments on the regression equation itself.*

TPWD has concerns about implementation of the proposed dissolved oxygen criteria for streams in the Cypress Creek basin. Based on their review of the UAA for the Cypress Creek Basin, TPWD recommends, at a minimum, revising mean dissolved oxygen criteria in Appendices A and D to a value that reflects realistic flow frequencies in the water bodies, rather than providing the impression that 5.0 mg/L is the criterion most of the time. Secondly, TPWD recommends reassessing the minimum dissolved oxygen criterion and consider whether a fixed interval tied to the mean dissolved oxygen equation is appropriate. TPWD is concerned that extremely low minimum dissolved oxygen levels may not be protective of aquatic life and requests that TCEQ provide additional analysis of the frequency of minimum dissolved oxygen patterns. Thirdly, TPWD recommends conducting further statistical analysis to evaluate whether it is appropriate to aggregate data from all the water bodies together for constructing the dissolved oxygen equation, particularly when several are classified segments with somewhat different dissolved oxygen and watershed dynamics. Finally, it recommends explaining the discrepancy between the equations listed in the implementation procedures and Appendix A of the standards. The first term is variously listed as 12.11 or 12.61.

Response: The commission acknowledges that current values listed in Appendices A and D for the Cypress Creek Basin streams that use the Black Cypress Bayou regression equation may be misleading. However, the commission also contends that listing a value that reflects realistic flow frequencies can also be misleading. The commission changed the values in Appendices A and D to read ≤5.0 mg/L. This will avoid confusion as well as more accurately depict what the range of

values could be, rather than list a single value that may only occur doing certain periods of time. Due to the multiple comments received regarding the minimum dissolved oxygen set by this equation, further review of the minimum dissolved oxygen criteria was conducted. As a result of this analysis, the commission determined that a minimum of 1.0 mg/L dissolved oxygen would be more appropriate than the possible 0.5 mg/L dissolved oxygen value that would result during low flow conditions. The commission also incorporates a 0.5 mg/L factor to determine the minimum dissolved oxygen when the average dissolved oxygen criterion is set at or below 2.0 mg/L. The data used to develop the Black Cypress Bayou regression equation utilized only data from the Black Cypress Bayou. Data from the other streams listed in the *Use-Attainability Analysis (UAA) for Selected Streams in the Cypress Creek Basin* were used to validate that the Black Cypress Bayou regression equation could accurately describe the conditions found in these other water bodies. The language is adopted as modified from the proposed language.

The commission notes the discrepancy between the equations listed in *Procedures to Implement the Texas Surface Water Quality Standards* and Appendix A; however, the equation in the *Procedures to Implement the Texas Surface Water Quality Standards* is based on the WQS and is adjusted to provide additional protection when applied in models at steady state flow conditions. The language is adopted as proposed.

The Black Cypress Bayou UAA describes Black Cypress Bayou as a least-impacted watershed within the South Central Plains Ecoregion of Texas. Because of this conclusion, the primary cause of low dissolved oxygen levels was determined to be natural variations. Data were collected in accordance with the Surface Water Quality Monitoring Procedures that specify that data be

collected between March and October to capture the low-flow conditions of streams. Although the data were collected over two years of varying flow conditions, this system experiences wide fluctuations and flow regimes. The inclusion of watershed size as a variable in the equation was preferred over bed slope due to the fact that it was less subjective and it helps describe the flow regime of the streams that the equation is being applied to. The equation does not directly take tree canopy into consideration in the equation because it is also a subjective variable. Flow data were collected using United States Geological Survey gauge stations, which is an acceptable practice in UAA studies. Black Cypress Bayou was determined in the UAA to support a high aquatic life use and 5.0 mg/L dissolved oxygen is protective of a high aquatic life use. The inclusion of lower dissolved oxygen levels was also determined to be protective of a high aquatic life use in this study because multiple sampling events occurred when dissolved oxygen levels were low with no observed effects on the fish and benthic communities. The regression equation proposed in the standards was based on an equation that was approved by EPA for use in East Texas. Currently, all dissolved oxygen criteria that are developed by a UAA use 24-hour dissolved oxygen data and can be assessed using grab sample data. These changes were discussed during the January 2009 Standards Workgroup Meeting, but the commission may look into further avenues for public participation in future dissolved oxygen and aquatic life use changes. The commission adopts language as modified from the proposed language.

Comment: PHA requests that Segment 2436 – Barbours Cut Channel be changed to the Navigational/Industrial Water Source category. PHA notes that this segment is part of the Houston Ship Channel and that public access is restricted and is regulated by the Department of Homeland Security *and the United States Coast Guard under 33 CFR Part 165. PHA is concerned that listing Segment 2436 as a primary contact recreation water body may inappropriately reflect the allowed uses of these waters.*

Response: The commission responds that to remove the contact recreational use of Segment 2436 - Barbours Cut Channel would require a UAA. The commission may evaluate the designated recreational use for Segment 2436 for the next triennial revision.

pH

Comment: CLACC, GCLAT, LGCLA, FCLNWR, EIP, CW Action, TCE, Uncertain, and CLI oppose the pH changes to Segments 0401-02, 0406-07, and 0410. OPIC requests TCEQ provide the scientific basis for its recommended pH changes to these segments.

Response: The commission proposed changes to pH criteria for five segments in the Cypress Creek Basin based on the full history of data available to the commission at the time of calculation. The evaluation indicates there are no obvious trends in the data used in the determination of these criteria. From the available data, the proposed criteria better describe the natural conditions observed in these water bodies. The commission adopts the language as proposed.

Temperature

Comment: The Edwards Aquifer Authority commented that they had collected and analyzed data on temperature in Segment 1811 - Comal River and Segment 1814 - Upper San Marcos River and they *support the proposed change of the temperature criteria to 78 degrees Fahrenheit in certain portions of those steams. They concur that the change will provide additional protection to federally listed endangered species within those segments. SAWS is concerned about the focus on temperature criteria in Segment 1811 - Comal River and Segment 1814 - Upper San Marcos River. In SAWS opinion, this focus distracts from other water quality threats in these segments and their aquatic life. SAWS comments that time, effort, and financial resources would be better directed towards addressing these other water quality threats, rather than towards addressing a possible lower temperature standard that is based on a single study in a controlled laboratory setting. SMRF comments that they appreciate the improvement in the temperature standard proposed for the San Marcos River, but note that 72 degrees Fahrenheit is normal water temperature and habitat condition for this segment of the river.*

Response: The commission acknowledges SAWS concerns and responds that the proposed maximum temperature criteria in Segments 1811 and 1814 are intended to be protective of federally endangered or threatened aquatic or aquatic dependent species. The temperature changes are based on available literature and data collected on these two water bodies by different entities, including BIOWEST, Inc., TPWD, and TCEQ. The commission notes that the data available indicate that the upper portions of Segments 1811 and 1814, due to direct spring influence, have temperatures lower than the existing maximum temperature criteria of 90 degrees Fahrenheit and 80 degrees Fahrenheit, respectively, and that the proposed revision is appropriate at this time. The commission adopts the maximum temperature criteria as proposed.

Appendix B – Sole-source Surface Drinking Water Supplies

Comment: IBWC concurs with the designations of Segments 2302, 2303, and 2304 and the removal of Segment 2308 in the Rio Grande Basin as sole-source drinking water supplies.

Response: The commission notes this comment in support of the designations of Segments 2302, 2303, and 2304 as sole-source drinking water supplies and the removal of the public water supply use for Segment 2308 in the Rio Grande Basin.

Comment: EPA supports the designation of sole-source drinking water supplies to specific water bodies. However, EPA asks what the process is for making revisions and notes if TCEQ does not plan to conduct interim standards revisions to incorporate changes, it may be appropriate to revise the language in Appendix B to state: "Where a water body has been identified as a sole-source drinking water supply, but is not included in Appendix B yet, the same level of protection may be applied."

Response: The commission notes this comment in support of the designation of sole-source surface drinking water supplies to specific water bodies. The commission edited the first paragraph by removing the sentence: "However, it is subject to amendment at any time." and replacing it with: "Where a water body has been identified as a sole-source surface drinking water supply, but is not included in this appendix yet, the same level of protection may be applied." The commission adopts the language as modified.

Comment: EPA asks whether the change to Segment 1801 – Guadalupe River Tidal in Appendix B refers to the Guadalupe-Blanco River Authority's diversion near Tivoli for municipal drinking water to the City of Port Lavaca and other cities. If so, EPA asks whether a public water supply use for this segment be *designated in Appendix A of this section. EPA also notes that 1801 is in parentheses, indicating only an unclassified segment is being designated. However, EPA states that the segment descriptions in Appendix C of this section do not appear to include any unclassified portions of segments in this area.*

Response: The commission responds that the sole-source surface drinking water supply is a terminal reservoir in close proximity to Segments 1801 and 1802. The commission corrected this entry in Appendix B by replacing "Guadalupe River" with "Terminal Reservoir" and replacing Segment "(1801)" with "(1802)," since water is obtained from Segment 1802, which is a designated public water supply use. The commission adopts the language as modified.

Appendix C – Segment Descriptions

Comment: EPA comments that the upper boundary for Segment 1305 – Caney Creek above Tidal is proposed to be changed to the confluence with Water Hole Creek. EPA believes this location is in Matagorda County, rather than Wharton County where the current upper boundary is found.

Response: The commission concurs that the county name for the upper boundary is incorrect and changed it to Matagorda County. The commission adopts the language as modified.

Appendix D – Site-specific Uses and Criteria for Unclassified Water Bodies

Comment: EPA comments that they will provide separate reviews of UAAs for the following water bodies: Dixon Creek (0101), Harrison Bayou (0401), Flag Lake Drainage Canal (1111), North Fork Rocky Creek (1217), Lavaca River (1602), and Camp Meeting Creek (1806).

Response: The commission notes this comment.

Comment: TPWD comments that TCEQ has proposed downgrading the aquatic life use from high to intermediate (dissolved oxygen 4.0 mg/L) in White Oak Creek (0303). Based on their review of the available biological data, TPWD does not support the proposed change. TPWD requests that the aquatic life use remain high with average and minimum dissolved oxygen criteria of 5.0 mg/L and 3.0 mg/L, respectively, until it is demonstrated that low dissolved oxygen levels are not due to pollutants.

Response: A UAA was conducted on White Oak Creek, an unclassified water body within the watershed of Segment 0303, in 2001 and 2002. While the commission recognizes the importance of the use of unimpacted water bodies to establish water quality standards, very few water bodies in Texas are unimpacted by point and nonpoint sources. Three routine monitoring stations were used in the study in an effort to evaluate variability in the stream as a whole. The data collected at all three stations were uniform in nature, which indicates that while both point and nonpoint sources exist, no significant impacts appear to be adversely affecting one portion of the stream over another. EPA has reviewed the UAA and agreed with the study findings in a letter dated November 2, 2009.

The coefficient of variation (CV) is not applied to index of biotic integrity results in order to set standards. Instead, the CV is utilized during the §305(b) assessment. If the CV were applied while setting the standard and during the assessment process, the index of biotic integrity would be skewed to only the upper range of variation one would expect to see in aquatic biological systems. The CV should only be applied once, and it has been the policy of the commission to apply the CV during the §305(b) assessment.

Comment: Uncertain, CLACC, GCLAT, LGCLA, FCLNWR, EIP, CW Action, TCE, and CLI oppose lowering the water quality standards for Harrison Bayou (0401). TPWD supports the proposed high aquatic life designation for Harrison Bayou.

Response: The commission responds that the due to multiple comments received regarding the minimum dissolved oxygen set by this equation, further review of the minimum dissolved oxygen criteria was conducted. As a result of this analysis, the commission determined that a minimum of 1.0 mg/L dissolved oxygen would be more appropriate than the possible 0.5 mg/L dissolved oxygen value that would result during low-flow conditions; and modified the footnote to use a 0.5 mg/L factor to determine the minimum dissolved oxygen when the average dissolved oxygen criteria is set at or below 2.0 mg/L.

The Black Cypress Bayou UAA describes Black Cypress Bayou as a least-impacted watershed within the South Central Plains Ecoregion of Texas. Because of this conclusion, the primary cause of low dissolved oxygen levels was determined to be natural variations. Data were collected in accordance with the Surface Water Quality Monitoring Procedures, which specifies that data be

collected between March and October to capture the low-flow conditions of streams. Although the data were collected over two years of varying flow conditions, this system experiences wide fluctuations and flow regimes. The inclusion of watershed size as a variable in the equation was preferred over bed slope due to the fact that it was less subjective and it helps describe the flow regime of the streams that the equation is being applied to. The equation does not directly take tree canopy into consideration in the equation because it is also a subjective variable. Flow data were collected using United States Geological Survey gauge stations, which is an acceptable practice in UAA studies. Black Cypress Bayou was determined in the UAA to support a high aquatic life use and 5.0 mg/L dissolved oxygen is protective of a high aquatic life use. The inclusion of lower dissolved oxygen levels was also determined to be protective of a high aquatic life use in this study because multiple sampling events occurred when dissolved oxygen levels were low with no observed effects on the fish and benthic communities. The regression equation proposed in the standards was based on an equation that was approved by EPA for use in East Texas. Currently, all dissolved oxygen criteria that are developed by a UAA use 24-hour dissolved oxygen data and can be assessed using grab sample data. These changes to the dissolved oxygen criteria for Segment 0401 were discussed during the January 2009 Standards Workgroup Meeting, but the commission may look into further avenues for public participation in future dissolved minerals changes. The commission adopts language as modified from the proposed language.

Comment: Uncertain, CLACC, GCLAT, LGCLA, FCLNWR, EIP, CW Action, TCE, and CLI oppose lowering the water quality standards for Meddlin Creek (0403).

Response: A receiving water assessment was conducted on Meddlin Creek in 2002 and found the stream to be perennial and supporting a high aquatic life use. Therefore, Meddlin Creek is listed in Appendix D as perennial, supporting a high aquatic life use, and having an average dissolved oxygen concentration of 5.0 mg/L. No criteria for the stream have been lowered from the presumed aquatic life uses for a perennial stream as described in §307.4(h)(3). No additional data was provided to demonstrate that this water body supports an exceptional aquatic life use, but this use can be revisited during a future revision if the commission receives additional information.

Comment: EPA comments that a high aquatic life use is proposed for Spring Branch (0801). EPA notes that a UAA completed in 1999 recommended an intermediate aquatic life use and described it as a shorter stream and suggests TCEQ may want to verify the boundaries.

Response: According to findings during a 2008 receiving water assessment for Spring Branch, the water body is better described as supporting a high aquatic life use with corresponding 5.0 mg/L average dissolved oxygen concentration. The boundaries were verified, and the commission does not recommend any changes to the reach description. The commission adopts the language as proposed.

Comment: Based on their review of data, TPWD is concerned about the current criteria for Pilot Grove Creek (0821) of low aquatic life use and 3.0 mg/L average dissolved oxygen. TPWD recommends that TCEQ conduct a re-evaluation of the aquatic life use and dissolved oxygen criteria.

Response: Revisions to the Appendix D entry for Pilot Grove were needed in order to clarify the description of the reach. The commission agrees that sampling methodology for biological communities has improved over recent years. However, at this time no other evaluation of this stream in the form of a receiving water assessment or UAA has been performed. The comment requesting the stream's re-evaluation is noted and may be considered by the Water Quality Standards Group of the Water Quality Planning Division and the Standards Implementation Team of the Water Quality Division for the next triennial revision.

Comment: HCFCD notes that some of the channelized ditches and streams in Harris County have perennial flow only because of effluent discharges. HCFCD believes the dissolved oxygen criterion in these channels should not be expected to support the same aquatic life use as natural streams. HCFCD comments that the more appropriate aquatic life use category for these manmade segments is "minimal" and not "intermediate" or "limited."

Response: Aquatic life use designations were assigned to HCFCD ditches based on a UAA conducted in 1999. Five streams with existing receiving water assessments were chosen to represent perennial, channelized streams and two concreted bayous were chosen to represent concrete-lined channels. These sites were also compared to least disturbed reference sites in the West Gulf Plain Ecoregion.

Many of the perennial ditches in Harris County are classified as such due to combined effluent flow from multiple upstream dischargers. These streams are presumed to support a high aquatic life use even though they are artificially perennial. Due to alteration of the stream bed and removal of

habitat, these ditches do not support the same type of aquatic life use (intolerant species, diversity, and evenness) as the least disturbed reference sites. A comparison of Harris County ditch sites both upstream and downstream of impacted sites shows that aquatic life uses are similar.

Not all flood control ditches in Harris County can be allowed to re-establish stream-side vegetation due to the increased chance of flooding. However, those that were left unmaintained do attain a higher aquatic life use. The finding of the UAA recommended assigning aquatic life use categories based on the degree of ditch modifications. Channelized and concrete-lined ditches and channelized and maintained (no riparian or instream cover) ditches were determined to support a limited aquatic life use. Ditches that were channelized, but not maintained (riparian vegetation recovered to early successional trees) were determined to support an intermediate aquatic life use. Therefore, the commission adopts the language as proposed.

Comment: Sierra Club, Public Citizen, TBBU, SEED, and WE CAN are concerned about whether the designation of limited aquatic life use and corresponding dissolved oxygen criteria of 4.0 mg/L for various concrete lined ditches and streams in Harris County will negatively impact intermediate aquatic life ditches and streams that receive flow from limited aquatic life ditches and streams.

Response: The commission's water quality management program has a framework to address protection of downstream water quality standards that are more stringent than upstream. This is a common occurrence with other kinds of criteria, such as those for toxic pollutants. Under this approach, in permits and TMDLs, pollutant sources are evaluated and controlled so that different standards in affected water bodies are attained.

Comment: GBF notes that Appendix D has 50 additions of HCFCD concrete-lined ditches and streams for aquatic life uses and dissolved oxygen. GBF notes that this could cause review of these ditches and streams for nutrients if standard attainment for dissolved oxygen is not met.

Response: The commission acknowledges the concern that the addition of these ditches could cause the review of these water bodies for nutrients if dissolved oxygen is not met. In one recent study, the commission recognized the relationship between dissolved oxygen impairment and nutrient enrichment; and addressed it in a TMDL. The language is adopted as proposed.

Comment: EPA comments that TCEQ may wish to review the previously completed UAA for Dry Creek (1009) in Harris County. The upper boundary for the portion assigned a limited aquatic life use is proposed to change to HCFCD ditch K-145-05-00, 0.29 km upstream of Spring Cypress Road. In the UAA, this ditch appears to be several kilometers upstream from that stream.

Response: The location of Harris County Flood Control District ditch K-145-05-00 was verified by the Standards Implementation Team of the Water Quality Division. The commission adopts language as proposed.

Comment: BRA comments that they have collected information on a number of unclassified segments that are not included in Appendix D. Based on their review of the data, BRA recommends the following unclassified streams be included in Appendix D: Cedar Creek (1209), Middle Yegua Creek upstream and downstream of the confluence of Cross Creek (1212), Trimmier Creek (1216), Reese Creek (1217), South

Rocky Creek (1217), and Deadman Creek downstream from the City of Abilene Waste Water Treatment Plant discharge point (1232).

Response: The commission has not had time to evaluate this recent data; and will evaluate it and gather more information, as needed. The commission notes this comment and may consider the inclusion of these streams in future triennial revisions.

Comment: BRA contends that according to data they have collected, Wickson Creek (1209) is an intermittent stream with perennial pools rather than a perennial stream.

Response: The commission is proposing no change to the Appendix D entry for Wickson Creek. At this time, no other evaluation of this stream in the form of a receiving water assessment or UAA has been performed. The commission has not had time to evaluate this recent data; and will evaluate it and gather more information, as needed. The comment requesting the stream's re-evaluation is noted and may be considered by the Water Quality Standards Group of the Water Quality Planning Division and the Standards Implementation Team of the Water Quality Division for the next triennial revision.

Comment: BRA contends that according to available data, Pecan Creek (1221) is an intermittent stream with perennial pools rather than a perennial stream. Because it is proposed as a perennial stream, BRA comments that the aquatic life use and dissolved oxygen criteria assigned are too high and the stream should be assigned a limited aquatic life use with a dissolved oxygen criteria of 3.0 mg/L.

Response: The commission is proposing no change to the Appendix D entry for Pecan Creek. At this time, no other evaluation of this stream in the form of a receiving water assessment or UAA has been performed. The commission has not had time to evaluate this recent data; and will evaluate it and gather more information, as needed. The comment requesting the stream's re-evaluation is noted and may be considered by the Water Quality Standards Group of the Water Quality Planning Division and the Standards Implementation Team of the Water Quality Division for the next triennial revision.

Comment: BRA contends that according to available data, Berry Creek (1248) is an intermittent stream with perennial pools rather than a perennial stream. Because it is proposed as a perennial stream, BRA comments that the aquatic life use and dissolved oxygen criteria assigned are too high and the stream should be assigned a limited aquatic life use with a dissolved oxygen criteria of 3.0 mg/L.

Response: At this time, no other evaluation of this stream in the form of a receiving water assessment or UAA has been performed. The commission has not had time to evaluate this more recent data; and will evaluate it and gather more information, as needed. The comment requesting the stream's re-evaluation is noted and may be considered by the Water Quality Standards Group of the Water Quality Planning Division and the Standards Implementation Team of the Water Quality Division for the next triennial revision.

Comment: Travis County Judge Samuel T. Biscoe files comment in support of the exceptional aquatic life use proposed for tributaries of Colorado River (1428) which include Dry Creek, Gilleland Creek, and Harris Branch.

Response: The commission notes this comment in support of site-specific criteria for unclassified tributaries of Segment 1428.

Comment: Sierra Club, Public Citizen, TBBU, SEED, and WE CAN support the designation of exceptional aquatic life use and corresponding dissolved oxygen criteria of 6.0 mg/L for the portion of Dry Creek (1428). Austin comments that the exceptional aquatic life designation should include some form of documentation or technical support.

Response: Flow status is based on field observations and geology. Two receiving water assessment reaches were chosen to characterize this stream because: (1) the stream is braided, (2) it crosses the level 4 Ecoregion, and (3) it crosses several members of Pleistocene era terrace deposits of the Colorado River. The receiving water assessment locations chosen were the Pearce Lane and Wolf Road crossings.

Flow in Dry Creek was observed by staff at several locations on August 5, 2005 after an extended dry hot period. Backpack electrofishing and seine sampling from the Pearce Lane receiving water assessment resulted in 21 different species and 255 individuals despite difficult sampling conditions for both techniques. The region 32 index of biotic integrity score resulting from the data was 49, which correspond to an exceptional aquaticlife use for this location.

Comment: Sierra Club, Public Citizen, TBBU, SEED, and WE CAN oppose the proposed change for the Lavaca River (1602) in Lavaca County that would decrease the dissolved oxygen criteria from 4.0 mg/L *to 2.0 mg/L as a 24-hour average and 1.0 mg/L as a minimum from March 15th through October 15th. TPWD comments that in the Lavaca River, TCEQ took the unusual step of assigning a high aquatic life use, while setting seasonal dissolved oxygen criteria (2.0 mg/L average and 1.0 mg/L minimum) for the period March 15th through October 15th. TPWD concurs that the upper Lavaca River warrants a high aquatic life use and does not object to seasonal dissolved oxygen criteria. However, their review of data in the UAA suggests that the existing dissolved oxygen criteria can be met during the spring and fall. Therefore, the lower dissolved oxygen criteria should only apply for the period July through September, rather than through the entire index period. TPWD recommends that the seasonal dissolved oxygen criteria, 2.0 mg/L average and 1.0 mg/L minimum, be revised to apply from July 1st through September 30th.*

Response: Dissolved oxygen concentrations are often influenced by the amount of flow present in the water body. A UAA conducted on the Lavaca River (Segment 1602) in 2005 and 2006 shows a positive relationship between flow and dissolved oxygen concentrations. Table 7 in the final use-attainability report demonstrates that when flows dropped in the early spring the dissolved oxygen also drops, and flows during the study did not begin to increase until early fall. Therefore, the commission adopts the proposed seasonal dissolved oxygen criteria of 2.0 mg/L as a 24-hour average and 1.0 mg/L as a 24-hour minimum apply from March 15th to October 15th.

Comment: SARA comments that the data collected seems to indicate that the dissolved oxygen content with limited aquatic life use for Salado Creek (1910) should be 3.0 mg/L rather than 4.0 mg/L.

Response: A UAA was conducted on Salado Creek (Segment 1910) in 2001-2002. All stations used in this study, including Station 12877, were considered to be representative of each flow regime type of Salado Creek. Data collected demonstrated that an intermediate aquatic life use with corresponding 24-hour average dissolved oxygen criteria of 4.0 mg/L is appropriate for this portion of Salado Creek. The commission would need additional biological, physical, and chemical data in order to alter the commission's current recommended aquatic life use and dissolved oxygen criteria as they are currently listed in Appendix D. The commission adopts the language as proposed.

Appendix E – Site-specific Toxic Criteria

Comment: TPWD comments that they have long had concerns about the site-specific standards for selenium under consideration for Dixon Creek (101) in Hutchison County. Therefore, TPWD supports TCEQ's decision to revoke these site-specific standards.

Response: The commission notes this comment related to the removal of the site-specific selenium standard for Dixon Creek.

Comment: EPA comments that the site-specific criteria for lead in Big Cypress Creek (0404) may not represent the dissolved fraction of the metal. EPA believes that these criteria have not been revised since its original adoption in 1995 and additional review may be needed as some of the newer toxicity tests may have measured the dissolved lead portion.

Response: The commission has not proposed changes to this portion of Appendix E. The comment is noted and may be re-evaluated during the next triennial revision.

Comment: EPA comments that the description of Buck Creek (0604) seems to represent a considerably longer reach than would be implemented as a mixing zone. EPA believes the confluence of Buck Creek and Segment 0604 is over ten miles from the point of discharge and recommend revising the site description.

Response: The Angelina and Neches River Authority describes Buck Creek as intermittent with pools above the unnamed tributary that receives the discharge from Lufkin Industries. Therefore, no mixing zone is allowed in Buck Creek, and during normal low-flow conditions the effluent from the discharger makes up all of the flow in Buck Creek downstream of Lufkin Industries' discharge point. In similar situations, the EPA has allowed the water-effect ratio study results to apply from the point of discharge downstream to the first perennial water body. However, the commission recognizes that this leads to an unusually long reach. The commission modified and adopted the language placing the lower boundary of the reach at the confluence of Buck Creek with Clayton Creek in Angelina County.

Appendix F – Site-specific Nutrient Criteria for Selected Reservoirs

NOTE: There were comments that directly addressed nutrients in §307.7. However, most of the comments are in reference to §307.10 Appendix F and are addressed in this section.

Comment: Sierra Club, Public Citizen, TBBU, SEED, WE CAN, PLTA, NWF, TPWD, and TCA support the adoption of numerical nutrient standards; however, they are concerned about the methodology used to set the numerical standards. TCA is also concerned about the water bodies in the state that will still have no numerical nutrient standards. Sierra Club, Public Citizen, TBBU, SEED, WE CAN, and PLTA urge the TCEQ to move forward with numeric nutrient criteria for rivers and streams in the next triennial revision. OPIC recommends TCEQ take note of a recent proposal by EPA to regulate nutrients in Florida and consider it a model for Texas.

WEAT and Harris County comment that the proposed revisions mark the completion of an important step. In the future revisions to the standards, Harris County suggests the TCEQ consider establishing more sensitive measures of nutrient impairment in lakes and impoundments. TACWA, TDA, and PHA appreciate the extensive work by TCEQ to develop the proposed revisions.

Sierra Club, Public Citizen, TBBU, SEED, and WE CAN note that adoption of nutrient standards for bodies of water, other than reservoirs, is required by federal law; and urges TCEQ to move expeditiously during the next revision of water quality standards to develop and adopt protective nutrient standards for those other bodies of water. OPIC strongly supports the beginning of the process of establishing numerical nutrient requirements for Texas waterways.

Response: The commission appreciates the support of the public and stakeholders in the efforts toward numeric nutrient criteria development for the State of Texas. Nutrient criteria are complex in such a large and diverse state. The methodologies presented in the rules for reservoir nutrient criteria are the culmination of years of work by the commission staff and stakeholders. The

commission and interested parties held many workgroups examining methodologies and concerns. The commission will work toward further development of nutrient criteria for water bodies of the state and further refine the numeric nutrient reservoir criteria presented in the rules. This will include an evaluation of methods to develop nutrient criteria that have been used in other states.

Comment: BRA, SRA, SARA, Fox Dairy, Heifer Ranch at Arroyo Seco, High Plains Dairy Counsel, Legacy Farms, Texas State Representative Sid Miller, HCFCD, T/K, PCG, Hamilton, Farmers Branch, TSSWCB, TSCRA, TFB, TIP, GBF, BCFB, LOCFB, the Association of Texas Soil and Water Conservation Districts, and 74 Soil and Water Conservation Districts filed comments in general support of using chlorophyll a criteria as proposed in §307.9(e)(7) and Appendix F as long as total phosphorus and transparency verify that there is an actually water body impairment. SARA also supports the secondary screening criteria, because there currently is no accreditation program for chlorophyll a and current analytical methods for that constituent are not particularly robust. SRA suggests a better approach would be to utilize both secchi disk transparency and total phosphorus for confirming non-support, and the best approach would be with secchi disk transparency that can be shown to be directly correlated with elevated chlorophyll a values. WEAT and SRA suggest retaining the present structure of Appendix F, but use the chlorophyll a values in the alternative proposal. A second alternative suggested by WEAT is to use chlorophyll a as they are proposed in Appendix F, but require confirmation based on both total phosphorus and transparency.

Sierra Club, Public Citizen, TBBU, SEED, WE CAN, Texas State Representative Valinda Bolton, Uncertain, CLACC, GCLAT, LGCLA, FCLNWR, EIP, CW Action, TCE, Austin, SOSA, PLTA, Volente, and CLI support the development of numerical nutrient criteria, but comment that total phosphorus and *transparency should not be used as an additional test to determine water body impairment. TPWD, NWF, and LCRA have general concerns about the current total phosphorous reporting limit of 0.06 mg/L, which they comment is too high to be effective.*

TPWD has compared the likelihood of flagging reservoirs with significant changes to the likelihood of identifying reservoirs as impaired using the TCEQ's proposed chlorophyll a criteria and total phosphorus screening levels. TPWD commented that their analysis of the data provided compelling evidence that the TCEQ procedure requiring both total phosphorus and chlorophyll a lack sufficient power to detect obvious change in the reservoirs. TPWD would prefer an approach where high levels of total phosphorus or high levels of chlorophyll a, or low transparency or moderate levels of any two parameters, would flag a reservoir.

TCC notes that the term "supplemental screening levels" is used in §307.7(b)(4)(E) without a description of how they are to be used. TCC recommends adding a definition of this term in §307.3 and cite §307.9(e)(7) to describe how the levels will be used in assessing the nutrient quality of reservoirs and lakes listed in Appendix F. WEAT recommends that the role of the secondary screening parameters in the event of a CWA, §303(d) listing for nutrients be more fully defined. WEAT comments that there should not be a requirement to achieve compliance with secondary screening parameters to fulfill TMDL requirements because they may be due to natural geologic conditions.

EPA states that "based on the federal regulation at 40 CFR §130.7(b), states must identify water quality limited segments where other pollution control requirements are not stringent enough to implement any water quality standards, inclusive of all numeric criteria; given that chlorophyll a criteria are *‘applicable' as water quality standards under these regulations." EPA expects that use attainment decisions be based on the assessment of these criteria, irrespective of associated indicator screening levels. EPA comments that the use of supplemental screening may not be as protective as a single criterion, preferably a causal criterion such as total phosphorus or total nitrogen. Harris County also suggests future refinements to the standards should focus on causal variables such as phosphorus.*

Response: The commission appreciates comments on the proposed nutrient criteria and other alternative criteria (stand alone chlorophyll *a* criteria) that were presented. The commission recognizes that some stakeholders prefer stand alone nutrient criteria for chlorophyll *a*, while other stakeholders prefer the use of total phosphorus and transparency as supplemental screening parameters.

The commission recognizes that data to assess eutrophication are highly variable and tend to exhibit cycles over multiple years that complicate the assessment. In addition, key parameters such as chlorophyll *a* and total phosphorus are often at levels that are near or below detection and limits; or minimum quantification levels. These difficulties are potentially lessened by the use of multiple parameters for assessment. However, there were also many comments and substantial concerns in opposition to the use of supplemental screening parameters to confirm nutrient impairment. The commission also recognizes that the statistical level of significance is difficult to determine when using parameters that are likely to be correlated.

In view of these concerns regarding secondary screening parameters, the commission deletes the proposed nutrient criteria based on secondary screening parameters and adopts the "stand alone"

chlorophyll *a* nutrient criteria at the confidence level of 0.01 for reservoirs in Appendix F. The use of stand alone chlorophyll *a* criteria is also incorporated into the adopted versions §307.3(a)(40), §307.7(b)(4)(E), and §307.9(e)(7). Other options to incorporate additional parameters for nutrient criteria will be considered by the commission for future nutrient criteria revisions.

Comment: Austin, Sierra Club, Public Citizen, TBBU, SEED, WE CAN, LCRA, Highland Lakes Group, Highland Lakes PAC, Lakeway, Texas State Representative Valinda Bolton, TPWD, and NWF oppose the language in Appendix F that would apply a 5.0 µg/L criterion for chlorophyll a to reservoirs with a calculated criterion of less than 5.0 µg/L. Travis County Judge Samuel T. Biscoe comments that this proposal is unacceptable and recommends that Appendix F reflect the necessity for special laboratory techniques for analysis of chlorophyll a and total phosphorus when a criterion is less than the general quantification level.

LCRA comments that TCEQ may want to use the model results they developed in evaluating the proposed chlorophyll a standard for Segment 1404 – Lake Travis and its watershed to test nutrient criteria. LCRA comments that the calculated criterion for Lake Travis is 3.31 µg/L and assessing it at the proposed 5.0 µg/L significantly decreases the level of protection in the reservoir. Accordingly, LCRA recommends that the high quality, low detection data from the Clean Rivers Program be used to assess the calculated criteria for Lake Travis.

PLTA comments that the proposed criteria for chlorophyll a are higher than ambient levels in Lake Travis and would result in degradation. PLTA supports LCRA's recommendation. PLTA comments that TCEQ needs to address the nutrient loading of the arms and coves of Lake Travis as well. Highland Lake

PAC opposes any lowering of water quality standards in the Highland Lakes, Lake Travis in particular. Several individuals also filed comments opposing any weakening of water quality standards in Lake Travis. State Senator Kirk Watson also opposes raising the chlorophyll a standard in Lake Travis. Volente commented that the proposed numerical standard for chlorophyll a was not adequate to protect water quality in the Highland Lakes. Travis County Judge Samuel T. Biscoe files comments in support of the adoption of the numerical nutrient criteria, but opposed to the proposed nutrient criteria for Lady Bird Lake, Lake Austin, and Lake Travis.

BRA is concerned about the language regarding screening levels in the third paragraph of Appendix F, and suggests the paragraph creates confusion and could lead to misinterpretation. The low total phosphorus level of 0.04 mg/L could result in healthy low nutrient lakes being listed as impaired. BRA requests the screening values should be reflected in the table and removed from the text. Therefore, BRA recommends that Appendix F reflect the actual assessment values.

EPA, Austin, Sierra Club, Public Citizen, TBBU, SEED, WE CAN, TPWD, Texas State Representative Valinda Bolton, and NWF comment that the standard should be set at the calculated value. EPA suggests language on current detection limits could be omitted. Furthermore, they suggest screening level language should be moved to the Surface Water Quality Monitoring Program's Procedures Guidance for Assessing and Reporting Surface Water Quality in Texas, and detection limits for compliance purposes could be addressed in the Implementation Procedures, where there are already provisions for similar parameters.

Response: The commission is aware of the concerns regarding language presented in Appendix F with regard to screening level values for chlorophyll *a* and total phosphorus. The adopted language in Appendix F reflects the stand alone chlorophyll *a* criteria. The note on minimum chlorophyll *a* level has been slightly revised to indicate the minimum default value is based on historical quantification levels. For the table in Appendix F, the commission incorporates a chlorophyll *a* level of 5 µg/L for the minimum default criteria.

Historical data that were used for the calculation often had minimum quantification levels and reporting levels above current chlorophyll *a* reporting values. The default to 5 µg/L is necessary in order to address this higher reporting level in much of the data used in nutrient criteria development. Even with these limitations, the default criteria of 5 µg/L chlorophyll *a* provides a general level of protection for clearer reservoirs. The commission notes that this concentration is lower than the minimum concentration of chlorophyll *a* criteria for those that have been developed for other states, such as for Florida lakes. The commission acknowledges that this approach is of concern to some commenters and the commission will evaluate ways to improve criteria for clear reservoirs, such as non-parametric statistical techniques and additional evaluation of chlorophyll *a* minimum quantification levels. This evaluation will be facilitated where reservoirs, such as the Highland Lakes, have substantial historical data.

To avoid confusion, the default chlorophyll *a* criteria are listed in the table in Appendix F for assessment purposes. For those reservoirs with default criteria, the calculated values are shown in parenthesis.

Comment: IBWC opposes the site-specific nutrient criteria and screening levels for reservoirs in the Rio Grande Basin. Based on review of the available data, IBWC believes that the criteria and screening should be less stringent for Segment 2303 – International Falcon Reservoir, 2305 – International Amistad Reservoir, and 2312 – Red Bluff Reservoir. IBWC requests a thorough review of the chlorophyll a criteria and total phosphorus screening levels for these segments to ensure the appropriateness of the proposed nutrient criteria.

Response: The commission recognizes IBWC's role in water quality management of the Rio Grande. Therefore, in response to their comments, the proposed adoption of nutrient criteria for International Falcon Reservoir (Segment 2303) and International Amistad Reservoir (Segment 2305) were deleted, pending future coordination and consideration. The commission appreciates that these large reservoirs are international boundary waters directly on the Rio Grande River. The commission is adopting a chlorophyll *a* criteria for Red Bluff Reservoir (Segment 2312) since this reservoir is a long distance (>300 stream miles) from the Rio Grande.

Comment: TPWD supports the TCEQ's efforts in §307.7(b)(4)(E) to establish nutrient criteria for reservoirs. However, TPWD does not support the statistical methodology used for setting the criteria and suggest the TCEQ use the methodology proposed by TPWD. TPWD's methodology is based on non-parametric control charts that evaluate the 90th percentile of chlorophyll a. TPWD suggests that their methodology is less sensitive to non-detect measurements and better reflects the effects of algal blooms. TPWD also notes that unlike TCEQ's proposed methods, their approach does not require the assumption of a normal distribution.

Overall, TPWD states that the TCEQ's approach is too cautious and will fail to identify and address problematic situations before they are extreme. TPWD is concerned that the proposed approach fails to address the antidegradation intent of the CWA, as it is likely to allow the trophic state of reservoirs to change. TPWD suggests that TCEQ look for a new approach that is statistically defensible and has more power to detect changes.

OPIC questions the methodology used to determine the numeric nutrient criteria and recommends using the TPWD methodology. LCRA does not agree with the stand alone approach and supports the TPWD proposed non-parametric method for developing standards for Texas reservoirs. Harris County also supports use of the TPWD method presented above, but suggests these refinements should be addressed after adoption of currently proposed nutrient criteria.

Response: The commission appreciates TPWD's unusual efforts in evaluating nutrient criteria options for Texas reservoirs. There would be some advantages to non-parametric statistical techniques to define criteria from historical data sets, particularly the lack of reliance on a statistical distribution as well as the reduced effect of measurements below quantification levels. Commission staff reviewed TPWD's control chart approaches as well as other non-parametric statistical approaches to derive nutrient criteria from historical data. At this time, the commission's reviews and evaluations indicate that the relatively straight-forward proposed approach that incorporates variability around a mean is an appropriate starting point for initiating nutrient criteria for Texas reservoirs. The use of a 90th percentile for a control chart analysis is less intuitive to those that will be using these criteria, and the commission is unaware of a control chart analysis or similar approach that is being used for criteria development in other states or by EPA. The

procedures to evaluate standards attainment using a control chart are not particularly difficult, but these procedures are relatively specialized and unfamiliar to most stakeholders in the water quality arena. In addition, preliminary analyses and literature reviews suggest that statistical uncertainty can be substantial when estimating the scalar value of the 90th percentile of modest datasets with high variability. This uncertainty would need to be further evaluated and addressed. A criterion based on a 90th percentile can also be more difficult to evaluate when reviewing regulatory actions that affect nutrient loads. The commission will continue to coordinate with TPWD, other stakeholders, and experts in eutrophication analysis in order to develop nutrient criteria for other types of water bodies and to expand and improve nutrient criteria for reservoirs. However, the commission does not adopt the methodology suggested by TPWD as part of this rulemaking.

Comment: If TCEQ chooses to retain the method currently proposed, TPWD recommends TCEQ consider having tiered false positive rates to allow for screening; increase sample sizes used in the assessment; switch from using a two-tailed interval to a one-tailed interval; and/or ascertain if there is structure in the data that can be exploited to reduce the variability.

Response: The commission appreciates TPWD's efforts in evaluating the proposed nutrient criteria. Some of these suggestions are beyond the scope of the current rulemaking. However, commission staff will consider them in future development and re-evaluation of nutrient criteria. The commission also concurs that larger sample sizes are statistically beneficial for assessment purposes and will continue to maximize data collection efforts within the constraints of available resources. At this time, the commission does not incorporate these suggestions into the adopted

nutrient criteria. However, the procedures for assessing attainment of nutrient criteria will continue to be reviewed by the commission.

Comment: BRA and SRA have expressed concerns regarding the elimination of values as "outliers" when they may actually be representative data. SRA does not agree with methodology that excludes values by statistical analysis alone.

Response: The commission acknowledges that this is a reasonable concern. However, the approach to identify outliers using Tukey Box Plot is a common statistical practice. Outlier exclusion was needed to avoid excessive outlier effects on smaller datasets, where one error can heavily bias the ultimate result. In general, the effect on the calculated criteria of removing a relative small number of outliers is minimal.

Comment: Overall, TPWD and BRA are supportive of the use of other causative factors, such as nitrate and orthophosphate. BRA recommends that the TCEQ consider using orthophosphate instead of total phosphorus for the phosphorus screening level since orthophosphate phosphorus is the most biologically available phosphorus compound and readily utilized by algal communities. BRA comments that since the goal is to protect lakes showing signs of advance eutrophication from further degradation; and since algal communities may be nutrient limited for phosphorus and nitrogen, they recommend including a screening level for nitrate or total Kjeldahl nitrogen.

Response: The commission agrees that the use of readily available forms of nutrients, such as orthophosphate and nitrate, may have some advantages in assessing eutrophication, such as

assessing short-term growth potential at a particular point in time. The available forms can also be important components of some eutrophication models. However, both nitrate and orthophosphate are relatively transitory and variable in comparison to total forms of nutrients. Sometimes a high proportion of phosphorus can be bound up in phytoplankton algae and rapidly recycled, so that the overall algal density might be substantial even though the orthophosphate remains relatively low. The use of total phosphorus or total nitrogen facilitates assessing long-term trophic status and establishing controls on nutrient loads where needed. In addition, for many reservoirs concentrations of phosphorus are often below quantification levels and this problem is exacerbated when measuring orthophosphates. The commission also agrees that measurements of total nitrogen (including Kjeldahl nitrogen) or nitrate are also potentially useful for screening purposes. At the present time, there are insufficient nitrogen data to historically evaluate screening values for many reservoirs in Texas, and the commission is exploring ways to expand the available nitrogen data for future monitoring efforts. The commission also notes that EPA recommends that nutrient criteria for phosphorus be expressed as total phosphorus, and this has generally been the approach that's been employed for criteria development in other states. As explained in other responses, the initial set of nutrient criteria are adopted for chlorophyll *a*, and supplemental screening of phosphorus values is not included. However, in the future, the commission and stakeholders will have an opportunity to further evaluate appropriate ways to apply phosphorus and nitrogen to nutrient criteria.

Comment: EPA requests that the TCEQ provide further explanation whether all existing uses for the selected reservoirs can be maintained with the proposed numeric criteria. EPA requests an explanation from TCEQ regarding why the available data approach was chosen over the more commonly used *approaches to criteria development, such as reference water bodies. EPA questions whether the criteria that would apply to the following reservoirs would be protective of their designated uses: Lake Tanglewood, Lake Tawakoni, Lake Murvaul, Lake Palestine, Lake Livingston, Lake Worth, Eagle Mountain Reservoir, Bardwell Reservoir, Cedar Creek Reservoir, White Rock Lake, Lake Arlington, Benbrook Lake, Lake Conroe, Lake Granbury, Sommerville Lake, Proctor Lake, Lake Waco, Buffalo Springs Lake, Brady Creek Reservoir, O.C. Fisher Reservoir, and Red Bluff Reservoir.*

In general, the EPA does not support chlorophyll a criteria above 20 µg/L, unless there is demonstration that these values are protective of designated uses. EPA comments that reliance on historical data does not necessarily improve water quality in reservoirs. EPA states that if declining water quality trends were captured in a data set, it could be argued that the proposed criteria was not protective, but only reflect water bodies in the process of eutrophication. EPA believes the intent should be protection and improvement in water quality, not maintaining the status of declining water quality. NWF also comments that the numerical standards are not sufficiently protective, particularly for those reservoirs already experiencing relatively high levels of chlorophyll a (over 20 µg/L). Lubbock asks TCEQ to review the proposed chlorophyll a criterion for Segment (1241) - Buffalo Springs Lake. Lubbock comments that the pre-1990 data is not reliable and should not be used to calculate the chlorophyll a criterion.

Response: The commission responds that it is not extraordinary for even the mean chlorophyll *a* concentrations of Texas reservoirs to exceed 20 µg/L. When statistical variability is accounted for, many of the applicable criteria are above 20 µg/L, as noted by EPA and NWF. The commission's advisory workgroup on nutrient criteria generally recommended that criteria be developed for as many reservoirs as reasonably possible using historical data. The commission also notes that EPA's

national guidance criteria for nutrients were not based on concentrations that were known to be related to water quality uses, but rather were selected as arbitrary percentiles of historical data from large aggregate ecoregions. The commission intends to continue exploring improved methods to categorize reservoirs into groups so that "least impacted" reference reservoirs can be identified and compared to other reservoirs in their group; and identify and address any reservoirs that might demonstrate an increase in eutrophication due to anthropogenic sources of nutrients. In response to this comment and in response to a concern expressed by the City of Lubbock, the commission is deleting the proposed nutrient criteria for Buffalo Springs Lake, since this small, unclassified reservoir exhibits particularly high chlorophyll *a* concentrations. For reservoirs with adopted criteria above 20 µg/L, the commission will coordinate with EPA during the federal review of the revisions to provide additional information and analyses concerning historical data patterns, sources of nutrient loadings, and other relevant information.

