The Texas Commission on Environmental Quality (TCEQ, agency, or commission) adopts new §§298.1, 298.5, 298.10, 298.15, 298.20, 298.25, 298.200, 298.205, 298.210, 298.215, 298.220, 298.225, 298.230, 298.240, 298.250, 298.255, 298.260, 298.265, 298.275, 298.280, 298.285, and 298.290.

Sections 298.1, 298.10, 298.15, 298.20, 298.25, 298.200, 298.205, 298.215, 298.220, 298.225, 298.230, 298.240, 298.250, 298.255, 298.260, 298.265, 298.275, 298.280, 298.285, and 298.290 are adopted *with changes* to the proposed text as published in the November 19, 2010, issue of the *Texas Register* (35 TexReg 10168). Section 298.5 and §298.210 are adopted *without changes* to the proposed text and will not be republished. Section 298.270 is withdrawn.

Background and Summary of the Factual Basis for the Adopted Rules

In 2007, the 80th Legislature passed House Bill 3 (HB 3), relating to the management of the water resources of the state, including the protection of instream flows and freshwater inflows; and Senate Bill 3 (SB 3) relating to the development, management, and preservation of the water resources of the state. Both of these bills amended Texas Water Code (TWC), §11.1471, which requires the commission to adopt rules related to environmental flow standards and set-asides. The commission adopts new Chapter 298, Environmental Flow Standards for Surface Water, to implement the environmental flow provisions of HB 3, Article 1, and SB 3, Article 1, and also adopts environmental flow standards for the Trinity and San Jacinto Rivers, their associated tributaries, and

Galveston Bay; and the Sabine and Neches Rivers, their associated tributaries, and Sabine Lake Bay.

Prior to HB 3/SB 3, the commission had the authority to protect environmental interests as it permitted state surface water. The commission had the authority to maintain: existing instream uses under TWC, §11.147(d); water quality under TWC, §11.147(d) and §11.150; fish and wildlife habitat under TWC, §11.147(e) and §11.152; and freshwater inflows to bay and estuary systems under TWC, §11.147(a) - (c). TWC, §11.147(b) - (e) and §11.152 required that these environmental considerations be included only to the extent practicable or reasonable and required that environmental considerations be considered along with other factors of public welfare. HB 3/SB 3 did not make major changes to this commission authority.

The commission also retains its ability, granted prior to HB 3/SB 3, to place special conditions in water right permits to protect environmental interests. Before HB 3/SB 3, TWC, §11.134(b)(3)(D), required consideration of environmental interests for new appropriations of water, including amendments that granted an increase in the amount of water that could be diverted and TWC, §11.085, required consideration for interbasin transfers. Permits for water projects that call for the re-diversion of wastewater or return flows to a watercourse, so called "indirect reuse" projects, were also subject to special conditions to protect environmental uses under TWC, §11.042 and §11.046. Amendments that were not new appropriations were required to be authorized if,

among other criteria, the amendment would not cause adverse impact to the environment of greater magnitude than under the original permit under TWC, §11.122(b). As a practical matter, if any adverse impact to the environment was noted in an application for an amendment, then special conditions were crafted to remove the adverse impact so that the amendment might be granted.

HB 3/SB 3 changed the process by which the state would decide the flow that needed to be preserved in the watercourse for the environment and the balancing of environmental interests along with other public interests. HB 3/SB 3 created a statewide Environmental Flows Advisory Group (Advisory Group). The Advisory Group was given the responsibility to appoint Basin and Bay Area Stakeholder Committees (the stakeholder committee or BBASC) for each of the state's river basin, bay, and estuary systems. The stakeholder committees, in turn, appointed a Basin and Bay Expert Science Team (the science team or BBEST). The science teams were to develop a recommended environmental flow regime, or schedule of flow quantities adequate to support a sound ecological environment. The stakeholders were to take the science team's recommendations and consider those recommendations in conjunction with other factors, including the present and future needs for water for other uses. The stakeholders were also to report their recommendations to the commission. Both the science teams and the stakeholder committees were to reach their recommendations by a consensus basis to the maximum extent possible. The commission, in turn, was to take the recommendations from the science team, the stakeholder committees, the

Advisory Group, and a statewide Science Advisory Committee (SAC), and consider that information along with other information and by rule adopt environmental flow standards for each basin and bay system. At the same time the commission is to establish an amount of unappropriated water, if available, to be set aside to satisfy the environmental flow standards to the maximum extent reasonable when considering human water needs. Once the environmental flow standards are adopted, the commission's objective or goal will be to protect the standards, along with the interests of senior water right holders, in its water rights permitting process for new appropriations and amendments that increase the amount of water to be taken, stored, or diverted. Under HB 3/SB 3, the commission may use the set-aside or use its existing authority to place special conditions in permits to protect the environmental flow standards.

The commission received the Trinity and San Jacinto Rivers and Galveston Bay science team's report on December 1, 2009, and the stakeholder committee report on May 28, 2010. The commission received the Sabine and Neches Rivers and Sabine Lake Bay science team's report on November 30, 2009, and the stakeholder committee report on May 24, 2010. Copies of the Trinity and San Jacinto Rivers and Galveston Bay reports are available on the Web site: *http://www.tceq.texas.gov/goto/eflows/galvestonbay*. Copies of the Sabine and Neches Rivers and Sabine Lake Bay reports are available on the Web site: *http://www.tceq.texas.gov/goto/eflows/sabinelake*.

The commission adopts Subchapter A to implement HB 3/SB 3 for the whole state. As the commission receives stakeholder recommendations, it intends to adopt environmental flow standards and basin-specific rules in separate subchapters. The commission adopts Subchapter B to cover the Trinity and San Jacinto Rivers and Galveston Bay. The commission further adopts Subchapter C to cover the Sabine and Neches Rivers and Sabine Lake Bay.

In a corresponding rulemaking published in this issue of the *Texas Register*, the commission also adopts the amendment to 30 TAC Chapter 35, Emergency and Temporary Orders and Permits; Temporary Suspension or Amendment of Permit Conditions.

Section by Section Discussion

Subchapter A: General Provisions

§298.1, Definitions

The commission adopts new §298.1 to define common terms used in Chapter 298. Occasionally, the same term might be defined differently for a specific basin or bay and basin system. In those cases, the term will be redefined for the subchapter devoted to that specific bay and basin system. The commission acknowledges that overbank flows are considered to be a component of a flow regime for a sound ecological environment. These flows result from naturally occurring large rainfall events, which will likely continue to occur. Therefore, the commission is not including overbank flows as a

component of the adopted standards. Terms defined in Subchapter B and Subchapter C are applicable to the specific bay and basin systems referred to in those subchapters, and those terms will control over the definitions in Subchapter A.

In response to comment, the commission adopts §298.1(1) to provide a definition of "Affected person" to define persons who could file a motion for reconsideration of the commission's action related to adjustment of environmental flow conditions in a water rights permit as specified in adopted §298.25(e). As a result of these additions, the commission has renumbered the paragraphs (2) - (11) in §298.1.

In §298.1(2), (8), and (10) the commission adopts definitions for the terms "Base flow," "Pulse or high flow pulse," and "Subsistence flow" which represent components of a flow regime. In response to comment, the phrase "and recolonization" was added to the definition of "Subsistence flow" in adopted §298.1(10). The SAC used these instream flow regime components in their recommended framework for the development of environmental flow regime recommendations. The commission notes that both the science teams used these components in developing portions of their reports. The commission anticipates that future recommendations will use similar components; however, the commission, by including definitions for these components, does not mean to imply that all future recommendations must use these exact components as defined here.

In §298.1(3) the commission adopts a definition for the term "Environmental flow regime" by tracking the definition in TWC, §11.002(16). In response to comment, the commission added the phrase ". . .and that are shown to be adequate to support a sound ecological environment and to maintain the productivity, extent, and persistence of key aquatic habitats in and along the affected water bodies" to avoid inconsistency with the statute. The commission intends its definition to have the same meaning as the statutory meaning.

In §298.1(4) the commission adopts a definition for the term "Environmental flow standards" by tracking the definition in TWC, §11.002(17). The commission intends its definition to have the same meaning as the statutory meaning.

In §298.1(5) and (7) the commission adopts definitions for the terms "Lower Rio Grande" and "Middle Rio Grande" by tracking the definitions in 30 TAC §303.2. In response to comment, the phrase ". . ., and its tributaries in Texas," was added to the definitions in adopted §298.1(5) and (7) to more closely track the definitions in §303.2 with regard to the tributaries.

In §298.1(6) the commission adopts a definition for the term "Measurement point." TWC, §11.1471(c), requires that environmental flow standards vary geographically by specific location in a river basin or bay system. The commission adopts the use of the term "Measurement point" to describe those locations where environmental flow

standards are established.

In response to comment, the commission adopts §298.1(9) to provide a definition of "Set-aside" by tracking TWC, §11.1471(a)(2). The commission intends its definition to have the same meaning as the statutory meaning. As a result of this addition, the commission has renumbered the remaining definitions in §298.1.

In §298.1(11) the commission adopts a definition for the acronym "USGS," otherwise known as United States Geological Survey.

In §298.1(12) the commission adopts a definition for the term "Water right holder" with its common practical meaning, being the owner of a water right permit, which also is defined in this chapter.

In §298.1(13) the commission adopts a definition for the term "Water right permit" that includes permits, certificates of adjudication, and certified filings for the area of the state where the water rights adjudication process is not final, generally the Pecos Sub-basin, as well as permits issued since the adjudication process. In response to comment, the word "user" was changed to the word "uses" in the definition of "Water right permit" in adopted §298.1(13). This change clarifies that domestic and livestock users are not water right holders for the purposes of this chapter. Additionally, these uses would not

be subject to the environmental flow standards because the standards apply to permits for new appropriations of water.

§298.5, General

The commission adopts new §298.5 to provide that Chapter 298 contains the commission's rules related to environmental flow standards. The commission adopts the environmental flow standards in Subchapter B for the Trinity and San Jacinto Rivers, their tributaries, and Galveston Bay and in Subchapter C for the Sabine and Neches Rivers, their associated tributaries, and Sabine Lake Bay. The commission has carefully considered: the definitions of the geographical extent of the river basin and bay system adopted by the Advisory Group and the designation of river basins by the Texas Water Development Board (TWDB); the schedule for the adoption of environmental flows standards established by the Advisory Group; the recommendations developed by the stakeholder committees for their respective areas and any strategies identified by the stakeholders to meet the flow standards; comments submitted by the Advisory Group; the specific characteristics of the river basin and bay system; economic factors considered appropriate by the commission; human and other competing water needs in the river basin; all reasonably available scientific information, including scientific information provided by the SAC; and other appropriate information. The commission specifically invited commenters to provide any relevant information, which may have differed from its proposed standards, which in the commenter's opinion would have assisted the commission in deciding on final environmental flow standards. The

commission considered those comments in developing the adopted standards. The adopted new section implements TWC, §11.1471(a) - (c).

§298.10, Applicability

The commission adopts new §298.10. The intent of HB 3/SB 3 was that the environmental flow standards would only apply to new appropriations of water and amendments that granted a new appropriation of water after September 1, 2007. Subsection (a) of this adopted section states the intent of those bills. In response to comment, the phrase ". . .only when there is an applicable adopted environmental flow standard and. . ." was added to adopted §298.10(a) to clarify that any standards apply only in areas where they have been adopted. However, HB 3/SB 3 left open the question of what process and substantive amounts of water will be used in special conditions, if any, to protect environmental flows for interbasin transfers of existing appropriations; amendments, such as moving a diversion point upstream that does not appropriate new water; and indirect reuse permits under either TWC, §11.042 or §11.046, that might or might not be considered a new appropriation. Under subsection (b) of the adopted rule, the commission clarifies that in those cases where this chapter does not apply, the commission will use its existing authority granted under TWC, Chapter 11, as may be modified by its 30 TAC Chapter 295 and Chapter 297 rules. This adopted new section implements SB 3 and HB 3, as §1.27 was not codified into the TWC.

§298.15, Special Conditions to Protect Environmental Flow Standards and Set-Asides

The commission adopts new §298.15 to incorporate special conditions to protect the environment and set-asides into the rule. One of the ways that the commission may take action to attempt to satisfy environmental flow standards is to set aside unappropriated water under TWC, §11.1471(a)(2). Once the commission has set aside unappropriated water for this purpose, under TWC, §11.023(a) and §11.1471(d), the water is not available for appropriation, except in an emergency under TWC, §5.506 and §11.148. In addition, once the commission has established a set-aside, it is also obligated under TWC, §11.1471(d) to include, in new appropriations, appropriate conditions to ensure protection of the environmental flow set-aside.

The commission understands that special conditions may also be imposed to protect environmental flows in other situations besides when the commission has set aside unappropriated flows. The commission views set-asides as a tool, in circumstances specified by the statute, for a high level of protection, but not the only level of protection afforded by the TWC for environmental flows. Just as it has before HB 3/SB 3, the commission may impose special conditions in water right permits to protect environmental interests. Under the typical special conditions imposed by the commission prior to HB 3/SB 3, a broad classification of waters was allowed to satisfy the special condition. Water appropriated to downstream water right holders, water of another state under an interstate compact, water appropriated to another but not used, and return flows would all count towards satisfying any environmental flow special condition. The commission considers this type of special condition still available to the

commission to provide protection to environmental flow standards adopted pursuant to HB 3/SB 3. The commission is not adopting the exact terms and conditions of special conditions that it will impose to protect environmental flow standards. The commission sees implementation of HB 3/SB 3 as an evolutionary process. The commission wishes to maintain flexibility in permit special conditions as it gains experience implementing the environmental flow standards. This adopted new section implements TWC, §§11.023, 11.1471(d), and 11.147(e-3). In response to comment, the phrase ". . ., after the adoption of an environmental flow set-aside. . .," was added to the adopted §298.15(a) to more closely track TWC, §11.1471(d). Additionally, the phrase ". . ., to the maximum extent reasonable, considering other public interests and other relevant factors. . ." was deleted from adopted §298.15(c) to avoid inconsistency with TWC, §11.147(e-3). The commission also corrected a typographical error by adding a hyphen between the word "set" and the word "asides" in the heading.

§298.20, Priority Date for Set-Asides

The commission adopts new §298.20 to establish that an environmental flow standard or set-aside that meets certain criteria will be assigned a priority date that corresponds to the date the commission receives the environmental flow recommendation. Further, this adopted new section establishes that the priority date will be included in certain water availability models (WAMs). In accordance with TWC, §11.1471(e), for any environmental flow set-aside, that set aside water must be included in the commission's WAM with a priority date based on the date that the commission received the

recommendations from the applicable science team. The commission also reserves the right to protect environmental flow standards by placing those standards into its availability models. When the commission places those environmental flow standards into the models, it will give the flow standards the same priority date that it would give a set-aside. This is in part to ensure that the standards will not affect existing water rights and will only apply to new appropriations of water.

In response to comments, the commission added the sentence "The priority date for the environmental flow standards will be used in the water availability determination for a new appropriation or for an amendment to an existing water right that increases the amount of water authorized to be stored, taken, or diverted and has no other purpose." The commission intends to protect high flow pulse standards from being permitted to smaller applicants for new appropriations because under adopted §298.230 and §298.285, the high flow pulse standards would not be included in water right permits for new appropriations of less than 10,000 acre-feet. In addition, the commission needs to ensure that new appropriations, or amendments to add a new appropriation, will not affect downstream flow standards at measurement points that are not applicable to those new appropriations or amendments. This adopted new section implements TWC, §11.1471(e).

§298.25, Process for Adjusting Environmental Flow Conditions in Certain Permits

The commission adopts new §289.25. Under the HB 3/SB 3 amendment to TWC,

§11.147, for all new appropriations of water after September 1, 2007, the commission was required to include in the water right a provision that allows the commission to adjust environmental flow conditions, if the commission later determines that the adjustment is appropriate to achieve compliance with adopted environmental flow standards. This section adopts procedures for that adjustment.

