

2022 Texas Integrated Report - Response to Public Comment

Texas Commission on Environmental Quality (TCEQ)

These comments address the TCEQ's Draft 2022 Texas Integrated Report for Clean Water Act Sections 303(d) and 305(b) List and were submitted during the comment period beginning January 28, 2022 and ending March 1, 2022.

COMMENTOR: Texas Parks and Wildlife Department

<u>Segment ID</u>	<u>Water Body Name</u>	<u>Summary of Request or Comment</u>	<u>Summary of Action or Explanation</u>
	<i>reservoirs</i>	Treatment of outliers and Below Detection Limit data: The draft Guidance doesn't mention this, but were outliers removed from other data sets used in the assessment, for example, the TN, TP, median Secchi depth thresholds used in the flowchart Figures F.1 and F.2? Were outliers removed in calculating the Trophic State Index? How were Below Detection Limit data handled in developing the threshold values? The process needs to be transparent, so that interested parties should be able to be able to replicate the work done by TCEQ to better understand how protective these processes will be for reservoirs.	Outliers were not removed from the datasets used to develop the draft 2022 Integrated Report, including the Trophic Classification of Texas Reservoirs. The assessment incorporates all the data in the assessment period, except those excluded due to drought, for the stations listed in Appendix F of the Draft 2022 Assessment Guidance. Data reported as below the detection limit were assessed at half the reported value. When developing thresholds, values that were less than the minimum historical reporting limit were assigned a value of one-half the reporting limit. No changes were made in response to this comment.

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	<i>reservoirs</i>	<p>The Line of Evidence Framework (p. 180) states that a line of evidence approach “allows for the evaluation of impacts from excessive algae caused by nutrients on protected uses.” The methodology for assessing chlorophyll in reservoirs with EPA-approved numeric criteria seems to be limiting the assessment of nutrient impacts to the proliferation of excessive phytoplanktonic algae. Is that the intention of TCEQ? The draft Guidance states, “This methodology provides a more robust assessment of reservoir conditions and increases certainty that excessive algae caused by nutrients are impacting factors like water clarity, increased algae biomass and DO attainment.” Wouldn’t a water body with excessive algae be a listing or concern, even if other parameters, like dissolved oxygen, seem to be unaffected? This is a concern in how the EPA-approved chlorophyll criteria are being applied in Figure F.1. If the assessment shows that the criteria are not exceeded, the reservoir is assessed as Fully Supporting without the other evidence being considered (TP, TN, DO swings, fish kills, etc.) We recommend some mechanism for a reservoir showing up as a concern, even if chlorophyll criteria are met.</p>	<p>The multiple lines of evidence approach is implemented to assess adverse nutrient conditions using multiple parameters to determine the status of reservoirs. In this process phytoplanktonic chlorophyll-a, upon which the criterion is based, serves as the primary indicator though other indicators related to algae growth are incorporated in the process. A reservoir that exceeds its site-specific criterion for chlorophyll-a is identified as impaired, provided minimum data requirements for assessment are met. No changes were made in response to this comment.</p>

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	<i>reservoirs</i>	<p>Chlorophyll measured at the dam is not typically a sensitive indicator of algal growth throughout the reservoir. First, chlorophyll is an indicator of elevated nutrients. While it can be used to indirectly measure certain phytoplankton, it does not account for all phytoplankton, nor does it account for filamentous algae and other submergent or emergent flora. Secondly, how well are golden algal blooms detected using these techniques? Further, by the time the water has flowed to the dam all variety of processes have been available to extract nutrients from the water. To better quantify the nutrient loading, more upstream sections should be measured. It would seem possible to have a nutrient-laden dead zone near the dam in a lake underlaying a surface layer that suggested no issues.</p>	<p>Biomass estimates of golden algae cannot be determined with chlorophyll-a data collected by TCEQ and partners. In order to capture potential water quality impacts in more sensitive portions of the reservoir, dissolved oxygen assessments using data from multiple sections of the reservoirs are evaluated in the assessment of reservoir nutrients. The Texas Surface Water Quality Standards prescribe methods for evaluating standards attainment using chlorophyll-a data in §307.9(e)(7). Dissolved oxygen criteria are applicable to the mixed surface layer, in accordance with §307.9(c)(2). No changes were made in response to this comment.</p>