Comment: BRA asks the TCEQ to consider more leniencies in nutrient levels for lakes not currently exhibiting signs of eutrophication in setting minimum values to allow for natural lake development.

Response: Texas reservoirs in general show slow rates of natural eutrophication and trends are not generally apparent. There was no clear method to consider the small effects of natural aging. However, to partly address this concern relatively recent historical data were used to calculate nutrient criteria when sufficient data were available.

Comment: After reviewing available data, TPWD requests that TCEQ explain the methodology that was used in deriving criteria and screening levels; and demonstrate that both methods are protective. TPWD *also requests that TCEQ conduct simulations to test the ability of any proposed methodology to discriminate between ambient and altered environments, as TPWD did using the original data set for chlorophyll a.*

TPWD comments that examination of the new TCEQ dataset suggests that significant changes in chlorophyll a concentrations have occurred since 2004 at most reservoirs and they are concerned that the TCEQ analysis has not dealt with this appropriately.

BRA, Lubbock, SRA and WEAT are concerned about some of the data used to develop the proposed nutrient standards. BRA states that some of the historical data collected in the 1970's and 1980's is unreliable because they date before the development and implementation of laboratory and program quality control standards. Furthermore, SRA suggest data from 2004-2008 only should be used in developing reservoir criteria for the Sabine Basin. BRA and SRA recommends using only the recent data with verifiable methodologies and quality control in calculating the nutrient standards. WEAT suggests changes to Appendix F to minimize the unintended effects of using data not analyzed with improved current analytical methods.

Response: In response to concerns about using screening parameters, the commission deleted the proposed screening levels as previously discussed in earlier responses. The methodology for deriving criteria is explained in Appendix F.

The commission notes that the nutrient advisory workgroup recommended that criteria be developed and applied to as many reservoirs as reasonably possible. When insufficient data were

available for this period for a particular reservoir, the commission added data for the entire period of record. This approach was taken because stakeholders expressed serious concerns about including only historical data, due to changes in chlorophyll *a* collection and analysis. However, in response to the comments concerned about trends over time in reservoirs, the commission re-evaluated the data used for criteria calculations. This re-evaluation indicated trends over time that appear to be anomalous and potentially artificial for the following 15 reservoirs: Lake Meredith (Segment 0102), Farmers Creek Reservoir (Segment 0210), Diversion Lake (Segment 0215), Lake Mackenzie (Segment 0228), Lake O' the Pines (Segment 0403), Lake Arlington (Segment 0828), Lake Weatherford (Segment 0832), Lake Amon G. Carter (Segment 0834), Lake Houston (Segment 1002), Leon Reservoir (Segment 1224), Lake Palo Pinto (Segment 1230), Fort Phantom Hill Reservoir (Segment 1236), Inks Lake (Segment 1407), E. V. Spence Reservoir (Segment 1411), and Lake Brownwood (Segment 1418). Therefore, the proposed nutrient criteria for these 15 reservoirs were deleted from the adopted standards. The commission may continue criteria development for these reservoirs in the future.

Comment: One individual noted that EPA's Algal Assay Bottle test might be helpful in resolving the nutrient/chlorophyll/algae dilemma.

Response: The commission notes that data from nutrient enrichment tests are available for some reservoirs. These results can be useful in assessing nutrient sensitivity and defining the limiting nutrients. At this stage, the available enrichment information on Texas reservoirs is insufficient to use in adjusting nutrient criteria.

Comment: CLACC, GCLAT, LGCLA, FCLNWR, EIP, CW Action, TCE, Uncertain, and CLI question why different lakes in the same watershed have different chlorophyll a criteria and why the criteria cannot be applied basin wide.

Response: The commission worked in conjunction with stakeholder workgroups and examined independent studies of reservoirs to develop classification based nutrient criteria. Texas reservoirs are highly variable systems, even within the same watershed or ecoregion, and this has complicated the development of criteria across groups of reservoirs. The initial set of reservoir nutrient criteria is therefore established for individual reservoirs. The commission will continue to explore approaches to effectively categorize reservoirs into groups.

Appendix G – Site-specific Recreational Uses and Criteria for Unclassified Water Bodies

Comment: Sierra Club, Public Citizen, TBBU, SEED, and WE CAN oppose the designation of Brickhouse Gully/Bayou and the two unnamed tributaries of Whiteoak Bayou as "secondary contact recreation 1" and believes these water bodies should continue to be presumed for contact recreation at this time. Sierra Club, Public Citizen, TBBU, SEED, and WE CAN also question the adequacy of the UAAs conducted to make the proposed changes. EPA also comments that they have received UAAs on these unclassified water bodies and will initiate review in the near future.

Response: Site-specific recreational uses and criteria for these three water bodies are appropriate since the recreational UAA followed the recreational UAA procedures and was submitted to EPA for review and preliminary approval. The commission notes that EPA received the UAA for these

three water bodies and will initiate review in the near future. EPA has indicated to the commission that the proposed recreational uses and associated criteria and the recreational UAA procedures are acceptable. The commission notes that designating site-specific recreational uses for certain water bodies is appropriate due to contact recreation being broadly presumed for all Texas surface waters, with the exception of eight water bodies, such as ship channels, in the 1980's and 1990's. The commission adopts Appendix G as proposed.

§§307.1 - 307.10

STATUTORY AUTHORITY

These amendments are adopted under the Texas Water Code, §26.023, that provides the Texas Commission on Environmental Quality with the authority to make rules setting Texas Surface Water Quality Standards (TSWQS) for all waters in the state. These amendments are also being adopted under Texas Water Code, §5.103, that authorizes the commission to adopt any rules necessary to carry out its powers and duties under the Texas Water Code and other laws of this state. The adopted amendments will satisfy the provision in Federal Clean Water Act, §303(c) that requires states to adopt water quality standards and to review and revise standards from time to time, but at least once each three year period. The revisions to the TSWQS are adopted to incorporate new information and studies on the appropriate uses and criteria of individual water bodies, to incorporate new scientific data on the effects of specific chemicals and pollutants, and to address new provisions in the Texas Water Code, federal regulations, and guidance of the EPA.

These amendments implement the Texas Water Code, §§5.103, 26.003, 26.023, and 26.026 in addition to Federal Clean Water Act, §303(c). No other codes or statutes will be affected by this adoption.

§307.1. General Policy Statement.

It is the policy of this state and the purpose of this chapter to maintain the quality of water in the state consistent with public health and enjoyment, propagation and protection of terrestrial and aquatic life, operation of existing industries, and taking into consideration economic development of the state; to encourage and promote development and use of regional and area-wide wastewater collection, treatment, and disposal systems to serve the wastewater disposal needs of the citizens of the state; and to require the use of all reasonable methods to implement this policy.

§307.2. Description of Standards.

(a) Contents of the Texas Surface Water Quality Standards.

(1) Section 307.1 of this title (relating to General Policy Statement) contains the general standards policy of the commission.

(2) This section lists the major sections of the standards, defines basin classification categories, describes justifications for standards modifications, and provides the effective dates of the rules.

(3) Section 307.3 of this title (relating to Definitions and Abbreviations) defines terms and abbreviations used in the standards.

(4) Section 307.4 of this title (relating to General Criteria) lists the general criteria that are applicable to all surface waters of the state unless specifically excepted in §307.8 of this title (relating to Application of Standards) or §307.9 of this title (relating to Determination of Standards Attainment).

(5) Section 307.5 of this title (relating to Antidegradation) describes the antidegradation policy and implementation procedures.

(6) Section 307.6 of this title (relating to Toxic Materials) establishes criteria and control procedures for specific toxic substances and total toxicity.

(7) Section 307.7 of this title (relating to Site-Specific Uses and Criteria) defines appropriate water uses and supporting criteria for site-specific standards.

(8) Section 307.8 of this title (relating to the Application of Standards) sets forth conditions when portions of the standards do not apply - such as in mixing zones or below critical low-flows.

(9) Section 307.9 of this title describes sampling and analytical procedures to determine standards attainment.

(10) Section 307.10 of this title (relating to Appendices A - G) lists site-specific standards and supporting information for classified segments (Appendices A and C), water bodies that are sole-source surface drinking water supplies (Appendix B), site-specific uses and criteria for unclassified water bodies (Appendix D), site-specific toxic criteria that may be derived for any water in the state (Appendix E), chlorophyll *a* criteria for selected reservoirs (Appendix F), and site-specific recreational uses and criteria for unclassified water bodies (Appendix G). Specific appendices are as follows:

(A) Appendix A - Site-specific Uses and Criteria for Classified Segments;

(B) Appendix B - Sole-source Surface Drinking Water Supplies;

(C) Appendix C - Segment Descriptions;

(D) Appendix D - Site-specific Uses and Criteria for Unclassified Water Bodies;

(E) Appendix E - Site-specific Toxic Criteria;

(F) Appendix F - Site-specific Nutrient Criteria for Selected Reservoirs; and

(G) Appendix G - Site-specific Recreational Uses and Criteria for Unclassified Water Bodies.

(b) Applicability. The Texas Surface Water Quality Standards apply to surface waters in the state - including wetlands.

(c) Classification of surface waters. The major surface waters of the state are classified as segments for purposes of water quality management and designation of site-specific standards. Classified segments are aggregated by basin, and basins are categorized as follows:

(1) River basin waters. Surface inland waters comprising the major rivers and their tributaries, including listed impounded waters and the tidal portion of rivers to the extent that they are confined in channels.

(2) Coastal basin waters. Surface inland waters, including listed impounded waters but exclusive of paragraph (1) of this subsection, discharging, flowing, or otherwise communicating with bays or the gulf, including the tidal portion of streams to the extent that they are confined in channels.

(3) Bay waters. All tidal waters, exclusive of those included in river basin waters, coastal basin waters, and gulf waters.

(4) Gulf waters. Waters that are not included in or do not form a part of any bay or estuary but that are a part of the open waters of the Gulf of Mexico to the limit of the state's jurisdiction.

(d) Modification of standards.

(1) The commission reserves the right to amend these standards following the completion of special studies.

(2) Any errors in water quality standards resulting from clerical errors or errors in data may be corrected by the commission through amendment of the affected standards. Water quality standards not affected by such clerical errors or errors in data remain valid until changed by the commission.

(3) The narrative provisions, presumed uses, designated uses, and numerical criteria of the Texas Surface Water Quality Standards may be amended for a specific water body to account for local conditions. A site-specific standard is an explicit amendment to this title, Chapter 307 (Texas Surface Water Quality Standards), and adoption of a site-specific standard requires the procedures for public notice and hearing established under the Texas Water Code, §26.024 and §26.025. An amendment that establishes a site-specific standard requires a use-attainability analysis that demonstrates that reasonably attainable water-quality related uses are protected. Upon adoption, site-specific amendments to the standards will be listed in §307.10 of this title.

(4) Factors that may justify the development of site-specific standards are described in §§307.4, 307.6, 307.7, and 307.8 of this title.

(5) Temporary variance. When scientific information indicates that a site-specific standards amendment is justified, the commission may allow a corresponding temporary variance to the water quality standards in a permit for a discharge of wastewater or storm water.

(A) A temporary variance is only applicable to an existing permitted discharge.

(B) A permittee may apply for a temporary variance prior to or during the permit application process. The temporary variance request must be included in a public notice during the permit application process. An opportunity for public comment is provided, and the request may be considered in any public hearing on the permit application.

(C) A temporary variance for a Texas Pollutant Discharge Elimination System permit also requires review and approval by the United States Environmental Protection Agency (EPA) during the permitting process.

(D) The permit must contain effluent limitations that protect existing uses and preclude degradation of existing water quality, and the term of the permit must not exceed three years. Effluent limitations that are needed to meet the existing standards are listed in the permit and are effective immediately as final permit effluent limitations in the succeeding permit, unless the permittee fulfills the requirements of the conditions for the variance in the permit.

(E) When the permittee has complied with the terms of the conditions in the temporary variance, then the succeeding permit may include a permit schedule to meet standards in accordance with subsection (f) of this section. The succeeding permit may also extend the temporary variance in accordance with subsection (f) of this section in order to allow additional time for a site-specific standard to be adopted in this title. This extension can be approved by the commission only after a site-specific study that supports a standards change is completed and the commission agrees the completed study supports a change in the applicable standard(s).

(F) Site-specific standards that are developed under a temporary variance must be expeditiously proposed and publicly considered for adoption at the earliest opportunity.

(e) Standards implementation procedures. Provisions for implementing the water quality standards are described in a document entitled *Procedures to Implement the Texas Surface Water Quality Standards* (RG-194) as amended and approved by the Texas Commission on Environmental Quality and EPA.

(f) Permit schedules to meet standards. Upon permit amendment or permit renewal, the commission may establish interim effluent limitations to allow a permittee time to modify effluent quality in order to attain final effluent limitations. The duration of any interim effluent limitations may not be longer than three years from the effective date of the permit issuance, except in accordance with a temporary variance as described in subsection (d)(5) of this section.

(g) Temporary standards. Where a criterion is not attained and cannot be attained for one or more of the reasons listed in 40 Code of Federal Regulations (CFR) §131.10(g), then a temporary standard for specific water bodies may be adopted in §307.10 of this title as an alternative to changing uses. A criterion that is established as a temporary standard must be adopted in accordance with the provisions of subsection (d)(3) of this section. Specific reasons and additional procedures for justifying a temporary standard are provided in the standards implementation procedures. A temporary standard must identify the water body or water bodies where the criterion applies. A temporary standard identifies the numerical criteria that apply during the existence of the temporary standard. A temporary standard does not exempt any discharge from compliance with applicable technology-based effluent limits. A temporary standard expires no later than the completion of the next triennial revision of the Texas Surface Water Quality Standards. When a temporary standard expires, subsequent discharge permits are issued to meet the applicable existing water quality standards. If a temporary standard is sufficiently justified in accordance with the provisions of subsection (d)(3) of this section, it can be renewed during revisions of the Texas Surface Water Quality Standards. A temporary standard cannot be established that would impair an existing use.

(h) Effective date of standards. Except as provided in 40 CFR §131.21 (EPA review and approval of water quality standards), these rules become effective 20 days after the date they are filed in the office of the secretary of state. As to actions covered by 40 CFR §131.21, the rules become effective upon approval by EPA.

(i) Effect of conflict or invalidity of rule.

(1) If any provision of this chapter or its application to any person or circumstances is held invalid, the invalidity does not affect other provisions or applications of the provisions contained in this chapter that can be given effect without the invalid provision or application, and to this end the provisions of this chapter are severable.

(2) To the extent of any irreconcilable conflict between provisions of this chapter and other rules of the commission, the provisions of this chapter supersede.

§307.3. Definitions and Abbreviations.

(a) Definitions. The following words and terms, when used in this chapter, have the defined meanings, unless the context clearly indicates otherwise.

(1) **Acute toxicity --** Toxicity that exerts a stimulus severe enough to rapidly induce an effect. The duration of exposure applicable to acute toxicity is typically 96 hours or less. Tests of total toxicity normally use lethality as the measure of acute impacts. (Direct thermal impacts are excluded from definitions of toxicity.)

(2) **Ambient --** Refers to the existing water quality in a particular water body.

(3) **Aquatic vegetation --** Refers to aquatic organisms, i.e., plant life, found in the water and includes phytoplankton; algae, both attached and floating; and vascular and nonvascular plants, both rooted and floating.

(4) **Attainable use --** A use that can be reasonably achieved by a water body in accordance with its physical, biological, and chemical characteristics whether it is currently meeting that use or not. Guidelines for the determination and review of attainable uses are provided in the standards implementation procedures. The designated use, existing use, or presumed use of a water body may not necessarily be the attainable use.

(5) **Background --** Refers to the water quality in a particular water body that would occur if that water body were relatively unaffected by human activities.

(6) **Bedslope --** Stream gradient, or the extent of the drop in elevation encountered as the stream flows downhill. One measure of bedslope is the elevation decline in meters over the stream distance in kilometers.

(7) **Best management practices --** Schedules of activities, maintenance procedures, and other management practices to prevent or reduce the pollution of water in the state from point and nonpoint sources, to the maximum extent practicable. Best management practices also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

(8) **Bioaccumulative --** Describes a chemical that is taken up by aquatic organisms from water directly or through the consumption of food containing the chemical.

(9) **Bioconcentration factor --** A unitless value describing the degree to which a chemical can be concentrated in the tissues of an organism in the aquatic environment and that is absorbed directly from the water. The bioconcentration factor is the ratio of a chemical's concentration in the tissue of an organism compared to that chemical's average concentration in the surrounding water.

(10) **Biological integrity --** The species composition, diversity, and functional organization of a community of organisms in an environment relatively unaffected by pollution.

(11) **Chronic toxicity --** Toxicity that continues for a long-term period after exposure to toxic substances. Chronic exposure produces sub-lethal effects, such as growth impairment and reduced

reproductive success, but it may also produce lethality. The duration of exposure applicable to the most common chronic toxicity test is seven days or more.

(12) **Classified --** Refers to a water body that is listed and described in Appendix A and Appendix C in §307.10 of this title (relating to Appendices A - G). Site-specific uses and criteria for classified water bodies are listed in Appendix A.

(13) **Commission** -- Texas Commission on Environmental Quality.

(14) **Criteria --** Water quality conditions that are to be met in order to support and protect desired uses, i.e., existing, designated, attainable, and presumed uses.

(15) **Critical low-flow --** Low-flow condition that consists of the seven-day, two-year low-flow (7Q2 flow) or the alternative low-flows for spring-fed streams as discussed in §307.8(a)(2) of this title (relating to Application of Standards) and below which some standards do not apply.

(16) **Designated use --** A use that is assigned to specific water bodies in Appendix A, Appendix D, or Appendix G in §307.10 of this title. Typical uses that may be designated for specific water bodies include domestic water supply, categories of aquatic life use, recreation categories, and aquifer protection.

(17) **Discharge permit --** A permit issued by the state or a federal agency to discharge treated effluent or cooling water into waters of the state.

(18) **Dry weather flows --** Sustained or typical dry, warm-weather flows between rainfall events, excluding unusual antecedent conditions of drought or wet weather.

(19) **EC_{50} --** The concentration of a toxicant that produces an adverse effect on 50% of the organisms tested in a specified time period.

(20) ***E. coli* --** *Escherichia coli*, a subgroup of fecal coliform bacteria that is present in the intestinal tracts and feces of warm-blooded animals. It is used as an indicator of the potential presence of pathogens.

(21) **Effluent --** Wastewater discharged from any point source prior to entering a water body.

(22) **Enterococci --** A subgroup of fecal streptococci bacteria (mainly *Streptococcus faecalis* and *Streptococcus faecium*) that is present in the intestinal tracts and feces of warm-blooded animals. It is used as an indicator of the potential presence of pathogens.

(23) **Epilimnion --** The upper mixed layer of a lake (including impoundments, ponds, and reservoirs).

(24) **Existing use --** A use that is currently being supported by a specific water body or that was attained on or after November 28, 1975.

(25) **Fecal coliform --** A portion of the coliform bacteria group that is present in the intestinal tracts and feces of warm-blooded animals; heat tolerant bacteria from other sources can sometimes be included. It is used as an indicator of the potential presence of pathogens.

(26) **Freshwaters --** Inland waters that exhibit no measurable elevation changes due to normal tides.

(27) **Halocline --** A vertical gradient in salinity under conditions of density stratification that is usually recognized as the point where salinity exhibits the greatest difference in the vertical direction.

(28) **Harmonic mean flow --** A measure of mean flow in a water course that is calculated by summing the reciprocals of the individual flow measurements, dividing this sum by the number of measurements, and then calculating the reciprocal of the resulting number.

(29) **Incidental fishery --** A level of fishery that applies to water bodies that are not considered to have a sustainable fishery but that have an aquatic life use of limited, intermediate, high, or exceptional.

(30) **Industrial cooling impoundment --** An impoundment that is owned or operated by, or in conjunction with, the water rights permittee, and that is designed and constructed for the primary purpose of reducing the temperature and removing heat from an industrial effluent.

(31) **Intermittent stream --** A stream that has a period of zero flow for at least one week during most years. Where flow records are available, a stream with a 7Q2 flow of less than 0.1 cubic feet per second is considered intermittent.

(32) **Intermittent stream with perennial pools --** An intermittent stream that maintains persistent pools even when flow in the stream is less than 0.1 cubic feet per second.

(33) **LC_{50} --** The concentration of a toxicant that is lethal (fatal) to 50% of the organisms tested in a specified time period.

(34) **Main pool station --** A monitoring station that is located in the main body of a reservoir near the dam and not located in a cove or in the riverine portion or transition zone of a reservoir.

(35) **Method detection limit --** The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte. The method detection limit (MDL) is estimated in accordance with 40 Code of Federal Regulations Part 136, Appendix B.

(36) **Minimum analytical level --** The lowest concentration that a particular substance can be quantitatively measured with a defined accuracy and precision level using approved analytical methods. The minimum analytical level is not the published MDL for a United States Environmental Protection Agency (EPA)-approved analytical method that is based on laboratory analysis of the

substance in reagent (distilled) water. The minimum analytical level is based on analyses of the analyte in the matrix of concern (e.g., wastewater effluents). The commission establishes general minimum analytical levels that are applicable when information on matrix-specific minimum analytical levels is unavailable.

(37) **Mixing zone --** The area contiguous to a permitted discharge where mixing with receiving waters takes place and where specified criteria, as listed in §307.8(b)(1) of this title, can be exceeded. Acute toxicity to aquatic organisms is not allowed in a mixing zone, and chronic toxicity to aquatic organisms is not allowed beyond a mixing zone.

(38) **Noncontact recreation --** Activities that do not involve a significant risk of water ingestion, such as those with limited body contact incidental to shoreline activity, including birding, hiking, and biking. Noncontact recreation use may also be assigned where primary and secondary contact recreation activities should not occur because of unsafe conditions, such as ship and barge traffic.

(39) **Nonpersistent --** Describes a toxic substance that readily degrades in the aquatic environment, exhibits a half-life of less than 60 days, and does not have a tendency to accumulate in organisms.

(40) **Nutrient criteria --** Numeric and narrative criteria that are established to protect surface waters from excessive growth of aquatic vegetation . Nutrient numeric criteria for reservoirs are expressed in terms of chlorophyll *a* concentration per unit volume as a measure of phytoplankton density.

(41) **Nutrient --** A chemical constituent, most commonly a form of nitrogen or phosphorus, that in excess can contribute to the undesirable growth of aquatic vegetation and impact uses as defined in this title.

(42) **Oyster waters --** Waters producing edible species of clams, oysters, or mussels.

(43) **Persistent --** Describes a toxic substance that is not readily degraded and exhibits a half-life of 60 days or more in an aquatic environment.

(44) **Pollution --** The alteration of the physical, thermal, chemical, or biological quality of, or the contamination of, any water in the state that renders the water harmful, detrimental, or injurious to humans, animal life, vegetation, or property or to the public health, safety, or welfare, or impairs the usefulness or the public enjoyment of the water for any lawful or reasonable purpose.

(45) **Point source --** Any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants or wastes are or may be discharged into or adjacent to any water in the state.

(46) **Presumed use --** A use that is assigned to generic categories of water bodies (such as perennial streams). Presumed uses are superseded by designated uses for individual water bodies in Appendix A, Appendix D, or Appendix G of §307.10 of this title.

(47) **Primary contact recreation --** Activities that are presumed to involve a significant risk of ingestion of water (e.g. wading by children, swimming, water skiing, diving, tubing, surfing, and the following whitewater activities: kayaking, canoeing, and rafting).

(48) **Protection zone --** Any area within the watershed of a sole-source surface drinking water supply that is:

(A) within two miles of the normal pool elevation of a body of surface water that is a sole-source surface drinking water supply;

(B) within two miles of that part of a perennial stream that is:

(i) a tributary of a sole-source surface drinking water supply; and

(ii) within three linear miles upstream of the normal pool elevation of a sole-source surface drinking water supply; or

(C) within two miles of that part of a stream that is a sole-source surface drinking water supply, extending three linear miles upstream from the water supply intake (Texas Water Code, §26.0286).

(49) **Public drinking water supply --** A water body designated to provide water to a public water system as defined in Chapter 290 of this title (relating to Public Drinking Water).

(50) **Saltwater --** A coastal water that has a measurable elevation change due to normal tides. In the absence of tidal information, saltwater is generally considered to be a coastal water that typically has a salinity of two parts per thousand or greater in a significant portion of the water column.

(51) **Salinity --** The total dissolved solids in water after all carbonates have been converted to oxides, all bromide and iodide have been replaced by chloride, and all organic matter has been oxidized. For most purposes, salinity is considered equivalent to total dissolved salt content. Salinity is usually expressed in parts per thousand.

(52) **Seagrass propagation --** A water-quality-related existing use that applies to saltwater with significant stands of submerged seagrass.

(53) **Secondary contact recreation 1 --** Activities that commonly occur but have limited body contact incidental to shoreline activity (e.g. fishing, canoeing, kayaking, rafting and motor boating). These activities are presumed to pose a less significant risk of water ingestion than primary contact recreation but more than secondary contact recreation 2.

(54) **Secondary contact recreation 2 --** Activities with limited body contact incidental to shoreline activity (e.g. fishing, canoeing, kayaking, rafting and motor boating) that are presumed to pose a less significant risk of water ingestion than secondary contact recreation 1. These activities occur less frequently than secondary contact recreation 1 due to physical characteristics of the water body or limited public access.

(55) **Segment --** A water body or portion of a water body that is individually defined and classified in Appendices A and C of §307.10 of this title in the Texas Surface Water Quality Standards. A segment is intended to have relatively homogeneous chemical, physical, and hydrological characteristics. A segment provides a basic unit for assigning site-specific standards and for applying water quality management programs of the agency. Classified segments may include streams, rivers, bays, estuaries, wetlands, lakes, or reservoirs.

(56) **Settleable solids --** The volume or weight of material that settles out of a water sample in a specified period of time.

(57) **Seven-day, two-year low-flow (7Q2) --** The lowest average stream flow for seven consecutive days with a recurrence interval of two years, as statistically determined from historical data. As specified in §307.8 of this title, some water quality standards do not apply at stream flows that are less than the 7Q2 flow.

(58) **Shellfish --** Clams, oysters, mussels, crabs, crayfish, lobsters, and shrimp.

(59) **Sole-source surface drinking water supply --** A body of surface water that is identified as a public water supply in rules adopted by the commission under Texas Water Code, §26.023 and is the sole source of supply of a public water supply system, exclusive of emergency water connections (Texas Water Code, §26.0286).

(60) **Standard Methods for the Examination of Water and Wastewater --** A document describing sampling and analytical procedures that is published by the American Public Health Association, American Water Works Association, and Water Environment Federation. The most recent edition of this document is to be followed whenever its use is specified by these rules.

(61) **Standards --** Desirable uses (i.e., existing, attainable, designated, or presumed uses as defined in this title) and the narrative and numerical criteria deemed necessary to protect those uses in surface waters.

(62) **Standards implementation procedures --** Methods and protocols in the guidance document *Procedures to Implement the Texas Surface Water Quality Standards* (RG-194), as amended and approved by the commission and EPA.

(63) **Storm water --** Rainfall runoff, snow melt runoff, surface runoff, and drainage.

(64) **Storm water discharge --** A point source discharge that is composed entirely of storm water associated with an industrial activity, a construction activity, a discharge from a municipal separate storm sewer system, or other discharge designated by the agency.

(65) **Stream order --** A classification of stream size, where the smallest, unbranched tributaries of a drainage basin are designated first order streams. Where two first order streams join, a second order stream is formed; and where two second order streams join, a third order stream is formed,

etc. For purposes of water quality standards application, stream order is determined from United States Geological Survey topographic maps with a scale of 1:24,000.

(66) **Surface water in the state --** 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 as defined in the Texas Water Code, §26.001, 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 water-courses and bodies of surface water, that are wholly or partially inside or bordering the state or subject to the jurisdiction of the state; except that waters in treatment systems that are authorized by state or federal law, regulation, or permit, and that are created for the purpose of waste treatment are not considered to be water in the state.

(67) **Sustainable Fisheries --** Descriptive of water bodies that potentially have sufficient fish production or fishing activity to create significant long-term human consumption of fish. Sustainable fisheries include perennial streams and rivers with a stream order of three or greater; lakes and reservoirs greater than or equal to 150 acre-feet or 50 surface acres; all bays, estuaries, and tidal rivers. Water bodies that are presumed to have sustainable fisheries include all designated segments listed in Appendix A unless specifically exempted.

(68) **Thalweg --** The deepest portion of a stream or river channel cross-section.

(69) **Tidal --** Descriptive of coastal waters that are subject to the ebb and flow of tides. For purposes of standards applicability, tidal waters are considered to be saltwater. Classified tidal waters

include all bays and estuaries with a segment number that begins with 24xx, all streams with the word tidal in the segment name, and the Gulf of Mexico.

(70) **To discharge --** Includes to 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.

(71) **Total Maximum Daily Load (TMDL) --** The total amount of a substance that a water body can assimilate and still meet the Texas Surface Water Quality Standards.

(72) **Total dissolved solids --** The amount of material (inorganic salts and small amounts of organic material) dissolved in water and commonly expressed as a concentration in terms of milligrams per liter. The term is equivalent to the term filterable residue, as used in 40 Code of Federal Regulations Part 136 and in previous editions of the publication entitled, *Standard Methods for the Examination of Water and Wastewater*.

(73) **Total suspended solids --** Total suspended matter in water, which is commonly expressed as a concentration in terms of milligrams per liter. The term is equivalent to nonfilterable residue, as used in 40 Code of Federal Regulations Part 136 and in previous editions of the publication entitled, *Standard Methods for the Examination of Water and Wastewater*.

(74) **Total toxicity --** Toxicity as determined by exposing aquatic organisms to samples or dilutions of instream water or treated effluent. Also referred to as whole effluent toxicity or biomonitoring.

(75) **Toxic equivalency factor (TEF) --** A factor to describe an order-of-magnitude consensus estimate of the toxicity of a compound relative to the toxicity of 2,3,7,8-tetraclorodibenzo-*p*-dioxin (2,3,7,8-TCDD). The factor is applied to transform various concentrations of dioxins and furans or dioxin-like polychlorinated biphenyls (PCBs) into equivalent concentrations of 2,3,7,8-TCDD, expressed as a toxic equivalency (TEQ).

(76) **Toxic equivalency (TEQ) --** The sum of the products from the concentration of each dioxin and furan, or dioxin-like PCB congener , multiplied by its respective TEF to give a single 2,3,7,8-TCDD equivalent.

(77) **Toxicity --** The occurrence of adverse effects to living organisms due to exposure to toxic materials. Adverse effects caused by conditions of temperature and dissolved oxygen are excluded from the definition of toxicity. With respect to the provisions of §307.6(e) of this title (relating to Toxic Materials), which concerns total toxicity and biomonitoring requirements, adverse effects caused by concentrations of dissolved salts (such as sodium, potassium, calcium, chloride, carbonate) in source waters are excluded from the definition of toxicity. Source water is defined as surface water or groundwater that is used as a public water supply or industrial water supply (including a cooling-water supply). Source water does not include brine water that is produced during the extraction of oil and gas, or other sources of brine water that are substantially uncharacteristic of surface waters in the area of discharge. In addition, adverse effects caused by concentrations of dissolved salts that are added to source water by industrial processes are not excluded from the requirements of §307.6(e) of this title, except as specifically noted in §307.6(e)(2)(B) of this title, which concerns requirements for toxicity testing of

100% effluent. This definition of toxicity does not affect the standards for dissolved salts in this chapter other than §307.6(e) of this title. The standards implementation procedures contain provisions to protect surface waters from adverse effects of dissolved salts and methods to address the effects of dissolved salts on total toxicity tests.

(78) **Toxicity biomonitoring --** The process or act of determining total toxicity. Documents that describe procedures for toxicity biomonitoring are cited in §307.6 of this title. Also referred to simply as biomonitoring.

(79) **Water-effect ratio (WER) --** The WER is calculated as the toxic concentration (LC_{50}) of a substance in water at a particular site, divided by the toxic concentration of that substance as reported in laboratory dilution water. The WER can be used to establish site-specific acute and chronic criteria to protect aquatic life. The site-specific criterion is equal to the WER times the statewide aquatic life criterion in §307.6(c) of this title.

(80) **Water quality management program --** The agency's overall program for attaining and maintaining water quality consistent with state standards, as authorized under the Texas Water Code, the Texas Administrative Code, and the Clean Water Act, §§106, 205(j), 208, 303(e) and 314 (33 United States Code, §§1251 *et seq*.).

(81) **Wetland --** An area (including a swamp, marsh, bog, prairie pothole, or similar area) having a predominance of hydric soils that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and that under normal circumstances supports the growth and

regeneration of hydrophytic vegetation. The term "hydric soil" means soil that, in its undrained condition, is saturated, flooded, or ponded long enough during a growing season to develop an anaerobic condition that supports the growth and regeneration of hydrophytic vegetation. The term "hydrophytic vegetation" means a plant growing in: water or a substrate that is at least periodically deficient in oxygen during a growing season as a result of excessive water content. The term "wetland" does not include irrigated acreage used as farmland; a man-made wetland of less than one acre; or a man-made wetland where construction or creation commenced on or after August 28, 1989, and that was not constructed with wetland creation as a stated objective, including but not limited to an impoundment made for the purpose of soil and water conservation that has been approved or requested by soil and water conservation districts. If this definition of wetland conflicts with the federal definition in any manner, the federal definition prevails.

(82) **Wetland water quality functions --** Attributes of wetlands that protect and maintain the quality of water in the state, which include storm water storage and retention and the moderation of extreme water level fluctuations; shoreline protection against erosion through the dissipation of wave energy and water velocity, and anchoring of sediments; habitat for aquatic life; and removal, transformation, and retention of nutrients and toxic substances.

(83) **Zone of initial dilution --** The small area at the immediate point of a permitted discharge where initial dilution with receiving waters occurs and that may not meet certain criteria applicable to the receiving water. A zone of initial dilution is substantially smaller than a mixing zone.

(b) Abbreviations. The following abbreviations apply to this chapter:

(1) ALU -- aquatic life use.

(2) AP -- aquifer protection.

(3) AS -- agricultural water supply.

(4) ASTER -- Assessment Tools for the Evaluation of Risk.

(5) BCF -- bioconcentration factor.

(6) CASRN -- Chemical Abstracts Service Registry number.

(7) CFR -- Code of Federal Regulations.

(8) cfs -- cubic feet per second.

(9) Cl^{-1} -- chloride.

(10) CR -- county road.

(11) DO -- dissolved oxygen.

(12) E -- exceptional aquatic life use.

(13) EPA -- United States Environmental Protection Agency.

(14) degrees F -- Degree(s) Fahrenheit.

(15) FM -- Farm to Market Road.

(16) ft^3/s -- cubic feet per second.

(17) H -- high aquatic life use.

(18) HEAST -- Health Effects Assessment Summary Tables.

(19) I -- intermediate aquatic life use.

(20) IBWC -- International Boundary and Water Commission.

(21) IRIS -- Integrated Risk Information System.

(22) IS -- industrial water supply.

(23) km -- kilometer.

(24) L -- limited aquatic life use.

(25) M -- minimal aquatic life use.

(26) m -- multiplier.

(27) m/km -- meters per kilometer.

(28) MCL -- maximum contaminant level (for public drinking water supplies).

(29) MDL -- method detection limit.

(30) mg/L -- milligrams per liter.

(31) mi -- mile.

(32) ml -- milliliter.

(33) N -- navigation.

(34) NCR -- noncontact recreation.

(35) O -- oyster waters.

(36) PCR -- primary contact recreation.

(37) PS -- public water supply.

(38) RfD -- reference dose.

(39) RR -- ranch road.

(40) 7Q2 -- seven-day, two-year low-flow.

(41) SCR -- secondary contact recreation.

(42) SH -- state highway.

(43) SO_4^{-2} -- sulfate.

(44) SU -- standard units.

(45) TCEQ -- Texas Commission on Environmental Quality.

(46) TDS -- total dissolved solids.

(47) TEF -- toxic equivalency factor.

(48) TMDL -- total maximum daily load.

(49) TPDES -- Texas Pollutant Discharge Elimination System.

(50) TRE -- toxicity reduction evaluation.

(51) TSS -- total suspended solids.

(52) US -- United States.

(53) USFDA -- United States Food and Drug Administration.

(54) USGS -- United States Geological Survey.

(55) WER -- Water-effect ratio.

(56) WF -- waterfowl habitat.

(57) WQM -- water quality management.

(58) µg/L -- micrograms per liter.

(59) ZID -- zone of initial dilution.

§307.4. General Criteria.

(a) Application. The general criteria set forth in this section apply to surface water in the state and specifically apply to substances attributed to waste discharges or human activities. General criteria do not apply to those instances when surface water, as a result of natural phenomena, exhibit characteristics beyond the limits established by this section. General criteria are superseded by specific exemptions stated in this section or in §307.8 of this title (relating to the Application of Standards), or by site-specific water quality standards for classified segments. Provisions of the general criteria remain in effect in mixing zones or below critical low-flow conditions unless specifically exempted in §307.8 of this title.

(b) Aesthetic parameters.

(1) Concentrations of taste and odor producing substances must not 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 waters, or otherwise interfere with the reasonable use of the water in the state.

(2) Surface water must be essentially free of floating debris and suspended solids that are conducive to producing adverse responses in aquatic organisms or putrescible sludge deposits or sediment layers that adversely affect benthic biota or any lawful uses.

(3) Surface waters must be essentially free of settleable solids conducive to changes in flow characteristics of stream channels or the untimely filling of surface water in the state. This provision does not prohibit dredge and fill activities that are permitted in accordance with the Federal Clean Water Act.

(4) Surface waters must be maintained in an aesthetically attractive condition.

(5) Waste discharges must not cause substantial and persistent changes from ambient conditions of turbidity or color.

(6) No foaming or frothing of a persistent nature is permissible.

(7) Surface waters must be maintained so that oil, grease, or related residue do not produce a visible film or sheen of oil or globules of grease on the surface or coat the banks or bottoms of the watercourse; or cause toxicity to man, aquatic life, or terrestrial life in accordance with subsection (d) of this section.

(c) Radiological substances. Radioactive materials must not be discharged in excess of the amount regulated by Chapter 336 of this title (relating to Radioactive Substance Rules).

(d) Toxic substances. Surface waters must not be toxic to man from ingestion of water, consumption of aquatic organisms, or contact with the skin, or to terrestrial or aquatic life. Additional requirements and criteria for toxic substances are specified in §307.6 of this title (relating to Toxic Materials). Criteria to protect aquatic life from acute toxicity apply to all surface waters in the state except as specified in §307.8(a)(3) of this title. Criteria to protect aquatic life from chronic toxicity apply to surface waters with an aquatic life use of limited, intermediate, high, or exceptional as designated in §307.10 of this title (relating to Appendices A - G) or as determined on a case-by-case basis in accordance with subsection (l) of this section. Toxic criteria to protect human health for consumption of fish apply to waters with a sustainable or incidental fishery, as described in §307.6(d) of this title. Additional criteria apply to water in the state with a public drinking water supply use, as described in §307.6(d) of this title. The general provisions of this subsection do not change specific provisions in §307.8 of this title for applying toxic criteria.

(e) Nutrients. Nutrients from permitted discharges or other controllable sources must not cause excessive growth of aquatic vegetation that impairs an existing, designated, presumed, or attainable use. Site-specific nutrient criteria, nutrient permit limitations, or separate rules to control nutrients in individual watersheds are established where appropriate after notice and opportunity for public participation and proper hearing. Site-specific numeric criteria related to chlorophyll *a* are listed in Appendix F of §307.10 of this title.

(f) Temperature. Consistent with §307.1 of this title (relating to General Policy Statement) and in accordance with state water rights permits, temperature in industrial cooling lake impoundments and all other surface water in the state must be maintained so as to not interfere with the reasonable use of such waters. Numerical temperature criteria have not been specifically established for industrial cooling lake impoundments, which in most areas of the state contribute to water conservation and water quality objectives. The following temperature criteria, expressed as a maximum temperature differential (rise over ambient) are established except for industrial cooling impoundments, temperature elevations due to discharges of treated domestic (sanitary) effluent, and temperature elevations within designated mixing zones. The maximum temperature differentials are:

(1) freshwater streams: 5 degrees Fahrenheit (degrees F);

(2) freshwater lakes and impoundments: 3 degrees F; and

(3) tidal river reaches, bay, and gulf waters: 4 degrees F in fall, winter, and spring, and 1.5 degrees F in summer (June, July, and August).

(4) Additional temperature criteria (expressed as maximum temperatures) for classified segments are specified in Appendix A of §307.10 of this title.

(g) Salinity.

(1) Concentrations and the relative ratios of dissolved minerals such as chlorides, sulfates, and total dissolved solids must be maintained such that existing, designated, presumed, and attainable uses are not impaired.

(2) Criteria for chlorides, sulfates, and total dissolved solids for classified freshwater segments are specified in Appendix A of §307.10 of this title.

(3) Salinity gradients in estuaries must be maintained to support attainable estuarine dependent aquatic life uses. Numerical salinity criteria for Texas estuaries have not been established because of the high natural variability of salinity in estuarine systems, and because long-term studies by state agencies to assess estuarine salinities are still ongoing. Absence of numerical criteria must not preclude evaluations and regulatory actions based on estuarine salinity, and careful consideration must be given to all activities that may detrimentally affect salinity gradients.

(h) Aquatic life uses and dissolved oxygen.

(1) Dissolved oxygen concentrations must be sufficient to support existing, designated, presumed, and attainable aquatic life uses. Aquatic-life use categories and corresponding dissolved oxygen criteria are described in §307.7(b)(3) of this title (relating to Site-Specific Uses and Criteria).

(2) Aquatic life use categories and dissolved oxygen criteria for classified segments are specified in Appendix A of §307.10 of this title. Aquatic life use categories and dissolved oxygen criteria for other specific water bodies are specified in Appendix D of §307.10 of this title. Where justified by sufficient site-specific information, dissolved oxygen criteria that differ from §307.7(b)(3) of this title may be adopted for a particular water body in §307.10 of this title.

(3) Perennial streams, rivers, lakes, bays, estuaries, and other appropriate perennial waters that are not specifically listed in Appendix A or D of §307.10 of this title are presumed to have a high aquatic life use and corresponding dissolved oxygen criteria. Applicable dissolved oxygen criteria are described in §307.7(b)(3)(A) of this title. Higher uses are protected where they are attainable.

(4) When water is present in the streambed of intermittent streams, a 24-hour dissolved oxygen mean of at least 2.0 mg/L and 24-hour minimum dissolved oxygen concentration of 1.5 mg/L must be maintained. Intermittent streams that are not specifically listed in Appendix A or D of §307.10 of this title are considered to have a minimal aquatic life use except as indicated below in this subsection. For intermittent streams with seasonal aquatic life uses, dissolved oxygen concentrations commensurate with the aquatic life uses must be maintained during the seasons when the aquatic life uses occur. Unclassified intermittent streams with perennial pools are presumed to have a limited aquatic life use and corresponding dissolved oxygen criteria. Higher uses are protected where they are attainable.

(i) Aquatic life uses and habitat. Vegetative and physical components of the aquatic environment must be maintained or mitigated to protect aquatic life uses. Procedures to protect habitat in permits for dredge and fill are specified in Federal Clean Water Act, §404 and in Chapter 279 of this title (relating to Water Quality Certification).

(j) Aquatic recreation.

(1) Existing, designated, presumed, and attainable uses of aquatic recreation must be maintained, as determined by criteria that indicate the potential presence of pathogens. Categories of recreation and applicable criteria are established in §307.7(b)(1) of this title.

(2) Recreational use categories and criteria for classified segments are specified in Appendix A of §307.10 of this title. Site-specific recreational use categories and criteria for selected unclassified water bodies are specified in Appendix G of §307.10 of this title. Where justified by sufficient site-specific information, recreational uses and criteria that differ from §307.7(b)(1) of this title may be adopted for a particular water body in §307.10 of this title. For water bodies not specifically listed in Appendix A or Appendix G of §307.10 of this title, the following recreational uses are presumed to apply.

(A) Primary contact recreation. Primary contact recreation is presumed for lakes, reservoirs, and tidal water bodies. Primary contact recreation is presumed to apply to intermittent streams, intermittent streams with perennial pools, nontidal wetlands, and perennial freshwater streams and rivers, except where site-specific information indicates that recreational activities that involve a significant risk of ingestion have little to no likelihood of occurring, in accordance with subparagraph (B) of this paragraph.

(B) Secondary contact recreation 1. Secondary contact recreation 1 applies to water bodies where water recreation can occur, but the nature of the recreation does not involve a significant risk of ingestion. Secondary contact recreation 1 applies to intermittent and perennial freshwaters where site-specific information demonstrates that primary contact recreation has little to no likelihood of occurring. At a minimum, the following characteristics must be demonstrated for a presumed use of secondary contact recreation 1 to apply:

(i) during dry weather flows , the average depth at the thalweg (mid-channel) is less than 0.5 meters and there are not substantial pools with a depth of 1 meter or greater; and

(ii) there are not existing recreational activities that create a significant risk of ingestion or a use for primary contact recreation.

(C) Secondary contact recreation 2. Secondary contact recreation 2 applies to water bodies where water recreation activities do not involve a significant risk of water ingestion and where activities occur less frequently than for secondary contact recreation 1 due to physical characteristics of the water body or limited public access. No water body is presumed to have a use of secondary contact recreation 2. This use is applicable when designated for an individual water body as listed in Appendix A or G in §307.10 of this title.

(D) Noncontact recreation. Noncontact recreation applies to water bodies where recreation activities do not involve a significant risk of water ingestion and where primary and secondary contact recreation uses should not occur because of unsafe conditions. No water body is presumed to have a use of noncontact recreation. This use is applicable when designated for an individual water body as listed in Appendix A or G in §307.10 of this title.

(3) Assigning recreational uses to an unclassified water body.