Subsection (a) adopts an adjustment process that would start on the petition by the executive director. The adjustment would only apply to new appropriations and amendments that increased the appropriation issued after September 1, 2007, the effective date of HB 3/SB 3, Article 1. Adopted Subsection (b) requires the executive director's petition be similar to an original application for a water permit, but the title should indicate that it is for an adjustment to an environmental flow special condition. Adopted subsection (c) requires the notice for these petitions for adjustment of special conditions be by first class mail to all water right holders and navigation districts in the basin. The adopted rule also requires that notice be posted to the agency's Web site. The adopted rule requires that notice be given at least 30 days prior to action on the petition. In response to comment, the commission added the "Texas Parks and Wildlife Department" to adopted §298.25(c) as an entity that would receive notice of the petition to be consistent with TWC, §11.147(f), which recognizes Texas Parks and Wildlife Department (TPWD) as a party on applications to store, take, or divert water. Adopted subsection (d) allows the commission to act on the petition without holding a public hearing. The authority for this subsection comes from TWC, §11.147(e-1), which does

not mention a public hearing for the decision to adjust these special conditions. The statute does specify that adjustments may be made after an "expedited public comment process." As adopted, subsections (e) and (f) provide that motions for reconsideration of the commission's action may be filed within 30 days by any of the following: the commission, the executive director, the water right holder, or the affected parties. The adoption would require the motion for reconsideration to be in writing. In response to comment, the commission added the "Texas Parks and Wildlife Department" to adopted §298.25(e)(4) as an entity that may file a motion for rehearing under this section. The commission made this change to the adopted rule to be consistent with the addition of TPWD as a party who receives notice of the petition under adopted §289.25(c). Adopted subsection (g) allows the commission, after it grants a motion to reconsider, authority to refer the matter to the State Office of Administrative Hearings (SOAH).

Adopted subsection (h) implements the provision of the statute that the adjustment may not exceed 12.5% of the annualized total of the amount required to be adjusted. As adopted, the 12.5% calculation for environmental flow conditions expressed in cubic feet per second is calculated by a simple arithmetic calculation of a 12.5% increase to the flow condition. For environmental flow conditions for high flow pulses that may have a peak flow component expressed in cubic feet per second, a duration expressed in hours or days, and a total volume expressed in acre-feet, the adopted rule uses a 12.5% increase of the total volume of the condition annualized by totaling all the required pulses per year. In response to comments, the commission added the words and phrases

". . .summing the monthly rate in cubic feet per second for each month and then. . .," ". . .sum of the monthly rates in. . .," "maximum annualized", and "annualized" to adopted §298.25(h)(1) and deleted the phrases "annual amount of", and "and calculate the new condition" from adopted §298.25(h)(1). Additionally, in response to comments, the commission also added the words and phrases ". . .summing the original pulse volume for each season and. . .," "that", and "annualized" to adopted §298.25(h)(2) and deleted the words and phrases "the original pulse" and "component" from adopted §298.25(h)(2). The commission does not intend to prescribe how a flow adjustment would be distributed in a future proceeding but only to clarify the calculation of this requirement. At this time, the commission needs to maintain flexibility to determine how these flows would be distributed in the future as it gains experience implementing adjustments to the standards. The adopted rule allows this flexibility. Adopted subsection (i) discusses the basis of environmental flow adjustment and tracks the language of TWC, §11.147(e-1)(2), and is not intended to expand or restrict the intent of this section.

Subsection (j) is adopted to implement the provision of the statute that calls for the adjustment to be based on appropriate consideration of the voluntary contributions to the Texas Water Trust, voluntary amendments to existing water rights to change the use or add a use for instream flows dedicated to environmental needs or bay and estuary inflows, and the appropriate credit for those contributions or amendments. Water rights vary in reliability or the amount of time that water is actually present in the

watercourse. The adopted rule recognizes that a contribution of reliable water or amendment for instream uses and bay and estuary freshwater inflows should be entitled to higher consideration and credit than a similar contribution or amendment of less reliable water. In order to avoid an overly complicated rule, the commission adopts that more reliable water, defined as water where the total volume is available at least 75% of the years, is entitled to full credit. The amount of water must be evenly distributed over the full year. For example, the water right holder seeking credit or consideration under the adopted rule would not be able to specify that their 10,000 acre-foot donation should be considered as being made only in June, July, and August, unless the original water right only allowed diversions in those months. The commission adopts that water that is available less than 75% of the years is entitled to credit for 50% of the amount of water, again spread over the full year. For water rights amended to add a use for instream flows dedicated to environmental needs or bay and estuary inflows, the water right holder retains the ability to use the water right for its original purposes. The adopted rule gives the water right holder credit for 50% of the amount so amended, so long as that amount is not used for its original purposes. In response to comment, the commission added the words and phrases "evenly" and ". . .year, or, if the underlying permit limits the portion of the year when use is authorized, over that portion of the year when use is authorized in the underlying permit" to adopted §298.25(j)(1) and (2) and deleted the phrase "permit's time interval" from adopted §298.25(j)(1) and (2). The commission intends to clarify how the adopted rule would apply to permits with limitations on when their water can be used throughout the year. Additionally, in

response to comments the commission also added §298.25(j)(3) stating, "For water rights that are voluntarily contributed to the Texas Water Trust and include storage, and providing that the underlying water right authorizes diversion from that storage, allowing the water to be provided in at least 75% of the years, the commission may allow credit for the contribution without spreading the amount of the contribution evenly across the year if the commission determines that doing so would better ensure protection of the standards and any applicable environmental flow set-aside." This new paragraph gives the commission discretion to distribute the credit for a contribution to the Texas Water Trust in a different manner, when reservoir storage is available, in order to provide maximum benefit to the environment. This adopted new section implements TWC, §11.147(e-1) and (e-2).

Subchapter B: Trinity, San Jacinto Rivers, and Galveston Bay.

The commission adopts Subchapter B to contain all of the environmental flow standards and rules specific to the basin and bay system composed of the Trinity and San Jacinto Rivers, their associated tributaries, and Galveston Bay. The science team delivered its report to the commission on December 1, 2009. The stakeholder committee delivered its recommendations to the commission on May 28, 2010. The commission understands that it is now its duty to adopt environmental flow standards under TWC, §11.02362(c)(5). This adopted new subchapter implements the schedule established by the Advisory Group under TWC, §11.02362, and environmental flow standards required of the commission in TWC, §11.1471.

§298.200, Applicability and Purpose

The commission adopts new §298.200 to describe the purpose of Subchapter B and in what circumstances it applies. In response to comment, the commission added the phrase "In case of a direct conflict, provisions" and deleted the word "Provisions" from adopted §298.200 to clarify the circumstances where the provisions of Subchapter B control over those in Subchapter A.

§298.205, Definitions

The commission adopts new §298.205. The adopted section has definitions of terms that will apply only to this subchapter. In response to comment, the commission added a definition for Galveston Bay as paragraph (1) and renumbered the remaining paragraphs. In §298.205(2), (3), (5), and (6) the commission adopts definitions for the seasons, "Fall," "Spring," "Summer," and "Winter" because the environmental flow standards for this basin and bay system vary by season. The definitions are the same as the definitions of the seasons in the recommendations of the majority of the stakeholders and commenters to the proposed rule. In §298.205(4) the commission adopts a definition for "Sound ecological environment." This adopted definition is the same definition as presented by the majority of the stakeholders.

§298.210, Findings

The commission adopts new §298.210 regarding findings related to sound ecological

environments. The adopted finding regarding the ecological environment is in keeping with the stakeholder committee reports. Additional information on the commission's reasoning for the adopted schedule of flow quantities and environmental flow standards can be found in this preamble under the analyses for §298.220 and §298.225. This adopted new section implements TWC, §11.1471.

§298.215, Set-Asides and Standards Priority Date

The commission adopts new §298.215 which establishes the priority date for any set-asides and any modeling of the environmental flow standards as the date the commission received the report from the science team, which was December 1, 2009. In response to comments, the commission added the sentence "The priority date for the environmental flow standards will be used in the water availability determination for a new appropriation or for an amendment to an existing water right that increases the amount of water authorized to be stored, taken, or diverted and has no other purpose. . ." to adopted §298.215. The commission intends to protect high flow pulse standards from being permitted to smaller applicants for new appropriations because under adopted §298.230, the high flow pulse standards would not be included in water right permits for new appropriations of less than 10,000 acre-feet. In addition, the commission needs to ensure that new appropriations, or amendments to add a new appropriation, will not affect downstream flow standards at measurement points that are not applicable to those new appropriations or amendments. The commission also adds these changes to ensure consistency with adopted §298.20. The commission also

corrected a typographical error by adding the phrase "Set-Asides and" to the heading.

§298.220, Schedule of Flow Quantities

The commission adopts new §298.220 regarding the schedule of flow quantities to explain the implementation of the environmental flow standards in §298.225. The commission reserves the right to not use the exact wording of the section in water right permits issued after the adoption of these rules. However, this section does express how the commission intends to implement the adopted environmental flow standards in water right permit applications for new appropriations. Subsistence flows are intended to be the minimum flows below which the commission will not allow diversions or storage of water. Therefore, the water right holder may not divert or store water if the flow at the applicable measurement point is below the subsistence flow standard. If the flow is above the subsistence flow standard but below the base flow standard, then the water right holder may divert or store water down to the subsistence flow standard. Once the flow at the applicable measurement point is above the base flow standard for the season, then the water right holder may store or divert water according to its permit, as long as the flow at the measurement point does not fall below the applicable base flow standard. The commission adopts that two pulse flows per season be allowed to pass if the flows are above the base flow standard for the season and if the peak flow trigger level is reached at the measurement point. The commission adopts that the requirement that summer and fall seasons can be considered together for purposes of determining compliance with the two per season pulse flow requirement. Once the trigger conditions

are met, the water right holder may not store or divert water until either the applicable pulse volume passes the measurement point or the applicable pulse duration has occurred. However, the water right holder may store or divert water in excess of the pulse flow trigger level so long as any diversions or storage do not prevent the pulse flow trigger level, or volume and duration requirements, from being met. The adopted rule does not require the water right holder to produce a pulse flow. Pulses occur because of high rainfall events. The adopted rule does require that during two of these high rainfall events per season, the high flow pulse be allowed to pass downstream. If in a particular season, only one of the high flow pulses identified in the commission's adopted rule is generated, then there would be no need to "catch up" or allow more than two high flow pulses to pass in the following season. The commission specifically requested comments on alternative ways to implement the environmental flow standards of §298.225.

The commission considered these comments and modified this section to provide more clarity in the rules. In response to comments, the commission added the sentence "The applicable subsistence flow standard varies depending on the seasons as described in §298.205 of this title." and the word "applicable" to adopted §298.220(b). These changes clarify that the definition for the seasons is found in adopted §298.205, that the subsistence flow standard can be variable depending on the season, and that only the subsistence flow for a particular season limits diversions by a water right subject to the standards in that season. Second, the commission added the phrases "§298.205" and "high flow pulse" and deleted "§298.230" and "peak flow" from adopted §298.220(c) to

conform to the changes in adopted §298.220(b). Third, the commission replaced a semi-colon with a comma in adopted §298.220(d). Fourth, in response to comments, the commission added the words and phrases "applicable high flow pulse", "except during times that streamflow at the applicable measurement point exceeds the applicable high flow pulse trigger level and", "applicable", "high flow pulse", and "level" to adopted §298.220(d)(1). The commission also deleted the words "peak flow" and "rate" from adopted §298.220(d)(1). The commission made these changes to clarify how a high flow pulse requirement would apply to a water right subject to the standards and to ensure consistency with adopted §298.275(d) because the commission intends to apply any high flow pulse requirements to water rights subject to the standards in Subchapters B and C in the same manner. In addition, these changes clarify that a water right owner can divert water in excess of the applicable pulse requirement so long as those diversions do not prevent the occurrence of the peak flow of the applicable pulse and so long as the duration or volume requirement is met for that pulse. Fifth, in response to comments, and to ensure consistency within adopted §298.220, the commission added the words and phrases "applicable high flow pulse", high flow pulse", and "level" to adopted §298.220(d)(2) and deleted the words "peak flow", "peak", and "rate" from adopted §298.220(d)(2). Sixth, in response to comments, the commission deleted §298.220(d)(3): "For purposes of this section, compliance with seasonal high flow pulse frequency requirements is determined by Fall, defined as October through November; Spring, defined as March through June; Summer, defined as July through September; and Winter, defined as December through February. " The commission

deleted this section to ensure consistency with adopted §298.225 and renumbered the remaining paragraph. This change to the adopted rule creates a more simplified flow regime, for purposes of water rights administration, because seasonality for subsistence flow, base flow, and high flow pulses is the same in the adopted rule. Seventh, the commission added the phrase "With the exception of summer and fall, which are treated as a single season for purposes of pulse flow requirements, each" and deleted the word "Each" from adopted §298.220(d)(3) to ensure consistency with adopted §298.225. This change also ensures consistency with the calculation of the specific high flow pulse values for these seasons in adopted §298.225. Eighth, the commission added §298.220(e): "(e) A water right owner that has stored water in accordance with the terms and conditions of its water right, including any applicable environmental flow requirement in effect at the time the water was stored, may divert, release, or use this water, even if the applicable environmental flow requirement is not met at the time of the subsequent diversion, release, or use of that stored water." The commission added this subsection to clarify that if a water right owner stored water at a previous time, and complied with the applicable environmental flow requirements at that time, the water right owner would not need to comply with any environmental flow requirements in effect when subsequent use of that stored water occurs. Finally, to ensure consistency with adopted §298.225, and to correct the location of the specific measurement points and flow values in this chapter, the commission adds the phrases "§298.225" and "Environmental Flow Standards" and deleted the phrases "§298.230" and "Water Right Permit Conditions" from adopted §298.220(a).

§298.225, Environmental Flow Standards

The commission adopts new §298.225 to provide the environmental flow standards of TWC, §11.1471, for the basin and bay system composed of the Trinity and San Jacinto Rivers, associated tributaries, and the Galveston Bay system. The commission based its decision on consideration of sound science and other public interests and relevant factors. In the absence of a consensus recommendation from the stakeholders, which balanced science with other public interests, the commission adopts standards based on available information, recommendations from the stakeholders, recommendations from the science teams, and comments to the proposed rule. The measurement points are those recommended by the majority of the stakeholders and that portion of the science team identified as the "conditional group." In addition, to ensure that the adopted standards take into account the geographic extent of the river basin and bay system, two additional measurement points are adopted. These additional measurement points were recommended as locations for adaptive management by the "conditional group" of the science team and were also recommended by the portion of the science team identifying themselves as the "regime group," as well as the remaining stakeholders. The adopted base flow and subsistence flow standards are based on comments to the proposed rule. The commission acknowledges concerns related to low flow levels. Therefore, specific values for base and subsistence flow standards for all of the measurement points in adopted §298.225 were generally changed based on specific values recommended by commenters. The adopted high flow pulse standards are based, in part, on comments to

the proposed rule. These simplified high flow pulse requirements and the changes in seasonality are consistent with recommendations from some members of the science team and are based on a balance of the best available science and human and other competing needs for water. The adopted bay and estuary freshwater inflow standards for Galveston Bay are based on the recommendations of the majority of the stakeholders and comments received on the proposed rule and include seasonal values and frequencies based on a balancing of human and other competing needs for water.

The executive director performed an analysis to address the issue of balancing human and other competing needs for water in the basin and bay system. The executive director did not look at every possible future water use scenario, but limited the selection of scenarios to those that could reasonably be expected to be implemented before the environmental flow standards are reconsidered, in accordance with the schedule in §298.240. The executive director did not look at longer term water use scenarios, i.e., 50 years in the future, because there will be another opportunity to look at those long-term scenarios through HB 3/SB 3's adaptive management provisions. Under those provisions, the standards will be re-examined based on improved science and the stakeholders will have another opportunity to re-evaluate the issue of balancing human and other competing needs for water in the basin and bay system.