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	<i>reservoirs</i>	<p>Reservoirs with EPA approved criteria are not assessed if there are fewer than 10 samples for any variable (chlorophyll, TP, TN, Secchi depth, DO listing). Developing numeric nutrient criteria for 39 Texas reservoirs was a difficult task and a big step forward for water quality protection in Texas. TCEQ should be commended for taking this important step to addressing this need. TPWD understands that the draft Guidance is intended to move toward extending numeric criteria to the 36 reservoirs for which EPA did not approve the original proposed criteria. Since there are only 39 reservoirs with EPA approved criteria for chlorophyll, is there an initiative at TCEQ to ensure that there is enough data for every one of the 39 to be assessed? A substantial amount of staff time and stakeholder engagement went into the proposal of numeric nutrient criteria for major reservoirs – shouldn't these waterbodies be prioritized for data collection to support the assessment?</p>	<p>In the 2022 draft Integrated Report, 33 of the 39 reservoirs with approved chlorophyll-a criteria were assessed. TCEQ and partners in each river basin meet annually to coordinate surface water quality monitoring activities for the upcoming fiscal year. In fiscal year 2022, all of the 39 reservoirs with approved criteria were monitored. This process to develop coordinated monitoring schedules includes stakeholder involvement and the allocation of surface water quality monitoring data collection activities, using available resources. The addition of category 5n as an assessment outcome prioritizes those waterbodies for additional monitoring. No changes were made in response to this comment.</p>

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	<i>reservoirs</i>	<p>The first decision point in Figure F.2 is the question of whether the median chlorophyll from the 2022 assessment period of record exceeds the designated threshold. If not, the reservoir is immediately relegated to “No Concern.” This does not take into account other indicators of nutrient problems in a reservoir without EPA-approved chlorophyll criteria: DO swings, the Trophic Status Index, Secchi depth, TN or TP levels, or fish and other animal kills due directly or indirectly to nutrients (including cyanobacteria blooms). TPWD staff recommend that ALL reservoirs be evaluated for the suite of factors related to eutrophication, not just the chlorophyll threshold. This could be accomplished by, at the very least, changing the first decision point in the flow chart to: “Is median Chl a threshold exceeded OR is 10-year change in Chl a TSI>10.” The way the flow chart is written now, a reservoir could have very high TN or TP levels, or other concerns with Secchi depth or DO, and be assessed as “No Concern.” One recommendation is to use either TP OR Secchi depth as indicators, not TP AND Secchi depth.</p>	<p>Chlorophyll-a serves as the primary indicator in both of the approaches outlined in Appendix F of the Assessment Guidance, though other indicators related to algae growth are incorporated in the process. No changes were made in response to this comment.</p>

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	<i>reservoirs</i>	<p>Application of the Trophic Status Index was one of the more confusing aspects of this draft IR. While TPWD supports use of a tool such as the TSI, it should be noted that only three reservoirs out of all those assessed for the draft IR were listed as having a ten-point increase: O.C. Fisher Reservoir, Lake Somerville, and Greenbelt Lake. Is the ten-point increase over 10 years a sensitive enough indicator of impacts of excessive nutrients on reservoirs? TCEQ may want to consider revising this portion of the flowchart to alert on a smaller point spread change in TSI over ten years. A ten-point increase in the Trophic State Index (TSI) translates to a 2- to 3-fold increase in turbidity, TP, and chlorophyll. How does this approach integrate with a non-degradation policy?</p>	<p>Carlson's Trophic Status Index (TSI) provides a useful tool for assessing a reservoir's condition and evaluating changes over time. Changes in TSI at 10-point increments are illustrated in Table 1-2 in the Trophic Classification of Texas Reservoirs report, and demonstrates how a change may come from shifts in multiple parameters. The TSI 10-year change is only used for reservoirs with chlorophyll-a criteria disapproved by EPA to indicate potential cultural eutrophication, and rapid transition toward un-desirable trophic conditions. No changes were made in response to this comment.</p>
	<i>reservoirs</i>	<p>In the reservoir assessment methodology, it wasn't always clear how threshold values were developed. For a reservoir with an EPA-approved criteria, is "threshold" in the top box of the Figure F.1 flowchart the same number as the approved chlorophyll criterion for that reservoir? In addition, it is uncertain how to evaluate the power of the approved criterion to detect changes in reservoirs, when comparing a non-parametric measure like the median of one data set with a parametric criterion like the 99th percentile of the criteria development data set. For example, if there are 30 data points available to assess a reservoir, how much increase in the mean chlorophyll would there have to be for the reservoir to be listed as non-supporting?</p>	<p>In Figure F.1, the top box, "Is median Chl-a criterion exceeded", indicates that a "criterion" is applied. The criterion applied is the approved chlorophyll-a criteria for that reservoir located in Appendix F of the Texas Surface Water Quality Standards (30 Texas Administrative Code Chapter 307). This assessment protocol uses medians of chlorophyll-a data collected from monitoring sites as specified in Appendix F of the TSWQS for those reservoirs with approved chlorophyll-a criteria. Chlorophyll-a criteria adopted by TCEQ and approved by EPA were developed using the 99th percentile confidence interval of the mean to derive the criterion, and based attainment upon the median of sampling data. Both measures provide similar information regarding the location of a population's central tendency. No changes were made in response to this comment.</p>