(A) Applying presumed uses. Recreational uses and associated numerical criteria are assigned to an unclassified water body in accordance with the presumed uses and guidelines established in paragraph (2) of this subsection. To assign uses other than primary contact recreation, a reasonable level of inquiry is conducted to determine if a different presumed use is appropriate for a particular water body. A reasonable level of inquiry includes review of available relevant information or completed site surveys.

(B) Assigning presumed uses. Presumed uses of primary contact recreation and secondary contact recreation 1 can be assigned to an individual water body for regulatory action without individually designating the recreational use and criteria in Appendix G in §307.10 of this title. Regulatory action may include issuing Texas Pollutant Discharge Elimination System permits, revising the list of impaired water bodies under Clean Water Act, §303(d), or setting and implementing a total maximum daily load. The presumed secondary contact recreation 1 use is included in the public notice of a regulatory action that could affect recreational water quality, and the assigned recreational uses are subject to applicable public comment and approval by the United States Environmental Protection Agency (EPA). For tracking purposes, presumed recreational uses that have been determined to be less stringent than primary contact recreation are noted in a publicly available list such as the EPA's Water Quality Standards Repository prior to a water quality standards revision. Presumed uses that have been determined for particular water bodies are listed in Appendix G in §307.10 of this title when the water quality standards are revised.

(C) Assigning a use less stringent than presumed use. A recreational use that is less stringent than the applicable presumed use can only be assigned to an individual water body for a regulatory action after that use is approved by the EPA and designated in Appendix A or G in §307.10 of this title. Support for designating a use less stringent than an applicable presumed use requires a use-attainability analysis (UAA). 40 Code of Federal Regulations §131.1(g) lists six reasons for a change in use in a water body. At least one of these reasons must be included in the UAA.

(k) Antidegradation. Nothing in this section is intended to be construed or otherwise used to supersede the requirements of §307.5 of this title (relating to Antidegradation).

(l) Assessment of unclassified waters for aquatic life uses. Waters that are not specifically listed in Appendices A or D of §307.10 of this title are assigned the specific uses that are attainable or characteristic of those waters. Upon administrative or regulatory action by the commission that affects a particular unclassified water body, the characteristics of the affected water body must be reviewed by the commission to determine which aquatic life uses are appropriate. Additional uses so determined must be indicated in public notices for discharge applications. Uses that are not applicable throughout the year in a particular unclassified water body are assigned and protected for the seasons where such uses are attainable. Initial determinations of use are considered preliminary, and in no way preclude redeterminations of use in public hearings conducted under the provisions of the Texas Water Code. For unclassified waters where the presumed minimum uses or criteria specified in this section are inappropriate, site-specific standards may be developed in accordance with §307.2(d) of this title (relating to Description of Standards). Uses and criteria are assigned in accordance with this section and with

§307.7(b)(3) of this title. Procedures for assigning uses and criteria are described in the standards implementation procedures.

(m) pH. Consistent with §307.1 of this title, pH levels in all surface water in the state must be maintained so as to not interfere with the reasonable use of such waters.

§307.5. Antidegradation.

(a) Application. The antidegradation policy and implementation procedures set forth in this section apply to actions regulated under state and federal authority that would increase pollution of the water in the state. Such actions include authorized wastewater discharges, total maximum daily loads (TMDLs), waste load evaluations, and any other miscellaneous actions, such as those related to man-induced nonpoint sources of pollution, that may impact the water in the state.

(b) Antidegradation policy. In accordance with the Texas Water Code, §26.003, the following provisions establish the antidegradation policy of the commission.

(1) Tier 1. Existing uses and water quality sufficient to protect those existing uses must be maintained. Categories of existing uses are the same as for designated uses, as defined in §307.7 of this title (relating to Site-Specific Uses and Criteria).

(2) Tier 2. No activities subject to regulatory action that would cause degradation of waters that exceed fishable/swimmable quality are allowed unless it can be shown to the commission's

satisfaction that the lowering of water quality is necessary for important economic or social development. Degradation is defined as a lowering of water quality by more than a de minimis extent, but not to the extent that an existing use is impaired. Water quality sufficient to protect existing uses must be maintained. Fishable/swimmable waters are defined as waters that have quality sufficient to support propagation of indigenous fish, shellfish, terrestrial life, and recreation in and on the water.

(3) Tier 3. Outstanding national resource waters are defined as high quality waters within or adjacent to national parks and wildlife refuges, state parks, wild and scenic rivers designated by law, and other designated areas of exceptional recreational or ecological significance. The quality of outstanding national resource waters must be maintained and protected.

(4) Discharges that cause pollution that are authorized by the Texas Water Code, the Federal Clean Water Act, or other applicable laws must not lower water quality to the extent that the Texas Surface Water Quality Standards are not attained.

(5) Anyone discharging wastewater that would constitute a new source of pollution or an increased source of pollution from any industrial, public, or private project or development is required to provide a level of wastewater treatment consistent with the provisions of the Texas Water Code and the Clean Water Act (33 United States Code, §§1251 *et seq*.). As necessary, cost-effective and reasonable best management practices established through the Texas Water Quality Management Program are achieved for nonpoint sources of pollution.

(6) Application of antidegradation provisions does not preclude the commission from establishing modified thermal discharge limitations consistent with the Clean Water Act, §316(a) (33 United States Code, §1326).

(c) Antidegradation implementation procedures.

(1) Implementation for specific regulatory activities.

(A) For TPDES permits for wastewater, the process for the antidegradation review and public coordination is described in the standards implementation procedures.

(B) For federal permits relating to the discharge of fill or dredged material under Federal Clean Water Act, §404, the antidegradation policy and public coordination is implemented through the evaluation of alternatives and mitigation under Federal Clean Water Act, §404(b)(1). State review of alternatives, mitigation, and requirements to protect water quality may also be conducted for federal permits that are subject to state certification, as authorized by Federal Clean Water Act, §401 and conducted in accordance with Chapter 279 of this title (relating to Water Quality Certification).

(C) Other state and federal permitted and regulated activities that increase pollution of water in the state are also subject to the provisions of the antidegradation policy as established in subsections (a) and (b) of this section.

(2) General provisions for implementing the antidegradation policy.

(A) Tier 1 reviews must ensure that water quality is sufficiently maintained so that existing uses are protected. All pollution that could cause an impairment of water quality is subject to Tier 1 reviews. If the existing uses and criteria of a potentially affected water body have not been previously determined, then the antidegradation review must include a preliminary determination of existing uses and criteria. Existing uses must be maintained and protected.

(B) Tier 2 reviews apply to all pollution that could cause degradation of water quality where water quality exceeds levels necessary to support propagation of fish, shellfish, terrestrial life , and recreation in and on the water (fishable/swimmable quality). Guidance for determining water bodies that exceed fishable/swimmable quality is contained in the standards implementation procedures. For dissolved oxygen, analyses of degradation under Tier 2 must utilize the same critical conditions as are used to protect instream criteria. For other parameters, appropriate conditions may vary. Conditions for determining degradation are commensurate with conditions for determining existing uses. The highest water quality sustained since November 28, 1975 (in accordance with EPA Standards Regulation 40 Code of Federal Regulations Part 131) defines baseline conditions for determinations of degradation.

(C) Tier 3 reviews apply to all pollution that could cause degradation of outstanding national resource waters. Outstanding national resource waters are those specifically designated in this chapter.

(D) When degradation of waters exceeding fishable/swimmable quality is anticipated, a statement that the antidegradation policy is pertinent to the permit action must be included in the public notice for the permit application or amendment. If no degradation is anticipated, the public notice must so state.

(E) Evidence can be introduced in public hearings, or through the public comment process, concerning the determination of existing uses and criteria; the assessment of degradation under Tier 1, Tier 2, and Tier 3; the social and economic justification for lowering water quality; requirements and conditions necessary to preclude degradation; and any other issues that bear upon the implementation of the antidegradation policy.

(F) Interested parties are given the opportunity to provide comments and additional information concerning the determination of existing uses, anticipated impacts of the discharge, baseline conditions, and the necessity of the discharge for important economic or social development if degradation of water quality is expected under Tier 2.

(G) The antidegradation policy and the general provisions for implementing the antidegradation policy apply to the determination of TMDLs and to waste load evaluations that allow an increase in loading. If the TMDL or waste load evaluation indicates that degradation of waters exceeding fishable/swimmable quality is expected, the public hearing notice must so state. Permits that are consistent with an approved TMDL or waste load evaluation under this antidegradation policy are not subjected to a separate antidegradation review for the specific parameters that are addressed by the TMDL or waste load evaluation.

§307.6. Toxic Materials.

(a) Application. The toxic criteria set forth in this section apply to surface water in the state and specifically apply to substances attributed to waste discharges or human activity. With the exception of numeric human health criteria, toxic criteria do not apply to those instances where surface water, solely as a result of natural phenomena, exhibit characteristics beyond the limits established by this section. Standards and procedures set forth in this section are applied in accordance with §307.8 of this title (relating to Application of Standards) and §307.9 of this title (relating to Determination of Standards Attainment).

(b) General provisions.

(1) Water in the state must not be acutely toxic to aquatic life in accordance with §307.8 of this title.

(2) Water in the state with designated or existing aquatic life uses of limited or greater must not be chronically toxic to aquatic life, in accordance with §307.8 of this title.

(3) Water in the state must be maintained to preclude adverse toxic effects on human health resulting from contact recreation, consumption of aquatic organisms, consumption of drinking water or any combination of the three. Water in the state with sustainable fisheries or public drinking water supply uses must not exceed applicable human health toxic criteria, in accordance with subsection (d) of this section and §307.8 of this title.

(4) Water in the state must be maintained to preclude adverse toxic effects on aquatic life, terrestrial life , livestock, or domestic animals, resulting from contact, consumption of aquatic organisms, consumption of water, or any combination of the three.

(c) Specific numerical aquatic life criteria.

(1) Numerical criteria are established in Table 1 of this paragraph for those specific toxic substances where adequate toxicity information is available and that have the potential for exerting adverse impacts on water in the state.

Figure: 30 TAC §307.6(c)(1)

TABLE 1

Criteria in Water for Specific Toxic Materials -
AQUATIC LIFE PROTECTION
(All values are listed or calculated in micrograms per liter)
(Hardness concentrations are input as milligrams per liter)

Parameter	CASRN	Freshwater	Freshwater	Saltwater	Saltwater
		Acute Criteria	Chronic Criteria	Acute Criteria	Chronic Criteria
Aldrin	309-00-2	3.0	---	1.3	---
Aluminum (d)	7429-90-5	991w	---	---	---
Arsenic (d)	7440-38-2	340 w	150 w	149w	78w
Cadmium (d)	7440-43-9	1.136672-(ln(hardness)(0.041838)) $(we^{(1.0166(\ln(hardness))-2.4743)})$	1.101672-(ln(hardness)(0.041838)) $(we^{(0.7409(\ln(hardness))-4.719)})$	40.0 w	8.75 w
Carbaryl	63-25-2	2.0	---	613	---
Chlordane	57-74-9 and 12789-03-6	2.4	0.004	0.09	0.004
Chlorpyrifos	2921-88-2	0.083	0.041	0.011	0.006
Chromium (Tri) (d)	16065-83-1	$0.316we^{(0.8190(\ln(hardness))+3.7256)}$	$0.860we^{(0.8190(\ln(hardness))+0.6848)}$	---	---
Chromium (Hex) (d)	18540-29-9	15.7w	10.6w	1,090w	49.6w
Copper (d)*	7440-50-8	$0.960m\ e^{(0.9422(\ln(hardness))-1.6448)}$	$0.960m\ e^{(0.8545(\ln(hardness))-1.6463)}$	13.5w	3.6w
Cyanide † (free)	57-12-5	45.8	10.7	5.6	5.6
4,4'- DDT	50-29-3	1.1	0.001	0.13	0.001
Demeton	8065-48-3	---	0.1	---	0.1

Diazinon	333-41-5	0.17	0.17	0.819	0.819
Dicofol	115-32-2	59.3	19.8	---	---
Dieldrin	60-57-1	0.24	0.002	0.71	0.002
Diuron	330-54-1	210	70	---	---
Endosulfan I (*alpha*)	959-98-8	0.22	0.056	0.034	0.009
Endosulfan II (*beta*)	33213-65-9	0.22	0.056	0.034	0.009
Endosulfan sulfate	1031-07-8	0.22	0.056	0.034	0.009
Endrin	72-20-8	0.086	0.002	0.037	0.002
Guthion	86-50-0	---	0.01	---	0.01
Heptachlor	76-44-8	0.52	0.004	0.053	0.004
Hexachloro-cyclohexane (*gamma*)(Lindane)	58-89-9	1.126	0.08	0.16	---
Lead (d)	7439-92-1	$1.46203-(\ln(hardness)(0.145712))$ $(we^{(1.273(\ln(hardness))-1.460)})$	$1.46203-(\ln(hardness)(0.145712))$ $(we^{(1.273(\ln(hardness))-4.705)})$	133w	5.3w
Malathion	121-75-5	---	0.01	---	0.01
Mercury	7439-97-6	2.4	1.3	2.1	1.1
Methoxychlor	72-43-5	---	0.03	---	0.03
Mirex	2385-85-5	---	0.001	---	0.001
Nickel (d)	7440-02-0	$0.998we^{(0.8460(\ln(hardness))+2.255)}$	$0.997we^{(0.8460(\ln(hardness))+0.0584)}$	118w	13.1w
Nonylphenol	84852-15-3	28	6.6	7	1.7
	and 25154-				

	52-3				
Parathion (ethyl)	56-38-2	0.065	0.013	---	---
Pentachlorophenol	87-86-5	$e^{(1.005(pH)-4.869)}$	$e^{(1.005(pH)-5.134)}$	15.1	9.6
Phenanthrene	85-01-8	30	30	7.7	4.6
Polychlorinated	1336-36-3	2.0	0.014	10	0.03
Biphenyls (PCBs) ‡					
Selenium	7782-49-2	20	5	564	136
Silver, as free ion	7440-22-4	0.8w	---	2w	---
Toxaphene	8001-35-2	0.78	0.0002	0.21	0.0002
Tributyltin (TBT)	688-73-3	0.13	0.024	0.24	0.0074
2,4,5 Trichlorophenol	95-95-4	136	64	259	12
Zinc (d)	7440-66-6	$0.978we^{(0.8473(\ln(hardness))+0.884)}$	$0.986we^{(0.8473(\ln(hardness))+0.884)}$	92.7w	84.2w

* In designated oyster waters, an acute saltwater copper criterion of 3.6 micrograms per liter applies outside of the mixing zone of permitted discharges, and specified mixing zones for copper do not encompass oyster reefs containing live oysters.

† Compliance will be determined using the analytical method for available cyanide.

(d) Indicates that the criteria for a specific parameter are for the dissolved portion in water. All other criteria are for total recoverable concentrations, except where noted.

‡ These criteria apply to the sum of all congener or all isomer or homolog or Arochlor analysis.

w Indicates that a criterion is multiplied by a water-effect ratio (WER) in order to incorporate the effects of local water chemistry on toxicity. The WER is equal to 1 except where sufficient data is available to establish a site-specific WER.

WERs for individual water bodies are listed in Appendix E when standards are revised. The number preceding the w in the freshwater criterion equation is an EPA conversion factor.

m Indicates that a criterion may be multiplied by a WER or a biotic ligand model result in order to incorporate the effects of local water chemistry on toxicity. The multiplier is equal to 1 except where sufficient data is available to establish a site-specific multiplier. Multipliers for individual water bodies are listed in Appendix E when standards are revised. The number preceding the m in the freshwater equation is an EPA conversion factor.

e The mathematical constant that is the basis of the natural logarithm. When rounded to four decimal points, *e* is equal to 2.7183.

(2) Numerical criteria are based on ambient water quality criteria documents published by the United States Environmental Protection Agency (EPA). EPA guidance criteria have been appropriately recalculated to eliminate the effects of toxicity data for aquatic organisms that are not native to Texas, in accordance with procedures in the EPA guidance document entitled *Guidelines for Deriving Numerical Site-specific Water Quality Criteria* (EPA 600/3-84-099) and Appendix B of the EPA draft guidance document entitled *Interim Guidance on the Determination and Use of Water-Effect Ratios for Metals* (EPA-823-B-94-001). Additional EPA guidelines that may be used to establish aquatic life criteria are detailed in the guidance documents.

(3) Specific numerical acute aquatic life criteria are applied as 24-hour averages, and specific numerical chronic aquatic life criteria are applied as seven-day averages.

(4) Ammonia and chlorine toxicity are addressed by total toxicity (biomonitoring) requirements in subsection (e) of this section.

(5) Specific numerical aquatic life criteria for metals and metalloids in Table 1 of paragraph (1) of this subsection apply to dissolved concentrations where noted. Dissolved concentrations can be estimated by filtration of samples prior to analysis, or by converting from total recoverable measurements in accordance with procedures approved by the commission in the standards implementation procedures (RG-194) as amended. Specific numerical aquatic life criteria for non-metallic substances in Table 1 of paragraph (1) of this subsection apply to total recoverable concentrations unless otherwise noted.

(6) Specific numerical acute criteria for toxic substances are applicable to all water in the state except for small zones of initial dilution (ZIDs) at discharge points. Acute criteria may be exceeded within a ZID and below extremely low streamflow conditions (one-fourth of critical low-flow conditions) in accordance with §307.8 of this title. There must be no lethality to aquatic organisms that move through a ZID, and the sizes of ZIDs are limited in accordance with §307.8 of this title. Specific numerical chronic criteria are applicable to all water in the state with designated or existing aquatic life uses of limited or greater, except inside mixing zones and below critical low-flow conditions, in accordance with §307.8 of this title.

(7) For toxic materials where specific numerical criteria are not listed in Table 1 of paragraph (1) of this subsection, the appropriate criteria for aquatic life protection may be derived in accordance with current EPA guidelines for deriving site-specific water quality criteria. When insufficient data are available to use EPA guidelines, the following provisions are applied in accordance with this section and §307.8 of this title. The LC_{50} data used in the subsequent calculations are typically obtained from traditional laboratory studies; however, if LC_{50} data are unavailable or incomplete, other methodologies (such as quantitative structure-activity relationships) may be used:

(A) acute criteria are calculated as 0.3 of the LC_{50} of the most sensitive aquatic species; $LC_{50} \times (0.3) =$ acute criteria;

(B) concentrations of nonpersistent toxic materials must not exceed concentrations that are chronically toxic as determined from appropriate chronic toxicity data obtained in accordance with procedures in the EPA guidance document entitled *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Life and Their Uses* (EPA 822-R-85-100) or calculated as 0.1 of acute LC_{50} values to the most sensitive aquatic species; LC_{50} x (0.1) = chronic criteria;

(C) concentrations of persistent toxic materials that do not bioaccumulate shall not exceed concentrations that are chronically toxic as determined from appropriate chronic toxicity data obtained in accordance with procedures in the EPA guidance document entitled *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Life and Their Uses* (EPA 822-R-85-100) or calculated as 0.05 of LC_{50} values to the most sensitive aquatic species; LC_{50} x (0.05) = chronic criteria; and

(D) concentrations of toxic materials that bioaccumulate must not exceed concentrations that are chronically toxic as determined from appropriate chronic toxicity data obtained in accordance with procedures in the EPA guidance document entitled *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Life and Their Uses* (EPA 822-R-85-100) or calculated as 0.01 of LC_{50} values to the most sensitive aquatic species; LC_{50} x (0.01) = chronic criteria.

(8) For toxic substances where the relationship of toxicity is defined as a function of pH or hardness, numerical criteria are presented as an equation based on this relationship. Site-specific values for each segment are given in the standards implementation procedures (RG-194) as amended.

(9) Criteria for most metals are multiplied by a water-effect ratio (WER) in order to incorporate the effects of local water chemistry on toxicity. The WER is assumed to be equal to one except where sufficient site-specific data are available to determine the WER for a particular water body or portion of a water body. A WER is only applicable to those portions of a water body that are adequately addressed by site-specific data. WERs that have been determined for particular water bodies are listed in Appendix E of §307.10 of this title (relating to Appendices A - G) when standards are revised. A site-specific WER that affects an effluent limitation in a wastewater discharge permit, and that has not been incorporated into Appendix E of §307.10 of this title, must be noted in a public notice during the permit application process. An opportunity for public comment must be provided, and the WER may be considered in any public hearing on the permit application.

(10) Freshwater copper aquatic-life criteria include a multiplier (m) to incorporate effects of local water chemistry on toxicity. This multiplier may be based on either a WER or a biotic ligand model. The multiplier is assumed to be equal to one except where sufficient site-specific data are available to determine the multiplier for a particular water body or portion of a water body. The multiplier is only applicable to those portions of a water body that are adequately addressed by site-specific data. As multipliers are determined for particular water bodies they are listed in Appendix E of §307.10 of this title when standards are revised. A site-specific multiplier that affects an effluent limitation in a wastewater discharge permit, and that has not been incorporated into Appendix E of §307.10 of this title, is noted in a public notice during the permit application process. An opportunity for public comment must be provided, and the multiplier may be considered in any public hearing on the permit application.

(11) Additional site-specific factors may indicate that the numerical criteria listed in Table 1 of paragraph (1) of this subsection are inappropriate for a particular water body. These factors are applied as a site-specific standards modification in accordance with §307.2(d) of this title (relating to Description of Standards). The application of a site-specific standard must not impair an existing, attainable, or designated use. Factors that may justify a temporary variance or site-specific standards amendment include the following:

(A) background concentrations of specific toxics of concern in receiving waters, sediment, or indigenous biota;

(B) persistence and degradation rate of specific toxic materials;

(C) synergistic, additive, or antagonistic interactions of toxic substances with other toxic or nontoxic materials;

(D) measurements of total effluent toxicity;

(E) indigenous aquatic organisms, which may have different responses to particular toxic materials;

(F) technological or economic limits of treatability for specific toxic materials;

(G) bioavailability of specific toxic substances of concern, as determined by WER tests or other analyses approved by the commission; and

(H) new information concerning the toxicity of a particular substance.

(d) Specific numerical human health criteria.

(1) Numerical human health criteria are established in Table 2 of this paragraph.

Figure: 30 TAC §307.6(d)(1)

TABLE 2
Criteria in Water for Specific Toxic Materials
HUMAN HEALTH PROTECTION
(All values are listed or calculated in micrograms per liter unless otherwise noted)

		A	B
COMPOUND	CASRN	Water and Fish µg/L	Fish Only µg/L
Acrylonitrile	107-13-1	0.80	3.8
Aldrin	309-00-2	0.00094	0.0010
Anthracene	120-12-7	5,569	--
Antimony	7440-36-0	6*	1,071
Arsenic (d)	7440-38-2	10*	---
Barium (d)	7440-39-3	2,000*	---
Benzene	71-43-2	5*	513
Benzidine	92-87-5	0.00086	0.0020

Benzo(*a*)anthracene	56-55-3	0.068	0.33
Benzo(*a*)pyrene	50-32-8	0.068	0.33
Bis(chloromethyl)ether	542-88-1	0.0024	0.44
Bis(2-chloroethyl)ether	111-44-4	0.3	5.27
Bis(2-ethylhexyl)phthalate	117-81-7	6*	41
Bromodichloromethane	75-27-4	10.2	322
Bromoform	75-25-2	69.1	2,175
Cadmium (d)	7440-43-9	5*	---
Carbon Tetrachloride	56-23-5	4.1	29
Chlordane	12789-03-6	0.0080	0.0081
Chlorobenzene	108-90-7	100*	5,201
Chlorodibromomethane	124-48-1	7.6	239
Chloroform	67-66-3	70*	7,143
Chromium (Hex) (d)	18540-29-9	62	502
Chrysene	218-01-9	68.13	327
Cresols	1319-77-3§	736	1,981
Cyanide (free)#	57-12-5	200*	---
4,4' - DDD ‡, ††	72-54-8	166.16 ug/kg	166.16 ug/kg
4,4' - DDE ‡, ††	72-55-9	214.4 ug/kg	214.4 ug/kg
4,4' - DDT ‡, ††	50-29-3	209.04 ug/kg	209.04 ug/kg
2,4 - D	94-75-7	70*	---
Danitol	39515-41-8	5.39	5.44
1,2 - Dibromoethane	106-93-4	0.16	2.13
m-Dichlorobenzene	541-73-1	473	1,445
o-Dichlorobenzene	95-50-1	600*	4,336
p-Dichlorobenzene	106-46-7	75*	---
3,3'-Dichlorobenzidine	91-94-1	0.32	0.44
1,2 - Dichloroethane	107-06-2	5*	553
1,1 - Dichloroethylene	75-35-4	7*	23,916
Dichloromethane	75-09-2	5*	5,926
1,2-Dichloropropane	78-87-5	5*	226
1,3 - Dichloropropene	542-75-6	3.4	211
Dicofol	115-32-2	0.076	0.076
Dieldrin†	60-57-1	0.0005	0.0005
2,4-Dimethylphenol	105-67-9	257	571
Di-*n*-Butyl Phthalate	84-74-2	1,318	3,010
Dioxins/Furans +, †† (TCDD Equivalents)	1746-01-6	4.0E-04 ug/kg	4.0E-04 ug/kg

Congener/Isomer	Toxic Equivalency Factors
2,3,7,8 TCDD	1
1,2,3,7,8 PeCDD	1
2,3,7,8 HxCDDs	0.1
1,2,3,4,6,7,8 HpCDD	0.01

2,3,7,8 TCDF	0.1		
1,2,3,7,8 PeCDF	0.03		
2,3,4,7,8 PeCDF	0.3		
2,3,7,8 HxCDFs	0.1		
2,3,4,7,8 HpCDFs	0.01		
OCDD	0.0003		
OCDF	0.0003		
PCB 77	0.0001		
PCB 81	0.0003		
PCB 126	0.1		
PCB 169	0.03		
Endrin	72-20-8	0.20	0.20
Ethylbenzene	100-41-4	700*	7,143
Fluoride	16984-48-8	4,000*	---
Heptachlor	76-44-8	0.0015	0.0015
Heptachlor Epoxide	1024-57-3	0.00074	0.00075
Hexachlorobenzene	118-74-1	0.0044	0.0045
Hexachlorobutadiene	87-68-3	6.5	274
Hexachlorocyclohexane (*alpha)*	319-84-6	0.050	0.093
Hexachlorocyclohexane *(beta)*	319-85-7	0.17	0.33
Hexachlorocyclohexane *(gamma)* (Lindane)	58-89-9	0.2*	6.2
Hexachlorocyclopentadiene	77-47-4	50*	--
Hexachloroethane	67-72-1	27	62
Hexachlorophene	70-30-4	0.0080	0.0080
Lead (d)	7439-92-1	1.15	3.83
Mercury †, ††	7439-97-6	700 ug/kg	700 ug/kg
Methoxychlor	72-43-5	0.33	0.33
Methyl Ethyl Ketone	78-93-3	13,932	1.50E+6
Nickel (d)	7440-02-0	332	1140
Nitrate-Nitrogen as total Nitrogen	14797-55-8	10,000*	---
Nitrobenzene	98-95-3	11	463
N-Nitrosodiethylamine	55-18-5	0.0037	2.1
N-Nitroso-di-*n*-Butylamine	924-16-3	0.119	4.2
Pentachlorobenzene	608-93-5	1.0	1.0
Pentachlorophenol	87-86-5	1.0*	57
Polychlorinated Biphenyls *(PCBs)* ±, **, ††	1336-36-3	19.96 ug/kg	19.96 ug/kg
Pyridine	110-86-1	23	2,014
Selenium	7782-49-2	50*	---
1,2,4,5 - Tetrachlorobenzene	95-94-3	0.65	0.71
1,1,2,2-Tetrachloroethane	79-34-5	3.2	76
Tetrachloroethylene	127-18-4	5*	49
Thallium	7440-28-0	0.75	1.50
Toluene	108-88-3	1,000*	---

Toxaphene	8001-35-2	0.0053	0.0053
2,4,5 - TP (Silvex)	93-72-1	7.3	7.6
1,1,1 - Trichloroethane	71-55-6	200*	956,663
1,1,2-Trichloroethane	79-00-5	5*	295
Trichloroethylene	79-01-6	5*	649
2,4,5 - Trichlorophenol	95-95-4	1,194	2,435
TTHM (Sum of total trihalomethanes)		80	---
bromodichloromethane	75-27-4		
dibromochloromethane	124-48-1		
tribromomethane (bromoform)	75-25-2		
trichloromethane (chloroform)	67-66-3		
Vinyl Chloride	75-01-4	0.25	24

* Based on Maximum Contaminant Levels (MCLs) specified in 30 TAC §290 (relating to Public Drinking Water).

† An assumed BCF of 33,000 is used to translate the tissue-based criterion to a water column criterion for the purposes of evaluating TPDES permittees. The criterion to protect combined water and fish consumption can not exceed drinking water MCL of 2 µg/L. BCF value taken from *Water Quality Criteria for the Protection of Human Health: Methylmercury*; January 2001; EPA 823-R-01-001.

§ Consists of *m*, *o*, and *p* Cresols. The criteria are the same for all three, and the criteria are applied independently to each form of cresol. CASRNs for cresols are 95-48-7 for *o*-Cresol, 108-39-4 for *m*-Cresol, and 106-44-5 for *p*-Cresol.

‡ An assumed BCF of 53,600 is used to translate the tissue-based criterion to a water column criterion for the purposes of evaluating TPDES permittees. BCF value taken from *Ambient Water Quality Criteria for DDT*; October 1980; EPA 440/5-80-038.

Compliance is determined using the analytical method for available cyanide

\+ An assumed BCF of 5,000 is used to translate the tissue-based criterion to a water column criterion for the purposes of evaluating TPDES permittees. BCF value taken from *Ambient Water Quality Criteria for 2,3,7,8-Tetrachloro-dibenzo-p-dioxin*; February 1984; EPA 440/5-84-007.

(d) Indicates the criteria is for the dissolved fraction in water. All other criteria are for total recoverable concentrations.

± An assumed BCF of 31,200 is used to translate the tissue-based criterion to a water column criterion for the purposes of evaluating TPDES permittees. BCF value taken from *Ambient Water Quality Criteria for Polychlorinated Biphenyls*; October 1980; EPA 440/5-80-068.

** Until Method 1668 or equivalent method to measure PCB congeners is approved in 40 Code of Federal Regulations Part 136, compliance with PCB criteria is determined using Arochlor data or any alternate method listed in a TCEQ-approved Quality Assurance Plan.

†† Based on fish tissue wet weight.

(2) Categories of human health criteria:

(A) concentration criteria to prevent contamination of drinking water, fish and other aquatic life to ensure that they are safe for human consumption. These criteria apply to surface waters that are designated or used for public drinking water supplies. (Column A in Table 2 of paragraph (1) of this subsection);

(B) concentration criteria to prevent contamination of fish and other aquatic life to ensure that they are safe for human consumption. These criteria apply to surface waters that have sustainable fisheries and that are not designated or used for public water supply (Column B in Table 2 of paragraph (1) of this subsection);

(3) Specific assumptions and procedures (except where noted in Table 2 of paragraph (1) of this subsection).

(A) Sources for the toxicity factors to calculate criteria were derived from EPA's Integrated Risk Information System (IRIS); EPA's *National Recommended Water Quality Criteria: 2002, Human Health Criteria Calculation Matrix* (EPA-822-R-02-012); EPA Health Effects Assessment Summary Tables (HEAST); Assessment Tools for the Evaluation of Risk (ASTER); and the computer program, CLOGP3.

(B) For known or suspected carcinogens (as identified in EPA's IRIS database), an incremental cancer risk level of 10^{-5} (1 in 100,000) was used to derive criteria. An RfD (reference dose) was determined for noncarcinogens and for carcinogens where EPA has not derived cancer slope factors.

(C) Consumption rates of fish and shellfish were estimated as 17.5 grams per person per day.

(D) Drinking water consumption rates were estimated as 2.0 liters per person per day.

(E) For carcinogens, a body-weight scaling factor of 3/4 power was used to convert data on laboratory test animals to human scale. Reported weights of laboratory test animals are used, and an average weight of 70 kilograms is assumed for humans.

(F) Childhood exposure was considered for all noncarcinogens. Consumption rates for fish and shellfish were estimated as 5.6 grams per child per day, and drinking water consumption rates were estimated as 0.64 liters per child per day. A child body weight was estimated at 15 kilograms. Both the water consumption rate and body weight are age-adjusted for a six-year-old child. The consumption rate for fish and shellfish for children is from Table 10-61 of EPA's 1997 *Exposure Factors Handbook* (EPA/600/P-95/002Fa-c).

(G) Numerical human health criteria were derived in accordance with the general procedures and calculations in the EPA guidance documents entitled *Technical Support Document for Water Quality-based Toxics Control* (EPA/505/2-90-001); *Guidance Manual for Assessing Human Health Risks from Chemically Contaminated Fish and Shellfish* (EPA/503/8-89-002); and *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)* (EPA-822-B-00-004).

(H) If a calculated criterion to prevent contamination of drinking water and fish to ensure they are safe for human consumption (Column A in Table 2 of paragraph (1) of this subsection) was greater than the applicable maximum contaminant level (MCL) in Chapter 290 of this title (relating to Public Drinking Water), then the MCL was used as the criterion.

(I) If the concentration of a substance in fish tissue used for these calculations was greater than the applicable United States Food and Drug Administration Action Level for edible fish and shellfish tissue, then the acceptable concentration in fish tissue was lowered to the Action Level for calculation of criteria.

(4) Human health criteria for additional toxic materials are adopted by the commission as appropriate.

(5) Specific human health concentration criteria for water are applicable to water in the state that has sustainable fisheries or designation or use as a public drinking water supply except within

mixing zones and below stream flow conditions as specified in §307.8 of this title. The following waters are considered to have sustainable fisheries:

(A) all designated segments listed in Appendix A of §307.10 of this title, unless specifically exempted;

(B) perennial streams and rivers with a stream order of three or greater, as defined in §307.3 of this title (relating to Definitions and Abbreviations);

(C) lakes and reservoirs greater than or equal to 150 acre-feet or 50 surface acres;

(D) all bays, estuaries, and tidal rivers; and

(E) any other waters that potentially have sufficient fish production or fishing activity to create significant long-term human consumption of fish.

(6) Waters that are not considered to have a sustainable fishery, but that have an aquatic life use of limited or greater, are considered to have an incidental fishery. Consumption rates assumed for incidental fishery waters are 1.75 grams per person per day. Therefore, numerical criteria applicable to incidental fishery waters are ten times the criteria listed in Column B of Table 2 of paragraph (1) of this subsection.

(7) Specific human health criteria are applied as long term average exposure criteria designed to protect populations over a life time. Attainment measures for human health are addressed in §307.9 of this title.

(8) For toxic materials of concern where specific human health criteria are not listed in Table 2 of paragraph (1) of this subsection, the following provisions apply:

(A) For known or suspected carcinogens (as identified in EPA's IRIS database), a cancer risk of 10^{-5} (1 in 100,000) is applied to the most recent numerical criteria adopted by EPA and published in the *Federal Register*. If an MCL or equivalent agency guideline for protection of drinking water sources is less than the resulting criterion, then the MCL applies to public drinking water supplies in accordance with paragraph (3)(H) of this subsection.

(B) For toxic materials not defined as carcinogens, the most recent numerical criteria adopted by EPA and published in the *Federal Register* are applicable. If an MCL or equivalent agency guideline for protection of drinking water sources is less than the resulting criterion, then the MCL applies to public drinking water supplies in accordance with paragraph (3)(H) of this subsection.

(C) In the absence of available criteria, numerical criteria may be derived from technically valid information and calculated in accordance with the provisions of paragraph (3) of this subsection.

(9) Numerical criteria for bioconcentratable pollutants are derived in accordance with the general procedures in the EPA guidance document entitled *Assessment and Control of Bioconcentratable Contaminants in Surface Water* (March 1991). The commission may develop discharge permit limits in accordance with the provisions of this section.

(10) Numerical human health criteria are expressed as total recoverable concentrations for nonmetals and selenium and as dissolved concentrations for other metals and metalloids. Criteria for several highly bioaccumulative pollutants are expressed as concentrations in fish tissue.

(11) Additional site-specific factors may indicate that the numerical human health criteria listed in Table 2 of paragraph (1) of this subsection are inappropriate for a particular water body. These factors are applied as a site-specific standards modification in accordance with §307.2(d) of this title. The application of site-specific criteria must not impair an existing, attainable, presumed, or designated use or affect human health. Factors that may justify a temporary variance or site-specific standards amendment include the following:

(A) background concentrations of specific toxics of concern in receiving waters, sediment, or indigenous biota;

(B) persistence and degradation rate of specific toxic materials;

(C) synergistic or antagonistic interactions of toxic substances with other toxic or nontoxic materials;

(D) technological or economic limits of treatability for specific toxic materials;

(E) bioavailability of specific toxic substances of concern;

(F) local water chemistry and other site-specific conditions that may alter the bioconcentration, bioaccumulation, or toxicity of specific toxic substances;

(G) site-specific differences in the bioaccumulation responses of indigenous, edible aquatic organisms to specific toxic materials;

(H) local differences in consumption patterns of fish and shellfish or drinking water, but only if any changes in assumed consumption rates are protective of the local population that frequently consumes fish, shellfish, or drinking water from a particular water body; and

(I) new information concerning the toxicity of a particular substance.

(e) Total toxicity.

(1) Total (whole-effluent) toxicity of permitted discharges, as determined from biomonitoring of effluent samples at appropriate dilutions, must be sufficiently controlled to preclude acute total toxicity in all water in the state with the exception of small ZIDs at discharge points and at extremely low streamflow conditions (one-fourth of critical low-flow conditions) in accordance with

§307.8 of this title. Acute total toxicity levels may be exceeded in a ZID, but there must be no significant lethality to aquatic organisms that move through a ZID, and the sizes of ZIDs are limited in accordance with §307.8 of this title. Chronic total toxicity, as determined from biomonitoring of effluent samples at appropriate dilutions, must be sufficiently controlled to preclude chronic toxicity in all water in the state with an existing or designated aquatic life use of limited or greater except in mixing zones at discharge points and at flows less than critical low-flows, in accordance with §307.8 of this title. Chronic toxicity levels may be exceeded in a mixing zone, but there must be no significant sublethal toxicity to aquatic organisms that move through the mixing zone.

(2) General provisions for controlling total toxicity.

(A) Dischargers whose effluent has a significant potential for exerting toxicity in receiving waters as described in the *Procedures to Implement the Texas Surface Water Quality Standards* (RG-194) as amended are required to conduct whole effluent toxicity biomonitoring at appropriate dilutions.

(B) In addition to the other requirements of this section, the effluent of discharges to water in the state must not be acutely toxic to sensitive species of aquatic life, as demonstrated by effluent toxicity tests. Toxicity testing for this purpose is conducted on samples of 100% effluent, and the criterion for acute toxicity is mortality of 50% or more of the test organisms after 24 hours of exposure. This provision does not apply to mortality that is a result of an excess, deficiency, or imbalance of dissolved inorganic salts (such as sodium, calcium, potassium, chloride, or carbonate) that are in the effluent and are not listed in Table 1 in subsection (c)(1) of this section or that are in source waters.

(C) The latest revisions of the following EPA publications provide methods for appropriate biomonitoring procedures: *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms*, and the *Technical Support Document for Water Quality-based Toxics Control*. The use of other procedures approved by the agency and EPA is also acceptable. Toxicity tests must be conducted using representative, sensitive aquatic organisms as approved by the agency, and any such testing must adequately determine if toxicity standards are being attained.

(D) If toxicity biomonitoring results indicate that a discharge is not sufficiently controlled to preclude acute or chronic toxicity as described in this subsection, then the permittee will be required to eliminate sources of toxicity and may be required to conduct a toxicity reduction evaluation (TRE) in accordance with the permitting procedures of the commission. In accordance with the implementation procedures, permits are amended to include appropriate provisions to eliminate toxicity . Such provisions may include total toxicity limits, chemical-specific limits, best management practices, or other actions (such as moving a discharge location) designed to reduce or eliminate toxicity. Where sufficient to attain and maintain applicable numeric and narrative state water quality standards, a chemical-specific limit, best management practices, or other actions designed to reduce or eliminate toxicity rather than a total toxicity limit may be established in the permit. Where conditions may be necessary to prevent or reduce effluent toxicity, permits must include a reasonable schedule for achieving compliance with such additional conditions.

(E) Discharge permit limits based on total toxicity may be established in consideration of site-specific factors, but the application of such factors must not result in impairment of an existing, attainable, presumed, or designated use. These factors are applied as a site-specific standards modification in accordance with §307.2(d) of this title. A demonstration that uses are protected may consist of additional effluent toxicity testing, instream monitoring requirements, or other necessary information as determined by the agency. Factors that may justify a temporary variance or site-specific standards amendment include the following:

(i) background toxicity of receiving waters;

(ii) persistence and degradation rate of principal toxic materials that are contributing to the total toxicity of the discharge;

(iii) site-specific variables that may alter the impact of toxicity in the discharge;

(iv) indigenous aquatic organisms, that may have different levels of sensitivity than the species used for total toxicity testing; and

(v) technological, economic, or legal limits of treatability or control for specific toxic material.

§307.7. Site-Specific Uses and Criteria.

(a) Uses and numerical criteria are established on a site-specific basis in Appendices A, B, D, E, F, and G of §307.10 of this title (relating to Appendices A - G). Site-specific uses and numerical criteria may also be applied to unclassified waters in accordance with §307.4 of this title (relating to General Criteria) and §307.5(c) of this title (relating to Antidegradation). Site-specific criteria apply specifically to substances attributed to waste discharges or human activity. Site-specific criteria do not apply to those instances when surface waters exceed criteria due to natural phenomena. The application of site-specific uses and criteria is described in §307.8 of this title (relating to the Application of Standards) and §307.9 of this title (relating to the Determination of Standards Attainment).

(b) Appropriate uses and criteria for site-specific standards are defined as follows.

(1) Recreation. Recreational use consists of four categories -- primary contact recreation, secondary contact recreation 1, secondary contact recreation 2, and noncontact recreation waters. Classified segments are designated for primary contact recreation unless sufficient site-specific information demonstrates that elevated concentrations of indicator bacteria frequently occur due to sources of pollution that cannot be reasonably controlled by existing regulations, wildlife sources of bacteria are unavoidably high and there is limited aquatic recreational potential, or primary or secondary contact recreation is considered unsafe for other reasons such as ship or barge traffic. In a classified segment where contact recreation is considered unsafe for reasons unrelated to water quality, a designated use of noncontact recreation may be assigned either noncontact recreation criteria or criteria normally associated with primary contact recreation. A designation of primary or secondary contact recreation is

not a guarantee that the water so designated is completely free of disease-causing organisms. Indicator bacteria, although not generally pathogenic, are indicative of potential contamination by feces of warm blooded animals. Recreational criteria are based on these indicator bacteria rather than direct measurements of pathogens. Criteria are expressed as the number of bacteria per 100 milliliters (ml) of water (in terms of colony forming units, most probable number, or other applicable reporting measures). Even where the concentration of indicator bacteria is less than the criteria for primary or secondary contact recreation, there is still some risk of contracting waterborne diseases. Additional guidelines on minimum data requirements and procedures for evaluating standards attainment are specified in the *TCEQ Guidance for Assessing and Reporting Surface Water Quality in Texas*, as amended.

(A) Freshwater

(i) Primary contact recreation. The geometric mean criterion for *E. coli* is 126 per 100 ml. In addition, the single sample criterion for *E. coli* is 399 per 100 ml.

(ii) Secondary contact recreation 1. The geometric mean criterion for *E. coli* is 630 per 100 ml.

(iii) Secondary contact recreation 2. The geometric mean criterion for *E. coli* is 1,030 per 100 ml.

(iv) Noncontact recreation. The geometric mean criterion for *E. coli* is 2,060 per 100 ml.

(v) For high saline inland water bodies where Enterococci is the designated recreational indicator in Appendix A of §307.10 of this title, Enterococci is the applicable recreational indicator for instream bacteria sampling at all times for the classified water body and for the unclassified water bodies that are within the watershed of that classified segment, unless it is demonstrated that an unclassified water body is not high saline. *E. coli* is the applicable recreational indicator for instream bacteria sampling at all times for unclassified water bodies where conductivity values indicate that the water bodies are not high saline. For high saline inland waters with primary contact recreation, the geometric mean criterion for Enterococci is 33 per 100 ml and the single sample criterion is 78 per 100 ml. For high saline inland waters with secondary contact recreation 1, the geometric mean criterion for Enterococci is 165 per 100 ml. For high saline inland waters with secondary contact recreation 2, the geometric mean criterion for Enterococci is 270 per 100 ml. For high saline inland water bodies with noncontact recreation, the geometric mean criterion for Enterococci is 540 per 100 ml.

(B) Saltwater.

(i) Primary contact recreation. The geometric mean criterion for Enterococci is 35 per 100 ml. In addition, the single sample criterion for Enterococci is 104 per 100 ml.

(ii) Secondary contact recreation 1. A secondary contact recreation 1 use for tidal streams and rivers can be established on a site-specific basis in §307.10 of this title if justified by a use-attainability analysis and the water body is not a coastal recreation water as defined in the Beaches

Environmental Assessment and Coastal Health Act of 2000 (BEACH Act). The geometric mean criterion for Enterococci is 175 per 100 ml.

(iii) Noncontact recreation. A noncontact recreation use for tidal streams and rivers can be established on a site-specific basis in §307.10 of this title if justified by a use-attainability analysis and the water body is not a coastal recreation water as defined in the BEACH Act. The geometric mean criterion for Enterococci is 350 per 100 ml.

(C) Fecal coliform bacteria. Fecal coliform bacteria can be used as an alternative instream indicator of recreational suitability in high saline inland water bodies where Enterococci is the designated recreational indicator in Appendix A of §307.10 of this title for two years after the adoption of this title to allow time to collect sufficient data for Enterococci. Fecal coliform criteria for high saline inland water bodies are as follows:

(i) Primary contact recreation. The geometric mean criterion for fecal coliform is 200 per 100 ml. In addition, the single sample criterion for fecal coliform is 400 per 100 ml.

(ii) Secondary contact recreation 1 and 2. The geometric mean criterion for fecal coliform is 1,000 per 100 ml.

(iii) Noncontact recreation. The geometric mean criterion for fecal coliform is 2,000 per 100 ml.

(D) Swimming advisory programs. For areas where local jurisdictions or private property owners voluntarily provide public notice or closure based on water quality, the use of any single-sample or short-term indicators of recreational suitability are selected at the discretion of the local managers of aquatic recreation. Guidance for single-sample bacterial indicators is available in the United States Environmental Protection Agency (EPA) document entitled *Ambient Water Quality Criteria for Bacteria - 1986*. Other short-term indicators to assess water quality suitability for recreation - such as measures of streamflow, turbidity, or rainfall - may also be appropriate.