The executive director reviewed the Regional Water Plans for Regions C and H, as those regions are delineated by the TWDB for the Regional Water Planning process. Based on

this review, the executive director selected one future use scenario for the balancing analysis from the Trinity River Basin and one from the San Jacinto River Basin. This analysis, conducted to address the issue of balancing human and other competing needs for water in the basin and bay system is not intended as a finding that water is or is not available for appropriation. For all evaluations, the executive director used the commission's WAM for the specific river basin and modified it by adding the selected scenario. Each scenario is different, therefore the application of criteria and reporting of results varies based on the specifics of the scenario. The executive director performed analyses to estimate water availability under three conditions: 1) application of the adopted environmental flow standard; 2) application of the commission's current default methodology; and 3) no environmental flow requirements. Copies of the WAMs used in this analysis are available at: *http://www.tceq.texas.gov/goto/eflows/rulemaking*.

For the Trinity River Basin scenario, applying either the default methodology or no instream flow or freshwater inflow requirement produces an annual availability of 83%. Application of the adopted standards also produced an annual availability of 83%. For the San Jacinto River Basin, no measurement points are adopted in the rule near the location of the scenario. In this case, no instream flow standards were applied in the analysis. However, the scenario would be subject to the adopted bay and estuary freshwater inflow standards. No specific freshwater inflow constraints were included in the WAM. Instead, the scenario was added to the WAM and processed. Then the flows

at the basin outlet were processed to determine whether the annual and seasonal values and frequencies in the adopted rule were met. If the annual and seasonal values and frequencies in the adopted rule were not met, the demand for the scenario was reduced. This process was performed iteratively until the annual and seasonal frequencies and values were met.

Applying the commission's default methodology resulted in less water than would be available without instream flow or freshwater inflow requirements. Applying the bay and estuary freshwater inflow standard adopted by this rule resulted in less water than would be available under either application of the default methodology or application of no environmental flow requirements. The reliability of available water varied depending on the environmental flow condition. Reliability with application of either the bay and estuary freshwater inflow standard or no environmental flow requirements was comparable, and both of these conditions resulted in more reliable water than application of the default methodology. The executive director also considered whether reduction of the adopted standards would result in a significant increase in the yield of these projects and found that it did not. Based on the results of the analysis, the executive director determined that there would be no significant impact from implementation of the adopted standards.

The adopted rule does not set aside any unappropriated water to protect the adopted environmental flow standards. Unappropriated water is not available to protect the

subsistence and base flows. Any unappropriated water that is available in these river basins is available only during relatively wet conditions. In theory, some water might be able to be set aside for high flow pulses. The commission is of the opinion that the environmental flow standards may be adequately protected by special conditions in water right permits or amendments for new appropriations of water in these basins. Special conditions are a more effective method to maximize the use of water by allowing water to be used for dual purposes. Special conditions to protect environmental flows may allow water permitted to downstream senior water rights, as well as return flows and permitted but unused water, to satisfy the special conditions.

In response to comments, the commission added the phrases "on either a seasonal or annual basis" and "to Galveston Bay, as described in Figure: 30 TAC §298.225(a)" to adopted §298.225(a). Second, in response to comment, the commission also deleted the words and phrases "or associated coastal basins that drains to Galveston Bay" and "following" from adopted §298.225(a). These changes implement the seasonal requirements in the adopted figure in §298.225(a) and ensure consistency with adopted §298.225(b). The commission includes seasonal components in the adopted rule to provide additional protection during lower flow seasons. The commission did not receive recommendations for freshwater inflow standards for the coastal basins from the stakeholders, or commenters to the proposed rule. Therefore, the commission does not adopt freshwater inflow standards for the coastal basins that drain to Galveston Bay at this time.

Third, in response to comments, the commission also adds §298.225(b): "(b) The freshwater inflow standards are subject to adjustment, in accordance with TWC, §11.147(e-1). The adjustment for each inflow level is calculated by adding the volumes for all of the seasons in that inflow level for the entire year and multiplying that annual total volume by 12.5% to generate the maximum adjustment amount. The maximum adjustment, including the effect of any previous adjustments, cannot increase the total volume for that inflow level above the sum of the annual total of the original volume requirement for that level plus the 12.5% adjustment." The commission adds this subsection to the adopted rule to clarify how adjustment of the freshwater inflow standards in §298.225(a) will occur. Fourth, the commission deletes the proposed figure in §298.225(a) and adds a new figure in §298.225(a) to reflect the addition of seasonal values to the adopted freshwater inflow standards. The freshwater inflow standards in the adopted rule represent a balance between the two recommendations of the stakeholder group and comments to the proposed rule. Fifth, the commission corrected the name of the gage, Trinity River at Dallas, in adopted §298.225(c)(2) and East Fork San Jacinto River near Cleveland in adopted §298.225(c)(5).

Finally, in response to comments, the commission deletes the figures in §298.225(b)(1) - (6). The commission adopts the modified and renumbered figure in §298.225(c)(1) - (6). These changes are to ensure consistency with adopted §298.205 and §298.220. The values in the adopted figures reflect the commission's consideration of comments

on the proposed rule by changing specific values for subsistence, base, and high flow pulse standards as described previously. This adopted section implements TWC, §11.1471.

§298.230, Water Right Permit Conditions

The commission adopts new §298.230 relating to water right permit conditions. The adopted provision requires the commission to place special conditions in water right applications for new appropriations and amendments that would add additional appropriations to existing permits. The special conditions would be to protect the environmental flow standards established by the subchapter. Water right permit applications to divert or store 10,000 acre-feet per year or less would not contain the special conditions relative to high flow pulses. In response to comments, the commission deleted the phrase ", to the maximum extent reasonable, considering other public interests and other relevant factors" from adopted §298.230(a) and (b). The commission agrees that TWC, §11.147(e-3), would not allow this balancing when implementing the adopted rule. This adopted new section implements TWC, §11.134(b)(3)(D) and §11.1471.

§298.240, Schedule for Revision of Standards

The commission adopts new §298.240 to provide the schedule for re-examination of the environmental flow standards. The commission will consider taking up a rulemaking to change the standards ten years from the effective date of the rules. The commission

notes that it is prohibited from providing that the rulemaking process occurs more frequently than once every ten years unless the stakeholders' workplan approved by the Advisory Group under TWC, §11.02362(p), calls for a more frequent schedule. The commission notes that, when it proposed this rule, it had not received an approved workplan from the stakeholder committee. The commission will consider changing its proposal on adoption of the rule if it has received an approved workplan by the date this rule is considered for adoption at the commission agenda. The commission is also of the opinion that should it receive an approved workplan after final adoption of this rule package, the commission is free to consider an amendment to this section and change the schedule more often than once every ten years. In response to comment, the commission added the phrase "by a balanced representation" to adopted §298.240. The commission made this change to ensure that the adopted rule is consistent with TWC, §11.0235(d)(6) and §11.02362(f)(1). The commission also corrected a typographic error. The adopted new section implements TWC, §11.1471(f).

Subchapter C: Sabine, Neches Rivers, and Sabine Lake Bay.

The commission adopts Subchapter C to contain all of the environmental flow standards and rules specific to the basin and bay system composed of the Sabine and Neches Rivers, their associated tributaries, and Sabine Lake Bay. The science team delivered its report to the commission on November 30, 2009. The stakeholder committee delivered its recommendations to the commission on May 24, 2010. The commission understands that it is now its duty to adopt environmental flow standards under TWC,

§11.02362(c)(5). This adopted new subchapter implements the schedule established by the Advisory Group under TWC, §11.02362, and environmental flow standards required of the commission in TWC, §11.1471.

§298.250, Applicability and Purpose

The commission adopts new §298.250 to describe the purpose of Subchapter C and in what circumstances it applies. In response to comment, the commission added the phrase "In case of a direct conflict, provisions" and deleted the word "Provisions" from adopted §298.250 to clarify the circumstances where the provisions of Subchapter C control over those in Subchapter A.

§298.255, Definitions

The commission adopts new §298.255 regarding definitions. The adopted section has definitions of terms that will apply only to this subchapter. In response to comments, the commission deletes §298.255(1), (2) and (7), which are definitions for "Average condition", "Dry condition", and "Wet condition" from adopted §298.255 and renumbers the remaining paragraphs in this section. The commission considered information from the SAC, as well as comments to the proposed rule that identified specific implementation issues associated with hydrologic condition triggers. The commission also considered its balancing analysis, which addressed human and other competing needs for water. Based on this analysis, the commission does not adopt hydrologic condition triggers or multiple levels of base flow at this time, and instead

adopts a more simplified flow regime for this basin and bay system. In §298.255(1), (2), (4), and (5) the commission adopts definitions for the seasons, "Fall," "Spring," "Summer," and "Winter" because the environmental flow standards for this basin and bay system vary by season. The definitions are the same as the definitions of the seasons in the recommendations of the science team. In §298.255(3) the commission adopts a definition for "Sound ecological environment," which is the same definition as presented by the stakeholders.

§298.260, Findings

The commission adopts new §298.260 regarding findings related to sound ecological environments. The adopted finding regarding the ecological environment is in keeping with the stakeholder committee report. The adopted finding regarding maintenance of the ecological environment is based on the science team report. Additional information on the commission's reasoning for the adopted schedule of flow quantities and environmental flow standards can be found in this preamble under the analyses for §§298.255, 298.275, and 298.280. In response to comments and to ensure consistency with adopted §§298.255, 298.275, and 298.280, which delete hydrologic condition triggers and remove multiple levels of base flow and one level of high flow pulses, the commission added the words and phrases "these", "environments", "contain", "one level", "will", "by year", and "whether a system is in subsistence or base flow conditions, will vary from year to year and within a year from season to season, and the number of pulses protected will also vary with the amount of precipitation" to adopted

§298.260(b). The commission also deleted the words and phrases "this", "environment", "includes", "two levels", "shall", "by hydrological conditions", and "streamflow varies from year to year" for the same reasons. This adopted new section implements TWC, §11.1471.

§298.265, Set-Asides and Standards Priority Date

The commission adopts new §298.265 that establishes the priority date for any set-asides and any modeling of the environmental flow standards as the date the commission received the report from the science team, which was November 30, 2009. In response to comments, the commission added the sentence "The priority date for the environmental flow standards will be used in the water availability determination for a new appropriation or for an amendment to an existing water right that increases the amount of water authorized to be stored, taken, or diverted and has no other purpose" to adopted §298.265. The commission intends to protect high flow pulse standards from being permitted to smaller applicants for new appropriations because under adopted §298.285, the high flow pulse standards would not be included in water right permits for new appropriations of less than 10,000 acre-feet. In addition, the commission needs to ensure that new appropriations, or amendments to add a new appropriation, that are subject to the environmental flow standards, will not affect downstream flow standards at measurement points that are not applicable to those new appropriations or amendments. The commission also adds these changes to ensure consistency with adopted §298.20.

In response to comments, the commission is withdrawing the proposal of §298.270. This section described the calculation of hydrologic conditions. However, at this time, the commission is not adopting hydrologic conditions for the reasons stated previously.

§298.275, Schedule of Flow Quantities

The commission adopts new §298.275 to explain the implementation of the environmental flow standards in §298.280. The commission does not intend to be bound to use the exact wording of this section in water right permits issued after the adoption of these rules. However, this section does express how the commission intends to implement the adopted environmental flow standards in water right permit applications for new appropriations. Subsistence flows are intended to be the minimum flows below which the commission will not allow diversions or storage of water. Therefore, the water right holder may not divert or store water if the flow at the applicable measurement point is below the subsistence flow standard. If the flow is above the subsistence flow standard but below the base flow standard, then the water right holder may divert or store water down to the subsistence flow standard. Once the flow at the applicable measurement point is above the base flow standard for the season, then the water right holder may store or divert water according to its permit, as long as the flow at the measurement point does not fall below the applicable base flow standard. The commission adopts the requirement that two high flow pulses per season be allowed to pass during the Spring and Fall seasons and one high flow pulse per season be

allowed to pass during the Winter and Summer seasons, if the flows are above the base flow standard for the season and if the peak flow trigger level is reached at the measurement point. Once the trigger conditions are met, the water right holder may not store or divert water until either the applicable pulse volume passes the measurement point or the applicable pulse duration has occurred. However, the water right holder may store or divert water in excess of the pulse flow trigger level so long as any diversions or storage do not prevent the pulse flow trigger level, or volume and duration requirements, from being met. The adopted rule does not require the water right holder to produce a pulse flow. Pulses occur because of high rainfall events. The adopted rule does require that during two of these high rainfall events per season during the Spring and Fall seasons, and during one of these high rainfall events during the Summer and Winter seasons, the high flow pulse be allowed to pass downstream. If in a particular season, depending on the seasonal requirement, either none or one of the high flow pulses identified in the commission's adopted rule is generated, then there would be no need to "catch up" or allow more than one or two high flow pulses to pass in the following season. The commission specifically requested comments on alternative ways to implement the environmental flow standards of §298.280 and considered those comments in development of the adopted standards. The commission balanced scientific recommendations with human and other competing needs for water in developing the adopted standards.

In response to comments, including an alternate recommendation, the commission added the phrase and word "one level of" and "ten" and deleted the word "eleven" from adopted §298.275(a). Second, in response to comments, the commission added the sentence "The applicable subsistence flow standard varies depending on the seasons described in §298.255 of this title." and the words "applicable", and "standard" to adopted §298.275(b) and deleted the word "level" from §298.275(b). These changes clarify that the definition for the seasons is found in adopted §298.255, that the subsistence flow standard can be variable depending on the season, and that only the subsistence flow for a particular season limits diversions by a water right subject to the standards in that season. Third, in response to comments, the commission added the words and phrases "seasons as", "§298.255", "a", and "trigger" to adopted §298.275(c) and deleted the words and phrases "hydrologic conditions", "§298.270", "the", and "for the climatic condition prevailing at that time, i.e., the water right will be subject to either: a dry base flow; an average base flow; or a wet base flow standard" from adopted §298.275(c) to conform to the changes in adopted §298.275(a) and §298.280. Fourth, the commission replaced a semi-colon with a comma in adopted §298.275(d). Fifth, in response to comments, the commission added the words and phrases "during the Spring and Fall seasons and one pulse per season is to be passed during the Winter and Summer seasons", "flows are above the applicable base flow standard", "applicable high flow pulse", "except during times that streamflow at the applicable measurement point exceeds the applicable high pulse flow trigger level and", "applicable", "high flow pulse", and "level" to adopted §298.275(d)(1). The commission also deleted the words and

phrases "smaller magnitude", "hydrologic condition is average or wet," "peak flow", "rate", and "Under dry hydrologic conditions during the spring and summer seasons, only one smaller-magnitude pulse shall be passed, if the peak flow trigger level is met at the measurement point. Under dry hydrologic conditions during the fall and winter, no high flow pulses need be passed." from adopted §298.275(d)(1). The commission made these changes to clarify how a pulse flow requirement would apply to a water right subject to the standards and to ensure consistency with adopted §298.220(d) because the commission intends to apply any pulse flow requirements to water rights subject to the standards in Subchapters B and C in the same manner. In addition, these changes clarify that a water right owner can divert water in excess of the applicable pulse requirement so long as those diversions do not prevent the occurrence of the peak flow of the applicable pulse. Sixth, the commission deleted §298.275(d)(2): "(2) During wet conditions and in addition to the two smaller-magnitude pulses, a single larger-magnitude pulse must be passed; a water right holder shall not divert or store water until either the volume amount has passed the measurement point, or the duration time has passed since the peak flow trigger rate occurred." from the adopted rule. The commission deleted this section to ensure consistency with adopted §298.280 and renumbered the remaining paragraphs. Seventh, the commission added the words and phrases "applicable high flow pulse", "level", and "high flow pulse" to adopted §298.275(d)(2) and deleted the words "peak", and "rate", from the adopted §298.275(d)(2) to ensure consistency with adopted §298.225. Eighth, the commission added §298.275(e): "(e) A water right owner that has stored water in accordance with

the terms and conditions of its water right, including any applicable environmental flow requirement in effect at the time the water was stored, may divert, release, or use this stored water, even if the applicable environmental flow requirement is not met at the time of the subsequent diversion, release, or use of that stored water." The commission added this subsection to clarify that if a water right owner stored water at a previous time, and complied with the applicable environmental flow requirements at that time, the water right owner would not need to comply with any environmental flow requirements in effect when subsequent use of that stored water occurs. Finally, to ensure consistency with adopted §298.280, and to correct the location of the specific measurement points and flow values in this chapter, the commission adds the phrases "§298.280" and "Environmental Flow Standards" and deleted the phrase "§298.270" and "Calculation of Hydrologic Condition" from the adopted §298.275(a).