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	<i>reservoirs</i>	TPWD supports the establishment of a new category 5n for water bodies affected by excessive nutrients. Excessive nutrients, along with associated eutrophication and increased harmful algal blooms, are significant water quality issues in Texas, especially in light of increasing growth and development in the state. The new category should help in spotlighting waterbodies where efforts are needed to understand and address excessive nutrient inputs, whether from point or nonpoint sources or a combination of the two.	TCEQ acknowledges this comment. No changes were made in response to this comment.
	<i>reservoirs</i>	The tables in the Supplemental Data for Reservoir Nutrient Assessment list the criteria threshold for change in TSI (10 points) and the 2010 Chl a TSI under the Median column. It is difficult to use the tables to understand if a reservoir has exceeded the TSI threshold. TPWD recommends that the ten-year change in TSI points (+/-) or the 2022 Chlorophyll a TSI be included in the tables to more easily see if the threshold has been exceeded.	The 10-year change of the TSI was intended to be reported in the Supplemental Data for Reservoir Nutrient Assessment report. In response to this comment, TCEQ revised this report to include the 10-year change in values.
1003	<i>East Fork of the San Jacinto River</i>	TPWD recommends that the East Fork of the San Jacinto River (1003) be included in the Integrated Report for having a concern for fish kills. During the assessment period, TPWD has investigated seven fish kills (one of which included three separate reports from the public) along primarily the southern extent of the fork. Of those events, two were confirmed low dissolved oxygen events, one suspected low DO, and four with unknown source causes.	TPWD fish kill reports used in this assessment do not show a continuing persistent pattern of fish kills, and of the reported fish kills, none have occurred since 2018. No changes were made in response to this comment.

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1113A	<i>Armand Bayou Above Tidal</i>	<p>TPWD recommends that Armand Bayou Above Tidal (1113A_01) be included in the Integrated Report for having a concern for fish kills. During the assessment period, TPWD has investigated four fish kills on Armand Bayou that have been caused by municipal wastewater releases from either a treatment plant or sewer lines. These fish kills were included in the fish kill query TPWD provided for the 2022 Integrated Report. The Integrated Report lists Armand Bayou Above Tidal as not supporting Contact Recreation, a TMDL for E. coli, and nonsupport for depressed dissolved oxygen, and impaired fish and macrobenthic communities. The Integrated Report also lists Armand Bayou Tidal (1113) as having a nutrient screening level concern for chlorophyllnd several exceedances for ammonia, total phosphorus, nitrate, and dissolved oxygen. These municipal wastewater releases that have caused fish kills may be contributing to the water quality concerns in Armand Bayou Tidal (1113) and Above Tidal (1113A).</p>	<p>In response to this comment, a concern for fish kills will be included for Armand Bayou Above Tidal, 1113A_01.</p>
1242N	<i>Tehuacana Creek</i>	<p>TPWD recommends including “PS - Industrial Point Source Discharge” to the Potential Sources of Impairment document for Tehuacana Creek (1242N) as there are E. coli limits to the permitted discharge and part of the wastewater discharge.</p>	<p>In response to this comment, “PS - Industrial Point Source Discharge” will be included in the Potential Sources of Impairment document.</p>