(2) Domestic water supply.

(A) Use categories. Domestic water supply consists of three use subcategories - public water supply, sole-source surface drinking water supply, and aquifer protection.

(i) Public water supply. Segments designated for public water supply are those known to be used or exhibit characteristics that would allow them to be used as the supply source for public water systems as defined by Chapter 290 of this title (relating to Public Drinking Water).

(ii) Sole-source surface drinking water supplies and their protection zones. Water bodies that are sole-source surface drinking water supplies are listed in Appendix B of §307.10 of this title. Sole-source surface drinking water supplies and their protection zones are addressed in Chapter 321 of this title (relating to Subchapter B: Concentrated Animal Feeding Operations).

(iii) Aquifer protection. Segments designated for aquifer protection are capable of recharging the Edwards Aquifer. The principal purpose of this use designation is to protect the quality of water infiltrating into and recharging the aquifer. The designation for aquifer protection applies only to those portions of the segments so designated that are on the recharge zone, transition zone, or contributing zone as defined in Chapter 213 of this title (relating to the Edwards Aquifer). Chapter 213 of this title establishes provisions for activities in the watersheds of segments that are designated for aquifer protection.

(B) Use criteria. The following use criteria apply to all domestic water supply use subcategories.

(i) Radioactivity associated with dissolved minerals in the freshwater portions of river basin and coastal basin waters should not exceed levels established by drinking water standards as specified in Chapter 290 of this title unless the conditions are of natural origin.

(ii) Surface waters utilized for domestic water supply must not exceed toxic material concentrations that prevent them from being treated by conventional surface water treatment to meet drinking water standards as specified in Chapter 290 of this title.

(iii) Chemical and microbiological quality of surface waters used for domestic water supply should conform to drinking water standards as specified in Chapter 290 of this title.

(3) Aquatic life. The establishment of numerical criteria for aquatic life is highly dependent on desired use, sensitivities of aquatic communities, and local physical and chemical characteristics. Six subcategories of aquatic life use are established. They include minimal, limited, intermediate, high, and exceptional aquatic life and oyster waters. Aquatic life use subcategories designated for segments listed in Appendix A of §307.10 of this title recognize the natural variability of aquatic community requirements and local environmental conditions.

(A) Dissolved oxygen.

(i) The characteristics and associated dissolved oxygen criteria for limited, intermediate, high, and exceptional aquatic life use subcategories are indicated in Table 3 of this clause. This table also includes dissolved oxygen criteria for a minimal aquatic life use subcategory that applies to intermittent streams without perennial pools as indicated in §307.4(h)(4) of this title.

Figure: 30 TAC §307.7(b)(3)(A)(i)

TABLE 3

Aquatic Life Use
Subcategories

Aquatic Life Use Subcategory	Dissolved Oxygen Criteria, mg/L			Aquatic Life Attributes					
	Freshwater mean/ minimum	Freshwater in Spring mean/ minimum	Saltwater mean/ minimum	Habitat Character-istics	Species Assemblage	Sensitive species	Diversity	Species Richness	Trophic Structure
Exceptional	6.0/4.0	6.0/5.0	5.0/4.0	Outstanding natural variability	Exceptional or unusual	Abundant	Exceptionally high	Exceptionally high	Balanced
High	5.0/3.0	5.5/4.5	4.0/3.0	Highly diverse	Usual asso-ciation of regionally expected species	Present	High	High	Balanced to slightly imbalanced
Intermediate	4.0/3.0	5.0/4.0	3.0/2.0	Moderately diverse	Some expected species	Very low in abundance	Moderate	Moderate	Moderately imbalanced
Limited	3.0/2.0	4.0/3.0		Uniform	Most regionally expected species absent	Absent	Low	Low	Severely imbalanced
Minimal	2.0/1.5								

- Dissolved oxygen means are applied as a minimum average over a 24-hour period.
- 24-hour minimum dissolved oxygen concentrations are not to extend beyond 8 hours per 24-hour day. Lower dissolved oxygen minima may apply on a site-specific basis, when

natural daily fluctuations below the mean are greater than the difference between the mean and minima of the appropriate criteria.

- Spring criteria to protect fish spawning periods are applied during that portion of the first half of the year when water temperatures are 63.0°F to 73.0°F.
- Procedures to support aquatic life attributes are described in the standards implementation procedures chapter "Determining Water Quality Uses and Criteria" as amended.
- Dissolved oxygen analyses and computer models to establish effluent limits for permitted discharges are normally applied to mean criteria at steady-state, critical conditions.
- Determination of standards attainment for dissolved oxygen criteria is specified in §307.9(e)(6) (relating to Determination of Standards Attainment).
- Minimal aquatic life use has been historically known as no significant aquatic life use. Typically, the classification of a water body as supporting a minimal aquatic life use is based on flow characteristics (intermittent stream without perennial pools), as set forth in §304.4(h)(4) of this title, and not on aquatic life attributes.

(ii) Critical low-flow values associated with the bedslopes and dissolved oxygen criteria in Table 4 of this clause apply to streams that have limited, intermediate, high, or exceptional aquatic life uses and to streams that are specifically listed in Appendix A or D of §307.10 of this title. The critical low-flow values in Table 4 of this clause apply to streams in Texas that are east of a line defined by Interstate Highways 35 and 35W from the Red River to the community of Moore in Frio County, and by United States Highway 57 from the community of Moore to the Rio Grande. Table 4 of this clause does not apply where specifically superceded by the equation that is listed in footnote 3 in the Cypress Creek Basin in Appendix A and in footnote 2 in Appendix D of §307.10 of this title. The critical low-flow values in Table 4 of this clause (at the appropriate stream bedslope) are utilized as headwater flows when the flows are larger than applicable seven-day, two-year low-flows in order to determine discharge effluent limits necessary to achieve dissolved oxygen criteria. For streams that have bedslopes less than the minimum bedslopes in Table 4, the flows listed for the minimum bedslope of 0.1 meters per kilometer (m/km) are applicable. For streams that have bedslopes greater than the maximum bedslope in Table 4 of this clause, the flows listed for the maximum bedslope of 2.4 m/km are applicable. The required effluent limits are those necessary to achieve each level of dissolved oxygen (as defined in clause (i) of this subparagraph, Table 3) at or below an assigned, designated, or presumed aquatic life use. Presumed aquatic life uses must be in accordance with those required by §307.4(h) of this title. The critical low-flow values in Table 4 of this clause do not apply to tidal streams.

Figure: 30 TAC §307.7(b)(3)(A)(ii)

TABLE 4

Critical low-flow values for dissolved oxygen for the eastern and southern Texas ecoregions as described in §307.7(b)(3)(A)(ii).

Bedslope (m/km)	6.0 DO (cfs)	5.0 DO (cfs)	4.0 DO (cfs)	3.0 DO (cfs)
0.1	*	18.3	3.0	0.5
0.2	*	7.7	1.3	0.2
0.3	28.6	4.7	0.8	0.1
0.4	20.0	3.3	0.5	0.1
0.5	15.2	2.5	0.4	0.1
0.6	12.1	2.0	0.3	0.1
0.7	10.0	1.6	0.3	0.0
0.8	8.4	1.4	0.2	0.0
0.9	7.3	1.2	0.2	0.0
1.0	6.4	1.0	0.2	0.0
1.1	5.7	0.9	0.2	0.0
1.2	5.1	0.8	0.1	0.0
1.3	4.6	0.8	0.1	0.0
1.4	4.2	0.7	0.1	0.0
1.5	3.9	0.6	0.1	0.0
1.6	3.6	0.6	0.1	0.0
1.7	3.3	0.5	0.1	0.0
1.8	3.1	0.5	0.1	0.0
2.1	2.5	0.4	0.1	0.0
2.4	2.2	0.4	0.1	0.0

* Flows are beyond the observed data used in the regression equation.

Dissolved oxygen criteria in this table are in mg/L and apply as 24-hour averages.

Dissolved oxygen criteria in this table apply at all stream flows at or above the indicated stream flow for each category.

(iii) The critical low-flow values in Table 4 of clause (ii) of this subparagraph for limited, intermediate, high, and exceptional aquatic life uses are based upon data from the commission's least impacted stream study (Texas Aquatic Ecoregion Project). Results of this study indicate a strong dependent relationship for average summertime background dissolved oxygen concentrations and several hydrologic and physical stream characteristics - particularly bedslope (stream gradient) and stream flow. The critical low-flow values in Table 4 of clause (ii) of this subparagraph are derived from a multiple regression equation for the eastern portion of Texas as defined in clause (ii) of this subparagraph. Further explanation of the development of the regression equation and its application are contained in the standards implementation procedures as amended.

(iv) The critical low-flow values in Table 4 of clause (ii) of this subparagraph may be adjusted based on site-specific data relating dissolved oxygen concentrations to factors such as flow, temperature, or hydraulic conditions in accordance with the standards implementation procedures as amended. Site-specific, critical low-flow values require approval by the commission. EPA must review any site-specific, critical low-flow values that could affect permits or other regulatory actions that are subject to approval by EPA. Critical low-flow values that have been determined for particular streams are listed in the standards implementation procedures.

(B) Oyster waters.

(i) A 1,000 foot buffer zone, measured from the shoreline at ordinary high tide, is established for all bay and gulf waters except those contained in river or coastal basins as defined in §307.2 of this title (relating to Description of Standards). Recreational criteria for indicator bacteria, as specified in §307.7(b)(1) of this title (relating to Site-Specific Uses and Criteria), are applicable within buffer zones.

(ii) The criteria for median fecal coliform concentration in bay and gulf waters, exclusive of buffer zones, are 14 colonies per 100 ml with not more than 10% of all samples exceeding 43 colonies per 100 ml.

(iii) Oyster waters should be maintained so that concentrations of toxic materials do not cause edible species of clams, oysters, and mussels to exceed accepted guidelines for the protection of public health. Guidelines are provided by the United States Food and Drug Administration Action Levels for molluscan shellfish, but additional information related to human health protection may also be considered in determining acceptable toxic concentrations.

(4) Additional criteria.

(A) Chemical parameters. Site-specific criteria for chloride, sulfate, and total dissolved solids are established as averages over an annual period for either a single sampling point or multiple sampling points.

(B) pH. Site-specific numerical criteria for pH are established as absolute minima and maxima.

(C) Temperature. Site-specific temperature criteria are established as absolute maxima.

(D) Toxic materials. Criteria for toxic materials are established in §307.6 of this title (relating to Toxic Materials).

(E) Nutrient criteria. Numeric and narrative criteria to preclude excessive growth of aquatic vegetation are intended to protect multiple uses such as primary, secondary, and noncontact recreation, aquatic life, and public water supplies. Nutrient numeric criteria for specific reservoirs, expressed as concentrations of chlorophyll *a* in water, are listed in Appendix F of §307.10 of this title.

(5) Additional uses. Other basic uses, such as navigation, agricultural water supply, industrial water supply, seagrass propagation, and wetland water quality functions must be maintained and protected for all water in the state where these uses can be achieved.

§307.8. Application of Standards.

(a) Flow conditions.

(1) The following standards do not apply below critical low-flows:

(A) site-specific criteria for dissolved oxygen, pH, temperature, and numerical chronic criteria for toxic materials, as listed in Appendices A, D, and E of §307.10 of this title (relating to Appendices A - G);

(B) numerical chronic criteria for toxic materials as established in §307.6 of this title (relating to Toxic Materials);

(C) total chronic toxicity restrictions as established in §307.6 of this title;

(D) maximum temperature differentials as established in §307.4(f) of this title (relating to General Criteria); and

(E) dissolved oxygen criteria for unclassified waters, as established in §307.4(h) of this title and §307.7(b)(3) of this title (relating to Site-Specific Uses and Criteria).

(2) Critical low-flows for streams or rivers that are dominated by springflow are listed in the standards implementation procedures as amended and are calculated as follows:

(A) for springflow-dominated streams or rivers that contain federally listed endangered or threatened aquatic or aquatic dependent species, the critical low-flow value is the 0.1 percentile value derived from a lognormal distribution for the period of record at the nearest United States Geological Survey (USGS) or International Boundary and Water Commission (IBWC) gage;

(B) for springflow-dominated streams or rivers that do not contain federally listed endangered or threatened species, the critical low-flow value is the 5th percentile value of the flow data for the period of record at the nearest USGS or IBWC gage.

(3) Numerical acute criteria for toxic materials and preclusion of total acute toxicity as established in §307.6 of this title are applicable at stream flows that are equal to or greater than one-fourth of critical low-flows.

(4) Harmonic mean flow is the applicable upstream flow when calculating wastewater permit limits for criteria that are assessed as long-term means, such as criteria for total dissolved solids, chlorides, sulfates in Appendix A of §307.10 of this title, and human health toxic criteria in Table 2 of §307.6(d)(1) of this title. These criteria are applicable at all flow conditions except as specified for the applicability of assessment data in §307.9 of this title (relating to Determination of Standards Attainment).

(5) Critical low-flows and harmonic mean flows for some classified segments are listed in the standards implementation procedures as amended. These critical low-flows are not for the purpose of regulating flows in water bodies in any manner or requiring that minimum flows be maintained in classified segments.

(6) Critical low-flows and harmonic mean flows listed in the standards implementation procedures as amended apply only to river basin and coastal basin waters. They do not apply to bay waters, gulf waters, reservoirs, or estuaries.

(7) Critical low-flows and harmonic mean flows in the standards implementation procedures as amended were calculated from historical USGS or IBWC daily streamflow records. If the calculated critical low-flow or harmonic mean flow value was equal to or less than 0.1 cubic foot per second (ft^3/s), it was rounded up to 0.1 ft^3/s.

(8) Flow values are periodically recomputed to reflect alterations in the hydrologic characteristics of a segment, including reservoir construction, climatological trends, and other phenomena.

(9) The general criteria are applicable at all flow conditions except as specified in this section or in §307.4 of this title.

(b) Mixing zones. A reasonable mixing zone is allowed at the discharge point of permitted discharges into surface water in the state, in accordance with the following provisions.

(1) The following portions of the standards do not apply within mixing zones:

(A) site-specific criteria, as defined in §307.7 of this title and listed in Appendices A, D, E, F, and G of §307.10 of this title;

(B) numerical chronic aquatic life criteria for toxic materials as established in §307.6 of this title;

(C) total chronic toxicity restrictions as established in §307.6 of this title;

(D) maximum temperature differentials as established in §307.4(f) of this title;

(E) dissolved oxygen criteria for unclassified waters, as established in §307.4(h) of this title;

(F) dissolved oxygen criteria for intermittent streams, as established in §307.4(h)(4) of this title;

(G) aquatic recreation criteria for unclassified waters, as established in §307.4(j) of this title and in §307.7(b)(1) of this title;

(H) specific human health criteria for concentrations in water to prevent contamination of drinking water, fish and shellfish so as to ensure safety for human consumption, as established in §307.6 of this title.

(2) Numerical acute aquatic life criteria for toxic materials and preclusion of total acute toxicity as established in §307.6 of this title are applicable in mixing zones. Acute criteria and acute total toxicity levels may be exceeded in small zones of initial dilution (ZIDs) at discharge points of permitted discharges, but there must be no lethality to aquatic organisms that move through a ZID. ZIDs must not exceed the following sizes:

(A) 60 feet downstream and 20 feet upstream from a discharge point in a stream and river. In addition, ZIDs in streams and rivers must not encompass more than 25% of the volume of stream flow at or above seven-day, two-year low-flow conditions;

(B) a 25-foot radius in all directions (or equivalent volume or area for diffuser systems) from a discharge point in a lake or reservoir; and

(C) a 50-foot radius in all directions (or equivalent volume or area for diffuser systems) from a discharge point in a bay, tidal river, or estuary.

(3) Provisions of the general criteria in §307.4 of this title remain in effect in mixing zones unless specifically exempted in this section.

(4) Water quality standards do not apply to treated effluent at the immediate point of discharge prior to any contact with either ambient waters or a dry streambed. However, effluent total toxicity requirements may be specified to preclude acute lethality near discharge points, or to preclude acute and chronic instream toxicity.

(5) Where a mixing zone is defined in a valid permit of the Texas Commission on Environmental Quality, the Railroad Commission of Texas, or the United States Environmental Protection Agency, the mixing zone defined in the permit must apply.

(6) Mixing zones must not preclude passage of free-swimming or drifting aquatic organisms to the extent that aquatic life use is significantly affected, in accordance with guidelines specified in the standards implementation procedures as amended.

(7) Mixing zones must not overlap unless it can be demonstrated that no applicable standards will be violated in the area of overlap. Existing and designated uses must not be impaired by the combined impact of a series of contiguous mixing zones.

(8) Mixing zones must not encompass an intake for a domestic drinking water supply. Thermal mixing zones are excepted from this provision unless elevated temperatures adversely affect drinking water treatment.

(9) Mixing zones must be individually specified for all permitted domestic discharges with a permitted monthly average flow equal to or exceeding one million gallons per day and for all permitted industrial discharges to water in the state (excepting discharges that consist entirely of storm water runoff). For domestic discharges with permitted monthly average flows less than one million gallons per day, a small mixing zone must be assumed in accordance with guidelines for mixing zone sizes specified in the standards implementation procedures as amended; and the commission may require specified mixing zones as appropriate.

(10) The size of mixing zones for human health criteria may vary from the size of mixing zones for aquatic life criteria.

(c) Minimum analytical levels. The specified definition of permit compliance for a specific toxic material must not be lower than established minimum analytical levels, unless that toxic material is of particular concern in the receiving waters, or unless an effluent specific method detection limit has been developed in accordance with 40 Code of Federal Regulations Part 136. Minimum analytical levels are listed in the standards implementation procedures as amended.

(d) Once-through cooling water discharges. When a discharge of once-through cooling water does not measurably alter intake concentrations of a pollutant, then water-quality based effluent limits for that pollutant are not required. For facilities that intake and discharge cooling-water into different water bodies, this provision only applies if water quality and applicable water quality standards in the receiving water are maintained and protected.

(e) Storm water discharges. Pollution in storm water must not impair existing or designated uses. Controls on the quality of storm water discharges must be based on best management practices, technology-based limits, or both in combination with instream monitoring to assess standards attainment and to determine if additional controls on storm water quality are needed. The standards implementation procedures as amended describe how water quality standards are applied to Texas Pollutant Discharge Elimination System storm water discharges. The evaluation of instream monitoring data for standards attainment includes the effects of storm water, as described in §307.9 of this title.

§307.9. Determination of Standards Attainment.

(a) General standards attainment sampling and assessment procedures. The procedures listed in this section are solely for the purposes of assessing water quality monitoring data to determine if water quality standards are attained in individual water bodies. Unless otherwise stated in this chapter, additional details concerning sampling procedures for the measurement, collection, preservation and laboratory analysis of water quality samples are provided in the Texas Commission on Environmental Quality (TCEQ) *Surface Water Quality Monitoring Procedures* as amended, the most recently published edition of the book entitled *Standard Methods for the Examination of Water and Wastewater*, 40 Code of Federal Regulations (CFR) Part 136, or other reliable sources acceptable to the commission. Laboratory accreditation requirements are specified in Chapter 25 of this title (relating to Environmental Testing Laboratory Accreditation and Certification). Unless otherwise stated in this chapter, additional details concerning how sampling data are evaluated to assess standards compliance are provided in the TCEQ *Guidance for Assessing and Reporting Surface Water Quality in Texas* as amended.

(b) Samples to determine standards attainment are collected at locations approved by the commission. Samples collected at non-approved locations may be accepted at the discretion of the commission. Samples to determine standards attainment in ambient water must be representative in terms of location, seasonal variations, and hydrologic conditions. Locations must be typical of significant areas of a water body. Temporal sampling must be sufficient to appropriately address seasonal variations of concern. Sample results that are used to assess standards attainment must not include samples that are collected during extreme hydrologic conditions such as high- flows and flooding immediately after heavy rains. Further guidance on representative sampling, both spatially, temporally, and hydrologically, can be found in the TCEQ *Surface Water Quality Monitoring Procedures* and the TCEQ *Guidance for Assessing and Reporting Surface Water Quality in Texas* as amended.

(c) Collection and preservation of water samples.

(1) To ensure that representative samples are collected and to minimize alterations prior to analysis, collection and preservation of attainment determination samples are in accordance with procedures set forth in the most recently published edition of the book entitled *Standard Methods for the Examination of Water and Wastewater*, the TCEQ *Surface Water Quality Monitoring Procedures* as amended, 40 CFR Part 136, or other reliable procedures acceptable to the commission.

(2) Bacterial and temperature determinations must be conducted on samples or measurements taken at or near the surface in accordance with the TCEQ *Surface Water Quality Monitoring Procedures* as amended. Depth collection procedures for chloride, sulfate, total dissolved solids, dissolved oxygen, chlorophyll *a*, and pH to determine standards attainment may vary depending on the water body being sampled. Standards for chloride, sulfate, total dissolved solids, dissolved oxygen, chlorophyll *a*, pH are applicable to the mixed surface layer, but a single sample taken near the surface normally provides an adequate representation of these parameters.

(3) For toxic materials, numerical aquatic life criteria are applicable to water samples collected at any depth. Numerical human health criteria are applicable to the average (arithmetic) concentration from the surface to the bottom. For the purposes of standards attainment for aquatic life protection and human health protection, samples that are collected at approximately one foot below the water surface are acceptable for assessing standards attainment of numerical criteria.

(d) Sample analysis.

(1) Numerical criteria. Procedures for laboratory analysis must be in accordance with the most recently published edition of the book entitled *Standard Methods for the Examination of Water and Wastewater*, the TCEQ *Texas Surface Water Quality Monitoring Procedures* as amended, 40 CFR Part 136, or other reliable procedures acceptable to the commission, and in accordance with Chapter 25 of this title.

(2) Radioactivity. Measurements must be made on filtered samples to determine radioactivity associated with dissolved minerals in accordance with current analytical methodology approved by the United States Environmental Protection Agency (EPA).

(3) Toxicity. Bioassay techniques must be selected as testing situations dictate but are generally conducted using representative sensitive organisms in accordance with §307.6 of this title (relating to Toxic Materials).

(e) Sampling periodicity and evaluation.

(1) Chloride, sulfate, total dissolved solids. Standards attainment determinations must be based on the long term mean in accordance with TCEQ *Guidance for Assessing and Reporting Surface Water Quality in Texas* as amended . Results from all monitoring stations within the segment are used to allow for reasonable parametric gradients. Total dissolved solids determinations may be based on measurements of specific conductance.

(2) Radioactivity. The impact of radioactive sources on surface waters must be evaluated in accordance with Chapter 336 of this title (relating to Radioactive Substance Rules), and in accordance with Chapter 290 of this title (relating to Public Drinking Water).

(3) Bacteria. Standards attainment must be based on a long-term geometric mean of applicable samples in accordance with TCEQ *Guidance for Assessing and Reporting Surface Water Quality in Texas* as amended , and data are evaluated in accordance with the provisions of §307.7(b)(1) of this title (relating to Site-Specific Uses and Criteria). Samples may be evaluated with the single sample maximum criterion for purposes of swimmer safety notification programs and wastewater permit compliance. Samples must not include extreme hydrologic conditions such as very high-flows and flooding immediately after heavy rains. The high-flow exemption applies for a 24-hour period following the last measured or estimated determination that extreme hydrologic conditions exist. A high-flow exemption applies during either of the following hydrologic conditions:

(A) freshwater stream flow that exceeds the 90th percentile flow using historical records for the nearest United States Geological Survey (USGS) or International Boundary and Water Commission (IBWC) gage, as found on the USGS or IBWC websites for many Texas gages, or by calculating the percentile flow for small freshwater streams without gages using statistical corrections to account for relative watershed size; or,

(B) an estimated flow severity index of flood or an equivalent category. This applies to tidal and freshwater streams .

(4) Toxic materials. Standards attainment must be evaluated in accordance with §307.6 of this title, and in accordance with §307.8 of this title (relating to Application of Standards). To protect aquatic life, specific numerical acute toxic criteria are applied as 24-hour averages, and specific numerical chronic toxic criteria are applied as seven-day averages. Human health criteria are applied as long-term average exposure criteria designed to protect populations over a life time. Standards attainment for acute and chronic toxic criteria for aquatic life and human health criteria must be in accordance with the TCEQ *Guidance for Assessing and Reporting Surface Water Quality in Texas* as amended. Standards attainment for human health criteria must be based on the mean of samples collected in accordance with the TCEQ *Guidance for Assessing and Reporting Surface Water Quality in Texas* as amended.

(5) Temperature and pH. Standards attainment must be in accordance with the TCEQ *Guidance for Assessing and Reporting Surface Water Quality in Texas* as amended.

(6) Dissolved oxygen.

(A) Criteria for daily (24-hour) average concentrations must be compared to a time-weighted average of measurements taken over a 24-hour period in accordance with TCEQ *Guidance for Assessing and Reporting Surface Water Quality in Texas* as amended.

(B) Criteria for minimum concentrations must be compared to individual measurements in accordance with TCEQ *Guidance for Assessing and Reporting Surface Water Quality in*

Texas as amended. When data are collected over a 24-hour period, the lowest measurement observed during that 24-hour period is compared to the applicable minimum criterion.

(7) Chlorophyll *a* in reservoirs. Standards attainment must be based on the long term median of chlorophyll *a* measurements in accordance with TCEQ *Guidance for Assessing and Reporting Surface Water Quality in Texas* as amended. Medians are compared to the chlorophyll *a* criteria for individual reservoirs in Appendix F of §307.10 of this title (relating to Appendices A - G). The data for the assessment must be collected at the sampling stations used for calculating the criteria and screening levels, as listed in Appendix F of §307.10 of this title, or from comparable stations in the main pool of the reservoir.

(8) Site-specific criteria for aquatic recreation (geometric mean), total dissolved solids, chloride, and sulfate as established in Appendix A of §307.10 of this title, and human health criteria as established in Table 2 of §307.6(d)(1) of this title do not apply in the following stream types and flow conditions:

(A) perennial streams when flows are below 0.1 cubic feet per second;

(B) intermittent streams when less than 20% of the stream bed of a 500 meter sampling reach is covered by pools; or when extremely dry conditions are indicated by comparable observations of flow severity.

(f) Biological integrity. Biological integrity, which is an essential component of the aquatic life categories defined in §307.7(b)(3) of this title (relating to Site-Specific Uses and Criteria), is assessed by sampling the aquatic community. Attainment of biological integrity is assessed by indices of biotic integrity that are described in the TCEQ *Surface Water Quality Monitoring Procedures* as amended. Primary criteria associated with assessing the attainment of aquatic life uses are indices of biotic integrity and criteria for dissolved oxygen. When monitoring data indicate that primary criteria are not being attained for a presumed high aquatic life use, as defined in §307.4(h) of this title (relating to General Criteria), the affected water body is not automatically considered impaired and placed in Category 5 of the Texas Integrated Report based on the primary criteria. Instead, the listing can be deferred until a use-attainability analysis of the water body is conducted to establish the appropriate aquatic life use. If the water body is not meeting the primary criteria for the aquatic life use that is determined to be appropriate, or if the use-attainability analysis has not been completed and submitted to EPA for review within the next two submissions of Texas' Integrated Report (approximately four years), then the water body is listed as impaired. When the appropriate aquatic life use as determined by the use-attainability study is less stringent than the presumed high use, then the appropriate aquatic life use and dissolved oxygen criteria are listed in Appendix D of §307.10 of this title after approval by EPA. Water bodies that are not meeting a presumed high aquatic life use are identified and subject to notice and public comment during the development of Texas' Integrated Report.

(g) Additional parameters. Assessment of narrative criteria parameters must be performed in accordance with the TCEQ *Guidance for Assessing and Reporting Surface Water Quality in Texas* as amended.

§307.10. Appendices A - G.

The following appendices are integral components of this chapter of the Texas Surface Water Quality Standards.

(1) Appendix A - Site-specific Uses and Criteria for Classified Segments:

Figure: 30 TAC §307.10(1)

Appendix A - Site-specific Uses and Criteria for Classified Segments

The following tables identify the water uses and supporting numerical criteria for each of the state's classified segments. The tables are ordered by basin with the segment number and segment name given for each classified segment. Marine segments are those that are specifically titled as "tidal" in the segment name, plus all bays, estuaries and the Gulf of Mexico. The following descriptions denote how each numerical criterion is used subject to the provisions in §307.7 of this title (relating to Site-Specific Uses and Criteria), §307.8 of this title (relating to Application of Standards), and §307.9 of this title (relating to Determination of Standards Attainment).

Segments that include reaches that are dominated by springflow are footnoted in this appendix and have critical low-flows calculated according to §307.8(a)(2) of this title. These critical low-flows apply at or downstream of the spring(s) providing the flows. Critical low-flows upstream of these springs may be considerably smaller. Critical low-flows used in conjunction with the Texas Commission on Environmental Quality regulatory actions (such as discharge permits) may be adjusted based on the relative location of a discharge to a gage.

The criteria for Cl^{-1} (chloride), SO_4^{-2} (sulfate), and TDS (total dissolved solids) are listed in this appendix as maximum annual averages for the segment.

Dissolved oxygen criteria are listed as minimum 24-hour means at any site within the segment. Absolute minima and seasonal criteria are listed in §307.7 of this title unless otherwise specified in this appendix. Dissolved oxygen criteria of 2.0 mg/L in this appendix are allowed a daily variation down to 1.5 mg/L for no more than eight hours per 24-hour period. Dissolved oxygen criteria of 1.0 mg/L in this appendix will be considered minimum values at any time.

The pH criteria are listed as minimum and maximum values expressed in standard units at any site within the segment.

The freshwater indicator bacteria for recreation is *E. coli*. Enterococci is the indicator bacteria for recreation in saltwater and certain high saline inland water bodies with typical high conductivity values. Fecal coliform can be used as an alternative indicator of recreational suitability in high saline inland waters for two years during the transition to Enterococci as specified in §307.7(b)(1)(C) of this title. The appropriate bacterial criteria are listed in the appendix under the Indicator Bacteria column and are applied as specified in §307.7(b)(1) of this title. The indicator bacteria for suitability for oyster waters is fecal coliform. The fecal coliform criteria for oyster waters is 14 colonies per 100 ml as specified in §307.7(b)(3)(B) of this title.

The criteria for temperature are listed as maximum values at any site within the segment.

Footnotes are defined at the end of each basin or bay and estuary table, as appropriate.

CANADIAN RIVER BASIN		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
0101	Canadian River Below Lake Meredith	PCR	H			1,975	760	5,000	5.0	6.5-9.0	126	95
0102	Lake Meredith	PCR	E	PS		400	350	1,300	6.0	6.5-9.0	126	85
0103	Canadian River Above Lake Meredith	PCR	H			1,050	540	4,500	5.0	6.5-9.0	126	95
0104	Wolf Creek	PCR	H			420	125	1,125	5.0	6.5-9.0	126	93
0105	Rita Blanca Lake	NCR	L		WF[2]	200	200	1,000	3.0	6.5-9.0	126	85

1 The indicator bacteria for freshwater is *E. coli.*

2 Segment 0105 - Rita Blanca Lake is designated as high quality waterfowl habitat.

RED RIVER BASIN		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
0201	Lower Red River	PCR	H	PS		375	250	1,100	5.0	6.5-9.0	126	93
0202	Red River Below Lake Texoma	PCR	H	PS		375	250	1,100	5.0	6.5-9.0	126	93
0203	Lake Texoma	PCR	H	PS		600	300	1,500	5.0	6.5-9.0	126	92
0204	Red River Above Lake Texoma	PCR	H			2,000	1,200	6,000	5.0	6.5-9.0	33	93
0205	Red River Below Pease River	PCR	H			5,000	2,000	10,000	5.0	6.5-9.0	33	93
0206	Red River Above Pease River	PCR	H			12,000	4,000	25,000	5.0	6.5-9.0	33	93
0207	Lower Prairie Dog Town Fork Red River	PCR	H			37,000	5,300	46,200	5.0	6.5-9.0	33	93
0208	Lake Crook	PCR	H	PS		75	150	350	5.0	6.5-9.0	126	90
0209	Pat Mayse Lake	PCR	H	PS		100	175	350	5.0	6.5-9.0	126	90
0210	Farmers Creek Reservoir	PCR	H	PS		200	60	550	5.0	6.5-9.0	126	93
0211	Little Wichita River	PCR	H	PS		250	50	500	3.0 [2]	6.5-9.0	126	91
0212	Lake Arrowhead	PCR	H	PS		250	50	500	5.0	6.5-9.0	126	93
0213	Lake Kickapoo	PCR	H	PS		100	50	400	5.0	6.5-9.0	126	90
0214	Wichita River Below Diversion Lake	PCR	H			1,800	800	5,000	5.0	6.5-9.0	126	90
0215	Diversion Lake	PCR	H			1,800	1,100	5,000	5.0	6.5-9.0	126	90
0216	Wichita River Below Lake Kemp	PCR	H			1,925	960	5,000	5.0	6.5-9.0	126	90
0217	Lake Kemp [3]	PCR	H			7,000	2,500	15,000	5.0	6.5-9.0	33	93
0218	Wichita/North Fork Wichita River [4]	PCR	H			7,500	2,800	16,250	5.0	6.5-9.0	33	93
0219	Lake Wichita	PCR	H			1,000	400	1,800	5.0	6.5-9.0	126	90
0220	Upper Pease/North Fork Pease River	PCR	H			12,000	3,500	30,000	5.0	6.5-9.0	33	91
0221	Middle Fork Pease River	PCR	H			870	1,400	2,800	5.0	6.5-9.0	126	91
0222	Salt Fork Red River	PCR	H			400	1,400	3,000	5.0	6.5-9.0	126	93
0223	Greenbelt Lake	PCR	H	PS		250	200	750	5.0	6.5-9.0	126	93
0224	North Fork Red River	PCR	H			800	1,200	2,500	5.0	6.5-9.0	126	91
0225	McKinney Bayou	PCR	L	PS		60	90	400	3.0	6.0-8.5	126	93

0226	South Fork Wichita River [3]	PCR	H			12,000	3,650	31,000	5.0	6.5-9.0	33	93
0227	South Fork Pease River	PCR	H			270	200	1,000	5.0	6.5-9.0	126	91
0228	Mackenzie Reservoir	PCR	H	PS		50	200	500	5.0	6.5-9.0	126	90
0229	Upper Prairie Dog Town Fork Red River	PCR	H			350	675	2,000	5.0	6.5-9.0	126	93
0230	Pease River	PCR	I			12,000	3,500	30,000	4.0	6.5-9.0	33	91

[1] The indicator bacteria for freshwater is *E. coli.* The indicator bacteria and alternate indicator for Segments 0204, 0205, 0206, 0207, 0217, 0218, 0220, 0226, and 0230 are Enterococci and fecal coliform, respectively.

[2] The 24-hour minimum dissolved oxygen criterion in Segment 0211 is 2.0 mg/L.

[3] It is anticipated that inorganic chemical quality in Segment 0217 and Segment 0226 should improve following completion and as a result of the operation of salinity control projects.

[4] The critical low-flow for Segment 0218 is calculated according to §307.8(a)(2)(B) of this title.

SULPHUR RIVER BASIN		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
0301	Sulphur River Below Wright Patman Lake	PCR	H			120	100	500	5.0	6.0-8.5	126	90
0302	Wright Patman Lake	PCR	H	PS		75	75	400	5.0	6.0-8.5	126	90
0303	Sulphur/South Sulphur River	PCR	H			80	180	600	5.0	6.0-8.5	126	93
0304	Days Creek	PCR	I			525	75	850	4.0	6.0-8.5	126	90
0305	North Sulphur River[2,3]	PCR	I[2]			190	475	1,320	5.0	6.0-8.5	126	93
0306	Upper South Sulphur River	PCR	I			80	180	600	4.0	6.5-9.0	126	93
0307	Jim L. Chapman Lake	PCR	H	PS		50	50	225	5.0	6.5-9.0	126	93

1 The indicator bacteria for freshwater is *E. coli.*

2 For the purpose of assessment, the intermediate aquatic life use applies only to the fish community. The benthic community is to be assessed using a

3 Segment 0305 is an intermittent stream with perennial pools.

CYPRESS CREEK BASIN		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
0401	Caddo Lake	PCR	H	PS		50	50	200	5.0	5.5-9.0	126	90
0402	Big Cypress Creek Below Lake O' the Pines	PCR	H	PS		100	50	300	5.0	5.5-8.0	126	93
0403	Lake O' the Pines	PCR	H	PS		80	50	300	5.0	6.0-8.5	126	93
0404	Big Cypress Creek Below Lake Bob Sandlin	PCR	I			100	100	500	4.0	6.0-8.5	126	90
0405	Lake Cypress Springs	PCR	H	PS		100	100	500	5.0	6.0-8.5	126	93
0406	Black Bayou[2]	PCR	H	PS		80	50	300	≤5.0[3]	5.5-8.0	126	90
0407	James' Bayou[2]	PCR	H	PS		100	50	300	≤5.0[3]	5.5-8.0	126	90
0408	Lake Bob Sandlin	PCR	H	PS		50	65	150	5.0	6.5-9.0	126	90
0409	Little Cypress Bayou (Creek)	PCR	H	PS		100	50	300	≤5.0 [3]	5.5-8.5	126	90
0410	Black Cypress Bayou (Creek)	PCR	H			50	50	200	≤5.0 [3]	5.5-8.0	126	90

1 The indicator bacteria for freshwater is *E. coli*.

2 Segments 0406 and 0407 are intermittent streams with perennial pools.

3 A 24-hour average dissolved oxygen criterion of 5.0 mg/L is the upper bounds if the following indicated dissolved oxygen equation predicts dissolved oxygen values that are higher than 5.0 mg/L. When the 24-hour average dissolved oxygen is predicted to be lower than 1.5 mg/L, then the dissolved oxygen criterion is set as 1.5 mg/L. When the 24-hour average dissolved oxygen criterion is greater than 2.0 mg/L, the corresponding 24-hour minimum dissolved oxygen criterion should be 1.0 mg/L less than the calculated 24-hour average. When the 24-hour average dissolved oxygen criterion is less than or equal to 2.0 mg/L, the corresponding 24-hour minimum dissolved oxygen criterion should be 0.5 mg/L less than the calculated 24-hour average criterion.

When stream flow is below 0.1 cfs, then 0.1 cfs is the presumed flow that should be used in the equation. This equation supersedes Table 4 in §307.7(b)(3)(A) of this title.

DO = 12.11 - 0.309 T + 1.05 logQ - 1.02 logWS where

DO = 24-hour average dissolved oxygen criterion

T = temperature in degrees Celsius

Q = flow in cfs

WS = watershed size in square kilometers (up to 1000 kilometers)

SABINE RIVER BASIN		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
0501	Sabine River Tidal	PCR	H						4.0	6.0-8.5	35	95
0502	Sabine River Above Tidal	PCR	H	PS		50	50	200	5.0	6.0-8.5	126	91
0503	Sabine River Above Caney Creek	PCR	H	PS		50	50	200	5.0	6.0-8.5	126	91
0504	Toledo Bend Reservoir	PCR	H	PS		70	50	240	5.0	6.0-8.5	126	93
0505	Sabine River Above Toledo Bend Reservoir	PCR	H	PS		175	100	400	5.0	6.0-8.5	126	93
0506	Sabine River Below Lake Tawakoni	PCR	H	PS		200	100	500	5.0	6.0-8.5	126	90
0507	Lake Tawakoni	PCR	H	PS		75[2]	75[2]	400[2]	5.0	6.0-9.0	126	93
0508	Adams Bayou Tidal	PCR	H						4.0	6.0-8.5	35	95
0509	Murvaul Lake	PCR	H	PS		150	75	500	5.0	6.5-9.0	126	92
0510	Lake Cherokee	PCR	H	PS		75	50	250	5.0	6.0-8.5	126	95
0511	Cow Bayou Tidal	PCR	H						4.0	6.0-8.5	35	95
0512	Lake Fork Reservoir	PCR	H	PS		50	50	200	5.0	6.5-9.0	126	95
0513	Big Cow Creek	PCR	H	PS		75	50	300	5.0	5.5-8.5	126	90
0514	Big Sandy Creek	PCR	H	PS		75	50	300	5.0	6.0-8.5	126	90
0515	Lake Fork Creek	PCR	H	PS		100	75	400	5.0	6.0-8.5	126	90

1 The indicator bacteria for freshwater is *E. coli* and Enterococci for saltwater.

2 This criterion will be reviewed upon the next water quality standards revision and is contingent upon the continuation and progress of a water reuse project. The original criteria (TDS of 200, Cl^{-1} of 50, and SO_4^{-2} of 50) may be appropriate if the water reuse project is not pursued.

NECHES RIVER BASIN		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
0601	Neches River Tidal	PCR	I						3.0	6.0-8.5	35	95
0602	Neches River Below B. A. Steinhagen Lake	PCR	H	PS		50	50	200	5.0	6.0-8.5	126	91
0603	B. A. Steinhagen Lake	PCR	H	PS		50	50	200	5.0	6.0-8.5	126	93
0604	Neches River Below Lake Palestine	PCR	H	PS		50	50	200	5.0	6.0-8.5	126	91
0605	Lake Palestine	PCR	H	PS		50	50	200	5.0	6.0-8.5	126	90
0606	Neches River Above Lake Palestine	PCR	I	PS		100	50	300	4.0	6.0-8.5	126	95
0607	Pine Island Bayou	PCR	H	PS		150	50	300	5.0	6.0-8.5	126	95
0608	Village Creek	PCR	H	PS		150	75	300	5.0	5.5-8.0	126	90
0609	Angelina River Below Sam Rayburn Reservoir	PCR	H	PS		70	50	250	5.0	6.0-8.5	126	90
0610	Sam Rayburn Reservoir	PCR	H	PS		100	100	400	5.0	6.0-8.5	126	93
0611	Angelina River Above Sam Rayburn Reservoir	PCR	H	PS		125	50	250	5.0	6.0-8.5	126	90
0612	Attoyac Bayou	PCR	H	PS		75	50	200	5.0	6.0-8.5	126	90
0613	Lake Tyler/Lake Tyler East	PCR	H	PS		50	50	200	5.0	6.5-9.0	126	93
0614	Lake Jacksonville	PCR	H	PS		50	75	750	5.0	6.5-9.0	126	93
0615	Angelina River/Sam Rayburn Reservoir	PCR	H	PS		150	100	500	5.0	6.5-9.0	126	93

[1] The indicator bacteria for freshwater is *E. coli* and Enterococci for saltwater.

NECHES-TRINITY COASTAL BASIN		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
0701	Taylor Bayou Above Tidal	PCR	I			400	100	1,100	4.0	6.5-9.0	126	95
0702	Intracoastal Waterway Tidal	PCR	H						4.0	6.5-9.0	35	95
0703	Sabine-Neches Canal Tidal	PCR	H						4.0	6.5-9.0	35	95
0704	Hillebrandt Bayou	PCR	I			250	100	600	4.0	6.5-9.0	126	95

[1] The indicator bacteria for freshwater is *E. coli* and Enterococci for saltwater.

TRINITY RIVER BASIN		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
0801	Trinity River Tidal	PCR	H						4.0	6.5-9.0	35	95
0802	Trinity River Below Lake Livingston	PCR	H	PS		125	100	600	5.0	6.5-9.0	126	93
0803	Lake Livingston	PCR	H	PS		150	60	500	5.0	6.5-9.0	126	93
0804	Trinity River Above Lake Livingston	PCR	H			150	150	600	5.0	6.5-9.0	126	93
0805	Upper Trinity River	PCR	H			175	175	850	5.0[2]	6.5-9.0	126	95
0806	West Fork Trinity River Below Lake Worth	PCR	H	PS		100	100	500	5.0	6.5-9.0	126	93
0807	Lake Worth	PCR	H	PS		100	100	500	5.0	6.5-9.0	126	91
0808	West Fork Trinity River Below Eagle Mountain Reservoir	PCR	H	PS		100	100	500	5.0	6.5-9.0	126	91
0809	Eagle Mountain Reservoir	PCR	H	PS		75	75	300	5.0	6.5-9.0	126	94
0810	West Fork Trinity River Below Bridgeport Reservoir	PCR	H	PS		100	100	500	5.0	6.5-9.0	126	90
0811	Bridgeport Reservoir	PCR	H	PS		75	75	300	5.0	6.5-9.0	126	90
0812	West Fork Trinity River Above Bridgeport Reservoir[3]	PCR	I	PS		190	200	800	3.0[4]	6.5-9.0	126	88
0813	Houston County Lake	PCR	H	PS		75	75	300	5.0	6.5-9.0	126	93
0814	Chambers Creek Above Richland-Chambers Reservoir	PCR	H	PS		90	160	500	5.0	6.5-9.0	126	90
0815	Bardwell Reservoir	PCR	H	PS		50	50	300	5.0	6.5-9.0	126	91
0816	Lake Waxahachie	PCR	H	PS		50	50	300	5.0	6.5-9.0	126	91
0817	Navarro Mills Lake	PCR	H	PS		50	75	300	5.0	6.5-9.0	126	90
0818	Cedar Creek Reservoir	PCR	H	PS		50	100	200	5.0	6.0-8.5	126	93
0819	East Fork Trinity River	PCR	I			100	100	500	4.0	6.5-9.0	126	91
0820	Lake Ray Hubbard	PCR	H	PS		100	100	500	5.0	6.5-9.0	126	93
0821	Lavon Lake	PCR	H	PS		100	100	500	5.0	6.5-9.0	126	93
0822	Elm Fork Trinity River Below Lewisville Lake	PCR	H	PS		80	60	500	5.0	6.5-9.0	126	90
0823	Lewisville Lake	PCR	H	PS		80	60	500	5.0	6.5-9.0	126	90
0824	Elm Fork Trinity River Above Ray Roberts Lake	PCR	H	PS[5]		110	90	700	5.0	6.5-9.0	126	90
0825	Denton Creek	PCR	H	PS		80	60	500	5.0	6.5-9.0	126	90
0826	Grapevine Lake	PCR	H	PS		80	60	500	5.0	6.5-9.0	126	93
0827	White Rock Lake	PCR	H			100	100	400	5.0	6.5-9.0	126	93
0828	Lake Arlington	PCR	H	PS		100	100	300	5.0	6.5-9.0	126	95
0829	Clear Fork Trinity River Below Benbrook Lake	PCR	H	PS		100	100	500	5.0	6.5-9.0	126	93
0830	Benbrook Lake	PCR	H	PS		75	75	300	5.0	6.5-9.0	126	93
0831	Clear Fork Trinity River Below Lake Weatherford	PCR	H	PS		100	100	500	5.0 [6]	6.5-9.0	126	90
0832	Lake Weatherford	PCR	H	PS		100	100	500	5.0	6.5-9.0	126	93
0833	Clear Fork Trinity River Above Lake Weatherford [7]	PCR	I	PS		125	125	750	4.0[8]	6.5-9.0	126	95

0834	Lake Amon G. Carter	PCR	H	PS		150	150	400	5.0	6.5-9.0	126	93
0835	Richland Creek Below Richland-Chambers Reservoir	PCR	H	PS		145	170	500	5.0	6.5-9.0	126	90
0836	Richland-Chambers Reservoir	PCR	H	PS		75	110	400	5.0	6.5-9.0	126	91
0837	Richland Creek Above Richland-Chambers Reservoir	PCR	H	PS		145	170	500	5.0	6.5-9.0	126	90
0838	Joe Pool Lake	PCR	H	PS		100	250	500	5.0	6.5-9.0	126	90
0839	Elm Fork Trinity River Below Ray Roberts Lake	PCR	H	PS		80	60	500	5.0	6.5-9.0	126	90
0840	Ray Roberts Lake	PCR	H	PS		80	60	500	5.0	6.5-9.0	126	90
0841	Lower West Fork Trinity River	PCR	I			175	175	850	4.0[9]	6.5-9.0	126	95

1 The indicator bacteria for freshwater is *E. coli* and Enterococci for saltwater.

2 The dissolved oxygen criterion in Segment 0805 is 3.5 mg/L when headwater flow at USGS Gaging Station 08048000 (located on the West Fork Trinity River in Fort Worth) is less than 80 $ft.^3/s$.