§298.280, Environmental Flow Standards

The commission adopts new §298.280 to provide the environmental flow standards of TWC, §11.1471, for the basin and bay system composed of the Sabine and Neches Rivers, associated tributaries, and Sabine Lake Bay. The commission based its decision on consideration of sound science and other public interests and relevant factors. In the absence of a recommendation from the stakeholders, which would have balanced science with other public interests, the commission adopts standards based on available information, recommendations from the science team, and comments on the proposed rule.

The adopted standards in §298.280 are not based solely on scientific information. The commission also considered human and other competing needs for water in developing the adopted standards. The commission does not find that there is sufficient existing scientific evidence to indicate that the standards, once adopted would not support a sound ecological environment. Therefore, the commission does not adopt hydrologic condition triggers or multiple levels of base flows and instead adopts a more simplified flow regime. The commission acknowledges that further analyses and studies may need to be performed in the future to determine whether the adopted standards, once implemented, are providing sufficient flow variability. HB 3/SB 3 contemplate that additional analyses and studies can be considered through adaptive management via the workplan for this basin and bay system.

The measurement locations are those recommended by the science team, with the exception of USGS gage 08038000, Attoyac Bayou near Chireno, Texas and USGS Gage 08028500, Sabine River near Bon Weir. The commission notes that, when it proposed this rule, daily discharge information was not publically available for USGS gage 08038000, Attoyac Bayou near Chireno, Texas. For this location, the lack of readily accessible daily data could have created implementation issues for specific water right holders who could be subject to an environmental flow standard at this location; therefore, the commission has not adopted environmental flow standards at this location. In addition, for USGS Gage 08028500, Sabine River near Bon Weir, the

commission considered comments related to the calculation of flows at this gage and determined that this gage should not be included in adopted §298.280. The commission considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, comments on the proposed standards, and alternate recommendations and balanced human and other competing needs for water and other factors with the scientific recommendations to develop the adopted standards. The science team did not recommend bay and estuary standards for Sabine Lake Bay. After reviewing available information from the science team, stakeholders, and commenters on the proposed rule, the commission did not include freshwater inflow requirements in the adopted standards. Pulse flow requirements in permits for new appropriations of water and naturally occurring flood events should provide sufficient freshwater inflows to Sabine Lake. The commission acknowledges that further analyses and studies may need to be performed in the future to determine whether the adopted standards, once implemented, are providing sufficient freshwater inflows to Sabine Lake.

The executive director performed an analysis to address the issue of balancing human and other competing needs for water in the basin and bay system. The executive director did not look at every possible future water use scenario, but limited the selection of scenarios to those that could reasonably be expected to be implemented before the environmental flow standards are reconsidered in accordance with the schedule in §298.290. The executive director did not look at longer term water use

scenarios, i.e., 50 years in the future, because there will be another opportunity to look at those long-term scenarios through HB 3/SB 3's adaptive management provisions. Under those provisions, the standards will be re-examined based on improved science and the stakeholders will have another opportunity to re-evaluate the issue of balancing human and other competing needs for water in the basin and bay system.

The executive director reviewed the Regional Water Plans for Regions C, D, and I, as those regions are delineated by the TWDB for the Regional Water Planning process. Based on this review, the executive director selected one future water use scenario for the balancing analysis from the Sabine River Basin and one from the Neches River Basin. For all evaluations, the executive director used the commission's WAM for the specific river basin and modified it by adding the selected scenario. Each scenario is different; therefore, the application of criteria and reporting of results varies based on the specifics of the scenario. The executive director performed analyses to estimate water availability under three conditions: 1) application of the adopted environmental flow standard; 2) application of the commission's current default methodology; and 3) no environmental flow requirements. The commission's WAM for the Sabine River Basin accounts for Texas' obligations under the Sabine River Compact. Copies of the WAMs used in this analysis are available at: *http://www.tceq.texas.gov/goto/eflows/rulemaking*.

For the Sabine River Basin scenario, applying either the default methodology or no

instream flow requirement produces an annual availability of 97%. Application of the standards adopted in this rule produces an annual availability of 95% or a 2% decrease as compared to the amount available under the other environmental flow conditions. For the Neches River Basin scenario, the maximum annual availability under each of the three conditions varied slightly. The 50th percentile annual diversion amounts exhibited greater variation, with application of the adopted standards resulting in the lowest annual availability in this range, although this reduction is not significant.

The executive director also considered whether reduction of the adopted standards would result in a significant increase in the yield of these projects and found that it did not. Based on the results of the analysis, the executive director determined that there would be no significant impact from implementation of the adopted standards. The adopted rule does not set aside any unappropriated water to protect the adopted environmental flow standards. Unappropriated water is not available to protect subsistence and base flows. Any unappropriated water that is available in these river basins is only available during relatively wet conditions. In theory, some water might be able to be set aside for high flow pulses. The commission is of the opinion that the environmental flow standards may be adequately protected by special conditions in water right permits or amendments for new appropriations of water in these basins. Special conditions are a more effective method to maximize the use of water by allowing water to be used for dual purposes. Special conditions to protect environmental flows may allow water permitted to downstream senior water rights, as well as return flows

and permitted but unused water, to satisfy the special conditions.

In response to comments, the commission deleted §298.280(4) and renumbered the remaining paragraphs and figures. The commission determined that USGS Gage 08028500, Sabine River near Bon Weir should not be included as a measurement point in the adopted rule. The commission also corrected the gage name Neches River near Rockland in adopted §298.280(7) and in the caption for the figure in §298.280(7).

Additionally, in response to comments, the commission deleted the figures in §298.280(1) - (3), and §298.280(5) - (11). The commission adopts the modified and renumbered figures in §298.280(1) - (10). These changes are to ensure consistency with adopted §298.255 and §298.275. The values in the adopted figures reflect the commission's consideration of comments on the proposed rule by changing specific values for subsistence, base, and high flow pulse standards as described above. This adopted new section implements TWC, §11.1471.

§298.285, Water Right Permit Conditions

The commission adopts new §298.285 to require the commission to place special conditions in water rights for new appropriations and amendments that would add additional appropriations to existing permits. The special conditions would be to protect the environmental flow standards established by the subchapter. Water right permit applications to divert or store 10,000 acre-feet or less per year would not contain

the special conditions relative to high flow pulses. The commission deleted the phrase ", to the maximum extent reasonable, considering other public interests and other relevant factors" from adopted §298.285(a) and (b) and corrected a typographic error in adopted §298.285(b). The commission agrees that TWC, §11.147(e-3) would not allow this balancing when implementing the adopted rule. This adopted new section implements TWC, §11.134(b)(3)(D) and §11.1471.

§298.290, Schedule for Revision of Standards

The commission adopts new §298.290 to provide the schedule for re-examination of the environmental flow standards. The commission will consider taking up a rulemaking to change the standards ten years from the date of adoption of the rules. The commission notes that it is prohibited from providing that the rulemaking process occurs more frequently than once every ten years, unless the stakeholders' workplan approved by the Advisory Group under TWC, §11.02362(p), calls for a more frequent schedule. The commission notes that, when it proposed this rule, it had not received an approved workplan from the stakeholder committee. The commission will consider changing its proposal on adoption of the rule if it has received an approved workplan by the date this rule is considered for adoption at the commission agenda. The commission is also of the opinion that should it receive an approved workplan after final adoption of this rule package, the commission is free to consider an amendment to this section and change the schedule more often than once every ten years. The commission added the word "revised" and removed the word "altered" from adopted §298.290 to ensure consistency

with the language in adopted §298.240. In response to comment, the commission added the phrase "by a balanced representation" to adopted §298.290. The commission made this change to ensure that the adopted rule is consistent with TWC, §11.0235(d)(6) and §11.02362(f)(1). The commission also corrected a typographic error by adding the word "periodic" and deleting the word "period." This adopted new section implements TWC, §11.1471(f).

Final Regulatory Impact Analysis Determination

The commission evaluated these adopted rules and performed an analysis of whether these adopted rules require a regulatory impact analysis under Texas Government Code, §2001.0225. These amendments are not a "major environmental rule" under Texas Government Code, §2001.0225 because although the specific intent of the rulemaking is to protect the environment, these rules do not potentially adversely affect in a material way the economy or a sector of the economy. Additionally, the purpose of these rules is not to exceed a standard set by federal law, exceed an express requirement of state law, exceed a requirement of a delegation agreement or contract between the state and an agency of the federal government to implement a state and federal program, or to adopt rules solely under the general powers of the agency instead of specific state law. This rulemaking is specifically required by TWC, §11.1471. The purpose of these rules is to establish environmental flow standards, set-asides (if available), and procedures for implementing an adjustment of these standards, if required, in a permit or amendment for the river and bay systems consisting of the Sabine and Neches Rivers and Sabine

Lake Bay, and the Trinity and San Jacinto Rivers and Galveston Bay, as required by TWC, §11.1471(a). Therefore, no regulatory impact analysis is required under Texas Government Code, §2001.0225, for this rulemaking.

The commission invited public comment regarding the draft regulatory impact analysis determination during the public comment period. The commission did not receive any comments regarding the draft regulatory impact analysis determination.

Takings Impact Assessment

The commission evaluated these adopted rules and performed an analysis of whether they constitute a taking under Texas Government Code, Chapter 2007. The specific purpose of these rules is to establish environmental flow standards, set-asides (if available), and procedures for implementing an adjustment of these standards, if required, in a permit or amendment for the river and bay systems consisting of the Sabine and Neches Rivers and Sabine Lake Bay, and the Trinity and San Jacinto Rivers and Galveston Bay, as expressly required by TWC, §11.1471(a). Promulgation and enforcement of these adopted rules would be neither a statutory nor a constitutional taking of private real property. Specifically, because under TWC, §11.147(e-1), these rules cannot be retroactively applied to water rights issued before September 1, 2007, the subject adopted regulations do not affect a landowner's rights in private real property. Thus, this rulemaking does not burden (constitutionally) nor restrict or limit the owner's right to existing property and reduce its value by 25% or more beyond that

which would otherwise exist in the absence of the regulations.

Consistency with the Coastal Management Program

The commission reviewed the adopted rulemaking and found that the adoption is subject to the Texas Coastal Management Program (CMP) in accordance with the Coastal Coordination Act, Texas Natural Resources Code, §§33.201 *et. seq*., and, therefore, must be consistent with all applicable CMP goals and policies. The commission conducted a consistency determination for the adopted rules in accordance with Coastal Coordination Act Implementation Rules, 31 TAC §505.22, and found the adopted rulemaking is consistent with the applicable CMP goals and policies.

CMP goals applicable to the adopted rules include: 1) to protect, preserve, restore, and enhance the diversity, quality, quantity, functions, and values of coastal natural resource areas; and 2) to ensure sound management of all coastal resources by allowing for compatible economic development and multiple human uses of the coastal zone. CMP policies applicable to the adopted rules include those contained in 31 TAC §501.33. The adopted rules implement HB 3/SB 3, which established the environmental flows process to provide certainty in water management and development and to provide adequate protection of the state's streams and rivers, bays, and estuaries. Since one of the purposes of the adopted rules is to protect coastal natural resources, the rules are consistent with CMP goals and policies.

Promulgation and enforcement of these rules will not violate or exceed any standards identified in the applicable CMP goals and policies because the adopted rules are consistent with these CMP goals and policies, because these rules do not create or have a direct or significant adverse effect on any coastal natural resource areas, and because one of the purposes of the adopted rules is to protect coastal natural resources.

The commission invited public comment regarding the consistency with the coastal management program during the public comment period. The commission did not receive any comments regarding the consistency with the coastal management program.

Public Comment

The commission held a public hearing for these rules on December 16, 2010, in Austin, Texas. The comment period closed on December 20, 2010. The commission received comments from: Angelina and Neches River Authority (ANRA); Bay Area Houston Economic Partnership (BAHEP); Bayou Land Conservancy (BLC); Bayou Preservation Association (BPA); Big Thicket Association (BTA); Big Thicket National Preserve (Big Thicket); Brazos River Authority (BRA); Café Express; City of Austin (Austin); City of Dallas' Water Utilities (DWU); Coastal Conservation Association Texas (CCA Texas); Consumer Energy Alliance (CEA); Eagle Point Fishing Camp, Inc.; Environmental Stewardship; Espey Consultants, Inc. on behalf of the Tarrant Regional Water District, San Jacinto River Authority (SJRA), North Texas Municipal Water District (NTMWD), Trinity River Authority of Texas (TRA), North Harris County Regional Water Authority,

DWU, City of Houston, and Chambers-Liberty Counties Navigation District (Espey); Evangeline Café; Fish City Grill; Foodways Texas; Freese and Nichols, Inc. (FNI); Friends of the Neches River; Galveston Bay Conservation and Preservation Association (GBCPA); Galveston Bay Foundation (GBF); Galveston Baykeeper; Houston Audubon; Houston Regional Group of the Sierra Club (Sierra Club-Houston); Junior Anglers and Hunters of America; Kelly Hart and Hallman, L.L.P. (KHH); Lloyd Gosselink Rochelle and Townsend, P.C., on behalf of its clients (LGRT); Lone Star Chapter of the Sierra Club (Sierra Club-Lone Star); Louisiana Foods Global Seafood Source; Lower Colorado River Authority (LCRA); Lower Neches Valley Authority (LNVA); National Wildlife Federation; National Wildlife Federation Action Fund on behalf of National Wildlife Federation Action Fund and 841 individuals (NWFAF); National Wildlife Federation and Sierra Club-Lone Star (NWF/LSCSC); National Wildlife Federation's South Central Regional Center on behalf of the National Wildlife Federation, Sierra Club-Lone Star, Environment Texas, GBCPA, Houston Audubon, BTA, Environmental Stewardship, and the law firm of Blackburn and Carter (NWFSCRC); NTMWD; NRG Texas Power, L.L.C. (NRG); Sabine River Authority of Texas (SRA Texas); SRA Texas on behalf of itself, LNVA, ANRA, Upper Neches River Municipal Water Authority (UNRMWA), and DWU (SRA Texas and Others); SRA Texas on behalf of the Sabine-Neches Bay and Basin Area Stakeholder Committee (SNBBASC); SJRA; TCEQ's Office of Public Interest Counsel (OPIC); Texas Conservation Alliance; Texas Oil and Gas Association (TXOGA); TPWD; TWDB; TRA; United States' Department of the Interior's Fish and Wildlife Service's Texas State Administrator for Ecological Services (USFWS); UNRMWA; and, Webb and

Webb (WW); and more than 2,400 individuals.

The commission received comments from nine commenters in support of the proposed rule. The commission received comments from more than 2,400 commenters against the proposed rule. The commission received comments from more than 2,400 commenters that suggested changes to the proposed rule.

Response To Comments

General Comments on Chapter 298

NWF, Sierra Club-Lone Star, and more than 1,000 individuals comment that the decisions made by the TCEQ for these first two basin and bay systems will set precedents for environmental flow standards for all of the other basin and bay systems in the state.

The commission respectfully disagrees that the standards in adopted Chapter 298, Subchapters B and C will set a precedent for future rule proposals. Future rule proposals in other basin and bay systems will be based on recommendations made by the science teams and stakeholders for those basin and bay systems. No changes were made in response to this comment.