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1244	<i>Brushy Creek</i>	<p>TPWD recommends that Brushy Creek Assessment Unit ID 1244_03 be included in the Integrated Report for having a concern for fish kills. During the assessment period, TPWD has investigated three fish kills on Brushy Creek and tributaries that have been caused by municipal wastewater releases from either a treatment plant or sewer lines. These fish kills were included in the fish kill query TPWD provided for the 2022 Integrated Report. Additionally, TPWD has recently investigated other fish kills and pollution complaints for poor water quality on Brushy Creek that are suspected to be from wastewater treatment plant releases but were outside of the assessment period. The Integrated Report lists Brushy Creek Assessment Unit ID 1244_03 as not supporting Contact Recreation, a nutrient screening level concern for nitrate, and several exceedances for ammonia and total phosphorus. The Integrated Report also identifies the potential source of the concern as municipal point source discharges. Including the fish kill concern for Brushy Creek complements the existing water quality concerns and potential source of pollution for this stream segment.</p>	<p>In response to this comment, a concern for fish kills will be included for Brushy Creek 1244_03.</p>
1259	<i>Leon River Above Belton Lake</i>	<p>Leon River Above Belton Lake (1259_01) notes sources for chlorophyll concerns but then lists the source for E. coli concerns as “UNK - Source Unknown”. Segment 1259_02 lists the source for E. coli as “NPS - Agriculture; NPS – Animal Feeding Operations (NPS); and NPS – Non-point source”. The potential sources should be the same for both assessment units.</p>	<p>In response to this comment, the sources will be updated to be consistent for parameters in both assessment units.</p>

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1402H	<i>Skull Creek</i>	TPWD recommends adding “PS – Industrial” to Skull Creek (1402H) as a source of the depressed dissolved oxygen impairment. The addition clarifies the sources for that waterbody. TPWD has determined an industrial discharge has contributed to fish kills and should be listed as a potential source.	A Use Attainability Analysis was developed to address the depressed dissolved oxygen impairment that established a more appropriate site-specific seasonal criterion and the criterion was approved by EPA in 2020. For purposes of the 303(d) report, the TCEQ must await future data to make any evaluation of continued impairment under the new criterion and information about any source thereof. No changes were made in response to this comment.
1810	<i>Plum Creek</i>	TPWD recommends that Plum Creek (1810) be included in the Integrated Report for having a concern for fish kills. During the assessment period, TPWD three fish kills on Plum Creek that have been caused by municipal wastewater releases. Additionally, there have been fish kills caused by industrial sources on the tributaries to Plum Creek. These fish kills are included in the fish kill information TPWD provided for the 2022 Integrated Report. Including the fish kill concern for Plum Creek complements the existing water quality concerns and potential sources of pollution for this stream segment.	In response to this comment, a concern for fish kills will be included for Plum Creek 1810_01.

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2424*		<p>TPWD recommends that Highland Bayou Diversion Canal (2424G), Lake Madeleine (2424B), and English Bayou (2424E) be included in the Integrated Report for having a concern for fish kills as it relates to these sites being newly listed on the 303(d) list for PCBs and Dioxins. During the assessment period, TPWD has investigated two fish kills in Lake Madeleine associated with low dissolved oxygen. In Highland Bayou Diversion Canal, TPWD investigated two pollution complaints (crude oil discharge) and three fish kills (one low dissolved oxygen, and one cold weather stress). In Offats Bayou, which is connected to English Bayou at 61st Street in Galveston, a large fish kill event occurred last fall caused by low dissolved oxygen associated with benthic algal turnover and poor water circulation. All three of these water bodies are commonly used by the public to fish along the shoreline.</p>	<p>The new 303(d) Listings for segments 2424B, 2424E, and 2424G are not based on new information. The Department of State Health Services (DSHS) issued ADV-35 on 7/8/2008, for PCBs and Dioxins in fish tissue for Galveston Bay including Chocolate Bay, East Bay, West Bay, Trinity Bay, and contiguous waters. These three segments are contiguous with others initially listed in the 2010 Integrated Report. There were no recorded fish kills within the seven-year period of record for the 2022 IR. No changes were made in response to this comment.</p>