3 Segment 0812 is an intermittent stream with perennial pools.

4 The 24-hour minimum dissolved oxygen criterion in Segment 0812 is 2.0 mg/L.

5 The public water supply use for Segment 0824 does not apply from a point 9.5 km (5.9 miles) downstream of the confluence of Pecan Creek in Cooke County up to FM 373 in Cooke County.

6 A 24-hour average dissolved oxygen criterion of 3.0 mg/L and minimum dissolved oxygen criterion of 2.0 mg/L applies from the confluence with an unnamed tributary approximately 1.0 mile downstream of Weatherford Dam upstream to Weatherford Dam.

7 Segment 0833 is an intermittent stream with perennial pools.

8 The 24-hour minimum dissolved oxygen criterion in Segment 0833 is 2.0 mg/L. A 24-hour average dissolved oxygen criterion of 2.0 mg/L and 24-hour minimum dissolved oxygen criterion of 1.0 mg/L applies when flows are less than 1cfs.

9 The dissolved oxygen criterion in Segment 0841 is 2.5 mg/L when headwater flow at USGS Gaging Station 08048000 (located on the West Fork Trinity River in Fort Worth) is less than 80.0 $ft.^3/s$.

TRINITY-SAN JACINTO COASTAL BASIN		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
0901	Cedar Bayou Tidal	PCR	H						4.0	6.5-9.0	35	95
0902	Cedar Bayou Above Tidal	PCR	H	PS		200	150	700	5.0	6.5-9.0	126	90

[1] The indicator bacteria for freshwater is *E. coli* and Enterococci for saltwater.

SAN JACINTO RIVER BASIN		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
1001	San Jacinto River Tidal	PCR	H						4.0	6.5-9.0	35	95
1002	Lake Houston	PCR	H	PS		100	50	400	5.0	6.5-9.0	126	90
1003	East Fork San Jacinto River	PCR	H	PS		80	50	400	5.0	6.0-8.5	126	91
1004	West Fork San Jacinto River	PCR	H	PS		100	50	400	5.0	6.5-9.0	126	95
1005	Houston Ship Channel/San Jacinto River Tidal	NCR	H						4.0	6.5-9.0	35	95
1006[2]	Houston Ship Channel Tidal				N/IS				2.0	6.5-9.0	168	95
1007[2]	Houston Ship Channel/Buffalo Bayou Tidal				N/IS				1.0	6.5-9.0	168	95
1008	Spring Creek	PCR	H	PS		100	50	450	5.0	6.5-9.0	126	90
1009	Cypress Creek	PCR	H	PS		100	50	600	5.0	6.5-9.0	126	90
1010	Caney Creek	PCR	H	PS		50	50	300	5.0	6.0-8.5	126	90
1011	Peach Creek	PCR	H	PS		50	50	300	5.0	6.0-8.5	126	90
1012	Lake Conroe	PCR	H	PS		50	50	300	5.0	6.5-9.0	126	90
1013	Buffalo Bayou Tidal	PCR	I						3.0	6.5-9.0	35	92
1014	Buffalo Bayou Above Tidal	PCR	L			110	65	600	3.0	6.5-9.0	126	92
1015	Lake Creek	PCR	H	PS		80	50	300	5.0	6.0-8.5	126	90
1016	Greens Bayou Above Tidal	PCR	L			150	150	1,000	3.0	6.5-9.0	126	92
1017	Whiteoak Bayou Above Tidal	PCR	L			110	65	600	3.0	6.5-9.0	126	92

1 The indicator bacteria for freshwater is *E. coli* and Enterococci for saltwater.

2 Chronic numerical toxic criteria and chronic total toxicity requirements apply to Segments 1006 and 1007.

SAN JACINTO-BRAZOS COASTAL BASIN		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
1101	Clear Creek Tidal	PCR	H						4.0	6.5-9.0	35	95
1102	Clear Creek Above Tidal	PCR	H			200	100	600	5.0	6.5-9.0	126	95
1103	Dickinson Bayou Tidal	PCR	H						4.0	6.5-9.0	35	95
1104	Dickinson Bayou Above Tidal	PCR	I			200	100	600	4.0	6.5-9.0	126	90
1105	Bastrop Bayou Tidal	PCR	H						4.0	6.5-9.0	35	95
1107	Chocolate Bayou Tidal	PCR	H						4.0	6.5-9.0	35	95
1108	Chocolate Bayou Above Tidal	PCR	H			200	100	900	5.0	6.5-9.0	126	90
1109	Oyster Creek Tidal	PCR	H						4.0	6.5-9.0	35	95
1110	Oyster Creek Above Tidal	PCR	H	PS		300	150	750	5.0	6.5-9.0	126	90
1111	Old Brazos River Channel Tidal	PCR	H						4.0	6.5-9.0	35	95
1113	Armand Bayou Tidal	PCR	H						4.0	6.5-9.0	35	95

[1] The indicator bacteria for freshwater is *E. coli* and Enterococci for saltwater.

BRAZOS RIVER BASIN		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
1201	Brazos River Tidal	PCR	H	PS[2]					4.0	6.5-9.0	35	95
1202	Brazos River Below Navasota River	PCR	H	PS		300	200	750	5.0	6.5-9.0	126	95
1203	Whitney Lake	PCR	H	PS		670	320	1,500	5.0	6.5-9.0	126	93
1204	Brazos River Below Lake Granbury	PCR	H			750	380	1,600	5.0	6.5-9.0	126	91
1205	Lake Granbury	PCR	H	PS		1,000	600	2,500	5.0	6.5-9.0	126	93
1206	Brazos River Below Possum Kingdom Lake	PCR	H			1,036	595	2,325	5.0	6.5-9.0	126	90
1207	Possum Kingdom Lake	PCR	H	PS		1,200	500	3,500	5.0	6.5-9.0	126	93
1208	Brazos River Above Possum Kingdom Lake	PCR	H			5,000	2,000	12,000	5.0	6.5-9.0	33	95
1209	Navasota River Below Lake Limestone	PCR	H	PS		140	100	600	5.0	6.5-9.0	126	93
1210	Lake Mexia	PCR	H	PS		100	50	400	5.0	6.5-9.0	126	90
1211	Yegua Creek	PCR	H	PS		140	130	640	5.0	6.5-9.0	126	91
1212	Somerville Lake	PCR	H	PS		100	100	400	5.0	6.5-9.0	126	93
1213	Little River	PCR	H	PS		75	75	400	5.0	6.5-9.0	126	90
1214	San Gabriel River	PCR	H	PS		50	45	500	5.0	6.5-9.0	126	91
1215	Lampasas River Below Stillhouse Hollow Lake	PCR	H	PS		100	75	500	5.0	6.5-9.0	126	91
1216	Stillhouse Hollow Lake	PCR	E	PS		100	75	500	6.0	6.5-9.0	126	93
1217	Lampasas River Above Stillhouse Hollow Lake	PCR	H			500	100	1,200	5.0	6.5-9.0	126	91
1218	Nolan Creek/South Nolan Creek	PCR	H			100	75	500	5.0	6.5-9.0	126	93
1219	Leon River Below Belton Lake	PCR	H	PS		150	75	500	5.0	6.5-9.0	126	91
1220	Belton Lake	PCR	H	PS		100	75	500	5.0	6.5-9.0	126	93
1221	Leon River Below Proctor Lake	PCR	H	PS		150	100	900	5.0	6.5-9.0	126	90
1222	Proctor Lake	PCR	H	PS		200	75	500	5.0	6.5-9.0	126	93
1223	Leon River Below Leon Reservoir	PCR	H	PS		480	130	1,240	5.0	6.5-9.0	126	93
1224	Leon Reservoir	PCR	H	PS		150	75	500	5.0	6.5-9.0	126	93

1225	Waco Lake	PCR	H	PS		60	60	400	5.0	6.5-9.0	126	93
1226	North Bosque River	PCR	H	PS		100	100	540	5.0	6.5-9.0	126	91
1227	Nolan River	PCR	I			372	320	1,383	4.0	6.5-9.0	126	95
1228	Lake Pat Cleburne	PCR	H	PS		100	100	300	5.0	6.5-9.0	126	93
1229	Paluxy River/North Paluxy River	PCR	H	PS		50	100	500	5.0	6.5-9.0	126	91
1230	Lake Palo Pinto	PCR	H	PS		100	100	450	5.0	6.5-9.0	126	93
1231	Lake Graham	PCR	H	PS		200	75	500	5.0	6.5-9.0	126	95
1232	Clear Fork Brazos River	PCR	H			1,250	2,200	4,900	5.0	6.5-9.0	126	93
1233	Hubbard Creek Reservoir	PCR	H	PS		350	150	900	5.0	6.5-9.0	126	93
1234	Lake Cisco	PCR	H	PS		75	75	350	5.0	6.5-9.0	126	93
1235	Lake Stamford	PCR	H	PS		580	400	2,100	5.0	6.5-9.0	126	93
1236	Fort Phantom Hill Reservoir	PCR	H	PS		130	150	550	5.0	6.5-9.0	126	93
1237	Lake Sweetwater	PCR	H	PS		250	225	730	5.0	6.5-9.0	126	93
1238	Salt Fork Brazos River	PCR	H			28,060	3,470	54,350	5.0	6.5-9.0	33	93
1239	White River	PCR	H	PS		100	100	500	5.0	6.5-9.0	126	92
1240	White River Lake	PCR	H	PS		190	90	780	5.0	6.5-9.0	126	89
1241	Double Mountain Fork Brazos River	PCR	H			2,630	2,400	5,500	5.0	6.5-9.0	33	95
1242	Brazos River Above Navasota River	PCR	H	PS		350	200	1,000	5.0	6.5-9.0	126	95
1243	Salado Creek [3]	PCR	H	PS/AP[4]		50	50	400	5.0	6.5-9.0	126	90
1244	Brushy Creek	PCR	H	PS/AP[4]		200	150	800	5.0	6.5-9.0	126	91
1245	Upper Oyster Creek	PCR	I	PS[5]		140	75	1,070	4.0 [6]	6.5-9.0	126	95
1246	Middle Bosque/South Bosque River	PCR	H			50	260	700	5.0	6.5-9.0	126	91
1247	Granger Lake	PCR	H	PS		50	50	400	5.0	6.5-9.0	126	90
1248	San Gabriel/North Fork San Gabriel River	PCR	H	PS/AP[4]		50	50	350	5.0	6.5-9.0	126	95
1249	Lake Georgetown	PCR	H	PS/AP[4]		50	50	350	5.0	6.5-9.0	126	90
1250	South Fork San Gabriel River	PCR	H	PS/AP[4]		50	50	350	5.0	6.5-9.0	126	95
1251	North Fork San Gabriel River	PCR	H	PS/AP[4]		50	50	400	5.0	6.5-9.0	126	91
1252	Lake Limestone	PCR	H	PS		50	50	300	5.0	6.5-9.0	126	90
1253	Navasota River Below Lake Mexia	PCR	H	PS		440	150	1,350	5.0	6.5-9.0	126	93

1254	Aquilla Reservoir	PCR	H	PS		110	310	600	5.0	6.5-9.0	126	90
1255	Upper North Bosque River	PCR	I			200	150	1,000	4.0	6.5-9.0	126	91
1256	Brazos River/Lake Brazos	PCR	H	PS		400	200	1,150	5.0	6.5-9.0	126	95
1257	Brazos River Below Whitney Lake	PCR	H	PS		450	250	1,450	5.0	6.5-9.0	126	95

[1] The indicator bacteria for freshwater is *E. coli* and Enterococci for saltwater. The indicator bacteria and alternate indicator for Segments 1208, 1238, and 1241 are Enterococci and fecal coliform, respectively.

[2] The public supply designation for Segment 1201 only applies from the upstream boundary to 300 meters (330 yards) downstream of SH 332 in Brazoria County.

[3] The critical low-flow for Segment 1243 is calculated according to §307.8(a)(2)(B) of this title.

[4] The aquifer protection use applies to the contributing, recharge, and transition zones of the Edwards Aquifer.

[5] The public water supply for Segment 1245 does not apply from Steep Bank Creek/Brazos River confluence upstream to Dam #3 approximately 0.4 mi downstream from the confluence of the American Canal.

[6] A 24-hour minimum dissolved oxygen criterion of 1.0 mg/L applies from the confluence with Steep Bank Creek/Brazos River upstream to Dam #3.

BRAZOS-COLORADO COASTAL BASIN		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
1301	San Bernard River Tidal	PCR	H						4.0	6.5-9.0	35	95
1302	San Bernard River Above Tidal	PCR	H	PS		200	100	500	5.0	6.5-9.0	126	90
1304	Caney Creek Tidal	PCR	H						4.0	6.5-9.0	35	95
1305	Caney Creek Above Tidal	PCR	H			200	75	1,000	5.0 [2]	6.5-9.0	126	90

1 The indicator bacteria for freshwater is *E.coli* and Enterococci for saltwater.

2 A 24-hour average dissolved oxygen criterion of 4.0 mg/L and a 24-hour minimum dissolved oxygen criterion of 3.0 mg/L applies from the confluence with Hardeman Slough upstream to the confluence with Water Hole Creek. A 24-hour average dissolved oxygen criterion of 2.5 mg/L and 24-hour minimum dissolved oxygen criterion of 2.0 mg/L applies from the confluence with Hardeman Slough upstream to the confluence with Water Hole Creek from March 15-October when flows are less than 5.0 cfs.

COLORADO RIVER BASIN		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
1401	Colorado River Tidal	PCR	H						4.0	6.5-9.0	35	95
1402	Colorado River Below La Grange	PCR	H	PS		100	100	500	5.0	6.5-9.0	126	95
1403	Lake Austin	PCR	H	PS		100	75	400	5.0	6.5-9.0	126	90
1404	Lake Travis	PCR	E	PS		100	75	400	6.0	6.5-9.0	126	90
1405	Marble Falls Lake	PCR	H	PS		125	75	500	5.0	6.5-9.0	126	94
1406	Lake Lyndon B. Johnson	PCR	H	PS		125	75	500	5.0	6.5-9.0	126	94
1407	Inks Lake	PCR	H	PS		150	100	600	5.0	6.5-9.0	126	90
1408	Lake Buchanan	PCR	H	PS		150	100	600	5.0	6.5-9.0	126	90
1409	Colorado River Above Lake Buchanan	PCR	H	PS		200	200	900	5.0	6.5-9.0	126	91
1410	Colorado River Below O. H. Ivie Reservoir	PCR	H	PS		500	455	1,475	5.0	6.5-9.0	126	91
1411	E. V. Spence Reservoir	PCR	H	PS		440	360	1,630	5.0	6.5-9.0	126	93
1412	Colorado River Below Lake J. B. Thomas	PCR	H			4,740	1,570	9,210	5.0	6.5-9.0	33	93
1413	Lake J. B. Thomas	PCR	H	PS		140	250	520	5.0	6.5-9.0	126	90
1414	Pedernales River	PCR	H	PS		125	75	525	5.0	6.5-9.0	126	91
1415	Llano River [2]	PCR	H	PS		50	50	350	5.0	6.5-9.0	126	91
1416	San Saba River	PCR	H	PS		50	50	425	5.0	6.5-9.0	126	90
1417	Lower Pecan Bayou	PCR	H			310	120	1,025	5.0	6.5-9.0	126	90
1418	Lake Brownwood	PCR	H	PS		150	100	500	5.0	6.5-9.0	126	90
1419	Lake Coleman	PCR	H	PS		150	100	500	5.0	6.5-9.0	126	93
1420	Pecan Bayou Above Lake Brownwood	PCR	H	PS		500	500	1,500	5.0	6.5-9.0	126	90
1421	Concho River	PCR	H	PS		610	420	1,730	5.0	6.5-9.0	126	90

1422	Lake Nasworthy	PCR	H	PS		450	400	1,500	5.0	6.5-9.0	126	93
1423	Twin Buttes Reservoir	PCR	H	PS		200	100	700	5.0	6.5-9.0	126	90
1424	Middle Concho/South Concho River [3]	PCR	H	PS		150	150	700	5.0	6.5-9.0	126	90
1425	O. C. Fisher Lake	PCR	H	PS		150	150	700	5.0	6.5-9.0	126	90
1426	Colorado River Below E. V. Spence Reservoir	PCR	H	PS		1,000	1,110	1,770	5.0	6.5-9.0	126	91
1427	Onion Creek	PCR	H	PS/AP[4]		100[5]	100[5]	500[5]	5.0	6.5-9.0	126	90
1428	Colorado River Below Lady Bird Lake/Town Lake	PCR	E	PS		100	100	500	6.0[6]	6.5-9.0	126	95
1429	Lady Bird Lake/Town Lake[7]	PCR	H	PS		75	75	400	5.0	6.5-9.0	126	90
1430	Barton Creek [8]	PCR	H	AP[4]		50	50	500	5.0	6.5-9.0	126	90
1431	Mid Pecan Bayou	PCR				410	120	1,100	2.0	6.5-9.0	126	90
1432	Upper Pecan Bayou	PCR	H	PS		200	150	800	5.0	6.5-9.0	126	90
1433	O. H. Ivie Reservoir	PCR	H	PS		430	330	1,520	5.0	6.5-9.0	126	93
1434	Colorado River Above La Grange	PCR	E	PS		100	100	500	6.0	6.5-9.0	126	95

1 The indicator bacteria for freshwater is *E.coli* and Enterococci for saltwater. The indicator bacteria and alternate indicator for Segment 1412 is Enterococci and fecal coliform, respectively.

2 The critical low-flow for the South Llano River portion of Segment 1415 is calculated according to §307.8(a)(2)(B) of this title.

3 The critical low-flow for the South Concho River portion of Segment 1424 is calculated according to §307.8(a)(2)(B) of this title.

4 The aquifer protection use applies to the contributing, recharge, and transition zones of the Edwards Aquifer.

5 The aquifer protection reach of Onion Creek is assigned a criteria of 50 mg/L for Cl^{-1}, 50 mg/L for SO_4^{-2}, and 400 mg/L for TDS.

6 Dissolved oxygen criterion of 6.0 mg/L only applies at stream flows greater than or equal to 150 cfs as measured at USGS gage number 08158000 located in Travis County upstream from U.S. Highway 183. Dissolved oxygen criteria of 5.0 mg/L applies to stream flows less than 150 cfs and greater than or equal to the 7Q2 for the segment.

7 While Segment 1429 exhibits quality characteristics that would make it suitable for primary contact recreation, the use is prohibited by local regulation for reasons unrelated to water quality.

8 The critical low-flow for Segment 1430 is calculated according to §307.8(a)(2)(A) of this title.

COLORADO-LAVACA COASTAL BASIN		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
1501	Tres Palacios Creek Tidal	PCR	E						5.0	6.5-9.0	35	95
1502	Tres Palacios Creek Above Tidal	PCR	H			250	100	800	5.0	6.5-9.0	126	90

1 The indicator bacteria for freshwater is *E. coli* and Enterococci for saltwater.

LAVACA RIVER BASIN		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
1601	Lavaca River Tidal	PCR	H						4.0	6.5-9.0	35	95
1602	Lavaca River Above Tidal	PCR	H	PS		200	100	700	5.0	6.5-9.0	126	91
1603	Navidad River Tidal	PCR	H						4.0	6.5-9.0	35	91
1604	Lake Texana	PCR	H	PS		100	50	500	5.0	6.5-9.0	126	93
1605	Navidad River Above Lake Texana	PCR	H	PS		100	50	550	5.0	6.5-9.0	126	91

[1] The indicator bacteria for freshwater is *E.coli* and Enterococci for saltwater.

LAVACA-GUADALUPE COASTAL BASIN		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
1701	Victoria Barge Canal Tidal	NCR	H						4.0	6.5-9.0	35	95

[1] The indicator bacteria for saltwater is Enterococci.

GUADALUPE RIVER BASIN		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
1801	Guadalupe River Tidal	PCR	E						5.0	6.5-9.0	35	95
1802	Guadalupe River Below San Antonio River	PCR	H	PS		150	100	700	5.0	6.5-9.0	126	93
1803	Guadalupe River Below San Marcos River	PCR	H	PS		100	100	500	5.0	6.5-9.0	126	93
1804	Guadalupe River Below Comal River	PCR	H	PS/AP[2]		100	50	400	5.0	6.5-9.0	126	90
1805	Canyon Lake	PCR	E	PS/AP[2]		50	50	400	6.0	6.5-9.0	126	90
1806	Guadalupe River Above Canyon Lake	PCR	E	PS/AP[2]		50	50	400	6.0	6.5-9.0	126	90
1807	Coleto Creek	PCR	H	PS		250	100	500	5.0	6.5-9.0	126	93
1808	Lower San Marcos River[3]	PCR	H	PS		60	50	400	5.0	6.5-9.0	126	90
1809	Lower Blanco River	PCR	H	PS/AP[2]		50	50	400	5.0	6.5-9.0	126	92
1810	Plum Creek	PCR	H	AP[2]		350	150	1,120	5.0	6.5-9.0	126	90
1811	Comal River[4]	PCR	H	PS/AP[2]		50	50	400	5.0	6.5-9.0	126	80[5]
1812	Guadalupe River Below Canyon Dam	PCR	E	PS/AP[2]		50	50	400	6.0	6.5-9.0	126	90
1813	Upper Blanco River[3]	PCR	E	PS/AP[2]		50	50	400	6.0	6.5-9.0	126	92
1814	Upper San Marcos River[4]	PCR	E	AP[2]		50	50	400	6.0	6.5-9.0	126	80[6]
1815	Cypress Creek	PCR	E	PS/AP[2]		50	50	400	6.0	6.5-9.0	126	86
1816	Johnson Creek	PCR	E	PS		50	50	400	6.0	6.5-9.0	126	86
1817	North Fork Guadalupe River[3]	PCR	E	PS		50	50	400	6.0	6.5-9.0	126	86
1818	South Fork Guadalupe River	PCR	E	PS		50	50	400	6.0	6.5-9.0	126	86

1 The indicator bacteria for freshwater is *E.coli* and Enterococci for saltwater.

2 The aquifer protection use applies to the contributing, recharge, and transition zones of the Edwards Aquifer.

3 The critical low-flow for Segments 1808, 1813, and 1817 is calculated according to §307.8(a)(2)(B) of this title.

4 The critical low-flow for Segments 1811 and 1814 is calculated according to §307.8(a)(2)(A) of this title.

5 Segment 1811 - Comal River is assigned a temperature criteria of 78^{o} F from the Landa Lake Park Dam immediately upstream of Landa Park Drive upstream to Klingemann Street in New Braunfels in Comal County (excludes the western channel at Spring Island, the eastern channel at Pecan Island, and the Blieders Creek arm of Landa Lake upstream of the springs in the upper spring run reach).

6 Segment 1814 - Upper San Marcos River is assigned a temperature criteria of 78^{o} F from the confluence with Sessom's Creek approximately 1.5 kilometers (0.9 miles) upstream of Rio Vista Dam upstream to a point 0.7 kilometers (0.4 mile) upstream of Loop 82 in San Marcos in Hays County (excludes the slough arm of SpringLake).

SAN ANTONIO RIVER BASIN		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
1901	Lower San Antonio River	PCR	H			180	140	750	5.0	6.5-9.0	126	90
1902	Lower Cibolo Creek	PCR	H			170	275	900	5.0	6.5-9.0	126	90
1903	Medina River Below Medina Diversion Lake	PCR	H	PS[2]/AP[3]		120	120	700	5.0	6.5-9.0	126	90
1904	Medina Lake	PCR	H	PS/AP		80	75	350	5.0	6.5-9.0	126	88
1905	Medina River Above Medina Lake [4]	PCR	E	PS		50	150	400	6.0	6.5-9.0	126	88
1906	Lower Leon Creek	PCR	H	PS[5]		120	120	700	5.0	6.5-9.0	126	95
1907	Upper Leon Creek	PCR	H	PS/AP[3]		55	240	550	5.0	6.5-9.0	126	95
1908	Upper Cibolo Creek	PCR	H	PS/AP[3]		50	100	600	5.0	6.5-9.0	126	90
1909	Medina Diversion Lake	PCR	H	PS/AP[3]		50	75	400	5.0	6.5-9.0	126	90
1910	Salado Creek	PCR	H	PS/AP[3]		140	200	600	5.0	6.5-9.0	126	90
1911	Upper San Antonio River	PCR	H			150	150	750	5.0	6.5-9.0	126	90
1912	Medio Creek	PCR	I			150	150	750	4.0	6.5-9.0	126	95
1913	Mid Cibolo Creek	PCR	L			150	150	750	3.0	6.5-9.0	126	90

1 The indicator bacteria for freshwater is *E. coli*.

2 For Segment 1903, the public supply designation does not apply from the confluence of the San Antonio River in Bexar County upstream to a point 2.5 kilometers (1.5 miles) upstream of the confluence of Leon Creek.

3 The aquifer protection use applies to areas in the contributing, recharge and transition zones of the Edwards Aquifer.

4 The critical low-flow for Segment 1905 is calculated according to §307.8(a)(2)(B) of this title.

5 For Segment 1906, the public supply designation does not apply from the confluence of the Medina River in Bexar County to a point 4.8 kilometers (3.0 miles) upstream.

SAN ANTONIO-NUECES COASTAL BASIN		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
2001	Mission River Tidal	PCR	H						4.0	6.5-9.0	35	95
2002	Mission River Above Tidal	PCR	H			850	100	2,000	5.0	6.5-9.0	126	95
2003	Aransas River Tidal	PCR	H						4.0	6.5-9.0	35	95
2004	Aransas River Above Tidal	PCR	H			450	100	1,700	5.0	6.5-9.0	126	95

[1] The indicator bacteria for freshwater is *E. coli* and Enterococci for saltwater.

NUECES RIVER BASIN		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
2101	Nueces River Tidal	PCR	H						4.0	6.5-9.0	35	95
2102	Nueces River Below Lake Corpus Christi	PCR	H	PS		250	250	500	5.0	6.5-9.0	126	91
2103	Lake Corpus Christi	PCR	H	PS		250	250	500	5.0	6.5-9.0	126	93
2104	Nueces River Above Frio River	PCR	H	PS		700	300	1,500	5.0	6.5-9.0	126	90
2105	Nueces River Above Holland Dam	PCR	H	PS		200	200	900	5.0	6.5-9.0	126	90
2106	Nueces/Lower Frio River	PCR	H	PS		285[2]	145[2]	735[2]	5.0	6.5-9.0	126	90
2107	Atascosa River	PCR	H	PS		600	500	1,500	5.0	6.5-9.0	126	90
2108	San Miguel Creek	PCR	H	PS		700	700	2,000	5.0	6.5-9.0	126	95
2109	Leona River [3]	PCR	H	PS/AP[4]		650	500	2,000	5.0	6.5-9.0	126	90
2110	Lower Sabinal River	PCR	H	PS		200	100	700	5.0	6.5-9.0	126	90
2111	Upper Sabinal River	PCR	H	PS/AP[4]		50	75	500	5.0	6.5-9.0	126	90
2112	Upper Nueces River	PCR	H	PS/AP[4]		50	50	400	5.0	6.5-9.0	126	90
2113	Upper Frio River [3]	PCR	E	PS/AP[4]		50	50	400	6.0	6.5-9.0	126	90
2114	Hondo Creek	PCR	H	PS/AP[4]		50	100	400	5.0	6.5-9.0	126	90
2115	Seco Creek	PCR	H	PS/AP[4]		50	70	400	5.0	6.5-9.0	126	90
2116	Choke Canyon Reservoir	PCR	H	PS		250	250	720	5.0	6.5-9.0	126	90
2117	Frio River Above Choke Canyon Reservoir	PCR	H	PS/AP[4]		620	380	1,700	5.0	6.5-9.0	126	90

1 The indicator bacteria for freshwater is *E. coli* and Enterococci for saltwater.

2 For segment 2106, a TDS value of 735 mg/L, a Cl^{-1} value of 285 mg/L, and a SO_4^{-2} value of 145 mg/L will apply for the Frio River portion of the segment from the confluence of the Nueces River upstream to Choke Canyon Dam. A TDS value of 950 mg/L, a Cl^{-1} value of 350 mg/L, and a SO_4^{-2} value 165 mg/L will apply for the Nueces River portion of the segment from a point 100 meters upstream of US 59 in Live Oak County upstream to the confluence of the Frio River. A site-specific conversion factor of 0.58 was used to calculate TDS criteria.

3 The critical low-flow for Segments 2109 and 2113 is calculated according to §307.8(a)(2)(B) of this title.

4 The aquifer protection use applies to the contributing, recharge, and transition zones of the Edwards Aquifer.

NUECES-RIO GRANDE COASTAL BASIN		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
2201	Arroyo Colorado Tidal	PCR	H						4.0	6.5-9.0	35	95
2202	Arroyo Colorado Above Tidal	PCR	I			1,200	1,000	4,000	4.0	6.5-9.0	126	95
2203	Petronila Creek Tidal	PCR	H						4.0	6.5-9.0	35	95
2204	Petronila Creek Above Tidal[2]	PCR	I			1,500	500	4,000	4.0	6.5-9.0	126	95

1 The indicator bacteria for freshwater is *E. coli* and Enterococci for saltwater.

2 High concentrations of chlorides, sulfates and total dissolved solids in Segment 2204 are due to past brine discharges that were halted effective 1/10/87 by order of the Texas Railroad Commission. Water quality is expected to improve as residual brines are flushed from the system. These estimated criteria are subject to modification as improvement in water quality is documented.

RIO GRANDE BASIN		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
2301	Rio Grande Tidal	PCR	E						5.0	6.5-9.0	35	95
2302	Rio Grande Below Falcon Reservoir	PCR	H	PS		270	350	880	5.0	6.5-9.0	126	90
2303	International Falcon Reservoir	PCR	H	PS		200	300	1,000	5.0	6.5-9.0	126	93
2304	Rio Grande Below Amistad Reservoir	PCR	H	PS		200	300	1,000	5.0	6.5-9.0	126	95
2305	International Amistad Reservoir	PCR	H	PS		150	270	800	5.0	6.5-9.0	126	88
2306	Rio Grande Above Amistad Reservoir	PCR	H	PS		300	570	1,550	5.0	6.5-9.0	126	93
2307	Rio Grande Below Riverside Diversion Dam	PCR	H	PS		300	550	1,500	5.0[2]	6.5-9.0	126	93
2308	Rio Grande Below International Dam	NCR	L			250	450	1,400	3.0	6.5-9.0	605	95
2309	Devils River [3]	PCR	E	PS		50	50	300	6.0	6.5-9.0	126	90
2310	Lower Pecos River	PCR	H	PS		1,700	1,000	4,000	5.0	6.5-9.0	126	92
2311	Upper Pecos River	PCR	H			7,000	3,500	15,000	5.0	6.5-9.0	33	92
2312	Red Bluff Reservoir	PCR	H			3,200	2,200	9,400	5.0	6.5-9.0	33	90
2313	San Felipe Creek [3]	PCR	H	PS		50	50	400	5.0	6.5-9.0	126	90
2314	Rio Grande Above International Dam	PCR	H	PS		340	600	1,800	5.0	6.5-9.0	126	92

1 The indicator bacteria for freshwater is *E. coli* and Enterococci for saltwater. The indicator bacteria and alternate indicator for Segments 2311 and 2312 are Enterococci and fecal coliform, respectively.

2 The dissolved oxygen criterion in the upper reach of Segment 2307 (Riverside Diversion Dam to the end of the rectified channel below Fort Quitman) is 3.0 mg/L when headwater flow over the Riverside Diversion Dam is less than 35 ft^3/s.

3 The critical low-flow for Segments 2309 and 2313 is calculated according to §307.8(a)(2)(A) of this title.

BAYS AND ESTUARIES		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
2411	Sabine Pass	PCR	E/O						5.0	6.5-9.0	35/14	95
2412	Sabine Lake	PCR	H/O						4.0	6.5-9.0	35/14	95
2421	Upper Galveston Bay	PCR	H/O						4.0	6.5-9.0	35/14	95
2422	Trinity Bay	PCR	H/O						4.0	6.5-9.0	35/14	95
2423	East Bay	PCR	H/O						4.0	6.5-9.0	35/14	95
2424	West Bay	PCR	H/O						4.0	6.5-9.0	35/14	95
2425	Clear Lake	PCR	H						4.0	6.5-9.0	35	95
2426	Tabbs Bay	PCR	H						4.0	6.5-9.0	35	95
2427	San Jacinto Bay	PCR	H						4.0	6.5-9.0	35	95
2428	Black Duck Bay	PCR	H						4.0	6.5-9.0	35	95
2429	Scott Bay	PCR	H						4.0	6.5-9.0	35	95
2430	Burnet Bay	PCR	H						4.0	6.5-9.0	35	95
2431	Moses Lake	PCR	H						4.0	6.5-9.0	35	95
2432	Chocolate Bay	PCR	H/O						4.0	6.5-9.0	35/14	95
2433	Bastrop Bay/Oyster Lake	PCR	H/O						4.0	6.5-9.0	35/14	95
2434	Christmas Bay	PCR	H/O						4.0	6.5-9.0	35/14	95
2435	Drum Bay	PCR	H/O						4.0	6.5-9.0	35/14	95
2436	Barbours Cut	PCR	H						4.0	6.5-9.0	35	95
2437	Texas City Ship Channel	NCR	H						4.0	6.5-9.0	35	95
2438	Bayport Channel	NCR	H						4.0	6.5-9.0	35	95
2439	Lower Galveston Bay	PCR	H/O						4.0	6.5-9.0	35/14	95
2441	East Matagorda Bay	PCR	E/O						5.0	6.5-9.0	35/14	95
2442	Cedar Lakes	PCR	H/O						4.0	6.5-9.0	35/14	95
2451	Matagorda Bay/Powderhorn Lake	PCR	E/O						5.0	6.5-9.0	35/14	95
2452	Tres Palacios Bay/Turtle Bay	PCR	E/O						5.0	6.5-9.0	35/14	95
2453	Lavaca Bay/Chocolate Bay	PCR	E/O						5.0	6.5-9.0	35/14	95

2454	Cox Bay	PCR	E/O						5.0	6.5-9.0	35/14	95
2455	Keller Bay	PCR	E/O						5.0	6.5-9.0	35/14	95
2456	Carancahua Bay	PCR	E/O						5.0	6.5-9.0	35/14	95
2461	Espiritu Santo Bay	PCR	E/O						5.0	6.5-9.0	35/14	95
2462	San Antonio Bay/Hynes Bay/Guadalupe Bay/Mission Lake	PCR	E/O						5.0	6.5-9.0	35/14	95
2463	Mesquite Bay/Carlos Bay/Ayres Bay	PCR	E/O						5.0	6.5-9.0	35/14	95
2471	Aransas Bay	PCR	E/O						5.0	6.5-9.0	35/14	95
2472	Copano Bay/Port Bay/Mission Bay	PCR	E/O						5.0	6.5-9.0	35/14	95
2473	St. Charles Bay	PCR	E/O						5.0	6.5-9.0	35/14	95
2481	Corpus Christi Bay	PCR	E/O						5.0	6.5-9.0	35/14	95
2482	Nueces Bay[2]	PCR	E/O						5.0	6.5-9.0	35/14	95
2483	Redfish Bay	PCR	E/O						5.0	6.5-9.0	35/14	95
2484	Corpus Christi Inner Harbor	NCR	I						3.0	6.5-9.0	35	95
2485	Oso Bay	PCR	E/O						4.5 [3]	6.5-9.0	35/14	95
2491	Laguna Madre	PCR	E/O						4.5 [3]	6.5-9.0	35/14	95
2492	Baffin Bay/Alazan Bay/Cayo del Grullo/Laguna Salada	PCR	H/O						4.0	6.5-9.0	35/14	95
2493	South Bay	PCR	E/O						5.0	6.5-9.0	35/14	95
2494	Brownsville Ship Channel	NCR	E						5.0	6.5-9.0	35	95

1 The indicator bacteria for recreational suitability in saltwater is Enterococci. Fecal coliform is the indicator bacteria for oyster water use.

2 For assessment purposes only, the acute aquatic life use criteria for zinc in Segment 2482 is 29 µg/L. This is based on the zinc TMDL approved November 1, 2006 and the Implementation Plan approved October 24, 2007.

3 A 24-hour minimum dissolved oxygen criterion of 2.0 mg/L applies to Segments 2485 and 2491.

GULF OF MEXICO		USES				CRITERIA						
Segment No.	SEGMENT NAME	Recreation	Aquatic Life	Domestic Water Supply	Other	Cl^{-1} (mg/L)	SO_4^{-2} (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria[1] #/100ml	Temperature (°F)
2501	Gulf of Mexico	PCR	E/O						5.0	6.5-9.0	35/14	95

[1] The indicator bacteria for recreational suitability in saltwater is Enterococci. Fecal coliform is the indicator bacteria for oyster water use.

(2) Appendix B - Sole-source Surface Drinking Water Supplies:

Figure: 30 TAC §307.10(2)

Appendix B - Sole-source Surface Drinking Water Supplies

The table contains sole-source surface drinking water supplies as provided by the Texas Commission on Environmental Quality Drinking Water Protection Team. This table is current as of March 3, 2009. Where a water body has been identified as a sole-source surface drinking water supply but is not included in this appendix yet, the same level of protection may be applied. If designations of sole-source surface drinking water supplies change, those designations can be changed by laws or regulations that address sole-source surface drinking water supplies. Sole-source protection zones of sole-source surface drinking water supplies are defined in §307.3 of this title (relating to Definitions and Abbreviations).

The listed county names provide the general location of these drinking water supplies. The segment numbers listed below are only provided to help in finding the general location of a sole-source water body and are associated with classified segments as listed in Appendices A and C of this section. Segment numbers in parentheses ( ) indicate that the water body is in close proximity to the segment listed, but not a part of the segment. For a current list and the precise location of a sole-source surface drinking water supply, contact the Texas Commission on Environmental Quality Drinking Water Protection Team.

Water Body Names	County	Segment No.
Lake Texoma	Grayson	0203
Farmers Creek Reservoir (Lake Nocona)	Montague	0210

Water Body Names	County	Segment No.
Lake Arrowhead	Clay	0212
Greenbelt Lake	Donley	0223
Mackenzie Reservoir	Briscoe	0228
Caney Creek Reservoir	Bowie	(0302)
Wright Patman Lake	Cass	0302
Cooper Lake (Jim L. Chapman Lake)	Hopkins	0307
Big Cypress Creek Below Lake O' the Pines	Harrison	0402
Lake O' the Pines	Marion	0403
Lake Cypress Springs	Franklin	0405
Lake Bob Sandlin	Camp, Titus	0408
Toledo Bend Reservoir	Sabine & Shelby	0504
Lake Tawakoni	Hunt, Rains, Van Zandt	0507
Lake Fork Reservoir	Wood	0512
Big Sandy Creek	Upshur	0514
Neches River Below Lake Palestine	Anderson	0604
Lake Palestine	Smith	0605
Lake Livingston	Polk, San Jacinto	0803
Trinity River (riverine portion of Lake Livingston)	Walker	0803
Lake Worth	Tarrant	0807
Eagle Mountain Reservoir	Tarrant	0809
West Fork Trinity River Below Bridgeport Reservoir	Wise	0810
Bridgeport Reservoir	Wise	0811
Houston County Lake	Houston	0813
Bardwell Reservoir	Ellis	0815
Lake Waxahachie	Ellis	0816
Cedar Creek Reservoir	Kaufman, Henderson	0818
Lavon Lake	Collin	0821
Elm Fork Trinity River Below Lewisville Lake	Dallas	0822

Water Body Names	County	Segment No.
Lake Arlington	Tarrant	0828
Lake Weatherford	Parker	0832
Lake Amon G. Carter	Montague	0834
Richland-Chambers Reservoir	Navarro	0836
Joe Pool Lake	Dallas	0838
Lake Granbury	Hood	1205
Possum Kingdom Lake	Palo Pinto	1207
Somerville Lake	Washington	1212
Little River	Milam	1213
Stillhouse Hollow Lake	Bell	1216
Leon River Below Belton Lake	Bell	1219
Belton Lake	Bell	1220
Proctor Lake	Comanche	1222
Leon Reservoir	Eastland	1224
Waco Lake	McLennan	1225
Lake Palo Pinto	Palo Pinto	1230
Hubbard Creek Reservoir	Stephens	1233
Lake Cisco	Eastland	1234
Lake Stamford	Haskell	1235
Granger Lake	Williamson	1247
Lake Limestone	Limestone	1252
Navasota River Below Lake Mexia	Limestone	1253
Aquilla Reservoir	Hill	1254
Lake Austin	Travis	1403
Lake Travis	Burnet & Travis	1404
Marble Falls Lake	Burnet	1405
Lake Lyndon B. Johnson	Burnet & Llano	1406
Inks Lake	Burnet & Llano	1407
Lake Buchanan	Llano	1408
Lake J.B. Thomas	Scurry & Borden	1413

Water Body Names	County	Segment No.
Pedernales River	Blanco	1414
South Llano River (part of Llano River)	Kimble	1415
Llano City Lake (part of Llano River)	Llano	1415
Lake Brownwood	Brown	1418
Lake Coleman	Coleman	1419
O.H. Ivie Reservoir	Concho	1433
Terminal Reservoir	Calhoun	(1802))
Canyon Lake	Comal	1805
Lower San Marcos River	Caldwell	1808
Lake Corpus Christi	San Patricio	2103
Rio Grande Below Falcon Reservoir	Starr	2302
International Falcon Reservoir	Starr & Zapata	2303
Rio Grande Below Amistad Reservoir	Maverick & Webb	2304

(3) Appendix C - Segment Descriptions:

Figure: 30 TAC §307.10(3)

Appendix C - Segment Descriptions

The following descriptions define the geographic extent of the state's classified segments. Boundaries of bay and estuary segments have not been precisely defined. Segment boundaries are illustrated in the document entitled *The Atlas of Texas Surface Waters* (GI-316) as amended and published by the commission.