NWFAF and more than 1,600 individuals comment that the proposed standards in Chapter 298, Subchapters B and C for how much water needs to remain flowing in the

Sabine and Neches Rivers, into Sabine Lake, and in the Trinity and San Jacinto Rivers, into Galveston Bay make some strides forward to protect a sound ecological environment, but they also have some key shortcomings that must be addressed.

The commission has examined specific comments on the rule proposal and made changes where appropriate within the context of HB 3/SB 3 and the environmental flows stakeholder process. No changes were made in response to this comment.

NWF wants to emphasize that this is a difficult undertaking. It is challenging and has been challenging at each stage of the process, and that's partly because the issue is so important, and it's a large one. It's also a critically important issue to the future of Texas. At stake is the well being of the state's river and our estuaries, and frankly, the natural heritage of Texas. It's really important that we do this well.

The commission acknowledges this comment.

NWF comments that ultimately, individual permits may not need to reflect the same amount of complexity that is in the standards. Permits can be evaluated to make sure that they comply with the standards, but the actual permit terms don't necessarily need to be that complex, in particular for smaller permits.

The commission generally agrees. Individual permit applications are different; therefore, special conditions may need to vary for those permits. The commission will implement these standards in each permit granted for a new appropriation of water. No changes were made in response to this comment.

TPWD comments that if it had one central message, it would be that it's very important to have transparency in these rules in terms of: 1) what tools were used to come up with particular quantitative requirements; and 2) the balancing that the TCEQ does to balance environmental needs with other competing needs and with human needs. It would probably help people avoid getting caught up with equating the proposed rules with one particular set of recommendations from a given group if the weighing/balancing factors are as transparent as they can be so that one can trace TCEQ's particular evaluation about whether a particular flow framework meets the statutory definition.

The commission acknowledges the importance of transparency and has made efforts to be transparent in the process of developing the adopted rules. In the Section by Section discussion for §298.225 and §298.280 in the preamble, the commission identifies which science team reports, stakeholder committee reports, and other information it relied upon in developing the adopted standards. Additionally, in the Section by Section

discussion for §298.225 and §298.280, the commission discusses the balancing analysis it performed and identifies the Web site where the models used for the balancing analysis are available for download. No changes were made in response to this comment.

Louisiana Foods Global Seafood Source and more than five individuals request that the TCEQ maintain rules to ensure that Texas' coastal fisheries and wildlife habitats receive sufficient fresh water inputs to preserve the biodiverse ecosystems of our bays and marshes.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules and balanced the interests listed in the statutes. The commission modified the adopted rule to include a seasonal component for inflows to Galveston Bay. These changes are discussed in the adoption preamble for §298.225, and the modified numerical values can be found in the adopted standard for §298.225(a).

One individual comments that the TCEQ must be vigilant to prevent individual allotments to private uses to add up to more than the established maximum allotment.

For any application for a new appropriation of water, commission staff

performs a technical analysis in accordance with commission rules to determine the availability of water for that specific application. No changes were made in response to this comment.

One individual comments that there need to be adequate enforceable provisions to make sure that the flows remain stable even during drought years. To make sure, there needs to be a group of TCEQ employees to monitor the flows to make sure that users are not taking more than their allotment.

The adopted flow standards in Chapter 298 will be included in permits for new appropriations of water as special conditions. They will be enforceable provisions of those water rights. TCEQ Regional Office personnel can respond to complaints; and, if a watermaster is designated for an area, the watermaster will daily monitor diversions. No change was made in response to this comment.

One individual comments that environmental water that potentially enters publicly accessed water and creates a pollution hazard must be vigilantly assessed. Downstream sampling should be a routine part of this, with identification of the upstream polluters. In the absence of a thoughtful strategy, any program of water environmental flow standards is incomplete.

The adopted rule does not contemplate putting environmental water into state watercourses. The adopted rule establishes flow standards (water that will remain in watercourses) that must be met before diversions under permits for new appropriations of water. The rule has not been changed in response to this comment.

One individual comments that it's time for TCEQ to start emphasizing water conservation rather than simply rubber stamping requests by those who are taking the water from our rivers.

The HB 3/SB 3 process is intended to develop environmental flow standards which will apply to permits for new appropriations of water. When evaluating new permit applications, the commission will apply the applicable rules and statutes to determine if the application for diversion or storage should be granted, including rules related to water conservation. No changes were made in response to this comment.

One individual comments that there appears to be a total disconnect between what the stakeholders did and the rulemaking process. It appears there is no unappropriated water for meeting the stakeholders' recommended environmental flows. It seems that imposing projected water needs 50 years into the future leaves nothing for protecting the environment. If this is correct, the whole process is fatally flawed and should be

stopped immediately. It would be a colossal waste of time and resources to proceed. This individual recommends that TCEQ staff and the SAC get together and re-scope the effort so that everyone is working with a clear understanding of the procedures that will be used to develop environmental flows within the guidelines of a realistic rulemaking process. Fifty-year planning horizons are okay for long-range planning but should not be used to set rules.

The commission followed its instructions in the TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups and other relevant factors when drafting the proposed rules. Specific strategies in the water plans change as a result of the planning process. The commission evaluated only those strategies for new appropriations of water that could reasonably be expected to be implemented before the environmental flow standards are reconsidered in accordance with the schedule for a particular basin and bay system. Future scenarios can be addressed through the adaptive management process. The rule was not modified in response to this comment.

One individual comments that the rules that will be adopted will have a major role in the well-being of wildlife in the rivers, estuaries and bays. Please be sure that adequate water is available to protect the wildlife. Once a species habitat is destroyed, it can easily

lead to a path toward extinction. Mankind has already made too many bad decisions that have led to the extinction of many species. Don't make another of these bad decisions.

The commission understands the comment but also responds that this rulemaking required balancing of all interests in determining the environmental flow standards. The balancing done by the commission is discussed in the preamble for §298.225 and §298.280. No changes were made in response to this comment.

BRA comments that flow recommendations that were developed with a Hydrology-based Environmental Flow Regime (HEFR) model in Subchapters B and C are solely based on historic flow statistics and lack site-specific scientific data and analyses describing the relationships between environmental flow and the actual needs of aquatic organisms. The premise is that if a sufficiently close representation of key elements of historical hydrology is maintained, then a reasonable approximation of the historical sound ecological environment is likely to also be maintained. However, until additional study is completed, flow requirements for a sound ecological environment and the best ways for meeting those requirements are unknown. The initial recommendations included in Subchapters B and C contain complex flow parameters that may be overly conservative with regard to what is actually required to maintain a sound ecological environment. BRA recommends that HEFR instream flow criteria be expressly

acknowledged as an interim methodology to be used only until better science is developed to support an environmental flow standard more directly related to the biological needs of species of concern.

The commission followed its instructions in the TWC, §11.1471, to determine these flow standards. Concerning HEFR, the commission responds that the science teams can determine which criteria and methods they will use to develop their recommended flow regimes. The commission considered all of the recommendations provided by the science team and the stakeholder groups and other relevant factors when drafting the adopted rules. The rule has not been changed in response to this comment.

BRA comments that in most cases, water supply diversions have little or no ability to impact the pulse peak, pulse duration, or pulse volume because diversions are so small compared to the magnitude of the pulse. Therefore, curtailment of water supply diversions during a pulse without regard to the magnitude of the diversion or the pulse is overly constraining and unnecessarily reduces the reliability of a run-of-river water right (See §298.220(d)(1) and §298.275(d)(1-2)). BRA recommends that part of the standards adopted by TCEQ be a trigger level for water supply diversions (e.g., 2% of the peak flow) and that only diversions of an amount greater than the trigger level be subject to limitation during peak flow events.

The commission acknowledges the comment. This is an interesting concept that future science teams or stakeholder groups may want to consider. The commission considered all of the recommendations provided by the science team and the stakeholder groups and other relevant factors, including commission staffs' water availability analyses, when drafting the proposed rules. These are the kinds of implementation procedures which the local science team and stakeholders can suggest and the commission could consider during rulemaking. This implementation procedure was not considered by either the science team or the stakeholders in these basin and bay systems. The rule was not modified in response to this comment.

BRA comments that a high flow pulse is defined by a peak discharge and a recurrence frequency. The pulse volume associated with a peak discharge varies as does the pulse duration. The proper way to characterize a pulse of a particular peak discharge and frequency is with a range of volumes and a range of durations that were observed historically. By combining pulse volume and pulse duration with a high flow pulse peak discharge recommendation, the natural variability of historical pulse events is compromised. The criteria proposed are overly constrained and unnecessarily complex (See §298.220(d)(1) and §298.275(d)(1-2)). BRA recommends that the characteristics of a pulse be defined be either the peak or the volume and duration and not a combination of the three characteristics.

The commission followed its instructions in the TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups and other relevant factors, including commission staffs' water availability analyses, when drafting the proposed rules. The environmental flows process under HB 3/SB 3 has an adaptive management component under which pulse criteria may be reconsidered in future science team and stakeholder recommendations. The rule has not been changed in response to this comment.

BRA notes that the Texas Instream Flow Program (TIFP) relies on biology, geomorphology, water quality, and hydrology as overlays to address a sound ecological environment. However, geomorphology, water quality, and hydrology have no meaning by themselves until the implications on biological species are considered. Therefore, biology is the indicator of a sound ecological environment. BRA recommends that continued effort be made to utilize biology as an indicator of a sound ecological environment in order to replace or modify the criteria proposed in Subchapters B and C.

The commission acknowledges this comment.

BRA comments that the TCEQ's message regarding return flows seems contradictory. On the water quality/wastewater permitting/conservation side, direct reuse of wastewater is strongly encouraged, and often required, for water quality protection. At

the same time, the proposed regulation seems to rely heavily on return flows to provide reliable flow during subsistence conditions. In order to achieve a partial reconciliation of this contradiction, BRA recommends that return flows be made available for indirect reuse only as a new appropriation. This would effectively make all return flows discharged to the watercourse subject to satisfaction of environmental flow requirements prior to being considered available for new appropriation.

The commission agrees that return flows can be used to provide flow during subsistence or base flow conditions, but not that they are a new appropriation of water. However, the commission notes that at the time of the adoption of this rule, the issue of how return flows should be treated in determining water availability is an issue in a contested case pending at SOAH.

USFWS comments that overbank flows were not included as part of the standards. Overbank flows are an important flow component required to maintain connectivity and the bottomland wetland and plant communities. The Service recognizes that human health and safety are paramount under all circumstances; the goal of SB 3 is not to reduce the floodplain risk but to ensure that future water right holders do not negatively affect the environment. USFWS recommends that the flow standards include an overbank component as provided under natural weather and climatic conditions.

The commission acknowledges that overbank flows are a component of a flow regime for a sound ecological environment and has modified the Section by Section discussion of §298.1 in the preamble to reflect this acknowledgement. Overbank flows are a result of naturally occurring large rainfall events, which will likely continue to occur. Therefore, the commission is not including overbank flows as a component of the adopted standards. No change has been made in response to this comment.

USFWS recognizes that there is uncertainty associated with setting aside water to ensure a sound ecological environment is sustained but disagrees that there is insufficient scientific information to make environmental flow recommendations or promulgate standards. The science of instream flows and freshwater inflows is replete with examples, studies, and approaches with the fundamentals of the science recognized world-wide. If the proposed standards for Trinity, San Jacinto, and Galveston Bay indeed have a high degree of biological uncertainty, the proposed standards should be more conservative (more protective) than those proposed by the Trinity BBEST and BBASC Regime reports.

The commission agrees that it is possible to make environmental flow recommendations based on data available. The commission followed its instructions in the TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team the

stakeholder groups and other relevant factors, including commission staffs' water availability analyses, when drafting the adopted rules. No change has been made in response to this comment.

UNRMWA suggests that in the final version of the proposed rules, the executive director should clarify that site-specific studies should be recognized as a more accurate and better means of determining what is needed to determine a sound ecological environment. Site-specific studies should always be considered preferential to the desktop data that was evaluated in deriving the proposed rules. Indeed, in developing the flow regimes proposed in the rules, the science teams only considered historic gaged flow records, with very little input on other factors that may take into account a sound ecological environment at specific points.

The commission respectfully disagrees with this comment. TWC, §11.147(e-3) expressly states: "Notwithstanding Subsections (b) - (e), for the purpose of determining the environmental flow conditions necessary to maintain freshwater inflows to an affected bay and estuary system, existing instream uses and water quality of a stream or river, or fish and wildlife habitats, the commission shall apply any applicable environmental flow standard, including any environmental flow set aside, adopted under §11.1471 instead of considering the factors specified by those subsections." Subsections (b) - (e) are the statutes regulating how the commission protected the

environment prior to HB 3/SB 3. It is clear that the bill and TWC, §11.147(e-3), meant for the commission to place any environmental flow standards determined under TWC, §11.1471, in a permit for new water instead of using these other statutes and site-specific data. Under TWC, §11.1471(d), all new appropriations or increases in the storage, taking, or diversion of water issued after an environmental flow standard is adopted must contain the standard. The commission acknowledges that further data may need to be developed. However, HB 3/SB 3 contemplates that this new data and new studies will be considered through adaptive management.

In the proposal preamble for §298.15, the commission stated that it still retained its existing authority to place special conditions in permits to protect the environment. The intent of this statement was to clarify that the commission would use special conditions to implement the environmental flow standards for applications for new appropriations of water and applications to increase the amount of water to be taken stored or diverted after September 1, 2007. Additionally, the commission still has authority to use special conditions for those applications which are not for new appropriations or an increase in storage, taking, or diverting of water.

TWDB comments that the proposed rules may create uncertainty and result in unintended consequences by considering only short-term effects of the environmental

flow standards (10-year view) with regard to the long-term regional water plans that develop water management strategies over a 50-year time frame. Water management strategies are recommended to meet needs in all decades over a 50-year period and must be based on expected water supply yields based on statute and rules. Evaluating these long-term future water supply amounts on short-term TCEQ flow requirements makes uncertain whether supplies from recommended water management strategies will actually be available and may result in significant changes to regional water plans each time the TCEQ 10-year flow requirement rule window shifts forward in time. TWDB requests that TCEQ consider evaluating the effects of the rules on longer term water supply strategies.

Specific strategies in the water plans change as a result of the planning process. The commission evaluated only those strategies for new appropriations of water that could reasonably be expected to be implemented before the environmental flow standards are reconsidered in accordance with the schedule for a particular basin and bay system. Future scenarios can be addressed through the adaptive management process. The rule was not modified in response to this comment.

TWDB comments that the rules are not clear regarding whether the associated flow requirements will all be captured within updated TCEQ WAMs, and if so, at what point in time these would be available for use by water planning groups. If these new

requirements are not incorporated into working WAM models, it may be difficult and/or costly for regions to develop reliable estimates of water management strategy yields. TWDB requests that TCEQ consider making WAM models available to allow evaluating of the rules on water planning strategies.

Any environmental flow standards adopted under these rules will be represented in the commission's WAMs. These models will be available for download from the commission's Web site after the standards are adopted. No change has been made in response to this comment.

TWDB comments that the rules are not clear regarding how the flow standards may affect reuse applications or interbasin transfers(IBTs). TWDB requests that TCEQ consider adding language to clarify how flow standards might be applied to reuse applications and IBTs or associated amendments.

For those applications that are not new appropriations of water, the commission will continue to use its existing authority to implement TWC, §11.147(b) - (e), and the commission may include the adopted environmental flow standards in those permits to protect environmental uses. At the time of the adoption of this rule, the issue of how return flows should be treated in determining water availability is an issue in a contested case pending at SOAH. With respect to interbasin transfers of water,

applicability of the adopted standards would be dependent upon whether the water to be transferred is a new appropriation of water. Interbasin transfers that are new appropriations of water are subject to the adopted standards. No change has been made in response to this comment.

TWDB comments that the rules are not clear as to whether the standards are to be applied in WAM modeling performed by TCEQ to evaluate the issuance of water rights alone or whether they are also to be applied for actual storage and diversion operations. If the rules and standards are intended to be used in actual operations, would actual reservoir storages and actual stream flows be used in determining trigger levels, or would WAM-modeled storage levels and flows be used? In applying the rules in both the WAM model and in actual applications, would flow pulses be identified using daily flows for monthly flows? TWDB requests that clarifying language be considered that addresses how the rules and standards would be applied in these cases.

Any environmental flow standards adopted under these rules will be represented in the TCEQ WAMs. In addition, these standards would be included as special conditions in water rights permits that are covered by this chapter. A water right would need to comply with these special conditions, which would be based on actual streamflow values included in the adopted rules. The rule was not modified in response to this comment.

LGRT comments that the proposed flow rates for the proposed regimes should not be considered the lowest instantaneous flows needed such that the executive director, in future amendments to the rules, would be precluded from lowering the proposed flow rates or removing some or all of the proposed pulse regimes. Moreover, when evaluating and imposing conditions in applications for water rights subject to the rules, LGRT comments that the executive director should not require applicants to monitor and adhere to all measuring points in the basin, but only the measuring point located closest to the diversion, or to a site-specific gage, should one exist. To support this position, a clarification in the preamble, or in the definitions section, should be included in the final adopted rules.

The commission agrees that the proposed flow rates should not be considered the lowest flows that would ever be needed. The science teams considered the best available science at the time these rules were developed. To the extent that additional information becomes available through monitoring and studies undertaken under the workplan, the science team and stakeholders could consider that information in future deliberations and recommend different flow values for consideration during future rulemaking.

With respect to the measurement point that would be applicable to a water right, the commission responds that this depends on the specific fact

situation for an application for a new appropriation of water. The measurement point applicable to a specific application could take into consideration the geographic extent of the impacts resulting from that application. No change was made in response to these comments.

WW is concerned about the use of the model as the means of determining how to impose environmental flow standards in individual permits and thinks we may find, when we hear the technical comments from engineers and hydrologists, that perhaps the model was not designed for that purpose. And we will be adding more uncertainty to a mathematical concept that is consensus-based and has a lot of simplifying assumptions already built in. To that extent, reliance on the model may not be appropriate for making a determination regarding environmental flow standards in permits.

Water availability models are used to determine whether water is available for appropriation for new permit applications. At this point in the process, the commission will examine permits as they come in to determine how to implement the standards in different permits. The rule was not modified in response to this comment.

WW would hate to see reliance on the model replace actual circumstances of individual permits, even in water rights permits without environmental flow standards. We come to realize that there is site-specific and application-specific information available. In

imposing environmental flow standards, we need to take advantage of all the information we have and not ignore reality in the face of a mathematical or computer construct. It is important that we allow ourselves some flexibility in determining how we're going to impose environmental standards in individual permits.

The commission responds that TWC, §11.147(e-3), expressly states: "Notwithstanding Subsections (b) - (e), for the purpose of determining the environmental flow conditions necessary to maintain freshwater inflows to an affected bay and estuary system, existing instream uses and water quality of a stream or river, or fish and wildlife habitats, the commission shall apply any applicable environmental flow standard, including any environmental flow set aside, adopted under TWC, §11.1471, instead of considering the factors specified by those subsections." TWC, §11.147(b) - (e) are the statutes regulating how the commission protected the environment prior to HB 3/SB 3. It is clear that the bill and TWC, §11.147(e-3), meant for the commission to place any environmental flow standards determined under TWC, §11.1471, in a permit for new water instead of using these other statutes and site-specific data. Under TWC, §11.1471(d), all new appropriations or increases in the storage, taking, or diversion of water issued after an environmental flow standard is adopted must contain the standard. The commission acknowledges that further data may need to be developed. However, HB 3/SB 3 contemplates that this new data and new

studies will be considered through adaptive management.

In the proposal preamble for §298.15, the commission stated that it still retained its existing authority to place special conditions in permits to protect the environment. The intent of this statement was to clarify that the commission would use special conditions to implement the environmental flow standards for applications for new appropriations of water and applications to increase the amount of water to be taken stored or diverted after September 1, 2007. Additionally, the commission still has authority to use special conditions for those applications which are not for new appropriations or an increase in storage, taking, or diverting of water. At this point in the process, the commission will examine permits as they come in to determine how to implement the standards in different permits. The rule was not modified in response to this comment.

WW is unsure exactly how the environmental flow standards are going to be applied when you look at the dates of September 1, 2007 and December 1, 2009; the difference in those two dates and how they are applied could make for some difficulty in applying stream standards.

The December 1, 2009 date is used solely for the purposes of water availability analyses for applications that are subject to this chapter. This

priority date for the environmental flow standards will be used in water rights permitting in the water availability model runs for these applications. The September 1, 2007 date is the date after which the commission may reopen permits to adjust special conditions to protect the environment in accordance with the statute. No change has been made in response to this comment.

TWDB comments that the TCEQ has not proposed set-asides for the Trinity-San Jacinto and Sabine-Neches systems. TWDB requests that TCEQ consider adding language describing how set-asides would be determined and applied, particularly in WAM applications for the purpose of evaluating future water supply strategies. TWDB also requests clarification on whether set-asides would be considered in the future if the mechanisms to satisfy environmental flow standards consisting of water appropriated to downstream water rights holders, water of another state under an interstate compact, water appropriated to another but not used, and return flows change or are affected so as to no longer satisfy the standard.

If set-asides are recommended in the future, the method for determining and implementing those set-asides will be described in that future rulemaking process. No change has been made in response to this comment.

TWDB requests that the TCEQ provide language clarifying how standards would be applied at locations other than at designated measurement points.

The measurement point that would be applicable to a water right depends on the specific fact situation for an application for a new appropriation of water. The measurement point applicable to a specific application could take into consideration the geographic extent of the impacts resulting from that application. Individual permit applications are different; therefore, special conditions and measurement points may need to vary for those permits. No change has been made in response to this comment.

SJRA and NTMWD suggest that the executive director clarify in more detail how he will evaluate applications that are not subject to the rules. There are several types of applications that involve the conversion or addition of purposes of use, the movement of water throughout streams in a basin for subsequent diversion and use (i.e., bed and banks authorizations), or the addition of diversion points. These types of applications should not be subject to the rules, as they do not represent new appropriations of water. It would be beneficial for the executive director to reiterate this fact and clarify in more detail the types of applications that are not subject to the rules and how he will evaluate those applications.

The commission believes that it is clear in the rulemaking that only new

appropriations are covered by these rules. For those applications that are not new appropriations of water, the commission will continue to use its existing authority to implement TWC, §11.147(b) - (e), and the commission may include the adopted environmental flow standards in those permits to protect environmental uses if it finds that this would be appropriate. Concerning what would not be considered a new appropriation, the commission agrees that changes in use and changes in diversion points alone would not be covered. At the time of the adoption of this rule, the issue of how return flows should be treated in determining water availability is an issue in a contested case pending at SOAH. With respect to interbasin transfers of water, applicability of the adopted standards would be dependent upon whether the water to be transferred is a new appropriation of water. Interbasin transfers that are new appropriations of water are subject to the adopted standards. The standards would also not apply to portions of existing water rights that were not being amended to add a new appropriation of water, including an additional diversion point that will not seek an increase in the diversion amount. No change has been made in response to this comment.

TPWD comments that the overarching requirement in HB 3/SB 3 is that adopted environmental flow standards shall be "adequate to support a sound ecological environment, to the maximum extent reasonable considering other public interests and

other relevant factors." (see TWC, §11.1471(a)(1)). From a reading of the preamble and draft rules, the criteria, studies, or analyses that TCEQ used to determine "maximum extent reasonable" is not clear. It is also not apparent if the determination was equivalent for the two basins included in the proposed rules. Since 1985, TCEQ has demonstrated an ability to balance multiple public and environmental needs in ascribing environmental flow conditions to water right permits. TCEQ should ensure that any balancing that results in a reduction of scientifically determined instream flow and freshwater inflow values is properly vetted and documented. An objective, consistent, transparent, and reliable balancing test is needed and should be detailed so that all stakeholders, including the general public, understand how the term is defined and applied. TPWD proposes that TCEQ add a rule that clearly identifies the factors it considers and how the agency makes its determination that a standard is adequate to support a sound ecological environment to the maximum extent reasonable.

The commission considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors such as human and other competing needs for water, and comments on the proposed standards when developing the adopted standards. The commission considers each basin and bay system individually, so the factors considered in balancing can vary. At this time, the commission needs flexibility in developing the standards for individual basin and bay systems. Therefore, the commission is not including a rule limiting that

flexibility. The rule was not modified in response to this comment.

TPWD is concerned that the proposed rule package does not describe the weight given to various sources of input in the rulemaking process. HB 3/SB 3 does not give special weight to the recommendations of an individual BBASC, majority BBASC group, or any other group (see TWC, §11.1471(b)). For example, without text to fully explain the TCEQ weighting process, it appears that the agency may have only considered the majority opinion of the stakeholder group in the Trinity-San Jacinto basin and excluded other available information and studies. This majority BBASC opinion called for a much weaker set of environmental flow standards than the majority BBEST opinion. Given that TCEQ staff's modeling of the draft rules shows an insignificant impact on the future water supplies evaluated, it would seem that the balancing by the TCEQ resulted in draft environmental flow standards that have no impact on human needs, but the balancing did not accommodate the best available science with regard to environmental needs.

The commission followed its instructions in the TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups and other relevant factors, including commission staffs' water availability analyses, when drafting the adopted rules. In the Section by Section discussion for §298.225 and §298.280 in the preamble, the commission identifies which science team reports, stakeholder committee reports, and other information it relied

upon in developing the adopted standards. Additionally, in the Section by Section discussion for §298.225 and §298.280, the commission discusses the balancing analysis it performed and identifies the Web site where the models used for the balancing analysis are available for download. No change has been made in response to this comment.

TPWD comments that the TCEQ has an independent duty to develop flow standards that meet the statutory requirements of TWC, §11.1471(a) and (c). In carrying out that duty, TCEQ must consider factors detailed in TWC, §11.1471(b), namely the basin and bay system geography, the Advisory Group schedule, the BBEST environmental flow analyses and recommended flow regime, the BBASC recommendations, Advisory Group comments, specific characteristics of the river and bay system, economic factors, human and other competing needs in the system, all reasonably available scientific information, including any scientific information provided by the SAC, and any other appropriate information. It is not clear how this full set of information was considered by the TCEQ in developing the proposed rules package. The methodology that TCEQ used to identify, evaluate, and analyze such information should be documented.

The commission followed its instructions in TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups and other relevant factors, including commission staffs' water availability analyses, when drafting the

adopted rules. In the Section by Section discussion for §298.225 and §298.280 in the preamble, the commission identifies which science team reports, stakeholder committee reports, and other information it relied upon in developing the adopted standards. Additionally, in the Section by Section discussion for §298.225 and §298.280, the commission discusses the balancing analysis it performed and identifies the Web site where the models used for the balancing analysis are available for download. No change has been made in response to this comment.

TPWD previously recommended, in an August 19, 2010 letter to the commission, that the TCEQ closely follow the technical guidance documents authored by the SAC regarding environmental flow regimes to construct environmental flow standards. TPWD also recommends that environmental flow standards reflect the regime components used by the TIFP and endorsed in "The Science of Instream Flows, A Review of the Texas Instream Flow Program." For bays and estuaries, key components are inter- and intra-annual variation of freshwater inflow volumes necessary to maintain important estuarine habitats and biological communities which in some cases are represented by one or more indicator species. In particular, the BBESTs and the SAC are comprised of experts appointed for the express purpose of advising the state in establishing environmental flow standards. Because of the complex nature of the science of environmental flows, the TCEQ should clearly describe how it considered these documents and recommendations.

The commission followed its instructions in TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups and other relevant factors, including commission staffs' water availability analyses, when drafting the adopted rules. The science teams' recommendations were to be based on the best available science, which could have included consideration of those documents. The factors considered by the commission are discussed in the adoption preamble for each basin and bay system. The commission notes that the freshwater inflow requirements contained in §298.225 were modified in response to other comments. The modifications are discussed further in the preamble for §298.225. The rule was not modified in response to this comment.

TPWD appreciates that TCEQ has included definitions in the draft rules to help to clarify some of the legal and technical terminology. However, in some instances the draft rule has created confusion by offering same-term definitions that have different meanings depending on basin or location. Definitions should be consistent regardless of basin. For example, as proposed, definitions in Subchapter A are to have statewide applicability yet definitions in Subchapters B and C may conflict with Subchapter A and are to control over Subchapter A. TPWD recommends that TCEQ develop a consistent set of terms with specific definitions. As needed, TCEQ should develop alternate terms

or methods to describe characteristics or findings unique to a given basin or situation.

The commission notes that general definitions for these terms are provided in Subchapter A and agrees that they are necessary for this rule package. However, the commission does not want to limit the ability of future stakeholder and expert science groups to define these terms in their future, location-specific recommendations. No change has been made in response to this comment. However, with respect to which subchapter controls, the adopted rule was clarified in response to other comments. The clarifying language can be found in the adopted standards in §298.200 and §298.250.

One individual requests that the TCEQ allow for natural and adequate flows on the East Texas rivers. Considering drought levels as adequate is not acceptable. Healthy river ecosystems depend on a variety of water levels as found in nature. Putting our water resources and dependent biological systems at risk to provide water to other areas of the state which would operate in wasteful ways is against local environmental and economic interests. I do not want our natural resources depleted so that cities such as Dallas-Fort Worth can continue to water lawns and flush toilets with drinking water.

The commission followed its instructions in TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups and other relevant factors,

including commission staffs' water availability analyses, when drafting the adopted rules. No change has been made in response to this comment.

FNI supports the TCEQ's decisions to not establish environmental flow set asides and to apply pulse flow standards only to large-scale projects.

The commission acknowledges this comment.

FNI supports the TCEQ's approach to apply these criteria only to new appropriations of water as of December 1, 2009. The preamble implies that these rules will not apply to interbasin transfers of water for water rights with a priority date before December 1, 2009; however, the rules are silent on this issue. The regulations should include more definitive language stating that these criteria will NOT be applied to interbasin transfers of existing senior water rights. In considering the impact on Regional Water Plans, the TCEQ did not analyze the impact of applying these rules to interbasin transfers.

The commission notes that these environmental flow standards are applicable to permit applications for new appropriations issued after September 1, 2007. With respect to interbasin transfers of water issued after September 1, 2007, applicability of the adopted standards would be dependent upon whether the water to be transferred is a new appropriation of water. The rule was not modified in response to this comment.

FNI comments that in seasons with large and small pulse criteria, it is common for a pulse event to reach the small pulse peak flow trigger and continue rising, reaching the large pulse peak flow trigger several days later. FNI recommends that when: 1) the peak criteria for the larger pulse occurs before the duration or volume criteria for the smaller pulse has been met; and 2) a large pulse has not occurred in the season, that the pulse be classified as a large pulse with credit for the days and volume that occur prior to reaching the large pulse peak criteria. This prevents the water right holder from potentially losing credit for bypassed flow.

The commission considered all of the comments and alternate proposals submitted in response to the proposed rules. The commission removed the requirement for a large high flow pulse in the adopted rule. The changes are discussed in the adoption preamble in §298.275 and §298.280, and the changes can also be found in the adopted standards for those sections.

FNI comments that the rules are unclear about what happens if a pulse event meets either the duration or volume criteria and flows are still above the peak flow trigger. FNI recommends that flows drop below the peak flow trigger before defining a new pulse.

Once the applicable pulse criteria is met, a water right holder to whom

these standards apply could begin diverting water in accordance with the subsistence or base flow criteria required by §298.225 or §298.280 for that month. The rule was not modified in response to this comment.

DWU comments that the term "set-asides" is used throughout Chapter 298 but is not defined.

The commission agrees with this comment and has added a definition for set-asides to §298.1.