SEGMENT	DESCRIPTION
0101	Canadian River Below Lake Meredith - from the Oklahoma State Line in Hemphill County to Sanford Dam in Hutchinson County
0102	Lake Meredith - from Sanford Dam in Hutchinson County to a point immediately upstream of the confluence of Camp Creek in Potter County, up to the normal pool elevation of 2936.5 feet (impounds Canadian River)
0103	Canadian River Above Lake Meredith - from a point immediately upstream of the confluence of Camp Creek in Potter County to the New Mexico State Line in Oldham County
0104	Wolf Creek - from the Oklahoma State Line in Lipscomb County to a point 2.0 kilometers (1.2 miles) upstream of FM 3045 in Ochiltree County
0105	Rita Blanca Lake - from Rita Blanca Dam in Hartley County up to the normal pool elevation of 3860 feet (impounds Rita Blanca Creek)
0201	Lower Red River - from the Arkansas State Line in Bowie County to the Arkansas-Oklahoma State Line in Bowie County
0202	Red River Below Lake Texoma - from the Arkansas-Oklahoma State Line in Bowie County to Denison Dam in Grayson County
0203	Lake Texoma - from Denison Dam in Grayson County to a point immediately upstream of the confluence of Sycamore Creek in Cooke County, up to the normal pool elevation of 617 feet (impounds Red River)
0204	Red River Above Lake Texoma - from a point immediately upstream of the confluence of Sycamore Creek in Cooke County to the confluence of the Wichita River in Clay County
0205	Red River Below Pease River - from the confluence of the Wichita River in Clay County to the confluence of the Pease River in Wilbarger County
0206	Red River Above Pease River - from the confluence of the Pease River in Wilbarger County to a point immediately upstream of the confluence of Buck Creek in Hardeman County
0207	Lower Prairie Dog Town Fork Red River - from a point immediately upstream of the confluence of Buck Creek in Hardeman County to a point 100 meters (110 yards) upstream of the confluence of Salt Fork Creek in Armstrong County

0208 Lake Crook - from Lake Crook Dam in Lamar County up to the normal pool elevation of 476 feet (impounds Pine Creek)

0209 Pat Mayse Lake - from Pat Mayse Dam in Lamar County up to the normal pool elevation of 451 feet (impounds Sanders Creek)

0210 Farmers Creek Reservoir (also known as Lake Nocona) - from Farmers Creek Dam in Montague County up to the normal pool elevation of 827.5 feet (impounds Farmers Creek)

0211 Little Wichita River - from the confluence with the Red River in Clay County to Lake Arrowhead Dam in Clay County

0212 Lake Arrowhead - from Lake Arrowhead Dam in Clay County up to the normal pool elevation of 926 feet (impounds the Little Wichita River)

0213 Lake Kickapoo - from Kickapoo Dam in Archer County up to the normal pool elevation of 1045 feet (impounds North Fork Little Wichita River)

0214 Wichita River Below Diversion Lake - from the confluence with the Red River in Clay County to Diversion Dam in Archer County

0215 Diversion Lake - from Diversion Dam in Archer County to a point 1.5 kilometers (0.9 mile) downstream of the confluence of Cottonwood Creek in Baylor County, up to the normal pool elevation of 1052 feet (impounds Wichita River)

0216 Wichita River Below Lake Kemp - from a point 1.5 kilometers (0.9 mile) downstream of the confluence of Cottonwood Creek in Baylor County to Lake Kemp Dam in Baylor County

0217 Lake Kemp - from Lake Kemp Dam in Baylor County to a point 9.4 kilometers (5.8 miles) downstream of the confluence of Crooked Creek in Baylor County, up to the normal pool elevation of 1144 feet (impounds Wichita River)

0218 Wichita/North Fork Wichita River - from a point 9.4 kilometers (5.8 miles) downstream of the confluence of Crooked Creek in Baylor County to a point 8.5 kilometers (5.3 miles) downstream of the most upstream crossing of FM 193 in Dickens County

0219 Lake Wichita - from Lake Wichita Dam in Wichita County up to the normal pool elevation of 980.5 feet (impounds Holliday Creek)

0220 Upper Pease/North Fork Pease River - from the confluence with Canal Creek at the Hardeman-Foard county line to 6.0 kilometers (3.7 miles) upstream of the confluence of Dick Moore Canyon in Floyd County

0221 Middle Fork Pease River - from the confluence with the North Fork Pease River in Cottle County to the confluence of Boggy Creek and Mott Creek in Motley County

0222 Salt Fork Red River - from the Oklahoma State Line in Collingsworth County to Greenbelt Dam in Donley County

0223 Greenbelt Lake - from Greenbelt Dam in Donley County up to the normal pool elevation of 2664 feet (impounds Salt Fork Red River)

0224 North Fork Red River - from the Oklahoma State Line in Wheeler County to a point 4.0 kilometers (2.5 miles) upstream of FM 2300 in Gray County

0225 McKinney Bayou - from the Arkansas State Line in Bowie County to a point 100 meters (110 yards) upstream of the most upstream crossing of FM 1397 near King Lake in Bowie County

0226 South Fork Wichita River - from the confluence with the North Fork Wichita River in Knox County to a point 15.0 kilometers (9.3 miles) upstream of US 82 in Dickens County

0227 South Fork Pease River - from the confluence with the Middle Fork Pease River in Cottle County to the confluence of Wolf Creek and Rustler Creek in Motley County

0228 Mackenzie Reservoir - from Mackenzie Dam in Briscoe County up to the normal pool elevation of 3100 feet (impounds Tule Creek)

0229 Upper Prairie Dog Town Fork Red River - from a point 100 meters (110 yards) upstream of the confluence of Salt Fork Creek in Armstrong County to Lake Tanglewood Dam in Randall County

0230 Pease River - from the confluence with the Red River in Wilbarger County upstream to the confluence with Canal Creek at the Hardeman-Foard county line

0301 Sulphur River Below Wright Patman Lake - from the Arkansas State Line in Bowie/Cass County to Wright Patman Lake Dam in Bowie/Cass County

0302 Wright Patman Lake - from Wright Patman Lake Dam in Bowie/Cass County to a point 1.5 kilometers (0.9 mile) downstream of Bassett Creek in Bowie/Cass County, up to the normal pool elevation of 226.4 feet (impounds the Sulphur River)

0303 Sulphur/South Sulphur River - from a point 1.5 kilometers (0.9 miles) downstream of Bassett Creek in Bowie/Cass County to Jim L. Chapman Dam (formerly Cooper Lake dam) in Delta/Hopkins County

0304 Days Creek - from the Arkansas State Line in Bowie County to the confluence of Swampoodle Creek and Nix Creek in Bowie County

0305 North Sulphur River - from the confluence with the South Sulphur River in Lamar County to a point 6.7 kilometers (4.2 miles) upstream of FM 68 in Fannin County

0306 Upper South Sulphur River - from a point 1.0 kilometers (0.7 mile) upstream of SH 71 in Delta/Hopkins County to SH 78 in Fannin County

0307 Jim L. Chapman Lake (formerly Cooper Lake) - from Jim L. Chapman Dam in Delta/Hopkins County to a point 1.0 kilometers (0.7 mile) upstream of SH 71 on the South Sulphur River arm in Delta/Hopkins County and 300 meters (275 yards) below the confluence of Barnett Creek on the Middle Sulphur River arm in Delta County, up to a conservation pool elevation of 440 feet (impounds the Middle Sulphur/South Sulphur River)

0401 Caddo Lake - from the Louisiana State Line in Harrison/Marion County to a point 12.3 kilometers (7.6 miles) downstream of SH 43 in Harrison/Marion County, up to the normal pool elevation of 168.5 feet (impounds Big Cypress Creek)

0402 Big Cypress Creek Below Lake O' the Pines - from a point 12.3 kilometers (7.6 miles) downstream of SH 43 in Harrison/Marion County to Ferrell's Bridge Dam in Marion County

0403 Lake O' the Pines - from Ferrell's Bridge Dam in Marion County to a point 1.0 kilometer (0.6 mile) downstream of US 259 in Morris/Upshur County, up to the normal pool elevation of 228.5 feet (impounds Big Cypress Creek)

0404 Big Cypress Creek Below Lake Bob Sandlin - from a point 1.0 kilometer (0.6 mile) downstream of US 259 in Morris/Upshur County to Fort Sherman Dam in Camp/Titus County

0405 Lake Cypress Springs - from Franklin County Dam in Franklin County up to the normal pool elevation of 378 feet (impounds Big Cypress Creek)

0406 Black Bayou - from the Louisiana State Line in Cass County to FM 96 in Cass County

0407 James' Bayou - from the Louisiana State Line in Marion County to Club Lake Road northwest of Linden in Cass County

0408 Lake Bob Sandlin - from Fort Sherman Dam in Camp/Titus County to Franklin County Dam in Franklin County, up to the normal pool elevation of 337.5 feet (impounds Big Cypress Creek)

0409 Little Cypress Bayou (Creek) - from the confluence with Big Cypress Creek in Harrison County to a point 1.0 kilometer (0.6 mile) upstream of FM 2088 in Wood County

0410 Black Cypress Bayou (Creek) - from the confluence with Big Cypress Creek in Marion County to the confluence with Kelly Creek in Cass County

0501 Sabine River Tidal - from the confluence with Sabine Lake in Orange County to West Bluff in Orange County

0502 Sabine River Above Tidal - from West Bluff in Orange County to the confluence with Caney Creek in Newton County

0503 Sabine River Above Caney Creek - from a point immediately upstream of the confluence with Caney Creek in Newton County up to Toledo Bend Dam in Newton County

0504 Toledo Bend Reservoir - from Toledo Bend Dam in Newton County to a point immediately upstream of the confluence of Murvaul Creek in Panola County, up to the normal pool elevation of 172 feet (impounds Sabine River)

0505 Sabine River Above Toledo Bend Reservoir - from a point immediately upstream of the confluence of Murvaul Creek in Panola County to a point 100 meters (110 yards) downstream of US 271 in Gregg County

0506 Sabine River Below Lake Tawakoni - from a point 100 meters (110 yards) downstream of US 271 in Gregg County to Iron Bridge Dam in Rains County

0507 Lake Tawakoni - from Iron Bridge Dam in Rains County up to the normal pool elevation of 437.5 feet (impounds Sabine River)

0508 Adams Bayou Tidal - from the confluence with the Sabine River in Orange County to a point 1.1 kilometers (0.7 mile) upstream of IH 10 in Orange County

0509 Murvaul Lake - from Murvaul Dam in Panola County up to the normal pool elevation of 265.3 feet (impounds Murvaul Bayou)

0510 Lake Cherokee - from Cherokee Dam in Gregg/Rusk County up to the normal pool elevation of 280 feet (impounds Cherokee Bayou)

0511 Cow Bayou Tidal - from the confluence with the Sabine River in Orange County to a point 4.8 kilometers (3.0 miles) upstream of IH 10 in Orange County

0512 Lake Fork Reservoir - from Lake Fork Dam in Wood County up to the normal pool elevation of 403 feet (impounds Lake Fork Creek)

0513 Big Cow Creek - from the confluence with the Sabine River in Newton County to a point 4.6 kilometers (2.9 miles) upstream of R 255 in Newton County

0514 Big Sandy Creek - from the confluence with the Sabine River in Upshur County to a point 2.6 kilometers (1.6 miles) upstream of SH 11 in Hopkins County

0515 Lake Fork Creek - from the confluence with the Sabine River in Wood County to Lake Fork Dam in Wood County

0601 Neches River Tidal - from the confluence with Sabine Lake in Orange County to the Neches River Saltwater Barrier, which is at a point 0.8 kilometers (0.5 miles) downstream of the confluence of Pine Island Bayou, in Orange County

0602 Neches River Below B. A. Steinhagen Lake - from the Neches River Saltwater Barrier, which is at a point 0.8 kilometers (0.5 miles) downstream of the confluence of Pine Island Bayou, in Orange County to Town Bluff Dam in Jasper/Tyler County

0603 B. A. Steinhagen Lake - from Town Bluff Dam in Jasper/Tyler County to a point immediately upstream of the confluence of Hopson Mill Creek on the Neches River Arm in Jasper/Tyler County and to a point immediately upstream of the confluence of Indian Creek on the Angelina River Arm in Jasper County, up to the normal pool elevation of 83 feet (impounds Neches River)

0604 Neches River Below Lake Palestine - from a point immediately upstream of the confluence of Hopson Mill Creek in Jasper/Tyler County to Blackburn Crossing Dam in Anderson/Cherokee County

0605 Lake Palestine - from Blackburn Crossing Dam in Anderson/Cherokee County to a point 6.7 kilometers (4.2 miles) downstream of FM 279 in Henderson/Smith County, up to the normal pool elevation of 345 feet (impounds Neches River)

0606 Neches River Above Lake Palestine - from a point 6.7 kilometers (4.2 miles) downstream of FM 279 in Henderson/Smith County to Rhine Lake Dam in Van Zandt County before it was breached in 2001

0607 Pine Island Bayou - from the confluence with the Neches River in Hardin/Jefferson County to FM 787 in Hardin County

0608 Village Creek - from the confluence with the Neches River in Hardin County to the confluence of Big Sandy Creek and Kimball Creek in Hardin County

0609 Angelina River Below Sam Rayburn Reservoir - from a point immediately upstream of the confluence of Indian Creek in Jasper County to Sam Rayburn Dam in Jasper County

0610 Sam Rayburn Reservoir - from Sam Rayburn Dam in Jasper County to a point 5.6 kilometers (3.5 miles) upstream of Marion's Ferry on the Angelina River Arm in Angelina/Nacogdoches County and to a point 3.9 kilometers (2.4 miles) downstream of Curry Creek on the Attoyac Bayou Arm in Nacogdoches/San Augustine County, up to the normal pool elevation of 164.4 feet (except on the Angelina River Arm) (impounds Angelina River and Attoyac Bayou)

0611 Angelina River Above Sam Rayburn Reservoir - from the aqueduct crossing 1.0 kilometer (0.6 mile) upstream of the confluence of Paper Mill Creek in Angelina/Nacogdoches County to the confluence of Barnhardt Creek and Mill Creek at FM 225 in Rusk County

0612 Attoyac Bayou - from a point 3.9 kilometers (2.4 miles) downstream of Curry Creek in Nacogdoches/San Augustine County to FM 95 in Rusk County

0613 Lake Tyler/Lake Tyler East - from Whitehouse Dam and Mud Creek Dam in Smith County up to the normal pool elevation of 375.38 feet (impounds Prairie Creek and Mud Creek)

0614 Lake Jacksonville - from Buckner Dam in Cherokee County up to the normal pool elevation of 422 feet (impounds Gum Creek)

0615 Angelina River/Sam Rayburn Reservoir - the riverine portion of Sam Rayburn Reservoir from a point 5.6 kilometers (3.5 miles) upstream of Marion's Ferry to the aqueduct crossing 1.0 kilometer (0.6 mile) upstream of the confluence of Paper Mill Creek

0701 Taylor Bayou Above Tidal - from the salt water lock 7.7 kilometers (4.8 miles) downstream of SH 73 in Jefferson County to the Lower Neches Valley Authority Canal in Jefferson County

0702 Intracoastal Waterway Tidal - from the confluence with Galveston Bay at Port Bolivar in Galveston County to the confluence with the Sabine-Neches/Port Arthur Canal in Jefferson County (including Taylor Bayou Tidal from the confluence with the Intracoastal Waterway up to the salt water lock 7.7 kilometers (4.8 miles) downstream of SH 73 in Jefferson County)

0703 Sabine-Neches Canal Tidal - from the confluence with Sabine Pass at the southern tip of Pleasure Island in Jefferson County to the Sabine Lake seawall at the northern tip of Pleasure Island in Jefferson County

0704 Hillebrandt Bayou - from the confluence of Taylor Bayou in Jefferson County to a point 100 meters (110 yards) upstream of SH 124 in Jefferson County

0801 Trinity River Tidal - from the confluence with Anahuac Channel in Chambers County to a point 3.1 kilometers (1.9 miles) downstream of US 90 in Liberty County

0802 Trinity River Below Lake Livingston - from a point 3.1 kilometers (1.9 miles) downstream of US 90 in Liberty County to Livingston Dam in Polk/San Jacinto County

0803 Lake Livingston - from Livingston Dam in Polk/San Jacinto County to a point 1.8 kilometers (1.1 miles) upstream of Boggy Creek in Houston/Leon County, up to the normal pool elevation of 131 feet (impounds Trinity River)

0804 Trinity River Above Lake Livingston - from a point 1.8 kilometers (1.1 miles) upstream of Boggy Creek in Houston/Leon County to a point immediately upstream of the confluence of the Cedar Creek Reservoir discharge canal in Henderson/Navarro County

0805 Upper Trinity River - from a point immediately upstream of the confluence of the Cedar Creek Reservoir discharge canal in Henderson/Navarro County to a point immediately upstream of the confluence of Elm Fork Trinity River in Dallas County

0806 West Fork Trinity River Below Lake Worth - from a point immediately upstream of the confluence of Village Creek in Tarrant County to Lake Worth Dam in Tarrant County

0807 Lake Worth - from Lake Worth Dam in Tarrant County to a point 4.0 kilometers (2.5 miles) downstream of Eagle Mountain Dam in Tarrant County, up to the normal pool elevation of 594 feet (impounds West Fork Trinity River)

0808 West Fork Trinity River Below Eagle Mountain Reservoir - from a point 4.0 kilometers (2.5 miles) downstream of Eagle Mountain Dam in Tarrant County to Eagle Mountain Dam in Tarrant County

0809 Eagle Mountain Reservoir - from Eagle Mountain Dam in Tarrant County to a point 0.6 kilometer (0.4 mile) downstream of the confluence of Oates Branch in Wise County up to the normal pool elevation of 649.1 feet (impounds West Fork Trinity River)

0810 West Fork Trinity River Below Bridgeport Reservoir - from a point 0.6 kilometer (0.4 mile) downstream of the confluence of Oates Branch in Wise County to Bridgeport Dam in Wise County

0811 Bridgeport Reservoir - from Bridgeport Dam in Wise County to a point immediately upstream of the confluence of Bear Hollow in Jack County, up to the normal pool elevation of 836 feet (impounds West Fork Trinity River)

0812 West Fork Trinity River Above Bridgeport Reservoir - from a point immediately upstream of the confluence of Bear Hollow in Jack County to SH 79 in Archer County

0813 Houston County Lake - from Houston County Dam in Houston County up to the normal pool elevation of 260 feet (impounds Little Elkhart Creek)

0814 Chambers Creek Above Richland-Chambers Reservoir - from a point 4.0 kilometers (2.5 miles) downstream of Tupelo Branch in Navarro County to the confluence of North Fork Chambers Creek and South Fork Chambers Creek

0815 Bardwell Reservoir - from Bardwell Dam in Ellis County up to the normal pool elevation of 421 feet (impounds Waxahachie Creek)

0816 Lake Waxahachie - from South Prong Dam in Ellis County up to the normal pool elevation of 531.5 feet (impounds South Prong Creek)

0817 Navarro Mills Lake - from Navarro Mills Dam in Navarro County up to the normal pool elevation of 424.5 feet (impounds Richland Creek)

0818 Cedar Creek Reservoir - from Joe B. Hoggsett Dam in Henderson County up to the normal pool elevation of 322 feet (impounds Cedar Creek)

0819 East Fork Trinity River - from the confluence with the Trinity River in Kaufman County to Rockwall-Forney Dam in Kaufman County

0820 Lake Ray Hubbard - from Rockwall-Forney Dam in Kaufman County to Lavon Dam in Collin County, up to the normal pool elevation of 435.5 feet (impounds East Fork Trinity River)

0821 Lavon Lake - from Lavon Dam in Collin County up to the normal pool elevation of 492 feet (impounds East Fork Trinity River)

0822 Elm Fork Trinity River Below Lewisville Lake - from the confluence with the West Fork Trinity River in Dallas County to Lewisville Dam in Denton County

0823 Lewisville Lake - from Lewisville Dam in Denton County to a point 200 meters (220 yards) upstream of FM 428 in Denton County, up to the normal pool elevation of 522 feet (impounds Elm Fork Trinity River)

0824 Elm Fork Trinity River Above Ray Roberts Lake - from a point 9.5 kilometers (5.9 miles) downstream of the confluence of Pecan Creek in Cooke County to US 82 in Montague County

0825 Denton Creek - from the confluence with the Elm Fork Trinity River in Dallas County to Grapevine Dam in Tarrant County

0826 Grapevine Lake - from Grapevine Dam in Tarrant County up to the normal pool elevation of 535 feet (impounds Denton Creek)

0827 White Rock Lake - from White Rock Dam in Dallas County up to the normal pool elevation of 458 feet (impounds White Rock Creek)

0828 Lake Arlington - from Arlington Dam in Tarrant County up to the normal pool elevation of 550 feet (impounds Village Creek)

0829 Clear Fork Trinity River Below Benbrook Lake - from the confluence with the West Fork Trinity River in Tarrant County to Benbrook Dam in Tarrant County

0830 Benbrook Lake - from Benbrook Dam in Tarrant County to a point 200 meters (220 yards) downstream of US 377 in Tarrant County, up to the normal pool elevation of 694 feet (impounds Clear Fork Trinity River)

0831 Clear Fork Trinity River Below Lake Weatherford - from a point 200 meters (220 yards) downstream of US 377 in Tarrant County to Weatherford Dam in Parker County

0832 Lake Weatherford - from Weatherford Dam in Parker County to a point 3.1 kilometers (1.9 miles) upstream of FM 730 in Parker County, up to the normal pool elevation of 896 feet (impounds Clear Fork Trinity River)

0833 Clear Fork Trinity River Above Lake Weatherford - from a point 3.1 kilometers (1.9 miles) upstream of FM 730 in Parker County to the confluence with Strickland Creek approximately 8 kilometers (5 miles) upstream of FM 51 in Parker County

0834 Lake Amon G. Carter - from Amon G. Carter Dam in Montague County up to the normal pool elevation of 920 feet (impounds Big Sandy Creek)

0835 Richland Creek Below Richland-Chambers Reservoir - from the confluence with the Trinity River in Freestone County to Richland-Chambers Dam in Freestone County

0836 Richland-Chambers Reservoir - from Richland-Chambers Dam in Freestone County to a point immediately upstream of the confluence of Pin Oak Creek on the Richland Creek Arm in Navarro County and to a point 4.0 kilometers (2.5 miles) downstream of Tupelo Branch on the Chambers Creek Arm in Navarro County, up to the normal pool elevation of 315 feet (impounds Richland and Chambers Creeks)

0837 Richland Creek Above Richland-Chambers Reservoir - from a point immediately upstream of the confluence of Pin Oak Creek in Navarro County to Navarro Mills Dam in Navarro County

0838 Joe Pool Lake - from Joe Pool Dam in Dallas County up to the normal pool elevation of 522 feet (impounds Mountain Creek)

0839 Elm Fork Trinity River Below Ray Roberts Lake - from a point 200 meters (220 yards) upstream of FM 428 in Denton County to Ray Roberts Dam in Denton County

0840 Ray Roberts Lake - from Ray Roberts Dam in Denton County to a point 9.5 kilometers (5.9 miles) downstream of the confluence of Pecan Creek in Cooke County, up to the normal pool elevation of 632.5 feet (impounds Elm Fork Trinity River)

0841 Lower West Fork Trinity River - from a point immediately upstream of the confluence of the Elm Fork Trinity River in Dallas County to a point immediately upstream of the confluence of Village Creek in Tarrant County

0901 Cedar Bayou Tidal - from the confluence with Galveston Bay 1.0 kilometer (0.6 mile) downstream of Tri-City Beach Road in Chambers County to a point 2.2 kilometers (1.4 miles) upstream of IH 10 in Chambers/Harris County

0902 Cedar Bayou Above Tidal - from a point 2.2 kilometers (1.4 miles) upstream of IH 10 in Chambers/Harris County to a point 7.4 kilometers (4.6 miles) upstream of FM 1960 in Liberty County

1001 San Jacinto River Tidal - from a point 100 meters (110 yards) downstream of IH 10 in Harris County to Lake Houston Dam in Harris County

1002 Lake Houston - from Lake Houston Dam in Harris County to the confluence of Spring Creek on the West Fork San Jacinto Arm in Harris/Montgomery County and to the confluence of Caney Creek on the East Fork San Jacinto Arm in Harris County, up to the normal pool elevation of 44.5 feet (impounds San Jacinto River)

1003 East Fork San Jacinto River - from the confluence of Caney Creek in Harris County to US 190 in Walker County

1004 West Fork San Jacinto River - from the confluence of Spring Creek in Harris/Montgomery County to Conroe Dam in Montgomery County

1005 Houston Ship Channel/San Jacinto River Tidal - from the confluence with Galveston Bay at Morgan's Point in Harris/Chambers County to a point 100 meters (110 yards) downstream of IH 10 in Harris County

1006 Houston Ship Channel Tidal - from the confluence with the San Jacinto River in Harris County to a point immediately upstream of Greens Bayou in Harris County, including tidal portions of tributaries

1007 Houston Ship Channel/Buffalo Bayou Tidal - from a point immediately upstream of Greens Bayou in Harris County to a point 100 meters (110 yards) upstream of US 59 in Harris County, including tidal portions of tributaries

1008 Spring Creek - from the confluence with the West Fork San Jacinto River in Harris/Montgomery County to the confluence with Kickapoo Creek in Harris/Waller County

1009 Cypress Creek - from the confluence with Spring Creek in Harris County to the confluence of Snake Creek and Mound Creek in Waller County

1010 Caney Creek - from the confluence with the East Fork San Jacinto River in Harris County to SH 150 in Walker County

1011 Peach Creek - from the confluence with Caney Creek in Montgomery County to SH 150 in Walker County

1012 Lake Conroe - from Conroe Dam in Montgomery County up to the normal pool elevation of 201 feet (impounds West Fork San Jacinto River)

1013 Buffalo Bayou Tidal - from a point 100 meters (110 yards) upstream of US 59 in Harris County to a point 400 meters (440 yards) upstream of Shepherd Drive in Harris County including the tidal portion of tributaries

1014 Buffalo Bayou Above Tidal - from a point 400 meters (440 yards) upstream of Shepherd Drive in Harris County to SH 6 in Harris County

1015 Lake Creek - from the confluence with the West Fork San Jacinto River in Montgomery County to a point 4.0 kilometers (2.5 miles) upstream of SH 30 in Grimes County

1016 Greens Bayou Above Tidal - from a point 0.7 kilometers (0.4 mile) upstream of the confluence of Halls Bayou in Harris County, to a point 100 meters (110 yards) upstream of FM 1960 in Harris County

1017 Whiteoak Bayou Above Tidal - from a point immediately upstream of the confluence of Little Whiteoak Bayou in Harris County to a point 3.0 kilometers (1.9 miles) upstream of FM 1960 in Harris County

1101 Clear Creek Tidal - from the confluence with Clear Lake at a point 3.2 kilometers (2.0 miles) downstream of El Camino Real in Galveston/Harris County to a point 100 meters (110 yards) upstream of FM 528 in Galveston/Harris County

1102 Clear Creek Above Tidal - from a point 100 meters (110 yards) upstream of FM 528 in Galveston/Harris County to Rouen Road in Fort Bend County

1103 Dickinson Bayou Tidal - from the confluence with Dickinson Bay 2.1 kilometers (1.3 miles) downstream of SH 146 in Galveston County to a point 4.0 kilometers (2.5 miles) downstream of FM 517 in Galveston County

1104 Dickinson Bayou Above Tidal - from a point 4.0 kilometers (2.5 miles) downstream of FM 517 in Galveston County to FM 528 in Galveston County

1105 Bastrop Bayou Tidal - from the confluence with Bastrop Bay 1.1 kilometers (0.7 mile) downstream of the Intracoastal Waterway in Brazoria County to a point 8.6 km (5.3 miles) upstream of Business 288 at Lake Jackson in Brazoria County

1107 Chocolate Bayou Tidal - from the confluence with Chocolate Bay 1.4 kilometers (0.9 mile) downstream of FM 2004 in Brazoria County to the salt water barrier (immediately downstream of the Chocolate Bayou Rice Canal) 5.2 kilometers (3.2 miles) downstream of SH 35 in Brazoria County

1108 Chocolate Bayou Above Tidal - from the salt water barrier (immediately downstream of the Chocolate Bayou Rice Canal) 5.2 kilometers (3.2 miles) downstream of SH 35 in Brazoria County to SH 6 in Brazoria County

1109 Oyster Creek Tidal - from the confluence with the Intracoastal Waterway in Brazoria County to a point 100 meters (110 yards) upstream of FM 2004 in Brazoria County

1110 Oyster Creek Above Tidal - from a point 100 meters (110 yards) upstream of FM 2004 in Brazoria County to the Brazos River Authority diversion dam 1.8 kilometers (1.1 miles) upstream of SH 6 in Fort Bend County

1111 Old Brazos River Channel Tidal - from the confluence with the Intracoastal Waterway in Brazoria County to SH 288 in Brazoria County

1113 Armand Bayou Tidal - from the confluence with Clear Lake (at the NASA Road 1 bridge) in Harris County to a point 0.8 kilometer (0.5 mile) downstream of Genoa-Red Bluff Road in Pasadena in Harris County (includes Mud Lake)

1201 Brazos River Tidal - from the confluence with the Gulf of Mexico in Brazoria County to a point 100 meters (110 yards) upstream of SH 332 in Brazoria County

1202 Brazos River Below Navasota River - from a point 100 meters (110 yards) upstream of SH 332 in Brazoria County to a point immediately upstream of the confluence of the Navasota River in Grimes County

1203 Whitney Lake - from Whitney Dam in Bosque/Hill County to a point immediately upstream of the confluence of Camp Creek on the Brazos River Arm in Bosque/Johnson County and to a point immediately upstream of the confluence of Rock Creek on the Nolan River Arm in Hill County, up to the normal pool elevation of 533 feet (impounds Brazos River)

1204 Brazos River Below Lake Granbury - from a point immediately upstream of the confluence of Camp Creek in Bosque/Johnson County to DeCordova Bend Dam in Hood County

1205 Lake Granbury - from DeCordova Bend Dam in Hood County to a point 100 meters (110 yards) upstream of FM 2580 in Parker County, up to the normal pool elevation of 693 feet (impounds Brazos River)

1206 Brazos River Below Possum Kingdom Lake - from a point 100 meters (110 yards) upstream of FM 2580 in Parker County to Morris Sheppard Dam in Palo Pinto County

1207 Possum Kingdom Lake - from Morris Sheppard Dam in Palo Pinto County to a point immediately upstream of the confluence of Cove Creek at Salem Bend in Young County, up to the normal pool elevation of 1000 feet (impounds Brazos River)

1208 Brazos River Above Possum Kingdom Lake - from a point immediately upstream of the confluence of Cove Creek at Salem Bend in Young County to the confluence of the Double Mountain Fork Brazos River and the Salt Fork Brazos River in Stonewall County

1209 Navasota River Below Lake Limestone - from the confluence with the Brazos River in Grimes County to Sterling C. Robertson Dam in Leon/Robertson County

1210 Lake Mexia - from Bistone Dam in Limestone County up to the normal pool elevation of 448.3 feet (impounds Navasota River)

1211 Yegua Creek - from the confluence with the Brazos River in Burleson/Washington County to Somerville Dam in Burleson/Washington County

1212 Somerville Lake - from Somerville Dam in Burleson/Washington County up to the normal pool elevation of 238 feet (impounds Yegua Creek)

1213 Little River - from the confluence with the Brazos River in Milam County to the confluence of the Leon River and the Lampasas River in Bell County

1214 San Gabriel River - from the confluence with the Little River in Milam County to Granger Lake Dam in Williamson County

1215 Lampasas River Below Stillhouse Hollow Lake - from the confluence with the Leon River in Bell County to Stillhouse Hollow Dam in Bell County

1216 Stillhouse Hollow Lake - from Stillhouse Hollow Dam in Bell County to a point immediately upstream of the confluence of Rock Creek in Bell County, up to the normal pool elevation of 622 feet (impounds Lampasas River)

1217 Lampasas River Above Stillhouse Hollow Lake - from a point immediately upstream of the confluence of Rock Creek in Bell County to FM 2005 in Hamilton County

1218 Nolan Creek/South Nolan Creek - from the confluence with the Leon River in Bell County to a point 100 meters (110 yards) upstream of the most upstream crossing of US 190 near the intersection of US 190 and Loop 172 in Bell County

1219 Leon River Below Belton Lake - from the confluence with the Lampasas River in Bell County to Belton Dam in Bell County

1220 Belton Lake - from Belton Dam in Bell County to a point 100 meters (110 yards) upstream of FM 236 in Coryell County, up to the normal pool elevation of 594 feet (impounds Leon River)

1221 Leon River Below Proctor Lake - from a point 100 meters (110 yards) upstream of FM 236 in Coryell County to Proctor Dam in Comanche County

1222 Proctor Lake - from Proctor Dam in Comanche County to a point immediately upstream of the confluence of Mill Branch in Comanche County, up to the normal pool elevation of 1162 feet (impounds Leon River)

1223 Leon River Below Leon Reservoir - from a point immediately upstream of the confluence of Mill Branch in Comanche County to Leon Dam in Eastland County

1224 Leon Reservoir - from Leon Dam in Eastland County up to the normal pool elevation of 1375 feet (impounds Leon River)

1225 Waco Lake - from Waco Lake Dam in McLennan County to a point 0.51 kilometers (0.32 miles) downstream from Caldwell Crossing on the North Bosque River Arm in McLennan County; and on the South Bosque River Arm in McLennan County, to a point on the Middle Bosque River 1.64 kilometers (1.02 miles) upstream of the confluence of the Middle Bosque and South Bosque rivers and to a point on the South Bosque River, 1.35 kilometers (0.84 miles) upstream of the confluence of the Middle Bosque and South Bosque rivers, up to the normal pool elevation of 462 feet (impounds the Bosque River)

1226 North Bosque River - from a point 0.51 kilometers (0.32 miles) downstream of Caldwell Crossing in McLennan County to a point immediately upstream of the confluence of Indian Creek in Erath County

1227 Nolan River - from a point immediately upstream of the confluence of Rock Creek in Hill County to Cleburne Dam in Johnson County

1228 Lake Pat Cleburne - from Cleburne Dam in Johnson County up to the normal pool elevation of 733.5 feet (impounds Nolan River)

1229 Paluxy River/North Paluxy River - from the confluence with the Brazos River in Somervell County to the confluence of Rough Creek in Erath County

1230 Lake Palo Pinto - from Palo Pinto Creek Dam in Palo Pinto County up to the normal pool elevation of 867.3 feet (impounds Palo Pinto Creek)

1231 Lake Graham - from Graham Dam and Eddleman Dam in Young County up to the normal pool elevation of 1075 feet (impounds Salt Creek and Flint Creek)

1232 Clear Fork Brazos River - from the confluence with the Brazos River in Young County to the most upstream crossing of US 180 in Fisher County

1233 Hubbard Creek Reservoir - from Hubbard Creek Dam in Stephens County up to the normal pool elevation of 1183 feet (impounds Hubbard Creek)

1234 Lake Cisco - from Williamson Dam in Eastland County up to the normal pool elevation of 1496 feet (impounds Sandy Creek)

1235 Lake Stamford - from Stamford Dam in Haskell County up to the normal pool elevation of 1416.8 feet (impounds Paint Creek)

1236 Fort Phantom Hill Reservoir - from Fort Phantom Hill Dam in Jones County up to the normal pool elevation of 1635.9 feet (impounds Elm Creek)

1237 Lake Sweetwater - from Sweetwater Dam in Nolan County up to the normal pool elevation of 2116.5 feet (impounds Bitter Creek)

1238 Salt Fork Brazos River - from the confluence of the Double Mountain Fork Brazos River in Stonewall County to the most upstream crossing of SH 207 in Crosby County

1239 White River - from the confluence with the Salt Fork Brazos River in Kent County to White River Dam in Crosby County

1240 White River Lake - from White River Dam in Crosby County up to the normal pool elevation of 2372.2 feet (impounds White River)

1241 Double Mountain Fork Brazos River - from the confluence with the Salt Fork Brazos River in Stonewall County to the confluence of the North Fork Double Mountain Fork Brazos River in Kent County

1242 Brazos River Above Navasota River - from a point immediately upstream of the confluence of the Navasota River in Brazos/Grimes/Washington County to the low water dam forming Lake Brazos in McLennan County

1243 Salado Creek - from the confluence with the Lampasas River in Bell County to the confluence of North Salado Creek and South Salado Creek in Williamson County

1244 Brushy Creek - from the confluence with the San Gabriel River in Milam County to the confluence of South Brushy Creek in Williamson County

1245 Upper Oyster Creek - from Steep Bank Creek/Brazos River confluence in Fort Bend County to pumping station on Jones Creek at Brazos River in Fort Bend County (includes portions of Steep Bank Creek, Flat Bank Creek, Flat Bank Creek Diversion Channel, and Jones Creek)

1246 Middle Bosque/South Bosque River - for the Middle Bosque River from a point 1.64 kilometers (1.02 miles) from the confluence with the South Bosque River in McLennan County to the confluence of Cave Creek and Middle Bosque Creek in Coryell County and for the South Bosque River from a point 1.35 kilometers (0.84 miles) from the confluence of the Middle Bosque River in McLennan County to FM 2671 in McLennan County

1247 Granger Lake - from Granger Dam in Williamson County to a point 1.9 kilometers (1.2 miles) downstream of SH 95 in Williamson County, up to the normal pool elevation of 504 feet (impounds San Gabriel River)

1248 San Gabriel/North Fork San Gabriel River - from a point 1.9 kilometers (1.2 miles) downstream of SH 95 in Williamson County to North San Gabriel Dam in Williamson County

1249 Lake Georgetown - from North San Gabriel Dam in Williamson County to a point 6.6 kilometers (4.1 miles) downstream of US 183 in Williamson County, up to the normal pool elevation of 791 feet (impounds North Fork San Gabriel River)

1250 South Fork San Gabriel River - from the confluence with the North Fork San Gabriel River in Williamson County to the most upstream crossing of SH 29 in Burnet County

1251 North Fork San Gabriel River - from a point 6.6 kilometers (4.1 miles) downstream of US 183 in Williamson County to the confluence of Allen Branch in Burnet County

1252 Lake Limestone - from Sterling C. Robertson Dam in Leon/Robertson County to a point 2.3 kilometers (1.4 miles) downstream of SH 164 in Limestone County, up to the normal pool elevation of 363 feet (impounds Navasota River)

1253 Navasota River Below Lake Mexia - from a point 2.3 kilometers (1.4 miles) downstream of SH 164 in Limestone County to Bistone Dam in Limestone County

1254 Aquilla Reservoir - from Aquilla Dam in Hill County up to the normal pool elevation of 537.5 feet (impounds Aquilla Creek)

1255 Upper North Bosque River - from a point immediately upstream of the confluence of Indian Creek in Erath County to the confluence of the North Fork and South Fork of the North Bosque River in Erath County

1256 Brazos River/Lake Brazos - from the low water dam forming Lake Brazos in McLennan County to a point immediately upstream of the confluence of Aquilla Creek in McLennan County (includes the Bosque River arm to the Waco Lake Dam)

1257 Brazos River Below Whitney Lake - from a point immediately upstream of the confluence of Aquilla Creek in McLennan County to Whitney Dam in Bosque/Hill County

1301 San Bernard River Tidal - from the confluence with the Intracoastal Waterway in Brazoria County to a point 3.2 kilometers (2.0 miles) upstream of SH 35 in Brazoria County

1302 San Bernard River Above Tidal - from a point 3.2 kilometers (2.0 miles) upstream of SH 35 in Brazoria County to the county road southeast of New Ulm in Austin County

1304 Caney Creek Tidal - from the confluence with the Intracoastal Waterway in Matagorda County to a point 1.9 kilometers (1.2 miles) upstream of the confluence of Linnville Bayou in Matagorda County

1305 Caney Creek Above Tidal - from a point 1.9 kilometers (1.2 miles) upstream of the confluence of Linnville Bayou in Matagorda County to the confluence of Water Hole Creek in Matagorda County

1401 Colorado River Tidal - from the confluence with the Gulf of Mexico in Matagorda County to a point 2.1 kilometers (1.3 miles) downstream of the Missouri-Pacific Railroad in Matagorda County

1402 Colorado River Below La Grange - from a point 2.1 kilometers (1.3 miles) downstream of the Missouri-Pacific Railroad in Matagorda County to a point 100 meters (110 yards) downstream of Business SH 71 at La Grange in Fayette County

1403 Lake Austin - from Tom Miller Dam in Travis County to Mansfield Dam in Travis County, up to the normal pool elevation of 492.8 feet (impounds Colorado River)

1404 Lake Travis - from Mansfield Dam in Travis County to Max Starcke Dam on the Colorado River Arm in Burnet County and to a point immediately upstream of the confluence of Fall Creek on the Pedernales River Arm in Travis County, up to the normal pool elevation of 681 feet (impounds Colorado River)

1405 Marble Falls Lake - from Max Starcke Dam in Burnet County to Alvin Wirtz Dam in Burnet County, up to the normal pool elevation of 738 feet (impounds Colorado River)

1406 Lake Lyndon B. Johnson - from Alvin Wirtz Dam in Burnet County to Roy Inks Dam on the Colorado River Arm in Burnet/Llano County and to a point immediately upstream of the confluence of Honey Creek on the Llano River Arm in Llano County, up to the normal pool elevation of 825.6 feet (impounds Colorado River)

1407 Inks Lake - from Roy Inks Dam in Burnet/Llano County to Buchanan Dam in Burnet/Llano County, up to the normal pool elevation of 888 feet (impounds Colorado River)

1408 Lake Buchanan - from Buchanan Dam in Burnet/Llano County to a point immediately upstream of the confluence of Yancey Creek, up to the normal pool elevation of 1020.5 feet (impounds Colorado River)

1409 Colorado River Above Lake Buchanan - from a point immediately upstream of the confluence of Yancey Creek in Burnet/San Saba/Lampasas County to the confluence of the San Saba River in San Saba County

1410 Colorado River Below O. H. Ivie Reservoir - from the confluence of the San Saba River in San Saba County to S. W. Freese Dam in Coleman/Concho County

1411 E. V. Spence Reservoir - from Robert Lee Dam in Coke County to a point immediately upstream of the confluence of Little Silver Creek in Coke County, up to the normal pool elevation of 1898 feet (impounds Colorado River)

1412 Colorado River Below Lake J. B. Thomas - from a point immediately upstream of the confluence of Little Silver Creek in Coke County to Colorado River Dam in Scurry County

1413 Lake J. B. Thomas - from Colorado River Dam in Scurry County up to the normal pool elevation of 2258 feet (impounds Colorado River)

1414 Pedernales River - from a point immediately upstream of the confluence of Fall Creek in Travis County to FM 385 in Kimble County

1415 Llano River - from a point immediately upstream of the confluence of Honey Creek in Llano County to FM 864 on the North Llano River in Sutton County and to SH 55 on the South Llano River in Edwards County

1416 San Saba River - from the confluence with the Colorado River in San Saba County to the confluence of the North Valley Prong and the Middle Valley Prong in Schleicher County

1417 Lower Pecan Bayou - from the confluence with the Colorado River in Mills County to a point immediately upstream of the confluence of Mackinally Creek in Brown County

1418 Lake Brownwood - from Lake Brownwood Dam in Brown County to a point 100 meters (110 yards) upstream of FM 2559 in Brown County, up to the normal pool elevation of 1425 feet (impounds Pecan Bayou)

1419 Lake Coleman - from Coleman Dam in Coleman County up to the normal pool elevation of 1717.5 feet (impounds Jim Ned Creek)

1420 Pecan Bayou Above Lake Brownwood - from a point 100 meters (110 yards) upstream of FM 2559 in Brown County to the confluence of the North Prong Pecan Bayou and the South Prong Pecan Bayou in Callahan County

1421 Concho River - from a point 2.0 kilometers (1.2 miles) upstream of the confluence of Fuzzy Creek in Concho County to San Angelo Dam on the North Concho River in Tom Green County and to Nasworthy Dam on the South Concho River in Tom Green County

1422 Lake Nasworthy - from Nasworthy Dam in Tom Green County to Twin Buttes Dam in Tom Green County, up to the normal pool elevation of 1872.2 feet (impounds South Concho River)

1423 Twin Buttes Reservoir - from Twin Buttes Dam in Tom Green County to a point 100 meters (110 yards) upstream of US 67 on the Middle Concho River Arm in Tom Green County and to a point 4.0 kilometers (2.5 miles) downstream of FM 2335 on the South Concho River Arm in Tom Green County, up to the normal pool elevation of 1940.2 feet (impounds the Middle Concho River and the South Concho River)

1424 Middle Concho/South Concho River - from a point 4.0 kilometers (2.5 miles) downstream of FM 2335 in Tom Green County to the confluence of Bois D'Arc Draw on the South Concho River in Tom Green County and from a point 100 meters (110 yards) upstream of US 67 in Tom Green County to the confluence of Three Bluff Draw and Indian Creek on the Middle Concho River in Reagan County

1425 O. C. Fisher Lake - from San Angelo Dam in Tom Green County up to the normal pool elevation of 1908 feet (impounds North Concho River)

1426 Colorado River Below E. V. Spence Reservoir - from a point 3.7 kilometers (2.3 miles) downstream of the confluence of Mustang Creek in Runnels County to Robert Lee Dam in Coke County

1427 Onion Creek - from the confluence with the Colorado River in Travis County to the most upstream crossing of FM 165 in Blanco County

1428 Colorado River Below Lady Bird Lake (formerly Town Lake) - from a point 100 meters (110 yards) upstream of FM 969 near Utley in Bastrop County to Longhorn Dam in Travis County

1429 Lady Bird Lake (formerly Town Lake) - from Longhorn Dam in Travis County to Tom Miller Dam in Travis County, up to the normal pool elevation of 429 feet (impounds Colorado River)

1430 Barton Creek - from the confluence with Lady Bird Lake (formerly Town Lake) in Travis County to FM 12 in Hays County

1431 Mid Pecan Bayou - from a point immediately upstream of the confluence of Mackinally Creek in Brown County to a point immediately upstream of Willis Creek in Brown County

1432 Upper Pecan Bayou - from a point immediately upstream of the confluence of Willis Creek in Brown County to Lake Brownwood Dam in Brown County

1433 O. H. Ivie Reservoir - from S. W. Freese Dam in Coleman/Concho County to a point 3.7 kilometers (2.3 miles) downstream of the confluence of Mustang Creek on the Colorado River Arm in Runnels County and to a point 2.0 kilometers (1.2 miles) upstream of the confluence of

Fuzzy Creek on the Concho River Arm in Concho County, up to the conservation pool level of 1551.5 feet (impounds Colorado River)

1434 Colorado River Above La Grange - from a point 100 meters (110 yards) downstream of Business SH 71 at La Grange in Fayette County to a point 100 meters (110 yards) upstream of FM 969 near Utley in Bastrop County

1501 Tres Palacios Creek Tidal - from the confluence with Tres Palacios Bay in Matagorda County to a point 1.6 kilometers (1.0 mile) upstream of the confluence of Wilson Creek in Matagorda County

1502 Tres Palacios Creek Above Tidal - from a point 1.6 kilometers (1.0 mile) upstream of the confluence of Wilson Creek in Matagorda County to State Route 525 (Old US 59) in Wharton County

1601 Lavaca River Tidal - from the confluence with Lavaca Bay in Calhoun/Jackson County to a point 8.6 kilometers (5.3 miles) downstream of US 59 in Jackson County

1602 Lavaca River Above Tidal - from a point 8.6 kilometers (5.3 miles) downstream of US 59 in Jackson County to the confluence of Campbell Branch west of Hallettsville in Lavaca County

1603 Navidad River Tidal - from the confluence with the Lavaca River in Jackson County to Palmetto Bend Dam in Jackson County

1604 Lake Texana - from Palmetto Bend Dam in Jackson County to a point 100 meters (110 yards) downstream of FM 530 in Jackson County, up to the normal pool elevation of 44 feet (impounds Navidad River)

1605 Navidad River Above Lake Texana - from a point 100 meters (110 yards) downstream of FM 530 in Jackson County to the confluence of the East Navidad River and the West Navidad River in Colorado/Lavaca County

1701 Victoria Barge Canal Tidal - from the confluence with San Antonio Bay in Calhoun County to Victoria Turning Basin in Victoria County

1801 Guadalupe River Tidal - from the confluence with Guadalupe Bay in Calhoun/Refugio County to the Guadalupe-Blanco River Authority Salt Water Barrier 0.7 kilometer (0.4 mile) downstream of the confluence of the San Antonio River in Calhoun/Refugio County

1802 Guadalupe River Below San Antonio River - from the Guadalupe-Blanco River Authority Salt Water Barrier 0.7 kilometer (0.4 mile) downstream of the confluence of the San Antonio River in Calhoun/Refugio County to a point immediately upstream of the confluence of the San Antonio River in Calhoun/Refugio/Victoria County

1803 Guadalupe River Below San Marcos River - from a point immediately upstream of the confluence of the San Antonio River in Calhoun/Refugio/Victoria County to a point immediately upstream of the confluence of the San Marcos River in Gonzales County

1804 Guadalupe River Below Comal River - from a point immediately upstream of the confluence of the San Marcos River in Gonzales County to a point immediately upstream of the confluence of the Comal River in Comal County

1805 Canyon Lake - from Canyon Dam in Comal County to a point 2.7 kilometers (1.7 miles) downstream of Rebecca Creek Road in Comal County, up to the normal pool elevation of 909 feet (impounds Guadalupe River)

1806 Guadalupe River Above Canyon Lake - from a point 2.7 kilometers (1.7 miles) downstream of Rebecca Creek Road in Comal County to the confluence of the North Fork Guadalupe River and the South Fork Guadalupe River in Kerr County

1807 Coleto Creek - from the confluence with the Guadalupe River in Victoria County to the confluence of Fifteenmile Creek and Twelvemile Creek in Goliad/Victoria County, including Coleto Creek Reservoir

1808 Lower San Marcos River - from the confluence with the Guadalupe River in Gonzales County to a point 1.0 kilometer (0.6 mile) upstream of the confluence of the Blanco River in Hays County

1809 Lower Blanco River - from the confluence with the San Marcos River in Hays County to a point 0.3 kilometer (0.2 mile) upstream of Limekiln Road in Hays County

1810 Plum Creek - from the confluence with the San Marcos River in Caldwell County to FM 2770 in Hays County

1811 Comal River - from the confluence with the Guadalupe River in Comal County to Klingemann Street at New Braunfels in Comal County

1812 Guadalupe River Below Canyon Dam - from a point immediately upstream of the confluence of the Comal River in Comal County to Canyon Dam in Comal County

1813 Upper Blanco River - from a point 0.3 kilometer (0.2 mile) upstream of Limekiln Road in Hays County to the confluence of Meier Creek in Kendall County

1814 Upper San Marcos River - from a point 1.0 kilometer (0.6 mile) upstream of the confluence of the Blanco River in Hays County to a point 0.7 kilometer (0.4 mile) upstream of Loop 82 in San Marcos in Hays County (includes Spring Lake)

1815 Cypress Creek - from the confluence with the Blanco River in Hays County to a point 6.4 kilometers (4.0 miles) upstream of the most upstream unnamed county road crossing in Hays County

1816 Johnson Creek - from the confluence with the Guadalupe River in Kerr County to a point 1.2 kilometers (0.7 mile) upstream of the most upstream crossing of SH 41 in Kerr County

1817 North Fork Guadalupe River - from the confluence with the Guadalupe River in Kerr County to a point 18.2 kilometers (11.3 miles) upstream of Boneyard Draw in Kerr County

1818 South Fork Guadalupe River - from the confluence with the Guadalupe River in Kerr County to a point 4.8 kilometers (3.0 miles) upstream of FM 187 in Kerr County

1901 Lower San Antonio River - from the confluence with the Guadalupe River in Refugio/Victoria County to a point 600 meters (660 yards) downstream of FM 791 at Mays Crossing near Falls City in Karnes County

1902 Lower Cibolo Creek - from the confluence with the San Antonio River in Karnes County to a point 100 meters (110 yards) downstream of IH 10 in Bexar/Guadalupe County

1903 Medina River Below Medina Diversion Lake - from the confluence with the San Antonio River in Bexar County to Medina Diversion Dam in Medina County

1904 Medina Lake - from Medina Lake Dam in Medina County to a point immediately upstream of the confluence of Red Bluff Creek in Bandera County, up to the normal pool elevation of 1072 feet (impounds Medina River)

1905 Medina River Above Medina Lake - from a point immediately upstream of the confluence of Red Bluff Creek in Bandera County to the confluence of the North Prong Medina River and the West Prong Medina River in Bandera County

1906 Lower Leon Creek - from the confluence with the Medina River in Bexar County to a point 100 meters (110 yards) upstream of SH 16 northwest of San Antonio in Bexar County

1907 Upper Leon Creek - from a point 100 meters (110 yards) upstream of SH 16 northwest of San Antonio in Bexar County to a point 9.0 kilometers (5.6 miles) upstream of Scenic Loop Road north of Helotes in Bexar County

1908 Upper Cibolo Creek - from the Missouri-Pacific Railroad bridge west of Bracken in Comal County to a point 1.5 kilometers (0.9 mile) upstream of the confluence of Champee Springs in Kendall County

1909 Medina Diversion Lake - from Medina Diversion Dam in Medina County to Medina Lake Dam in Medina County, up to the normal pool elevation of 926.5 feet (impounds Medina River)

1910 Salado Creek - from the confluence with the San Antonio River in Bexar County to the confluence of Beitel Creek in Bexar County

1911 Upper San Antonio River - from a point 600 meters (660 yards) downstream of FM 791 at Mays Crossing near Falls City in Karnes County to a point 100 meters (110 yards) upstream of Hildebrand Avenue at San Antonio in Bexar County

1912 Medio Creek - from the confluence with the Medina River in Bexar County to a point 1.0 kilometer (0.6 mile) upstream of IH 35 at San Antonio in Bexar County

1913 Mid Cibolo Creek - from a point 100 meters (110 yards) downstream of IH 10 in Bexar/Guadalupe County to the Missouri-Pacific Railroad bridge west of Bracken in Comal County

2001 Mission River Tidal - from the confluence with Mission Bay in Refugio County to a point 7.4 kilometers (4.6 miles) downstream of US 77 in Refugio County

2002 Mission River Above Tidal - from a point 7.4 kilometers (4.6 miles) downstream of US 77 in Refugio County to the confluence of Blanco Creek and Medio Creek in Refugio County

2003 Aransas River Tidal - from the confluence with Copano Bay in Aransas/Refugio County to a point 1.6 kilometers (1.0 mile) upstream of US 77 in Refugio/San Patricio County

2004 Aransas River Above Tidal - from a point 1.6 kilometers (1.0 mile) upstream of US 77 in Refugio/San Patricio County to the confluence of Poesta Creek and Aransas Creek in Bee County

2101 Nueces River Tidal - from the confluence with Nueces Bay in Nueces County to Calallen Dam 1.7 kilometers (1.1 miles) upstream of US 77/IH 37 in Nueces/San Patricio County

2102 Nueces River Below Lake Corpus Christi - from Calallen Dam 1.7 kilometers (1.1 miles) upstream of US 77/IH 37 in Nueces/San Patricio County to Wesley E. Seale Dam in Jim Wells/San Patricio County

2103 Lake Corpus Christi - from Wesley E. Seale Dam in Jim Wells/San Patricio County to a point 100 meters (110 yards) upstream of US 59 in Live Oak County, up to the normal pool elevation of 94.0 feet (impounds Nueces River)

2104 Nueces River Above Frio River - from the confluence of the Frio River in Live Oak County to Holland Dam in LaSalle County

2105 Nueces River Above Holland Dam - from Holland Dam in LaSalle County to a point 100 meters (110 yards) upstream of FM 1025 in Zavala County

2106 Nueces/Lower Frio River - from a point 100 meters (110 yards) upstream of US 59 in Live Oak County to Choke Canyon Dam in Live Oak County

2107 Atascosa River - from the confluence with the Frio River in Live Oak County to the confluence of the West Prong Atascosa River and the North Prong Atascosa River in Atascosa County

2108 San Miguel Creek - from a point immediately upstream of the confluence of Mustang Branch in McMullen County to the confluence of San Francisco Perez Creek and Chacon Creek in Frio County

2109 Leona River - from the confluence with the Frio River in Frio County to US 83 in Uvalde County

2110 Lower Sabinal River - from the confluence with the Frio River in Uvalde County to a point 100 meters (110 yards) upstream of SH 127 in Uvalde County

2111 Upper Sabinal River - from a point 100 meters (110 yards) upstream of SH 127 in Uvalde County to the most upstream crossing of FM 187 in Bandera County

2112 Upper Nueces River - from a point 100 meters (110 yards) upstream of FM 1025 in Zavala County to the confluence of the East Prong Nueces River and Hackberry Creek in Edwards County

2113 Upper Frio River - from a point 100 meters (110 yards) upstream of US 90 in Uvalde County to the confluence of the West Frio River and the East Frio River in Real County

2114 Hondo Creek - from the confluence with the Frio River in Frio County to FM 470 in Bandera County

2115 Seco Creek - from the confluence with Hondo Creek in Frio County to the confluence of West Seco Creek in Bandera County

2116 Choke Canyon Reservoir - from Choke Canyon Dam in Live Oak County to a point 4.2 kilometers (2.6 miles) downstream of SH 16 on the Frio River Arm in McMullen County and to a point 100 meters (110 yards) upstream of the confluence of Mustang Branch on the San Miguel Creek Arm in McMullen County, up to the normal pool elevation of 220.5 feet (impounds Frio River)

2117 Frio River Above Choke Canyon Reservoir - from a point 4.2 kilometers (2.6 miles) downstream of SH 16 in McMullen County to a point 100 meters (110 yards) upstream of US 90 in Uvalde County

2201 Arroyo Colorado Tidal - from the confluence with Laguna Madre in Cameron/Willacy County to a point 100 meters (110 yards) downstream of Cemetery Road south of Port Harlingen in Cameron County

2202 Arroyo Colorado Above Tidal - from a point 100 meters (110 yards) downstream of Cemetery Road south of Port Harlingen in Cameron County to FM 2062 in Hidalgo County (includes La Cruz Resaca, Llano Grande Lake, and the Main Floodway)

2203 Petronila Creek Tidal - from the confluence of Chiltipin Creek in Kleberg County to a point 1 kilometer (0.6 mile) upstream of private road crossing near Laureles Ranch in Kleberg County

2204 Petronila Creek Above Tidal - from a point 1 kilometer (0.6 mile) upstream of private road crossing near Laureles Ranch in Kleberg County to the confluence of Agua Dulce and Banquete Creeks in Nueces County

2301 Rio Grande Tidal - from the confluence with the Gulf of Mexico in Cameron County to a point 10.8 kilometers (6.7 miles) downstream of the International Bridge in Cameron County

2302 Rio Grande Below Falcon Reservoir - from a point 10.8 kilometers (6.7 miles) downstream of the International Bridge in Cameron County to Falcon Dam in Starr County

2303 International Falcon Reservoir - from Falcon Dam in Starr County to the confluence of the Arroyo El Salado (Mexico) in Zapata County, up to the normal pool elevation of 301.1 feet (impounds Rio Grande)

2304 Rio Grande Below Amistad Reservoir - from the confluence of the Arroyo El Salado (Mexico) in Zapata County to Amistad Dam in Val Verde County

2305 International Amistad Reservoir - from Amistad Dam in Val Verde County to a point 1.8 kilometers (1.1 miles) downstream of the confluence of Ramsey Canyon on the Rio Grande Arm in Val Verde County and to a point 0.7 kilometer (0.4 mile) downstream of the confluence of Painted Canyon on the Pecos River Arm in Val Verde County and to a point 0.6 kilometer (0.4 mile) downstream of the confluence of Little Satan Creek on the Devils River Arm in Val Verde County, up to the normal pool elevation of 1117 feet (impounds Rio Grande)

2306 Rio Grande Above Amistad Reservoir - from a point 1.8 kilometers (1.1 miles) downstream of the confluence of Ramsey Canyon in Val Verde County to the confluence of the Rio Conchos (Mexico) in Presidio County

2307 Rio Grande Below Riverside Diversion Dam - from the confluence of the Rio Conchos (Mexico) in Presidio County to Riverside Diversion Dam in El Paso County

2308 Rio Grande Below International Dam - from the Riverside Diversion Dam in El Paso County to International Dam in El Paso County

2309 Devils River - from a point 0.6 kilometer (0.4 mile) downstream of the confluence of Little Satan Creek in Val Verde County to the confluence of Dry Devils River in Sutton County

2310 Lower Pecos River - from a point 0.7 kilometer (0.4 mile) downstream of the confluence of Painted Canyon in Val Verde County to a point immediately upstream of the confluence of Independence Creek in Crockett/Terrell County

2311 Upper Pecos River - from a point immediately upstream of the confluence of Independence Creek in Crockett/Terrell County to Red Bluff Dam in Loving/Reeves County

2312 Red Bluff Reservoir - from Red Bluff Dam in Loving/Reeves County to the New Mexico State Line in Loving/Reeves County, up to the normal pool elevation of 2842 feet (impounds Pecos River)

2313 San Felipe Creek - from the confluence with the Rio Grande in Val Verde County to a point 4.0 kilometers (2.5 miles) upstream of US 90 in Val Verde County

2314 Rio Grande Above International Dam - from International Dam in El Paso County to the New Mexico State Line in El Paso County

2411 Sabine Pass * - from the end of the jetties at the Gulf of Mexico to SH 82

2412 Sabine Lake *

2421 Upper Galveston Bay *

2422 Trinity Bay *

2423 East Bay *

2424 West Bay *

2425 Clear Lake *

2426 Tabbs Bay *

2427 San Jacinto Bay *

2428 Black Duck Bay *

2429 Scott Bay *

2430 Burnet Bay *

2431 Moses Lake *

2432 Chocolate Bay *

2433 Bastrop Bay/Oyster Lake *

2434 Christmas Bay *

2435 Drum Bay *

2436 Barbours Cut *

2437 Texas City Ship Channel *

2438 Bayport Channel *

2439 Lower Galveston Bay *

2441 East Matagorda Bay *

2442 Cedar Lakes *

2451 Matagorda Bay/Powderhorn Lake *

2452 Tres Palacios Bay/Turtle Bay *

2453 Lavaca Bay/Chocolate Bay *

2454 Cox Bay *

2455 Keller Bay *

2456 Carancahua Bay *

2461 Espiritu Santo Bay *

2462 San Antonio Bay/Hynes Bay/Guadalupe Bay/Mission Lake *

2463 Mesquite Bay/Carlos Bay/Ayres Bay *

2471 Aransas Bay *

2472 Copano Bay/Port Bay/Mission Bay *

2473 St. Charles Bay *

2481 Corpus Christi Bay *

2482 Nueces Bay *

2483 Redfish Bay *

2484 Corpus Christi Inner Harbor * - from US 181 to Viola Turning Basin

2485 Oso Bay *

2491 Laguna Madre *

2492 Baffin Bay/Alazan Bay/Cayo del Grullo/Laguna Salada *

2493 South Bay *

2494 Brownsville Ship Channel *

2501 Gulf of Mexico * - from the Gulf shoreline to the limit of Texas' jurisdiction between Sabine Pass and the mouth of the Rio Grande

* The segment boundaries are considered to be the mean high tide line.

(4) Appendix D - Site-specific Uses and Criteria for Unclassified Water Bodies:

Figure: 30 TAC §307.10(4)

Appendix D - Site-specific Uses and Criteria for Unclassified Water Bodies

Water bodies listed in this appendix are those waters that are not designated segments listed in Appendix A of this title of this section. The water bodies are included because a regulatory action has been taken or is anticipated to be taken by the commission or because sufficient information exists to provide an aquatic life use designation. The segment numbers listed refer to the designated segments as defined in Appendix C of this section. The county listed is the primary location where the use designation is. The water body is a tributary within the drainage basin of the listed segment. The aquatic life use (ALU) designations and dissolved oxygen (DO) criterion are the same as defined in §307.4(h) and §307.7(b)(3)(A) of this title (relating to General Criteria and Site-Specific Uses and Criteria, respectively). The description defines the specific area where the aquatic life use designation pertains. Recreational uses as defined in §307.4(j) of this title are assigned to the waters listed. Generally, there is not sufficient data on these waters to develop other conventional criteria and those criteria are the same as for the segment where the water body is located unless further site-specific information is obtained.

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
0101	Carson, Hutchinson	Dixon Creek	I	4.0[1]	Intermittent stream with perennial pools from the confluence with the Canadian River in Hutchinson County upstream to the confluence with the Middle, West, and East Dixon creeks in Carson County

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
0101	Hutchinson	Rock Creek	L	3.0	Perennial stream from the confluence with the Canadian River upstream to SH 136 in the City of Borger
0201	Bowie	Jones Creek	I	4.0	Intermittent stream with perennial pools from the confluence with Barkman Creek upstream to the western most crossing of FM 1398 near the City of Hooks
0202	Fannin	Bois d'Arc Creek	I	4.0	Perennial stream from the confluence with Sandy Creek upstream to the confluence with Pace Creek
0202	Grayson	Corneliason Creek	L	3.0	Intermittent stream with perennial pools from the confluence with Mill Creek upstream to FM 1897 in the City of Bells
0202	Lamar	Pine Creek	I	4.0	Perennial and intermittent stream from the confluence with the Red River upstream to the dam forming Lake Crook
0203	Grayson	Big Mineral Creek	I	4.0	Intermittent stream with perennial pools from the normal pool elevation of Lake Texoma upstream to the confluence with an unnamed second order tributary on North Branch 2.4 km upstream of US 377 and upstream to the confluence with an unnamed second order tributary on South Branch 1.1 km upstream of US 377 north of the City of Whitesboro
0203	Grayson	Little Mineral Creek	I	4.0	Intermittent stream with perennial pools from the normal pool elevation of Lake Texoma upstream to the confluence with an unnamed tributary approximately 0.7 km upstream of Reeves Road
0204	Montague	Ritchie Creek	L	3.0	Intermittent stream with perennial pools from the confluence with Salt Creek upstream to SH 59 east of the City of Montague
0302	Bowie	Big Creek	I	4.0	Intermittent stream with perennial pools from FM 2149 upstream to 1.3 km south of US 82 southeast of the City of New Boston
0302	Bowie	Anderson Creek	I	4.0	Intermittent stream with perennial pools from the confluence with an unnamed tributary approximately 4.2 km downstream of SH 992 upstream to the confluence with an unnamed tributary approximately 2.2 km upstream of CR 4320
0303	Franklin, Hopkins, Morris, Titus	White Oak Creek	I	4.0	Perennial stream from the confluence with the Sulphur River north of the City of Naples in Morris County upstream approximately 0.26 km upstream of FM 900 in northeast Hopkins County

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
0303	Red River	Morrison Branch	I	4.0	Intermittent stream with perennial pools from the confluence with Little Mustang Creek upstream to approximately 0.7 km south of FM 909 southeast of the City of Bogata
0304	Bowie	Wagner Creek	I	4.0	Perennial stream from the confluence with Days Creek upstream to a point 1.5 km upstream of IH 30
0400	Harrison	Cross Bayou	H	5.0	Perennial stream from the Texas/Louisiana border upstream to the headwaters approximately 0.2 km south of the cemetery at Stricklen Springs
0401	Harrison	Harrison Bayou	H	≤5.0[2]	Intermittent stream with perennial pools from the confluence with Caddo Lake within the Caddo Lake National Wildlife Refuge (also known as the Longhorn Ordinance Works facility) east of the City of Karnack upstream to FM 1998 east of the City of Marshall
0402	Cass	Hughes Creek	H	5.0	Perennial stream from the confluence with Black Cypress Creek upstream to the confluence with an unnamed first order tributary approximately 0.5 km downstream of FM 250
0403	Upshur	Meddlin Creek	H	5.0	Perennial stream from the confluence with Lake O' the Pines in Marion County upstream to US 259 in Upshur County
0404	Camp	Dry Creek	I	4.0	Perennial stream from the confluence with Big Cypress Creek upstream to the confluence of Mile Branch and Little Creek
0404	Camp	Sparks Branch	I	4.0	Perennial stream from the confluence with Dry Creek upstream to US 271
0404	Morris	Brutons Creek	I	4.0	Perennial stream from the headwaters of Ellison Reservoir upstream to SH 49 near the City of Daingerfield
0404	Morris	Unnamed tributary of Okry Creek	I	4.0	Perennial stream from the confluence with Okry Creek upstream to a point 0.26 km upstream of US 259 south of the City of Omaha
0404	Titus	Hart Creek	H	5.0	Perennial stream from the confluence with Big Cypress Creek upstream to 0.2 km upstream of FM 1402
0404	Titus	Tankersley Creek	H	5.0	Perennial stream from the confluence with Big Cypress Creek upstream to the confluence with an unnamed tributary 250 meters upstream of IH 30

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
0407	Cass	Beach Creek	I	4.0	Perennial stream from Iron Ore Lake upstream to the confluence with an unnamed tributary 0.48 km upstream of Hwy 59
0410	Cass	Black Cypress Creek/Bayou	H	≤5.0[2]	Intermittent stream with perennial pools from the confluence with Kelly Creek upstream to FM 250 north of the City of Hughes Springs
0502	Orange	County Relief Ditch	L	3.0	Perennial ditch from the confluence with the Sabine River upstream to SH 87
0502	Newton	Caney Creek	H	5.0	Perennial stream from the Sabine River upstream to the confluence with Martin Branch
0502	Newton	Unnamed tributary of Dempsey Creek	I	4.0	Perennial stream from the confluence with Dempsey Creek to a headwater swamp near the City of Bon Weir
0504	Shelby	Unnamed tributary of Flat Fork Creek	L	3.0	Intermittent stream with perennial pools from the confluence of an unnamed tributary 1.0 km upstream of FM 1645 upstream to 0.4 km upstream of SH 87
0504	Shelby	Prairie Creek	H	5.0	Perennial stream from the confluence with Cedar Creek upstream to SH 7
0505	Gregg	Grace Creek	I	4.0	Perennial stream from the confluence with the Sabine River upstream to FM 1844
0505	Gregg	Hawkins Creek	L	3.0	Perennial stream from the confluence with the Sabine River upstream to FM 2605 in the City of White Oak
0505	Gregg	Rocky Creek	H	5.0	Intermittent stream with perennial pools from the confluence with Prairie Creek upstream to the confluence with an unnamed first order tributary 0.6 km west of SH 135
0505	Gregg	Rabbit Creek	I	4.0[3]	Perennial stream from the confluence with the Sabine River in Gregg County upstream to the confluence with Little Rabbit Creek in Rusk County
0505	Gregg	Campbells Creek	I	4.0	Intermittent stream with perennial pools from the confluence with Moody Creek upstream to the dam forming Lake Devernia
0505	Harrison	Eightmile Creek	I	4.0[4]	Perennial stream from the confluence with the Sabine River upstream to SH 31
0505	Harrison	Mason Creek	L	3.0	Intermittent stream with perennial pools from the confluence with a swamp 3.1 km downstream of IH 20 upstream to 0.2 km above IH 20 near the intersection with FM 968

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
0505	Harrison	Wards Creek	I	4.0	Intermittent stream with perennial pools from the confluence with Sewell Creek upstream to the confluence with an unnamed second order tributary approximately 0.6 km upstream of US 80
0505	Panola	Wall Branch	I	4.0	Perennial stream from the confluence with Irons Bayou upstream to the confluence with an unnamed tributary 400 meters upstream of the City of Beckville WWTP
0505	Rusk	Little Rabbit Creek	I	4.0	Perennial stream from the confluence with Rabbit Creek upstream to the confluence with an unnamed tributary 0.15 km upstream of FM 850 west of the City of Overton
0505	Rusk	Unnamed tributary of Sabine River	I	4.0	Perennial stream from the confluence with the Sabine River upstream 0.7 km above the Santa Fe Railroad crossing in the City of Easton
0506	Rains	Sandy Creek	H	5.0	Perennial stream from the confluence of Glade Creek upstream to the confluence of an unnamed tributary 0.3 km below SH 19
0506	Smith	Wiggins Creek	H	5.0	Perennial stream from the confluence with Harris Creek upstream to the dam impounding an unnamed reservoir located approximately 3.8 km upstream of FM 2015 northeast of the City of Tyler
0506	Smith	Mill Creek	H	5.0	Spring-fed perennial stream from the confluence with the Old Sabine River Channel upstream to the spring source at or above FM 2710
0506	VanZandt	Giladon Creek	I	4.0	Perennial stream from the confluence with Mill Creek upstream to the confluence with an unnamed tributary approximately 0.4 km upstream of FM 859 near the City of Edgewood
0506	Van Zandt	Unnamed tributary of Grand Saline Creek	I	3.0[5]	Perennial stream from the confluence with Grand Saline Creek upstream to the confluence with an unnamed tributary approximately 0.2 km downstream of US 80
0506	Wood	Unnamed tributary of Sabine River (Ninemile Creek)	H	5.0	Perennial stream from the confluence with the Sabine River upstream to the confluence with an unnamed tributary immediately upstream of US 80 southeast of the City of Mineola
0506	Wood	No. 5 Branch	H	5.0	Intermittent stream with perennial pools from the confluence with Simpkins Creek upstream to US 69
0507	Hunt	West Caddo Creek	L	3.0	Intermittent stream with perennial pools from the confluence with Brushy Creek upstream to the confluence of Middle Caddo Creek northwest of Caddo Mills

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
0510	Rusk	Adaway Creek	I	4.0	Intermittent stream with perennial pools from the confluence with Mill Creek upstream to the confluence with an unnamed tributary 0.36 km upstream of FM 782 north of the City of Henderson
0510	Rusk	Mill Creek	I	4.0	Perennial stream from the confluence with Beaver Run upstream to the confluence with an unnamed tributary 50 meters upstream of FM 2276 north of the City of Henderson
0511	Orange	Coon Bayou	H	4.0	From the confluence with Cow Bayou upstream to the extent of tidal limits
0511	Orange	Unnamed tributary of Cow Bayou	H	4.0	From the confluence with Cow Bayou (north bank approximately 1.6 km from the Sabine River confluence) upstream to the extent of tidal limits
0513	Jasper	Trout Creek	H	5.0	Perennial stream from the confluence with Big Cow Creek in Newton County upstream to the confluence with Boggy Creek and Davis Creek in Jasper County
0601	Orange	Tiger Creek	L	3.0	Perennial stream from the confluence with Meyer Bayou upstream to the confluence of Caney Creek near the City of Vidor
0602	Hardin	Unnamed tributary (Booger Branch) of Massey Lake Slough	L	3.0	Perennial stream from Massey Lake Slough upstream to the Santa Fe Railroad crossing south of the City of Silsbee
0603	Jasper	Sandy Creek	H	5.0	Perennial stream from the confluence with B. A. Steinhagen Lake upstream to 0.5 km below FM 766 east of the City of Jasper
0604	Anderson	Caddo Creek	H	5.0	Perennial stream from the confluence with the Neches River below Lake Palestine upstream to the dam of Caddo Creek Lake in Henderson County
0604	Anderson	Unnamed tributary of Caddo Creek	H	5.0	Perennial stream from the confluence with Caddo Creek approximately 1 km south of SH 175 upstream to its headwaters 0.6 km north of SH 175
0604	Angelina	Cedar Creek	I	4.0	Perennial stream from the confluence with Jack Creek upstream to the confluence with an unnamed tributary adjacent to SH Loop 287
0604	Angelina	Graham Creek	H	5.0	Perennial stream from the confluence with the Neches River in Jasper County upstream to the confluence with Mill Creek in Angelina County

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
0604	Angelina	Hurricane Creek	I	4.0	Perennial stream from the confluence with Cedar Creek upstream to the confluence of two unnamed tributaries 100 meters upstream of SH Loop 287 in the City of Lufkin
0604	Angelina	Sandy Creek	H	5.0	Perennial stream from the confluence with Shawnee Creek upstream to the confluence with an unnamed tributary approximately 0.5 km upstream of US 69
0604	Angelina	Shawnee Creek	I	4.0	Intermittent stream with perennial pools from the confluence with Dry Creek upstream to the headwaters just downstream of the railroad line southeast of the City of Huntington
0604	Cherokee	Alto Branch	H	5.0	Perennial stream from the confluence of Larrison Creek upstream to FM 851 north of the City of Alto
0604	Cherokee	Larrison Creek	H	5.0	Perennial stream from US 69 southeast of the City of Alto upstream to 1.0 km above SH 21 east of Alto
0604	Cherokee	One Eye Creek	I	4.0	Perennial stream from the confluence with McCann Creek upstream to the confluence with College Creek
0604	Polk	Dabbs Creek	H	5.0	Perennial stream from the confluence of Caney Creek upstream to the confluence of Dabbs Branch approximately 4.5 kilometers above FM 942
0605	Henderson	Little Duncan Branch	I	4.0	Perennial stream from the confluence with Big Duncan Branch upstream to the dam impounding Jackson Lake
0606	Smith	Black Fork Creek	L	3.0	Intermittent stream with perennial pools from a point 0.4 km downstream of FM 14 upstream to a point 0.2 km upstream of SH 31 in the City of Tyler
0606	Smith	Black Fork Creek	H	5.0[6]	Perennial stream from the confluence with Prairie Creek upstream to a point 0.4 km downstream of FM 14 in the City of Tyler
0606	Smith	Prairie Creek	H	5.0[7]	Perennial stream from the confluence with the Neches River to a point immediately upstream of the confluence of Caney Creek
0606	Smith	Prairie Creek	H	5.0	Perennial stream from a point immediately upstream of the confluence with Caney Creek upstream to the confluence with an unnamed tributary approximately 0.6 km downstream of the US 69 bridge crossing, which is located approximately 0.6 km south of the City of Lindale

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
0607	Hardin	Boggy Creek	H	5.0	Perennial stream from the confluence with Pine Island Bayou upstream to the confluence with an unnamed tributary 4.0 km downstream of the crossing of the Southern Pacific Railroad
0607	Jefferson	Cotton Creek	I	4.0	Intermittent stream with perennial pools from the confluence with Pine Island Bayou upstream to the confluence of an unnamed tributary 1.2 km south of the Southern Pacific Railroad
0608	Hardin	Cypress Creek	H	5.0	Perennial stream from the confluence with Village Creek upstream to the confluence of Bad Luck Creek
0608	Tyler	Turkey Creek	H	5.0	Perennial stream from the confluence with Village Creek upstream to 1.6 km above US 69 north of the City of Woodville
0610	Sabine	Little Sandy Creek	I	4.0	Intermittent stream with perennial pools from the confluence with Pomponaugh Creek upstream to 0.5 km above FM 83 north of the City of Pineland
0610	San Augustine	Ayish Bayou	H	5.0	Perennial stream from the headwaters of Sam Rayburn Reservoir upstream to the dam impounding Bland Lake approximately 0.1 km upstream of FM 1279 near the City of San Augustine
0611	Cherokee	Keys Creek	H	5.0	Perennial stream from the confluence with Mud Creek upstream to the confluence of Barber Branch east of the City of Jacksonville
0611	Cherokee	Mud Creek	H	5.0	Perennial stream from the confluence with the Angelina River upstream to a point immediately upstream of the confluence of Prairie Creek in Smith County
0611	Cherokee	Ragsdale Creek	I	4.0	Perennial stream from the confluence with Keys Creek upstream to the confluence of an unnamed tributary 250 meters upstream of Canada Street in the City of Jacksonville
0611	Nacogdoches	Bayou LaNana	I	4.0	Perennial stream from the confluence with the Angelina River upstream to FM 1878 in the City of Nacogdoches
0611	Rusk	Unnamed tributary of Johnson Creek	L	3.0	Perennial stream from the confluence with Johnson Creek upstream to 2.4 km upstream of the confluence, which is 0.8 km south of SH 64 west of the City of Joinerville

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
0611	Smith	Blackhawk Creek	I	4.0	Perennial stream from the confluence with Mud Creek upstream to the confluence of an unnamed tributary 120 meters upstream of SH 110 south of the City of Whitehouse
0611	Smith	Henshaw Creek	H	5.0	Perennial stream from the confluence with West Mud Creek upstream to FM 2813
0611	Smith	West Mud Creek	L	3.0	Perennial stream from the confluence with Mud Creek in Cherokee County upstream to the confluence of an unnamed tributary 300 meters upstream of the most northern crossing of US 69 (approximately 2.25 km south of the intersection of Loop 323) in the City of Tyler
0615	Angelina	Unnamed tributary of Mill Creek	L	3.0	Intermittent stream with perennial pools from the confluence with Mill Creek upstream to 1.0 km above FM 2251 north of the City of Lufkin
0615	Angelina	Mill Creek	H	5.0	Perennial stream from the confluence with Paper Mill Creek upstream to 1.0 km upstream of FM 2251 north of the City of Lufkin
0701	Jefferson	Green Pond Gully	I	4.0	Perennial stream from the confluence with North Fork Taylor Bayou upstream to the confluence with an unnamed tributary approximately 2.4 km downstream of US 90 near the City of China
0701	Jefferson	Mayhan Gully	I	4.0	Perennial stream from the confluence with Green Pond Gully upstream 6.0 km to the confluence with an unnamed tributary near the City of China
0701	Jefferson	Rhodair Gully	I	4.0	Perennial stream from the confluence with Taylor Bayou upstreamto US 69 near the City of Nederland
0702	Jefferson	Main Canal D, Canal A, Canal B, Canal C	I	3.0[8]	All perennial canals in Jefferson County Drainage District No. 7 that eventually drain into the tidal portion of Taylor Bayou at the pump house gate
0704	Jefferson	Willow Marsh Bayou	I	4.0	Perennial stream from the confluence with Hillebrandt Bayou upstream to the confluence with an unnamed tributary immediately upstream of Old Sour Lake Road
0801	Liberty	Linney Creek	H	5.0	Intermittent stream with perennial pools from the confluence with Spring Branch upstream to its confluence with French Creek
0801	Liberty	Spring Branch	H	5.0	Intermittent stream with perennial pools from the confluence with Dry Lake Slough upstream to the confluence with Big Bayou approximately 425 meters downstream of US 90

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
0802	Polk	Choates Creek	H	5.0	Perennial stream from the confluence with Long King Creek upstream to the confluence with an unnamed tributary approximately 3.0 km upstream of SH 146 near the City of Livingston
0802	Polk	Long King Creek	H	5.0	Perennial stream from the confluence with the Trinity River upstream to the confluence with an unnamed tributary approximately 1.2 km upstream of FM 350 near the City of Livingston
0802	Polk	Crooked Creek	H	5.0	Perennial spring-fed stream from the confluence with Long King Creek upstream to the headwaters
0802	Polk	Unnamed tributary of Crooked Creek	H	5.0	Perennial spring-fed stream from the confluence with Crooked Creek upstream to the headwaters
0802	San Jacinto	Unnamed tributary of Coley Creek	H	5.0	Perennial stream from the confluence with Coley Creek upstream to its origin at the culvert leading from Lake Run-Amuck at Wright Road
0803	Walker	Harmon Creek	H	5.0	Perennial stream from the confluence with the normal pool elevation of Lake Livingston upstream to the confluence of East Fork Creek
0803	Walker	Parker Creek	I	4.0	Perennial stream from the confluence with Harmon Creek upstream to the confluence with Town Branch
0803	Walker	Turkey Creek	I	4.0	Perennial stream from the normal pool elevation of Lake Livingston upstream to the confluence with an unnamed tributary 2.85 km downstream of FM 980
0804	Anderson	Box Creek	I	4.0	Perennial stream from the confluence of Elkhart Creek upstream to the Elkhart Lake dam northeast of the City of Elkhart
0804	Anderson	Keechi Creek	H	5.0	Perennial stream from the confluence with the Trinity River upstream to a point 0.05 km upstream of FM 645
0804	Anderson	Bassett Creek	H	5.0	Perennial stream from the confluence with Town Creek upstream to Blue Lake
0804	Anderson	Town Creek	H	5.0	Perennial stream from the confluence with the Trinity River upstream to SH 256
0804	Freestone	Mims Creek	I	4.0	Perennial stream from the confluence with Upper Keechi Creek upstream to the confluence of an unnamed tributary approximately 2.1 km upstream of FM 1580 near the City of Fairfield

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
0804	Henderson	Walnut Creek	H	5.0	Intermittent stream with perennial pools from the confluence with an unnamed tributary approximately 0.5 km upstream of FM 753 upstream to FM 2494 in the City of Athens
0804	Leon	Toms Creek	H	5.0	Perennial stream from the confluence with the Trinity River upstream to the Missouri Pacific Railroad crossing near the City of Oakwood
0804	Leon	Unnamed tributary (Northwest Branch)	H	5.0	Perennial stream from the confluence with Toms Creek upstream to a point 0.3 km upstream of FM 831
0809	Parker	Walnut Creek	H	5.0	Perennial stream from the confluence with Little Cypress Creek upstream to the confluence with Little Walnut Creek in Upshur County
0809	Tarrant	Ash Creek	H	5.0	Intermittent stream with perennial pools from Eagle Mountain Lake upstream to its confluence with Mill Branch in Parker County
0815	Ellis	Waxahachie Creek	I	4.0	Perennial stream from the confluence with the normal pool elevation of Bardwell Reservoir upstream to the confluence with North Prong Creek
0818	Henderson	One Mile Creek	I	4.0	Perennial stream from the confluence with Valley View Reservoir upstream to the confluence with an unnamed tributary 0.8 km upstream of SH 19
0819	Dallas	Duck Creek	I	4.0	Perennial stream from the confluence with the East Fork Trinity River in Kaufman County upstream to the confluence of an unnamed tributary 0.6 km upstream of Jupiter Road in Dallas County
0819	Rockwall	Buffalo Creek	L	3.0	Perennial stream from the confluence with the East Fork Trinity River upstream to 0.6 km above the confluence with Little Buffalo Creek
0820	Collin	Cottonwood Creek	L	3.0	Perennial stream from the confluence with Rowlett Creek upstream to SH 5 (near Greenville Road)
0820	Collin	Rowlett Creek	I	4.0	Perennial stream from the normal pool elevation of Lake Ray Hubbard upstream to the Parker Road crossing
0821	Collin	Pilot Grove Creek	L	3.0	Perennial stream from the confluence of Desert Creek upstream to FM 121 approximately five miles north of the City of Blue Ridge

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
0823	Grayson	Little Elm Creek	I	4.0	Perennial stream from FM 455 in Collin County upstream to 1.4 km above FM 121 in Grayson County near the City of Gunter
0826	Denton	Denton Creek	H	5.0	Perennial stream from the headwaters of Grapevine Lake upstream to the confluence of Trail Creek near the City of Justin
0826	Denton	Trail Creek	H	5.0	Perennial stream from the confluence with Denton Creek upstream to 2.1 km upstream of SH 156 in the City of Justin
0827	Dallas	Cottonwood Creek	I	4.0	Perennial stream from the confluence with White Rock Creek upstream to the confluence with an unnamed tributary approximately 0.25 km upstream of Campbell Road in the City of Richardson
0827	Dallas	White Rock Creek	I	4.0	Perennial stream from the headwaters of White Rock Lake upstream to the confluence with McKamy Branch east of the City of Addison
0836	Hill	Pin Oak Creek	I	4.0	Perennial stream from the confluence with the North Fork of Pin Oak Creek in Limestone County upstream to the confluence with Pin Oak Creek and an unnamed tributary flowing from the west approximately 2.8 km downstream of SH 171
0840	Cooke	Spring Creek	H	5.0	Perennial stream from the confluence with Pecan Creek upstream to the confluence with John's Branch
0901	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district
0901	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district
0902	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district
0902	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
1001	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district
1001	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district
1001	Harris	Bear Lake	H	4.0	Encompasses the entire tidal portion of the bay (tributary bay of San Jacinto River Tidal)
1001	Harris	Gum Gully	H	5.0	Perennial stream from the confluence with Jackson Bayou upstream to the confluence with an unnamed tributary approximately 0.4 km downstream of Huffman-Crosby Road
1001	Harris	Jackson Bayou	H	5.0	Perennial stream from a point immediately upstream of the tidal portion of Jackson Bayou upstream to the confluence with Gum Gully
1001	Harris	Rickett Creek	L	3.0	Intermittent stream with perennial pools from San Jacinto River Tidal upstream to US 90
1002	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district
1002	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district
1002	Liberty	Tarkington Bayou	I	4.0	Perennial stream from the confluence with Luce Bayou upstream to the confluence of Little Tarkington Bayou near the City of Cleveland
1003	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district
1003	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
1004	Montgomery	East Fork White Oak Creek	I	4.0	Perennial stream from the confluence with White Oak Creek upstream to the confluence with an unnamed tributary approximately 0.4 km upstream of League Line Road in the City of Panorama Village
1004	Montgomery	Unnamed Tributary	I	4.0	Perennial stream from the confluence of the West Fork San Jacinto River upstream to the Missouri-Pacific Railroad bridge crossing located east of IH 45 and north of Needham Road approximately 10 km south of the City of Conroe
1004	Montgomery	West Fork White Oak Creek	H	5.0	Perennial stream from the confluence with White Oak Creek and West Fork San Jacinto River upstream to an on-channel impoundment on West Fork White Oak Creek 1.2 km upstream of League Line Road
1004	Montgomery	Unnamed tributary of Woodsons Gully	H	5.0	Perennial stream from the confluence with Woodsons Gully upstream to the headwaters
1004	Montgomery	Woodsons Gully	H	5.0	Perennial stream from the confluence with West Fork San Jacinto River upstream to the confluence with an unnamed tributary approximately 1.9 km upstream from Riley-Fussel Road
1005	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district
1005	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district
1006	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district
1006	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district
1006	Harris	Carpenters Bayou	I	4.0	Perennial stream from 9.0 km upstream of the Houston Ship Channel upstream to 0.8 km upstream of Wallisville Road

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
1006	Harris	Carpenters Bayou	L	3.0	Perennial stream from 0.8 km upstream of Wallisville Road upstream to Sheldon Reservoir
1006	Harris	Halls Bayou	I	4.0	Perennial stream from the confluence with Greens Bayou upstream to US 59
1006	Harris	Halls Bayou	L	3.0	Perennial stream from US 59 upstream to Frick Road
1007	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district
1007	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district
1007	Harris	Berry Bayou Above Tidal	L	3.0	Perennial stream from 2.4 km upstream from the confluence with Sims Bayou upstream to the southern city limits of South Houston
1007	Harris	Brays Bayou Above Tidal	L	3.0	Perennial stream from 11.5 km upstream from the confluence with the Houston Ship Channel upstream to SH 6
1007	Harris	Keegans Bayou	L	3.0	Perennial stream from the confluence with Brays Bayou upstream to the Harris County line
1007	Harris	Sims Bayou Above Tidal	L	3.0	Perennial stream from 11.0 km upstream of the confluence with the Houston Ship Channel upstream to Hiram Clark Drive
1007	Harris	Willow Waterhole Bayou	L	3.0	Perennial stream from the confluence with Brays Bayou upstream to South Garden (in the City of Missouri City)
1008	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district
1008	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
1008	Harris	Metzler Creek	L	3.0	Intermittent stream with perennial pools from the confluence of Cannon Gully upstream to 0.2 km below Kuykendahl Road
1008	Montgomery	Mill Creek	I	4.0	Perennial stream from the normal pool elevation of Neidigk Lake upstream to the confluence with Hurricane Creek and Kickapoo Creek in Grimes County
1008	Montgomery	Panther Branch	L	3.0	Intermittent stream with perennial pools from the normal pool elevation of 125 feet of Lake Woodlands upstream to the confluence with Bear Branch
1008	Montgomery	Panther Branch	I	4.0	Perennial stream from the confluence with Spring Creek upstream to the dam impounding Lake Woodlands
1008	Montgomery	Arnold Branch	I	4.0	Intermittent stream with perennial pools from the confluence with Mink Branch upstream to the headwaters just upstream of FM 1774
1008	Montgomery	Mink Branch	H	5.0	Perennial stream from the confluence with Walnut Creek upstream to the confluence with an unnamed tributary approximately 1.0 km upstream of Nichols-Sawmill Road
1008	Montgomery	Sulphur Branch	H	5.0	Intermittent stream with perennial pools from an unnamed reservoir, known locally as Lake Apache, upstream to FM 1774. The unnamed reservoir impounds Sulphur Branch approximately 0.8 km upstream of the confluence with Walnut Creek.
1009	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district
1009	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district
1009	Harris	Dry Creek	I	4.0	Perennial stream from the confluence with Cypress Creek upstream to the beginning of channelization at Jarvis Road, 0.6 km upstream from the confluence with Cypress Creek north of US 290
1009	Harris	Dry Creek	L	3.0	Perennial stream from the point where channelization begins at Jarvis Road, which is 0.6 km upstream of the confluence with Cypress Creek, upstream to Harris County Flood Control District ditch K-145-05-00, 0.29 km upstream of Spring Cypress Road north of US 290

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
1009	Harris	Dry Gully	I	4.0	Perennial stream from its confluence with Cypress Creek upstream 3.2 km, which is approximately 1 km upstream of Louetta Road
1009	Harris	Dry Gully	L	3.0	Perennial stream from a point 1.0 km upstream of Louetta Road upstream to Spring Cypress Road
1009	Waller	Mound Creek	H	5.0	Perennial stream from the confluence with Snake Creek, which together form Cypress Creek, upstream to an unnamed tributary 1.95 km upstream of FM 362
1010	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district
1010	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district
1010	Montgomery	Dry Creek	I	4.0	Intermittent stream with perennial pools from Caney Creek upstream to the confluence with an unnamed tributary approximately 3.6 km upstream of SH 242
1010	Montgomery	White Oak Creek	H	5.0	Perennial stream from the confluence with Caney Creek upstream to the confluence with an unnamed tributary approximately 2.08 km upstream of US 59
1012	Montgomery	Town Creek	I	4.0	Perennial stream from the confluence with Atkins Creek upstream to the confluence with Carwile Creek
1012	Walker	Robinson Creek	I	4.0	Perennial stream from the confluence with the West Fork San Jacinto River upstream to the confluence with an unnamed second order tributary approximately 0.1 km upstream of Bethel Road
1013	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district
1013	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
1013	Harris	Little Whiteoak Bayou	I	4.0	Perennial stream from the confluence with Whiteoak Bayou upstream to the railroad tracks north of IH 610
1013	Harris	Little Whiteoak Bayou	L	3.0	Perennial stream from the railroad tracks north of IH 610 upstream to Yale Street
1014	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district
1014	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district
1014	Harris	Bear Creek	I	4.0	Perennial stream from the confluence with South Mayde Creek upstream to the confluence with an unnamed tributary 1.24 km north of Longenbaugh Road
1014	Harris	Buffalo Bayou	I	4.0	Perennial stream from SH 6 in Harris County upstream to the confluence with Willow Fork Buffalo Bayou in Fort Bend County
1014	Harris	Dinner Creek	L	3.0	Perennial stream from the confluence with Langham Creek upstream to Frey Road
1014	Harris	Horsepen Creek	L	3.0	Perennial stream from 0.62 km north of FM 529 upstream to a point 2.4 km upstream of SH 6
1014	Harris	Horsepen Creek	I	4.0	Perennial stream from the confluence with Langham Creek upstream to where channelization begins, which is 0.62 km north of FM 529
1014	Harris	Langham Creek	L	3.0	Perennial stream from the confluence with Dinner Creek upstream to FM 529
1014	Harris	Langham Creek	I	4.0	Perennial stream from the confluence with Bear Creek upstream to the confluence with Dinner Creek
1014	Harris	Mason Creek	I	4.0	Perennial stream from the confluence with Buffalo Bayou upstream to channelization, which is 1.55 km south of Franz Road
1014	Harris	South Mayde Creek	L	3.0	Perennial stream from an unnamed tributary 1.3 km west of Barker-Cypress Road upstream to an unnamed tributary 1.05 km south of Clay Road