DWU notes that there appear to be three definitions of "High flow pulses" within the proposed Chapter 298: §§298.1(7), 298.220(d), and 298.275(d). As BBESTs and BBASCs across the state submit environmental flow recommendations and TCEQ develops standards, there is a possibility of seven or more definitions of "High flow pulses." With multiple definitions, each slightly different, interpreting the rules becomes confusing.

The commission notes that general definitions for these terms are provided in Subchapter A and agrees that they are necessary for this rule package. However, the commission does not want to limit the ability of future stakeholder and expert science groups to define these terms in their future, location-specific recommendations. The commission deferred to the

definitions of these flow components used by the basin groups, and this is why the definitions are different in §298.220(d) and §298.275(d). No change has been made in response to this comment.

WW comments that none of the environmental flow standards for the Trinity and San Jacinto Rivers and Galveston Bay or the Neches and Sabine Rivers and Sabine Lake Bay were promulgated with an eye on their impact on water development or even pending water rights applications. The commission should make an effort to gain further knowledge regarding the practical application of these proposed rules on pending water rights applications before it finalizes the environmental flow standards. The experience regarding the practical application of these proposed rules should inform their revision and ultimate adoption.

The commission followed its instructions in TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups and other relevant factors. In addition, commission staff performed a water availability analysis on the adopted standards to evaluate issues related to human and other competing needs for water when drafting the adopted rules. No change has been made in response to this comment.

Three individuals request the TCEQ to halt the transport of massive machinery through

the Pacific Northwest to tar sands operations in Canada until a full federal environmental review and analysis is completed, including impacts on endangered wild salmon.

This rulemaking does not address federal environmental reviews and analysis. No change has been made in response to this comment.

One individual comments that if Texas wants to actually protect its vital river systems, then the standards used must be high. There are many demands on both the Trinity and San Jacinto Rivers/Galveston Bay, and at times the flow of these rivers would be reduced to a trickle. On part of the Trinity in north Texas, the Clear Fork, there is no water for the majority of the year. The only time there is water is during flash floods. That is not protection. Standards need to be increased massively in order to have any chance at maintaining a viable river system and protecting the animals and plants living in those areas. Life is all life, not just human life or human convenience. Without other living systems then humans die from their absence.

TWC, §11.1471, instructs the commission to consider numerous factors such as the recommendations provided by the science teams, the stakeholder groups and other relevant factors, including human and other competing needs, when drafting the adopted rules. No change has been made in response to this comment.

One individual comments that the work the TCEQ is doing to set the standards for flow allocations is important to your fellow Texans, even those that live far from the coast and city dwellers who aren't aware of how it affects them. This individual urges the TCEQ to go for the gold standard and make a difference for the future of our coast and hopes the TCEQ will consider strengthening the standards to provide for periodic flooding that's essential for protecting the flora and fauna of the bottomlands.

The commission has considered all comments on the rule proposal and adopted changes where appropriate. The commission acknowledges that overbank flows are a component of a flow regime for a sound ecological environment and has modified the Section by Section discussion of §298.1 in the preamble to reflect this acknowledgement. Overbank flows are a result of naturally occurring large rainfall events, which will likely continue to occur. Therefore, the commission is not including overbank flows as a component of the adopted standards. No change has been made in response to this comment.

Three individuals request that the TCEQ revise and strengthen the proposed standards.

The commission followed its instructions in TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by

the science team and the stakeholder groups and other relevant factors, including commission staffs' water availability analyses, when drafting the adopted rules. No change has been made in response to this comment.

Chapter 298 Preamble General Comments

Environmental Stewardship, NWF, and NWFSCRC comment that the issue of the need to provide for continued overbank flows merits acknowledgement in the rules. The importance of overbank flows in protecting a sound ecological environment is explicitly acknowledged by the expert science teams and the SAC. Given the critical nature of those flows to the protection of a sound ecological environment, the rule preamble should explicitly acknowledge the importance of overbank flow protection as an issue for continued consideration in future revisions to the standards.

The commission acknowledges that overbank flows are a component of a flow regime for a sound ecological environment and has modified the Section by Section discussion of §298.1 in the preamble to reflect this acknowledgement. Overbank flows are a result of naturally occurring large rainfall events, which will likely continue to occur. Therefore, the commission is not including overbank flows as a component of the adopted standards. No change has been made in response to this comment.

One individual notes that the TCEQ states that although it provides definitions for the

terms "base flow," "pulse or high flow pulse," and "subsistence flow," this does not mean in future recommendations that these terms will be used or defined in the same manner. This makes no sense and simply serves to confuse the public and allows the TCEQ so much flexibility that no one knows how it will develop analyses, methods, or make decisions. The TCEQ is supposed to educate and clearly tell the public what it does and why it does what it does and not confuse the public. The public must know how the TCEQ will define and implement these terms.

The commission notes that general definitions for "base flow," "pulse or high flow pulse," and "subsistence flow" are provided in §298.1 and agrees that they are necessary for this rule package. However, the commission does not want to limit the ability of future stakeholder and expert science groups to define these terms in their future, location-specific recommendations. No change has been made in response to these comments.

TPWD comments that the preamble does not adequately explain the TCEQ's characterization of set-asides as a tool to establish a "high-level" of protection. It is not clear how a set-aside that contributes to meeting an environmental flow standard elevates flow protection to a perceived unacceptable "high level." TPWD agrees that a set-aside provides perhaps a more reliable source to meet flow standards than other water sources. TPWD believes that set-asides provide for a more effective and realistic

protection of the environment that assumptions about environmental flow protection from underutilization of existing water rights, return flows, and flows passed to meet senior water rights. The set-aside was meant to provide reliable environmental flow conditions that would be unaffected by later appropriations, except to the extent that such set-asides might be altered in future rulemaking processes that consider additional studies and technical information. TCEQ's modeling has demonstrated that under the full utilization of existing water rights, the impacts of the proposed standards on selected future water projects is insignificant. Thus, the proposed standards could be established as set-asides and have a similarly insignificant impact on "human water needs." The preamble notes a number of factors that can contribute to the satisfaction of permit special conditions, but, by implication, not to set-asides. Of these factors, all either also apply to set-asides or do not exist in WAM Run 3. Thus set-asides could be established, instead of permit conditions, with no greater impact on water for human needs.

As the commission notes in the preamble for §298.15, due to water availability issues in these basins, special conditions placed in a permit may be a more effective method to protect flows in the stream when new appropriations of water are granted. This is because if special conditions are used, there are other sources of water in a stream that could be used to meet environmental flow requirements in a permit; for example, water appropriated to downstream water right holders, water appropriated to

another but not used, or return flows. Additionally, set-asides require a water availability determination, and these sources would not be used to determine water availability because they would not be considered to be unappropriated water. The commission also notes that although stakeholder groups could make recommendations regarding set-asides, neither of the stakeholder groups in these basins recommended an amount of water to be set aside. No change has been made in response to these comments.

One individual notes that the TCEQ states "The commission is not proposing to specify the exact terms and conditions of special conditions that it will impose to protect environmental flow standards." This is a great concern because the flexibility that this proposal allows the TCEQ means that the public will be unable to understand, in any realistic time frame, what the TCEQ's basis is for the methodology it uses to compute environmental flows for streams, rivers, and bays and estuaries. No certainty or stability is provided by the TCEQ with this ad hoc, case-by-case method, and thus this will allow for contradictory results that are not consistent.

Individual permit applications are different; therefore, special conditions may need to vary for those permits. Certainty and stability are provided by the placement of specific numerical values included in these rules. The fact that the special conditions that will be used to protect the standards may

vary does not change the specific flow standards themselves. The methodology used to compute these standards is discussed in the preamble. No change has been made in response to this comment.

UNRMWA, LGRT, SJRA, and NTMWD expressed concern about how TCEQ will implement the proposed rules. Further, LGRT, SJRA, and NTMWD request that TCEQ develop some form of implementation procedures for public review and comment once these rules are adopted.

The commission will implement these standards in each permit granted for a new appropriation of water. The commission cannot change the standards themselves but believes that at this point in the process the commission should examine permits as they come in to determine how to implement the standards in different permits. More detail may be added to the rules or as guidance at a later time. Concerning adjustments to permit conditions, TWC, §11.147(e-1)(1), provides that the commission may not adjust permit conditions "by more than 12.5%." No change has been made in response to these comments.

One individual notes that the TCEQ states in the preamble for §298.25(j) that "the commission proposes that more reliable water, proposed to be defined as water where the total volume is available at least 75% of the years, is entitled to full credit." This

individual opposes this definition. A stream, river, bay, and estuary cannot survive without water for 25% of the years. These ecological entities need water all of the time! The TCEQ needs to explain how it addresses the environmental impacts to streams, river, and bays and estuaries if they only get water 75% of the water.

Section 298.25(j) is related to voluntary contributions to the Texas Water Trust and voluntary amendments to existing water rights to change or add a use for instream flows dedicated to environmental needs or bay and estuary inflows. The intent of this provision is to ensure that water dedicated to the environment that would receive full credit for the dedicated amount, through these methods, is available often enough to reliably provide protection to the environment. More reliable water, defined as water where the total volume is available in at least 75% of the years, is entitled to full credit. Water that is available in less than 75% of the years is entitled to a 50% credit. These availability amounts do not represent how much water is physically present in the stream. They are intended to represent a mathematical calculation of the amount of the credit. No change has been made in response to these comments.

UNRMWA, SJRA, and NTMWD note that there needs to be some express protocol for addressing the accuracy of flow recording devices. SJRA and NTMWD request that the TCEQ acknowledge an accuracy of 95% for flow devices given normal variations in flow

gage accuracies and other factors and the proposed gage locations in Chapter 298, Subchapters B and C. SJRA and NTMWD request the TCEQ to acknowledge that when the proposed flow regimes have been met at 95% of the amount required, such regimes are considered fulfilled for purposes of allowing diversions pursuant to a water right.

The commission acknowledges measurement devices may have varying degrees of accuracy. However, USGS gages are the best available tool to determine compliance with the standards. The rule has specific values for the standards, which must be fully met at specified locations. No change has been made in response to these comments.

BRA comments that since flow standards proposed may vary by month and not season, such as those in Chapter 298, Subchapter B, the sentence that states that "Once the flow at the applicable measurement point is above the base flow standard for the season, then the water right holder may store or divert water according to its permit as long as the flow at the measurement point does not fall below the applicable base flow standard" may need to be reworded to accommodate monthly standards.

The commission respectfully disagrees with this interpretation of the standards. The recommendations for these bay and basins systems adopt seasonal requirements. The seasons are defined in the rule for each bay and basin system. In §298.220, in response to other comments, the seasons

will be included in the tables in the adopted rule, which may help clarify this issue. No change has been made in response to this comment.

One individual states that the TCEQ is inconsistent in whose recommendations it chose to include in the proposed rule. On the one hand the TCEQ says that the "majority of the stakeholders" recommends something but does not stay consistent and say the same thing about the majority of the science team, which also recommended something. Instead, the TCEQ breaks the science team into two groups and says that because the minority science team supports what the majority of the stakeholders support that the minority science team recommendations are supported by TCEQ. Exactly what method was used to dismantle different recommendations and then put them together? The TCEQ needs to explain how it addresses the methodology used to determine what the environmental flows are in a scientific manner.

Because the commission did not receive a consensus recommendation from this basin, it had to consider what the science team and stakeholders recommended and come up with a standard. The commission explained exactly how it considered the different recommendations in the preamble for §298.225. The commission also considered staff's water quality and water availability analyses on the proposed standards, which indicated no significant water quality concerns from the adopted standard. No change has been made in response to these comments. The commission notes that

the specific numerical values in §298.225 that the commenter addresses have been modified in response to other comments.

Espey and LGRT comment that, as stated in the rule proposal, the TCEQ did not look at every possible future water use scenario, but limited the selection of scenarios to those that could "reasonably be expected to be implemented before the environmental flow standards are reconsidered, in accordance with the schedule in §298.240." Further, the TCEQ "did not look at longer term water use scenarios, i.e. 50 years in the future, because there will be another opportunity to look at those long term scenarios through HB 3/SB 3's adaptive management provisions." The State and Regional Water Planning process, implemented via SB 1, is charged to evaluate water supply strategies over a 50-year time period and must further consider applicable environmental flow standards within those evaluations. It appears no effort has been made by the TCEQ to address this discrepancy. The assertion of no impact may not be justified given this consideration. Further, it is unlikely that the evaluation of any single strategy in a basin is sufficient, considering the complexity and variety of strategies within Regional Water Planning Groups' approaches. It is proposed that those recommended strategies identified in the most recent Regional Water Plans be utilized in the evaluation of potential impacts from the proposed standards.

Specific strategies in the water plans change as a result of the planning process. The commission selected strategies for new appropriations of

water that could reasonably be expected to be implemented before the environmental flow standards are reconsidered in accordance with the schedule for a particular basin and bay system. Future scenarios can be addressed through the adaptive management process. No change has been made in response to this comment.

One individual notes that the TCEQ states "For the Trinity River Basin Scenario . . . produces an annual availability of 83%" and would like to know what the percent error is of the methodologies used to calculate the annual availability; how streams, rivers, and bays and estuaries survive if 17% of the time the water needed for life is not available; what the TCEQ means when it states "Reliability with application of either the bay and estuary freshwater inflow standard or no environmental flow requirements was comparable"; how comparable is defined; and how close models, methodologies, analyses, or scenarios have to be to be called "comparable." The TCEQ does not provide enough information about these issues.

The models used by the commission are based on historic gage flows. While the gages may have varying degrees of accuracy, the gages remain the best tool available for measuring stream flows which are the basis for the water availability models. Concerning the annual availability numbers, these numbers represent when diversions could occur under the scenario after the environmental flow standard has been met. An annual availability of

83% is the amount of time water is available for the scenario after the flow standard has already been met. The 17% represents the amount of time the scenario could not divert all of its water, although it could divert some water. No change has been made in response to these comments. However, the commission notes that in response to comments received on the proposed standards in §298.225, those standards were modified. Commission staff performed a water availability analysis on the adopted standards for these basins and the results of that analysis can be found in the adoption preamble under §298.225.

Espey and LGRT note that the TCEQ has elected to model the proposed environmental flow standards using a monthly WAM application, which focuses on volumetric flows in a monthly context. However, the rules specify that permittees would be subject to the application of a trigger amount (presumably based on a daily average flow rate at the measuring point) identified as a pulse flow, then passing this flow until either the applicable volume standard is achieved or the applicable duration criterion has been met. There are several potential disconnects between how the standards are implemented in the WAM versus how they would ultimately be applied operationally as proposed in the rules. This implementation methodology should be developed, tested, standardized, and promulgated prior to applying it to any water right subject to these proposed rules. The SAC guidance document Consideration of Methods for Evaluating Interrelationships Between Recommended SB-3 Environmental Flow Regimes and

Proposed Water Supply Projects recognizes that the use of a daily flow analytic procedure, in conjunction with a WAM analysis, produces more accurate representations of the effects of environmental flow requirements. It is suggested that both techniques be employed to assess the potential impacts of the proposed environmental flow standards. Espey and LGRT also comment that the WAM has not been thoroughly vetted as a tool for evaluating the potential effects of such environmental flow criteria. The assumption of very precise daily flow characteristics being indicative of future distributions of flows (both temporally and spatially) has not been tested. While tests have been made to evaluate if given months that are found to achieve the monthly volumetric flow criteria yield the recommended pulse characteristics, such tests would be based on the assumption that the historic daily flow distribution for a given monthly volume would be the same. Such an important assumption has not been tested. Thus, while the WAM might be the only tool available at present, conclusions drawn from its application might be ill-informed and potentially misleading.

The commission respectfully disagrees with this comment. The SAC guidance document referenced in the comment notes that the monthly WAM is "recommended as an acceptable approach for performing these types of e-flow analyses based on the results from the test cases examined herein, and it is recognized as the superior method with regard to effectively representing both water availability, consistent with the way

TCEQ would evaluate a permit application, and e-flow requirements in the same analysis." The commission used the TCEQ WAM, which is the model that it would apply to any permit application submitted for a new appropriation of water. Since this is the model that would be used for any application before the commission to which these standards apply, the commission used this model to determine the impacts of the proposed standards on future water use scenarios. No change has been made in response to these comments.