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
1014	Harris	South Mayde Creek	I	4.0	Perennial stream in the Addicks Reservoir flood pool area from the confluence with Buffalo Bayou upstream to the confluence with an unnamed tributary 0.62 km east of Barker-Cypress Road
1014	Harris	Turkey Creek	I	4.0	Perennial stream from the confluence with South Mayde Creek upstream to the headwaters south of Clay Road
1014	Waller	Willow Fork Buffalo Bayou	I	4.0	Intermittent stream with perennial pools from the confluence with Buffalo Bayou in Fort Bend County upstream to 1.0 km above US 90 in Waller County
1015	Montgomery	Mound Creek	H	5.0	Perennial stream from the confluence with Lake Creek upstream to the confluence with an unnamed tributary approximately 0.75 km downstream of Rabon-Chapel Road
1016	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district
1016	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district
1016	Harris	Garners Bayou	L	3.0	Perennial stream from the confluence with Greens Bayou Above Tidal upstream to 1.5 km north of Atoscocita Road
1017	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district
1017	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district
1017	Harris	Brickhouse Gully/Bayou	L	3.0	Perennial stream from the confluence with Whiteoak Bayou upstream to Gessner Road
1017	Harris	Cole Creek	L	3.0	Perennial stream from the confluence with Whiteoak Bayou upstream to Flintlock Street

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
1017	Harris	Vogel Creek	L	3.0	Perennial stream from the confluence with Whiteoak Bayou upstream to a point 3.2 kilometers upstream of the confluence with Whiteoak Bayou
1101	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district
1101	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district
1101	Galveston	Magnolia Creek	I	4.0	Intermittent stream with perennial pools from the confluence with Clear Creek upstream to 0.8 km upstream of the confluence with the second unnamed tributary
1102	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district
1102	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district
1102	Brazoria	Cowart Creek	L	3.0	Intermittent stream with perennial pools from the confluence with Clear Creek in Galveston County upstream to SH 35 in Brazoria County
1102	Brazoria	Mary's Creek/North Fork Mary's Creek	I	4.0	Perennial stream from the confluence with Clear Creek upstream to the confluence with North Fork Mary's Creek and South Fork Mary's Creek near FM 1128, approximately 5 km southwest of the City of Pearland. Includes perennial portions of North Fork Mary's Creek from the confluence of Mary's Creek to the confluence of an unnamed tributary approximately 3.2 km upstream of FM 1128.
1105	Brazoria	Flores Bayou	I	4.0	Perennial stream from a point 2.6 km downstream of County Road 171 upstream to SH 35
1113	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
1113	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district
1202	Fort Bend	Rabbs Bayou	L	3.0	Perennial stream from Smithers Lake upstream to the confluence with an unnamed tributary below HW 59
1202	Fort Bend	Unnamed oxbow slough	L	3.0	An unnamed oxbow slough immediately north of the intersection of US 90A and SH 6 at the head of Ditch H
1202	Fort Bend	Big Creek	I	4.0	Intermittent stream with perennial pools from the confluence with an unnamed tributary 2.1 km downstream of FM 2977 upstream to the confluence of Cottonwood Creek and Coon Creek
1202	Grimes	Beason Creek	I	4.0	Perennial stream from the confluence with the Brazos River upstream to the confluence with an unnamed tributary 2.8 km upstream of FM 362
1202	Waller	Brookshire Creek	L	3.0	Perennial stream from the confluence of an unnamed tributary located 0.2 km downstream of SH 359 upstream to 500 meters upstream of US 90
1202	Waller	Bessies Creek	I	4.0	Intermittent stream with perennial pools from the confluence with Bessies Bayou upstream to the confluence with an unnamed tributary approximately 0.7 km upstream of FM 359 northwest of the City of Pattison
1202	Waller	Clear Creek	H	5.0	Perennial stream from the confluence with the Brazos River upstream to the confluence with an unnamed tributary approximately 0.2 km upstream of FM 1488
1202	Washington	Hog Branch	I	4.0	Perennial stream from the confluence with Little Sandy Creek upstream to Loop 318 in the City of Brenham
1202	Washington	Little Sandy Creek	I	4.0	Perennial stream from the confluence with New Year Creek to a point 100 meters upstream of Loop 283
1202	Washington	New Year Creek	I	4.0	Perennial stream from the confluence with Woodward Creek upstream to the confluence of Big Sandy Creek
1203	Bosque	Steele Creek	H	5.0	Perennial stream from the confluence with Whitney Lake upstream to 2.4 km above the confluence of Cox Branch

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
1205	Hood	McCarty Branch	L	3.0	Intermittent stream with perennial pools from the confluence with Lake Granbury upstream to FM 208
1206	Hood	Kickapoo Creek	I	4.0	Intermittent stream with perennial pools from the confluence with the Brazos River in Parker County upstream to Bailey's Lake at the Hood-Erath county line near the City of Lipan
1206	Parker	Rock Creek	I	4.0	Intermittent stream with perennial pools from the confluence with Dry Creek upstream to the confluence with an unnamed second order tributary approximately 0.7 km downstream of Lake Mineral Wells
1206	Parker	Unnamed tributary of Rock Creek	I	4.0	Intermittent stream with perennial pools from the confluence with Rock Creek upstream to the confluence with an unnamed first order tributary approximately 0.2 km upstream of Hood Road, west of Lake Mineral Wells
1209	Brazos	Carters Creek	I	4.0	Perennial stream from the confluence with the Navasota River upstream to the confluence of an unnamed tributary 0.5 km upstream of FM 158
1209	Brazos	Wickson Creek	L	3.0	Perennial stream from the confluence with an unnamed first order tributary (approximately 1.3 km upstream of Reliance Road crossing) upstream to the confluence with an unnamed first order tributary approximately 15 meters upstream of Dilly Shaw Road
1209	Brazos	Wolfpen Creek	L	3.0	Intermittent stream with perennial pools from the confluence with Carter Creek upstream to near Bizzell Street in the City of College Station
1211	Burleson	Davidson Creek	I	4.0	Intermittent stream with perennial pools from the confluence with Yegua Creek upstream to 0.2 km above SH 21 near the City of Caldwell
1217	Burnet	North Fork Rocky Creek	I	4.0[9]	Intermittent stream with perennial pools from the confluence with South Rocky Creek upstream to its headwaters approximately 11 km west of US 183
1217	Lampasas	Sulphur Creek	H	5.0	Perennial stream from the confluence with the Lampasas River upstream to the spring source located in the City of Lampasas
1221	Comanche	Indian Creek	I	4.0	Perennial stream from the confluence with Armstrong Creek approximately 1.5 km downstream of SH 36 upstream to the confluence with an unnamed tributary approximately 0.1 km upstream of US 377

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
1221	Hamilton	Pecan Creek	I	4.0	Perennial stream from the confluence with the Leon River upstream to the confluence with an unnamed tributary approximately 3.5 km upstream of SH 36 near the City of Hamilton
1224	Eastland	Leon River Above Leon Reservoir	H	5.0	From the headwaters of Leon Reservoir upstream to the confluence of the North Fork Leon River and the South Fork Leon River (includes Lake Olden)
1224	Eastland	South Fork Leon River	H	5.0	From the confluence of the North Fork Leon River upstream to the confluence of the Middle Fork Leon River
1227	Johnson	Buffalo Creek	L	3.0	Intermittent stream with perennial pools from the confluence with the Nolan River upstream to the confluence of East Buffalo Creek and West Buffalo Creek
1227	Johnson	Mustang Creek	I	4.0	Intermittent stream with perennial pools from the confluence with the Nolan River upstream to FM 916 near Rio Vista
1230	Eastland	Palo Pinto Creek	H	5.0	Perennial stream from the confluence with the normal pool elevation of Lake Palo Pinto which is near the confluence with an unnamed tributary at the Texas and Pacific Railroad crossing upstream to the dam forming Hagaman Lake
1232	Stephens	Gonzales Creek	H	5.0	Perennial stream from the confluence with Hubbard Creek upstream to the confluence with Brown Branch approximately 1.2 km upstream of Elliott Street in the City of Breckenridge
1241	Lubbock	North Fork Double Mountain Fork Brazos River	L	3.0	Perennial stream from the confluence with Double Mountain Fork Brazos River upstream to the dam forming Lake Ransom Canyon
1242	Brazos	Cottonwood Branch	I	4.0	Intermittent stream with perennial pools from the confluence with Still Creek upstream 0.95 km to the confluence with an unnamed tributary
1242	Brazos	Still Creek	H	5.0	Perennial stream from the confluence with Thompsons Creek upstream to the confluence with Cottonwood Branch
1242	Brazos	Thompsons Creek	H	5.0	Perennial stream from the confluence with the Brazos River upstream to the confluence with Still Creek
1242	Brazos	Thompsons Creek	I	4.0	Intermittent stream with perennial pools from the confluence with Still Creek upstream to the confluence with Thompsons Branch, north of FM 1687

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
1242	Brazos	Unnamed tributary of Cottonwood Branch	I	4.0	Intermittent stream with perennial pools from the confluence with Cottonwood Branch upstream to the headwaters
1242	Falls	Pond Creek	L	3.0	Perennial stream from the confluence with the Brazos River in Milam County, upstream to the confluence with Live Oak Creek in Falls County
1242	Falls	Deer Creek	H	5.0	Perennial stream from the confluence with the Brazos River upstream to the confluence with Dog Branch
1242	McLennan	Tradinghouse Reservoir	H	5.0	Encompasses the entire reservoir up to the normal pool elevation of 447 feet
1242	Robertson	Little Brazos River	H	5.0	Perennial stream from the confluence with the Brazos River in Brazos County upstream to the confluence of Walnut Creek in Robertson County west of the City of Calvert
1244	Williamson	Brushy Creek	H	5.0	Perennial stream from the confluence of South Brushy Creek upstream to the confluence of North Fork Brushy Creek and South Fork Brushy Creek
1244	Williamson	Mustang Creek	I	4.0	Perennial stream from the confluence with Brushy Creek upstream to the confluence of North Fork Mustang Creek
1244	Williamson	Cluck Creek	H	5.0	Perennial stream from the confluence with South Brushy Creek upstream to the confluence with an unnamed tributary 0.6 km downstream of US 183
1245	Fort Bend	Red Gully	I	4.0	Perennial stream from the confluence with Oyster Creek upstream to 1.7 km upstream of Old Richmond Road
1246	McLennan	Comanche Springs Spring Brook	H	5.0	Spring-fed intermittent stream with perennial pools from the confluence with Harris Creek upstream to and including Comanche Springs approximately 2.1 km upstream of US 84 west of the City of McGregor
1246	McLennan	Harris Creek	H	5.0	Spring-fed intermittent stream with perennial pools from the confluence with South Bosque River upstream to the confluence with an unnamed tributary approximately 1.19 km upstream of US 84 west of the City of McGregor
1246	McLennan	Tonk Creek	H	5.0	Intermittent stream with perennial pools from the confluence with Middle Bosque/South Bosque River upstream to the confluence with an unnamed tributary 1.0 km upstream of FM 185 near Tonkawa Falls Park

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
1246	McLennan	Unnamed tributary of South Bosque River (Sheep Creek)	I	4.0	Perennial stream from the confluence with the South Bosque River upstream to 1.0 km above SH 317 south of the City of McGregor
1248	Williamson	Berry Creek	H	5.0	Perennial stream from the confluence with the San Gabriel River upstream to the confluence of Stapp Branch southwest of the City of Florence
1304	Matagorda	Linnville Bayou	L	3.0	Intermittent stream with perennial pools from a point 1.1 km above the confluence with Caney Creek in Matagorda County upstream to a point 0.1 km above SH 35 in Brazoria/Matagorda counties
1305	Matagorda	Hardeman Slough	I	4.0	Perennial stream from the confluence with Caney Creek upstream to the confluence with an unnamed tributary approximately 1.9 km downstream of FM 3156 near the City of Van Vleck
1402	Colorado	Cummins Creek	E	6.0	Perennial stream from the confluence with the Colorado River upstream to the confluence of Boggy Creek at FM 1291
1402	Fayette	Allen Creek	I	4.0	Intermittent stream with perennial pools from the confluence of Pool Branch upstream to its headwaters south of the City of Fayetteville
1402	Fayette	Buckners Creek	H	5.0	Perennial stream from the confluence with the Colorado River upstream to the confluence with Chandler Branch 1.6 km upstream of FM 154 in Fayette County
1402	Fayette	Cedar Creek Reservoir/Lake Fayette	H	5.0	Encompasses the entire reservoir up to the normal pool elevation of 390 feet
1402	Fayette	Cedar Creek	H	5.0	Perennial stream from the confluence with the Colorado River upstream to the dam forming Cedar Creek Reservoir/Lake Fayette
1404	Burnet	Hamilton Creek	I	4.0	Perennial stream from the confluence with Delaware Creek upstream to the confluence with an unnamed tributary in the City of Burnet 1.1 km upstream of the Southern Pacific Railroad
1412	Howard	Beals Creek	L	3.0	Intermittent stream with perennial pools from the confluence with the Colorado River in Mitchell County upstream to the confluence of Mustang Draw and Sulphur Springs Draw in Howard County

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
1412	Mitchell	North Fork Champion Creek	L	3.0	Intermittent stream with perennial pools from the confluence with an unnamed tributary approximately 2.3 km upstream of IH 20 to its headwaters north of the City of Loraine
1412	Scurry	Deep Creek	I	4.0	Perennial stream from the confluence with Hell Roaring Hollow Creek upstream to the confluence with an unnamed first order tributary approximately 0.07 km downstream of RR 1605
1414	Gillespie	Barons Creek	H	5.0	Perennial stream from the confluence with the Pedernales River upstream to the most northern crossing of US 87 northwest of the City of Fredericksburg
1415	Kimble	Johnson Fork Creek	H	5.0	Perennial stream from the confluence with the Llano River upstream to source springs (Rio Bonito Springs) south of the City of Segovia
1415	Mason	Comanche Creek	L	3.0	Intermittent stream with perennial pools from the confluence with the Llano River upstream to the confluence of West Comanche Creek near the City of Mason
1416	McCulloch	Brady Creek	I	4.0	Perennial stream and intermittent stream with perennial pools from the confluence with an unnamed tributary approximately 5.0 km east of FM 2309 east of the City of Brady upstream to Brady Lake dam
1418	Coleman	Hord Creek	I	4.0	Perennial stream from the confluence with an unnamed second order tributaryapproximately 0.7 km downstream of Live Oak Street crossing upstream to the confluence with Bachelor Prong Creek
1420	Callahan	Kaiser Creek	L	3.0	Intermittent stream with perennial pools from the confluence with North Prong Pecan Bayou upstream to 0.5 km upstream of FM 2700 south of the City of Clyde
1420	Callahan	Turkey Creek	H	5.0	From the confluence with Pecan Bayou in Brown County upstream to SH 36 in Callahan County
1426	Runnels	Elm Creek	H	5.0	Perennial stream from the confluence with the Colorado River upstream to the dam approximately 300 meters downstream of US Highway 67
1427	Travis	Slaughter Creek	H	5.0	Intermittent stream with perennial pools from the confluence with Onion Creek upstream to above US 290 west of Austin
1428	Travis	Gilleland Creek	H	5.0	Perennial stream from the confluence with the Colorado River upstream to an unnamed tributary 0.39 km downstream of Ward Spring Road

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
1428	Travis	Gilleland Creek	H	5.0	Intermittent stream with perennial pools from the confluence with an unnamed tributary 0.39 km downstream of Ward Spring Road upstream to the spring source (Ward Spring) northwest of the City of Pflugerville
1428	Travis	Dry Creek	H	5.0	Perennial stream from the mouth of the Colorado River upstream to 150 meters upstream of the confluence with Cottonwood Creek
1428	Travis	Dry Creek	L	3.0	Intermittent stream with perennial pools from 150 meters upstream of the confluence with Cottonwood Creek upstream to just below the confluence with an unnamed tributary located approximately 2.73 km upstream of Wolf Lane. Channel topography in this reach is a braided to anastomosiging channel, and all channels within the reach are intermittent with perennial pools
1428	Travis	Dry Creek	E	6.0	Perennial stream from the confluence with an unnamed tributary located approximately 2.73 km upstream of Wolf Lane upstream to the confluence of North Fork Dry Creek and Dry Creek
1428	Travis	Dry Creek	L	3.0	Intermittent stream with perennial pools from the confluence with North Fork Dry Creek upstream to US 183 south of Pilot Knob
1428	Travis	Harris Branch	H	5.0	Perennial stream from the confluence with Gilleland Creek upstream to the confluence with an unnamed tributary approximately 2.6 km downstream of Gregg Lane
1428	Travis	Unnamed tributary of Harris Branch	L	3.0	Intermittent stream with perennial pools from the confluence with Harris Branch upstream to the confluence with an unnamed tributary approximately 0.7 km downstream of the Old Railroad grade
1434	Bastrop	Cedar Creek	H	5.0	Perennial stream from the confluence with the Colorado River upstream to the confluence of an unnamed tributary at FM 535
1434	Bastrop	Gazley Creek	I	4.0	Perennial stream from the confluence with the Colorado River above the City of La Grange upstream to the confluence with an unnamed tributary approximately 3.25 km upstream of the southern-most crossing of the Missouri-Kansas-Texas Railroad south of the City of Smithville
1434	Bastrop	Maha Creek	I	4.0	Intermittent stream with perennial pools from the confluence with Cedar Creek upstream to the confluence with an unnamed tributary approximately 0.25 km upstream of US 183 in Travis County

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
1501	Matagorda	Wilson Creek	H	5.0	Perennial stream from the confluence with the Tres Palacios River upstream to the confluence with the first tributary south of IH 35
1602	DeWitt	Big Brushy Creek	H	5.0	Perennial stream from the confluence with Clarks Creek in Lavaca County upstream to the confluence with an unnamed tributary just downstream of the Loop 51 (US Highway B77) bridge crossing south of the City of Yoakum
1602	Lavaca	Rocky Creek	H	5.0	Perennial stream from the confluence with the Lavaca River upstream to 1.0 km above FM 533 west of the City of Shiner
1602	Lavaca	Lavaca River	H	5.0[10]	Intermittent stream with perennial pools from the confluence of Campbells Creek west of the City of Hallettsville upstream to the confluence with West Prong Lavaca River downstream of the City of Moulton
1604	Wharton	East Mustang Creek	I	4.0	Intermittent stream with perennial pools from the confluence with Middle Mustang Creek upstream to the confluence with an unnamed tributary approximately 4.2 km upstream of US 59 northeast of the City of Louise
1605	Fayette	West Navidad River	H	5.0	Intermittent stream with perennial pools from the confluence with the Navidad River above Lake Texana in Lavaca County upstream to the confluence with Walker Branch approximately 0.5 km upstream of IH 10
1806	Kerr	Camp Meeting Creek	H	5.0[11]	Intermittent stream with perennial pools from the confluence with the Guadalupe River upstream to an unnamed impoundment, located downstream of Ranchero Road in the City of Kerrville.
1806	Kerr	Camp Meeting Creek	H	5.0[12]	Intermittent stream with perennial pools from an unnamed impoundment located downstream of Ranchero Road upstream to the dam of an unnamed impoundment approximately 0.65 km upstream of Tree Lane in the City of Kerrville.
1810	Caldwell	Town Branch	H	5.0	Perennial stream from the confluence with Plum Creek upstream to US 183 in the City of Lockhart
1902	Bexar	Martinez Creek	I	4.0	Perennial stream from the confluence with Escondido Creek upstream to Binz-Engleman Road
1903	Medina	Polecat Creek	H	5.0	Perennial stream from 6.4 km above the confluence with the Medina River upstream to the spring source 1.3 km above FM 2790 southeast of the City of LaCoste

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
1910	Bexar	Salado Creek	L	4.0[13]	Intermittent stream with perennial pools from the confluence with Beitel Creek upstream to Nacogdoches Road
2107	Atascosa	West Prong Atascosa River	I	4.0	Intermittent stream with perennial pools from the confluence with the Atascosa River upstream to the confluence with an unnamed tributary at IH 35
2108	Medina	Chacon Creek	I	4.0	Perennial stream from the confluence with San Francisco Perez Creek in Frio County upstream to the confluence of an unnamed tributary approximately 0.8 km north of SH 132 in Medina County
2108	Medina	Fort Ewell Creek	I	4.0	Perennial stream from the confluence with Chacon Creek in Medina County upstream to the confluence of the Natalia Canal approximately 0.8 km north of SH 132 in Medina County
2201	Cameron, Hidalgo, Willacy	Drainage Ditches	L	3.0	Perennial freshwater drainage ditches that flow into the segment in the counties listed
2202	Cameron, Hidalgo	Drainage Ditches	L	3.0	Perennial freshwater drainage ditches that flow into the segment in the counties listed
2304	Val Verde	Cienegas Creek	H	5.0	Perennial stream from the confluence with the Rio Grande River upstream to the headwater spring source (Cienegas Springs) approximately 0.8 km north of Cienega Lane west of the City of Del Rio
2310	Terrell	Independence Creek	E	6.0	Perennial stream from the confluence with the Pecos River upstream to the mouth of Surveyor Canyon (upstream of FM 2400)
2421	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district
2421	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district
2422	Chambers	Anahuac Ditch	I	4.0	Perennial stream from the confluence with the West Fork Double Bayou upstream to FM 563 near the City of Anahuac

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
2425	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district
2425	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district
2425	Harris	Taylor Lake	H	4.0	Encompasses the entire tidal portion of the bay (tributary bay of Clear Lake) including Taylor Bayou Tidal
2426	Harris	Goose Creek	I	4.0	Perennial stream from Baker Street upstream to the confluence of an unnamed tributary from Highlands Reservoir
2426	Harris	Goose Creek	L	3.0	Perennial stream from the confluence with East Fork Goose Creek upstream to Baker Street
2427	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district
2427	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district
2428	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district
2428	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district
2429	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district

SEGMENT	COUNTY	WATER BODY	ALU	DO	DESCRIPTION
2429	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district
2430	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district
2430	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district
2432	Brazoria	Mustang Bayou	I	4.0	Perennial stream from CR 166 upstream to the confluence with an unnamed tributary 0.3 kilometers upstream of SH 35
2438	Harris	Concrete lined and maintained channelized ditches and streams	L	3.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, whether concrete lined or earthen, and are maintained by the district
2438	Harris	Unmaintained channelized ditches and streams	I	4.0	Perennial (including effluent dominate) freshwater Harris County Flood Control District ditches that have been channelized into trapezoidal channels, are earthen, and are not maintained by the district
2491	Cameron, Hidalgo	Drainage Ditches	L	3.0	Perennial freshwater drainage ditches that flow into the segment in the counties listed
2494	Cameron	Drainage Ditches	L	3.0	Perennial freshwater drainage ditches that flow into the segment in the counties listed

[1] A minimum DO criterion of 2.0 mg/L applies to the described portion of the water body.

[2] The following site-specific multiple regression equation is used to determine the 24-hour average and minimum DO criteria. A 24-hour average DO criterion of 5 mg/L is the upper bounds if the indicated DO equation predicts DO values that are higher than 5.0 mg/L. When the 24-hour average DO is predicted to be lower than 1.5 mg/L, then the DO criterion is set as 1.5 mg/L. When the 24-hour average DO criterion is greater than 2.0 mg/L, the corresponding 24-hour minimum DO criterion should be 1.0 mg/L less than the calculated 24-hour average criterion. When the 24-hour average DO criterion is less than or equal to 2.0 mg/L, the corresponding 24-hour minimum DO criterion should be 0.5 mg/L less than the calculated 24-hour average criterion. When stream flow is below 0.1 cfs, then 0.1 cfs is the presumed flow that should be used in the equation. This equation supercedes Table 4 in §307.7(b)(3)(A) of this title.

$$DO = 12.11 - 0.309\ T + 1.05\ \log Q - 1.02\ \log WS$$

where: DO = 24-hour average DO criterion

T = temperature in degrees Celsius (C)
Q = flow in cubic feet per second (ft^3/s)
WS = watershed size in square kilometers (up to 1000 km^2)

3 A site-specific low-flow of 5.95 ft^3/s applies to achieve the 4.0 mg/L DO 24-hour average criterion at the critical summer-time temperatures of 29.7°C. A site-specific DO criterion of 3.0 mg/L as a 24-hour average applies from May to October when flows are ≥1.2 $ft^3/s$and < 5.95 ft^3/s. The following site-specific multiple regression equation relating DO averages, flow, and temperature may be used to determine appropriate headwater flows:

$$Q = e^{(0.253T-10.4 + DO)/0.625}$$

where Q = flow in ft^3/s
T = temperature in degrees Celsius
DO = 24-hour average DO

4 A site-specific DO criterion of 3.0 mg/L as a 24-hour average applies for the months of June through October.
5 A site-specific DO criterion of 3.0 mg/L as a 24-hour average applies to the unnamed tributary due to low ambient levels of DO upstream of the City of Grand Saline discharge.
6 A site-specific DO criterion of 4.0 mg/L as a 24-hour average applies for the months of May through October.
7 A site-specific DO criterion of 3.0 mg/L as a 24-hour average applies for the months of May through October.
8 A site-specific DO criterion of 3.0 mg/L as a 24-hour average applies to the designated perennial canals.
9 A site-specific 24-hour minimum DO criterion of 3.0 applies. A site-specific 24-hour average DO criterion of 2.0 mg/L and a 24-hour minimum dissolved oxygen criterion of 1.0 mg/L applies when stream flows are below 1.5 ft^3/s.
10 Site-specific DO criteria of 2.0 mg/L as a 24-hour average and 1.0 mg/L as a minimum apply from March 15th through October 15th.
11 A minimum DO criterion of 2.0 mg/L and a 24-hour average of 4.0 mg/L apply from July 1st to September 30th.
12 A minimum DO criterion of 1.0 mg/L and a 24-hour average of 2.0 mg/L apply from July 1st to September 30th.
13 A minimum DO criterion of 3.0 mg/L applies to the described portion of the water body.

(5) Appendix E - Site-specific Toxic Criteria:

Figure: 30 TAC §307.10(5)

Appendix E - Site-specific Toxic Criteria

The water bodies found in this appendix have a site-specific standard for the chemical parameter listed. The procedures for obtaining a site-specific standard are specified in §307.2(d) of this title (relating to Description of Standards) and result in a site-specific adjustment factor (such as a water-effect ratio (WER), multiplier, etc.). For most of the chemical parameters listed, this factor is used along with hardness in the formulas listed in Table 1 of §307.6(c)(1) of this title (relating to Toxic Materials) to calculate the dissolved portion of the parameter. The newly calculated criteria from Table 1 of §307.6(c)(1) of this title are then used to calculate discharge limits for permitted facilities. To calculate discharge limits, use the site-specific adjustment factors listed in this appendix in accordance with the most current *Procedures to Implement the Texas Surface Water Quality Standards* (RG-194) as amended. If a smaller portion of a water body has a separate and different site-specific adjustment factor, this factor supersedes any other factor specified for the larger water body that includes the smaller water body. In establishing Texas Pollutant Discharge Elimination System (TPDES) permit conditions, the site-specific criteria only apply to the referenced facility except where otherwise noted in footnote 3 of Appendix A in §307.10 of this title (relating to Appendices A - G).

SEGMENT	SITE DESCRIPTION	TPDES	FACILITY	PARAMETER	SITE-SPECIFIC ADJUSTMENT FACTOR	ADDITIONAL SITE-SPECIFIC CONSIDERATIONS

SEGMENT	SITE DESCRIPTION	TPDES	FACILITY	PARAMETER	SITE-SPECIFIC ADJUSTMENT FACTOR	ADDITIONAL SITE-SPECIFIC CONSIDERATIONS
0301	Remnant channel of Baker Slough from the edge of the mixing zone with Segment 0301 upstream to the permitted outfall in Cass County	01339-000	International Paper Co.	Aluminum[1]	6.39	
0303	River Crest Reservoir	00945-000	Luminant Generation Co.	Copper[1, 3]	3.4	
0403	Johnson Creek Reservoir in Marion County	01331-000	SWEPCO	Copper[1, 3]	5.15	Hardness = 20 mg/L TSS = 4 mg/L
0404	Welsh Reservoir in Titus County	01811-000	SWEPCO	Aluminum[1, 3]	10	
0404	Big Cypress Creek in Camp, Titus, and Morris counties	00348-000	Lone Star Steel	Lead[2, 3]	Acute Criterion = 41.4 µg/L Chronic Criterion = 5.7 µg/L	Hardness = 40.1mg/L
0404	Unnamed tributary of Hart Creek from the edge of the mixing zone with Hart Creek upstream to the permitted outfall in Titus County	10575-004	City of Mount Pleasant	Copper[1]	7.16	
0409	Sugar Creek from the edge of the mixing zone with Segment 0409 upstream to the permitted outfall in Upshur County	10457-001	City of Gilmer	Copper[1]	6.83	

SEGMENT	SITE DESCRIPTION	TPDES	FACILITY	PARAMETER	SITE-SPECIFIC ADJUSTMENT FACTOR	ADDITIONAL SITE-SPECIFIC CONSIDERATIONS
0501	Sabine River Tidal in Orange County	00475-000	E.I. DuPont de Nemours	Copper[1, 4]	1.9	
0505	Sabine River from the confluence with Brandy Branch approximately 1 mile (1.6 km) upstream from Highway 43 in Harrison County upstream to SH 149 in Gregg County	00471-000	Eastman Chemical Co.	Copper[1]	6.7	Hardness = 40 mg/L
0510	Mill Creek from the edge of the mixing zone with Segment 0510 upstream to the confluence with Adaway Creek in Rusk County	10187-002	City of Henderson	Copper[1]	4.95	
0511	Unnamed tidal drainage ditch from the edge of the mixing zone with Segment 0511 upstream to the permitted outfall in Orange County	00670-000	Honeywell, Inc.	Copper[1]	2.39	
0511	Unnamed tidal drainage ditch from the edge of the mixing zone with Segment 0511 upstream to the permitted outfall in Orange County	00454-000	Firestone Polymers	Copper[1]	2.54	
0603	Sandy Creek from the edge of the mixing zone with Segment 0603 upstream to the permitted outfall in Jasper County	10197-001	City of Jasper	Copper[1]	4.67	

SEGMENT	SITE DESCRIPTION	TPDES	FACILITY	PARAMETER	SITE-SPECIFIC ADJUSTMENT FACTOR	ADDITIONAL SITE-SPECIFIC CONSIDERATIONS
0604	Unnamed tributary of Bear Creek from the edge of the zone of initial dilution with Bear Creek upstream to the permitted outfall in Polk County	01902-000	International Paper – Corrigan	Aluminum[1]	5.58	
0604	Buck Creek from the confluence with Clayton Creek upstream to the confluence with the unnamed tributary receiving the discharge from the permitted outfall in Angelina County	01268-000	Lufkin Industries	Copper[1]	7.94	
0604	One-eye Creek from the edge of the mixing zone with Box Creek upstream to the permitted outfall in Cherokee County	10447-001	City of Rusk	Copper[1]	4.3	Hardness = 40 mg/L
0611	Ragsdale Creek from the edge of the mixing zone with Keys Creek upstream to the permitted outfall in Cherokee County	10693-001	City of Jacksonville	Copper [1]	4.6	Hardness = 48 mg/L
0615	Papermill Creek from the edge of the zone of initial dilution with Segment 0615 upstream to the permitted outfall in Angelina County	00368-000	Abitibi Consolidated	Aluminum[1]	8.39	

SEGMENT	SITE DESCRIPTION	TPDES	FACILITY	PARAMETER	SITE-SPECIFIC ADJUSTMENT FACTOR	ADDITIONAL SITE-SPECIFIC CONSIDERATIONS
0805	Forney Branch from the edge of the mixing zone with White Rock Creek upstream to the permitted outfall in Dallas County	01251-000	Luminant Generation Co.	Copper[1]	3.9	
0806	West Fork Trinity River in Tarrant County	00555-000	Luminant Generation Co.	Copper[1, 4]	2.5	
1001	San Jacinto River Tidal in Harris County	NA	NA	Copper[1, 3]	1.8	
1005	Houston Ship Channel/San Jacinto River Tidal in Harris County	NA	NA	Copper[1, 3]	1.8	
1005	The Houston Ship Channel/San Jacinto River tidal from the edge of the mixing zone with Segment 2421 upstream to the confluence with Santa Annas Bayou in Harris County	02097-000	Oxy Vinyls	Copper[1]	1.8	
1006	Houston Ship Channel Tidal in Harris County	NA	NA	Copper[1, 3]	1.8	
1006	Tucker Bayou from the edge of the mixing zone with Segment 1006 upstream to the permitted outfall in Harris County	01429-000	Safety-Kleen	Copper[1]	2.3	

SEGMENT	SITE DESCRIPTION	TPDES	FACILITY	PARAMETER	SITE-SPECIFIC ADJUSTMENT FACTOR	ADDITIONAL SITE-SPECIFIC CONSIDERATIONS
1006	Greens Bayou Tidal from the edge of the mixing zone with the Houston Ship Channel upstream to the confluence with Spring Gully in Harris County	01031-000	Texas Genco	Copper[1]	2.4	TSS = 14.75 mg/L Dissolved Fraction Available = 87%
1007	Houston Ship Channel/Buffalo Bayou Tidal in Harris County	NA	NA	Copper[1, 3]	1.8	
1008	Panther Branch from the edge of the mixing zone with Lake Woodlands upstream to the permitted outfall in Montgomery County	12597-001	San Jacinto River Authority	Copper[1]	6.45	
1009	Cypress Creek and Harris County Flood Control District Ditch K159-00-00 from the edge of the mixing zone with Cypress Creek upstream to the permitted outfall in Harris County	13296-002	Harris County MUD No. 358	Copper[1]	8.47	
1013	Buffalo Bayou Tidal in Harris County	NA	NA	Copper[1, 3]	1.8	
1014	Horsepen Creek in Harris County	12726-001	Harris Co. MUD No. 155	Copper[1, 4]	4.65	
1014	Willow Fork Drainage Dist. Lateral Ditch VA1 from the edge of the mixing zone with Segment 1014 upstream to the permitted outfall in Fort Bend County	13558-001	Cinco MUD No. 1	Copper[1, 4]	7.26	

SEGMENT	SITE DESCRIPTION	TPDES	FACILITY	PARAMETER	SITE-SPECIFIC ADJUSTMENT FACTOR	ADDITIONAL SITE-SPECIFIC CONSIDERATIONS
1113	Horsepen Bayou in Harris County	10539-001	City of Clear Lake Water Authority	Copper[1, 4]	2.74	
1201	Segment 1201in Brazoria County	00007-000	Dow Chemical	Copper [1, 4]	1.6	
1209	Unnamed ditch from the edge of the zone of initial dilution of the unnamed ditch with Gibbons Creek Reservoir upstream to the permitted Outfall 001 in Grimes County	02120-000	Texas Municipal Power Agency	Aluminum[1]	6.81	
1236	Ft. Phantom Hill Reservoir in Jones County	01422-000	AEP North Texas	Aluminum[1, 3]	2.9	
1242	Lake Creek Reservoir in McClennan County	00954-000	Luminant Generation Co.	Copper[1, 3]	2.4	
1412	Red Draw Reservoir in Howard County	01768-000	ALON USA	Selenium	Acute Criterion = 219 µg/L Chronic Criterion = 7.5 µg/L	
1701	Victoria Barge Canal in Calhoun County	00447-000	Dow Chemical	Copper[1, 4]	1.81	
1701	Victoria Barge Canal in Victoria County	03943-000	Air Liquide	Copper[1, 4]	2.55	
2427	San Jacinto Bay in Harris County	NA	NA	Copper[1, 3]	1.8	

SEGMENT	SITE DESCRIPTION	TPDES	FACILITY	PARAMETER	SITE-SPECIFIC ADJUSTMENT FACTOR	ADDITIONAL SITE-SPECIFIC CONSIDERATIONS
2431	Moses Bayou from the edge of the mixing zone with Segment 2431 upstream to the drainage ditches receiving the discharge from the permitted outfall in Galveston County	01263-000	ISP Technologies	Copper[1]	1.88	
2481	Kinney Bayou tidal/Jewel Fulton Canal from the edge of the mixing zone with Ingleside Cove upstream to the permitted outfall in San Patricio County	10422-001	City of Ingleside	Copper[1]	2.0	
2481	Kinney Bayou tidal/Jewel Fulton Canal from the edge of the mixing zone with Ingleside Cove upstream to the permitted outfall in San Patricio County	10422-001	City of Ingleside	Zinc[1]	1.14	
2485	La Volla Creek from the edge of the mixing zone with Oso Creek upstream to the permitted outfall in Nueces County	10401-003	City of Corpus Christi	Copper[1]	2.07	
2494	Vidia Ancha from the edge of the mixing zone with Segment 2494 upstream to the tidal mud flats receiving the discharge from the permitted outfall in Cameron County	10350-001	Laguna Madre Water District	Copper[1]	2.52	

1 Results based on a water-effect ratio study.

2 The equation used for acute criterion calculation is $e^{(1.273(\ln hardness)-0.9744)}$, and the equation used for chronic criterion calculation is $e^{(1.273(\ln hardness)-2.958)}$.

3 Site-specific criteria apply to the entire water body listed under the "Site Description" column. If the site described is a designated segment, the boundaries of the segment are given in Appendix C of §307.10 of this title.

4 Site-specific criteria may only be used in the evaluation of permit limits for the facility listed under the "TPDES" and "Facility" columns.

(6) Appendix F - Site-specific Nutrient Criteria for Selected Reservoirs:

Figure: 30 TAC §307.10(6)

Appendix F: Site-specific Nutrient Criteria for Selected Reservoirs

In the following table, nutrient criteria for selected reservoirs are specified in terms of concentrations of chlorophyll *a* in water as a measure of the density of phytoplankton (suspended microscopic algae). Notes on the derivation of criteria are described below.[1]

Criteria for chlorophyll *a* are assessed with long-term medians of sampling data. The criteria are applicable to the monitoring site(s) listed in the Site Identification (ID) column for each reservoir or to comparable monitoring sites. If sampling data are available from more than one of the listed sites, then the data are pooled to provide a single median for purposes of comparing to the criteria. Segment numbers in parentheses ( ) indicate that the water body is in close proximity to the segment listed, but the water body is not part of the segment.

Criteria in the following table are adjusted to minimum levels that could generally be historically quantified by laboratory chemical analyses. When a chlorophyll *a* criterion is below 5.00 μg/L, then the criterion is set at the minimum default criterion of 5.00 μg/L. The calculated values are shown in parentheses ( ).

Criteria for chlorophyll *a* are attained when they are not exceeded by the median of monitoring data results. Procedures to assess attainment with nutrient criteria are described in §307.9 (c)(2) and (e)(7) of this title (relating to Determination of Standards Attainment).

Segment No.	Reservoir Name	Site ID	Chlorophyll a Criteria (μg/L)
(0100)[2]	Palo Duro Reservoir	10005	21.73
0208	Lake Crook	10137	7.38
0209	Pat Mayse Lake	10138	12.40
0212	Lake Arrowhead	10142	11.21
0213	Lake Kickapoo	10143	6.13
0217	Lake Kemp	10159	8.83
0223	Greenbelt Lake	10173	5.00 (4.59)
(0229)	Lake Tanglewood	10192	43.71
0302	Wright Patman Lake	10213	21.49
0405	Lake Cypress Springs	10312	17.54
0507	Lake Tawakoni	10434	37.18
0509	Murvaul Lake	10444	55.80
0510	Lake Cherokee	10445	8.25
0512	Lake Fork Reservoir	10458	14.50
0603	B. A. Steinhagen Lake	10582	11.67
0605	Lake Palestine	16159	27.34
0610	Sam Rayburn Reservoir	14906	6.22
0613	Lake Tyler	10637	13.38
0613	Lake Tyler East	10638	10.88
0614	Lake Jacksonville	10639	5.60
0803	Lake Livingston	10899	22.96
0807	Lake Worth	10942	34.18
0809	Eagle Mountain Reservoir	10944 10945	25.37
0811	Bridgeport Reservoir	10970	5.32
0813	Houston County Lake	10973	11.10
0815	Bardwell Reservoir	10979	22.84
0816	Lake Waxahachie	10980	19.77
0817	Navarro Mills Lake	10981	15.07
0818	Cedar Creek Reservoir	10982 16749	30.40
0823	Lewisville Lake	11027	18.45
0826	Grapevine Lake	11035 16113 17827	11.90

Segment No.	Reservoir Name	Site ID	Chlorophyll a Criteria (μg/L)
0827	White Rock Lake	11038	33.65
0830	Benbrook Lake	15151 11046	27.15
0836	Richland-Chambers Reservoir	15168	15.29
1012	Lake Conroe	11342	24.27
1203	Whitney Lake	11851	18.34
1205	Lake Granbury	11860	22.16
1207	Possum Kingdom Lake	11865	10.74
(1208)	Millers Creek Reservoir	11679	15.65
1212	Somerville Lake	11881	53.05
1216	Stillhouse Hollow Lake	11894	5.00 (2.07)
1220	Belton Lake	11921	6.38
1222	Proctor Lake	11935	28.15
1225	Waco Lake	11942	23.16
1228	Lake Pat Cleburne	11974	19.04
1231	Lake Graham	11979	6.07
1233	Hubbard Creek Reservoir	12002	5.61
1234	Lake Cisco	12005	5.00 (4.64)
1235	Lake Stamford	12006	16.85
1237	Lake Sweetwater	12021	13.28
1240	White River Lake	12027	13.85
1247	Granger Lake	12095	11.72
1249	Lake Georgetown	12111	5.00 (3.87)
1252	Lake Limestone	12123	19.26
1254	Aquilla Reservoir	12127	14.10
1403	Lake Austin	12294	5.00 (3.58)
1404	Lake Travis	12302	5.00 (3.66)
1405	Marble Falls Lake	12319	10.48
1406	Lake Lyndon B. Johnson	12324	10.29
1408	Lake Buchanan	12344	9.82
(1412)	Lake Colorado City	12167	15.60
(1416)	Brady Creek Reservoir	12179	24.15
1419	Lake Coleman	12398	6.07
1422	Lake Nasworthy	12418	16.91
1423	Twin Buttes Reservoir	12422	14.44
1425	O.C. Fisher Lake	12429	39.13
(1426)	Oak Creek Reservoir	12180	6.93
1429	Lady Bird Lake (Town Lake)	12476	7.56
1433	O.H. Ivie Reservoir	12511	5.77
1805	Canyon Lake	12597	5.00 (4.11)
1904	Medina Lake	12826	5.00 (2.15)

Segment No.	Reservoir Name	Site ID	Chlorophyll a Criteria (μg/L)
2103	Lake Corpus Christi	12967	17.17
2116	Choke Canyon Reservoir	13019	12.05
2312	Red Bluff Reservoir	13267	25.14
(2454)	Cox Lake	12514	13.56

[1]Criteria for chlorophyll *a* were calculated from historical sampling data and set at the upper parametric prediction intervals; (Hahn and Meeker, 1991, Statistical Intervals, a Guide for Practitioners. Wiley Series in Probability and Mathematical Statistics. Wiley-Interscience Publications). Historical sampling data was used from 1990 through 2008, and only reservoirs with 30 or more datapoints for chlorophyll *a* are included. As needed, the historical period was extended back through the period of record (potentially back as far as 1969) in order to acquire sufficient data for individual reservoirs. Values that were less than the minimum historical reporting limit were assigned a value of one-half the reporting limit. Data outside an interquartile range of 1.5 on a Tukey box plot were excluded as outliers. Statistical calculations of prediction intervals were based on a 0.01 confidence level, and the number of samples that are available for assessing compliance was assumed to be 10.

[2]A segment number ending in 00 indicates an unclassified water body that is in not within the watershed of a classified segment. For example, Palo Duro Reservoir is on unclassified Palo Duro Creek, which flows into Oklahoma.

(7) Appendix G - Site-specific Recreational Uses and Criteria for Unclassified Water

Bodies:

Figure: 30 TAC §307.10(7)

Appendix G - Site-specific Recreational Uses and Criteria for Unclassified Water Bodies

The water bodies listed in this appendix are those waters that are not designated segments listed in Appendix A of this title. The water bodies are included because a regulatory action has been taken or is anticipated to be taken by the commission or because sufficient information exists to provide a recreational use designation. The segment numbers listed refer to the designated segments as defined in Appendix C of this title (relating to Segment Descriptions). The county listed is the primary location where the use designation is assigned. The water body is a tributary within the drainage basin of the listed segment. The recreation use designations and bacteria indicator criteria are the same as defined in §307.4(j) of this title (relating to General Criteria) and §307.7(b) of this title (relating to Site-Specific Uses and Criteria). The description defines the specific area where the recreation use designation applies. Generally, there is not sufficient data on these waters to develop other conventional criteria and those criteria are the same as for the segment where the water body is located unless further site-specific information is obtained.

SEGMENT	COUNTY	WATER BODY	USE	GEOMETRIC MEAN colonies/100 ml	INDICATOR BACTERIA	DESCRIPTION
1017	Harris	Brickhouse Gully/Bayou	SCR 1	630	*E. coli*	From the confluence with Whiteoak Bayou Above Tidal upstream to its headwaters 1.1 km upstream of Gessner Road
1017	Harris	Unnamed tributary of Whiteoak Bayou	SCR 1	630	*E. coli*	From the confluence with Whiteoak Bayou Above Tidal downstream of TC Jester Blvd, upstream to Hempstead Hwy, north of US Hwy 290 in Harris County

SEGMENT	COUNTY	WATER BODY	USE	GEOMETRIC MEAN colonies/100 ml	INDICATOR BACTERIA	DESCRIPTION
1017	Harris	Unnamed tributary of Whiteoak Bayou	SCR 1	630	*E. coli*	From the confluence with Whiteoak Bayou Above Tidal, near W 11th Street, upstream to a point immediately upstream of W 26th Street, south of Loop 610 W in Harris County