Espey and LGRT comment that the WAM evaluations performed by the TCEQ to assess the potential impacts to regional water plan strategies in the Trinity River basin only consider the effects of proposed instream flow criteria and do not consider the ramifications from the proposed estuary standards. The single strategy evaluated by the TCEQ exists in the northern area of the watershed, outside of the 200-river-mile boundary beyond which the estuarine flow criteria do not apply. Although no evaluation has been made into the potential effects of the Trinity estuarine criteria on potential strategies in the Trinity River Basin, the assertion is made that the criteria yield no impact. The reverse is true for the WAM evaluation of the San Jacinto River Basin, wherein the WAM evaluations performed by the TCEQ employ the proposed estuarine standards, yet no analysis of the potential effects of the instream criteria was performed. It is suggested that an analysis be performed on the potential effects of the estuarine flow criteria in the Trinity River Basin as well as the potential effects of the instream

flow criteria in the San Jacinto River Basin.

The commission selected scenarios based on new appropriations of water. Other scenarios may be addressed in the adaptive management process. With respect to the 200-river-mile boundary, the commission has determined that under TWC, §11.147(e-3), the 200-river-mile limit does not apply to environmental flow standards for bays and estuaries unless the science team or stakeholders submit this recommendation to TCEQ for review during the environmental flows process. No change has been made in response to these comments. The commission notes that in response to other comments, unrelated to this comment, the commission modified §298.225(a) and additional analyses were performed in support of that modification.

Espey and LGRT comment that the methods by which the estuarine criteria have been employed to evaluate their potential effects do not appear to ascribe to the standards proposed in the rule. Three estuarine criteria have been specified in the proposed standards; however, only the single, minimum criterion has been evaluated. The potential impact of all three criteria remains unclear and should be investigated prior to any assertion of the potential impact of the proposed standards. Espey and LGRT also comment that although the proposed standards are annual targets (with associated frequencies), an arbitrary monthly distribution is applied. The application of a monthly

distribution directly conflicts with the annual standards identified in the proposed rule and recommended by the majority of the Trinity-San Jacinto Stakeholder Committee.

The water availability model for the proposed rule did include a minimum flow value using the monthly distribution from the Regional Water Plan. However, all of the criteria were evaluated in determining the effects of the proposed rule on the scenario. The commission has modified the preamble for §298.225 to clarify the analysis. In response to other comments, the commission modified §298.225(a) and performed additional analyses in support of that modification. These modifications are explained in the adoption preamble in Subchapter B, §298.225.

Espey and LGRT comment that the proposed estuarine standards disaggregate the recommendations on total inflows to Galveston Bay from the majority of the Trinity-San Jacinto Stakeholder group into the system's component watersheds (e.g., the Trinity and San Jacinto), using (assumedly) average historic annual flow proportions as a basis. However, the same overall watershed frequencies are ascribed in the standard to each watershed's proportion. It is unclear if the frequencies recommended for the total watershed remain valid when disaggregated into component watersheds using a long-term average. Another distribution is made to disaggregate flows from the San Jacinto River from other flows in the basin contributing to Galveston Bay. The basis for this disaggregation should be documented.

The majority stakeholder recommendation for this basin and bay system included total amounts for Galveston Bay and did not disaggregate the flows by river basin. Water rights are permitted by river basin. Therefore, the commission disaggregated the flows to reflect this. The commission used the average historic annual flow proportions as the basis for the disaggregation. No change has been made in response to these comments. In response to other comments the commission modified §298.225(a). The modification is explained in the adoption preamble for Subchapter B, §298.225.

WW thinks the impact of these proposed rules is underestimated in terms of its impact on the development of water supplies and that it will be important to the TCEQ as it looks at individual applications to take into account the technical information received in the form of comments, but also the technical information that is available in individual applications, so that the TCEQ can ascertain how these individual circumstances should impact contributions to environmental flows.

The commission reviews each application in accordance with the current statutes and rules. Although the commission does consider all technical information submitted with an application, HB 3/SB 3 does not allow it to change the flow standards in the adopted rules outside of the adaptive

management process. No change has been made in response to this comment.

UNRMWA, SJRA, LGRT, and NTMWD comment that it is unclear why the TCEQ limited its evaluation of the proposed rules to one proposed project in each basin under consideration in Chapter 298, Subchapters B and C. The regional water planning process includes all proposed water management strategies, per decade, and the TCEQ should consider the impact of the rules on these projects in more detail. Existing water availability models that include approved water management strategies should be carefully considered by the TCEQ as it evaluates the impact of the proposed rules on future projects. SJRA and NTMWD comment that the TCEQ's analysis on impacts is understated in the preamble in part because the TCEQ did not consider the impacts to firm yield and in part because the TCEQ did not fully evaluate all water management strategies. SJRA and NTMWD request the TCEQ to further consider these impacts or to explain in detail why the single strategy reviewed for the Trinity River Basin is an appropriate surrogate for every other strategy proposed for the Basin. LGRT notes that with regard to §298.225 and §298.280, only a handful of water management strategies were evaluated by the TCEQ when determining the impacts of the rules on said strategies. LGRT comments that this evaluation appears to only be related to the reliability of diversions, not to the firm yield of projects. "Firm yield" is the hydrological foundation for most municipal and industrial water rights, and the TCEQ should give more consideration to the impact of the proposed rules on the firm yield of the projects

it evaluated. LGRT respectfully requests the TCEQ revise its assessment of the impacts to recommended water management strategies adopted in the approved Regional and State Water Plans to address the impacts to all recommended water management strategies in the Trinity and San Jacinto River Basins, and assess such impacts on a firm yield basis.

The commission understands that specific strategies in the water plans change as a result of the planning process. The commission selected strategies for new appropriations of water that could reasonably be expected to be implemented before the environmental flow standards are reconsidered under adaptive management in accordance with the schedule for a particular basin and bay system. The strategies in the water plan change from time to time and not all of the recommended strategies are appropriate for this type of analysis; for example, reuse of return flows, or modification of a diversion point. Future scenarios can be addressed through the adaptive management process. No change has been made in response to these comments.

NWF believes that a realistic consideration of the potential impacts of the flow regime on potential future water supplies indicates that in fact that impact is very reasonable. It's not out of proportion to what's being protected or out of proportion to the ability to develop new water supplies in those basins.

The commission acknowledges this comment.

NWFSCRC supports the basic approach used by commission staff in assessing potential impacts of proposed environmental flow standards on public interests. Recognizing that HB 3/SB 3 establishes a process for periodic adjustments of environmental flow standards, pursuant to TWC, §11.1471(f) that can occur at least once every 10 years, the TCEQ determined that water supply projects likely to be seriously considered for implementation during that same approximate time frame are the most appropriate for use in balancing public interest impacts. Many water supply projects that are talked about as long-term options are eventually dropped or modified for a variety of reasons. By basing evaluations of potential water project impacts on a time frame that approximately matches the revision schedule for environmental flow standards, the TCEQ will help to provide a reasonable balancing of all interests.

The commission acknowledges this comment.

One individual notes that the TCEQ states "The commission is not proposing to set aside any un-appropriated water to protect the proposed environmental flow standards . . . In theory, some water might be able to be set aside for high flow pulses . . . environmental flow standards may be adequately protected by special conditions in water rights permits or amendments . . . Special conditions to protect environmental flows may allow

water permitted . . . " and comments that this type of explanation is not comforting and puts the public in the position of not knowing if water is or is not available and if it will or will not be provided for environmental flows. The TCEQ is supposed to know if un-appropriated water is available in each river basin. Why is the TCEQ unaware of whether un-appropriated water is available? Why is the TCEQ unaware of whether it will set aside un-appropriated water?

The commission does know what basins have water availability issues. As the commission notes in the preamble, due to water availability issues in these basins, special conditions placed in a permit may be a more effective method to protect flows in the stream when new appropriations of water are granted. This is because if special conditions are used there are other sources of water in a stream that could be used to meet environmental flow requirements in a permit; for example, water appropriated to downstream water right holders, water appropriated to another but not used, or return flows. Additionally, set-asides require a water availability determination, and these sources would not be used to determine water availability because they would not be considered to be unappropriated water. The commission also notes that although stakeholder groups could make recommendations regarding set-asides, neither of the stakeholder groups in these basins recommended an amount of water to be set aside. No changes were made in response to these comments.

OPIC is concerned the rule proposal does not meet legislative intent to use environmental set-asides as a tool to meet environmental flows. The rule proposal declines to establish set-asides in either Subchapters B or C. The proposal justifies this decision for two reasons: 1) a preference for special conditions because they allow water use for dual purpose; and 2) unappropriated water is unavailable. Although OPIC understands the commission's preference for the flexibility provided by special conditions, this justification is not one allowed by the legislature in TWC, §11.1471(a)(2). The "human water needs" limitation on set-asides refers to the appropriate amount of the set-aside, not whether it is appropriate to establish them at all. In essence, by stating that special conditions in general better balance human water needs than set-asides, the commission is setting a precedent that there are no circumstances where it is reasonable to establish them. OPIC remarks that this approach is particularly troubling because the two basins being considered are the two most easterly and the most likely to have water available for appropriation. The commission's current approach does not establish set-asides to satisfy the environmental flow standards "to the maximum extent reasonable" as required by the statute. OPIC is also concerned with the commission's conclusion that no unappropriated water is available for set-asides. The rule proposal acknowledges that some water might be available to be set aside for high flow pulses. In addition, it appears from the science committee reports that some level of low reliability unappropriated water may be available in each basin. OPIC comments that to meet the legislative mandate, these waters should be set aside. Environmental Stewardship and

NWFSCRC are concerned that the TCEQ has not proposed to adopt any set asides for protection of environmental flows. The TCEQ is directed by statute to "establish an amount of unappropriated water, if available, to be set aside to satisfy the environmental flow standards to the maximum extent reasonable when considering human water needs" (see TWC, §11.1471(a)(2)). Although the challenge is complex, the TCEQ's failure to set aside water for environmental flow protection purposes has not been adequately justified. Environmental Stewardship and NWFSCRC comment that although water may not be available in the Trinity or San Jacinto Rivers on a reliable basis to help satisfy subsistence and base flows, some water likely is available to be set aside to help satisfy high flow pulses and freshwater inflows to Galveston Bay. The contention that no water is available in the Sabine and Neches basins to protect subsistence and base flows is more questionable. Unappropriated flow is available that could be set aside to help satisfy high flow pulses and freshwater inflows to Sabine Lake. Environmental Stewardship and NWFSCRC further comment that if the TCEQ does not establish environmental flow set asides at this time, it will be critical for the TCEQ to acknowledge and respect the availability determinations noted in the proposed rules in future water rights permitting decisions in order to retain and protect its ability to meaningfully revisit the issue of establishing set asides during the first revision process for these standards. USFWS notes that the TCEQ states in the preamble that there is no unappropriated water available in the basins for subsistence and base flows and that no set-aside for the environment can be made. The premise that the TCEQ will resolve environmental flow requirements in future water right permits given that the basin is

fully appropriated is inconsistent with the intent of the legislation. While there may not be water available during the drought of record, there is available water during non-drought periods for the environment as well as future water right permits. USFWS states that the 12.5% ceiling would be restrictive in addressing any needs identified by future studies. If the water is fully appropriated, it is not clear how the basin can be defined as a sound ecological environment. Return flows in the Trinity Basin have significantly increased base flow conditions over time. USFWS comments that while the basin may be fully appropriated during the drought of record, using this as a rationale to avoid setting aside environmental flows is not supportable given that, if there is water to issue new water right permits, then there is sufficient water to set aside environmental flows. USFWS recommends that the TCEQ re-evaluate its assessment that there is no available water for a set aside.

As the commission notes in the preamble for §298.225, due to water availability issues in these basins, special conditions placed in a permit may be a more effective method to protect flows in the stream when new appropriations of water are granted. This is because if special conditions are used there are other sources of water in a stream that could be used to meet environmental flow requirements in a permit; for example, water appropriated to downstream water right holders, water appropriated to another but not used, or return flows. Additionally, set-asides require a water availability determination, and these sources would not be used to

determine water availability because they would not be considered to be unappropriated water. The commission also notes that although stakeholder groups could make recommendations regarding set-asides, neither of the stakeholder groups in these basins recommended an amount of water to be set-aside. No change was made in response to these comments.

Sierra Club-LS comments that the original concept of HB 3/SB 3 was that at least for those bay/basin areas where you had unappropriated water in sufficient quantities that the agency might be able to set aside or reserve a certain amount of water to meet the environmental flow needs in that particular area. Now, the initial indication from the first two basins is that there is not enough water necessary to do set-asides. If indeed that is the case, then for all practical purposes, except when permits come in for amendment, environmental flow standards will have to be met through voluntary options. This might mean, for example, purchase or lease of existing water rights up to a certain level to be able to meet the standards. That actually provides a great deal of latitude. Because obviously, if there is not enough water to set aside for environmental flow purposes, there also isn't enough water to be able to appropriate for additional water rights permits. If this is indeed the case, don't set the standards so low that the targets and goals for achieving environmental flows don't really meet the requirements of the environment. If voluntary options are going to be the primary way of achieving environmental flows in the first place, then please set the standards as protective as they

need to be and provide the targets and goals that are needed to make sure that these rules will actually protect the habitat and create or maintain a sound ecological environment.

With regard to the specific numerical values in §298.225 of the adopted rule, the commission followed its instructions in the TWC to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards when drafting the adopted rules. Water availability determinations are done on an application specific basis. Whether or not water would be available for a new appropriation depends on the fact situation for those applications. The commission also notes that although stakeholder groups could make recommendations regarding set-asides, neither of the stakeholder groups in these basins recommended an amount of water to be set aside. No changes were made in response to these comments.

TPWD notes that in §298.275 of the preamble, the text states "If the flow is above the subsistence flow standard but below the dry base flow standard, then the water right holder may divert or store water down to the subsistence flow." This statement is only correct if the hydrologic condition is dry; it is incorrect during average and wet conditions. TWPD suggests inserting "During dry hydrologic conditions," before the

above-referenced sentence.

In response to other comments, adopted §298.275 has been modified to delete hydrologic conditions and modify the implementation of the flow components. The changes are discussed in the adoption preamble for §298.275 and §298.280, and the changes can be found in the adopted standards for those sections.

UNRMWA comments that the TCEQ did not evaluate the firm yield of a run-of-river diversion project with off-channel storage similar to that recommended to meet projected needs in the 2011 Region C Water Plan. Hence, the TCEQ has substantially underestimated the potential impacts of environmental flow constraints on a project of significant interest to UNRMWA. UNRMWA has completed technical analyses of such a project, and when firm yield is appropriately considered, the percentage losses in yield are radically greater than those reported by the TCEQ.

The commission responds that it used information available from the Regional Water Plan, and there was not enough information available to analyze this scenario with the specificity requested by the commenter. The commission did not intend for the analysis conducted to address the issue of balancing human and other competing needs for water in the basin and bay system to be a finding that water was available for a specific project. No

changes were made in response to this comment. The commission notes that §298.280 was changed in response to other comments and the new analysis is discussed in the adoption preamble for subsection C, §298.280.

Public Benefits and Costs

TRA notes that the findings of the public benefit and costs analysis found, in part, the following: "Overall, because the proposed standards are expected to function similarly to current streamflow restrictions for applications, the proposed standards are not expected to have significant fiscal implications . . . " This finding is likely inaccurate if the impacts upon water planning are considered. Specifically, the TCEQ has evaluated projects that are likely to be implemented in the short term, while the SB 1 water planning process works with a 50-year horizon. Because the water planning process must consider all relevant rules and regulations, it is very likely that numerous long-term projects, such as importing water across basin divides or developing new reservoirs - strategies that are paramount to meeting anticipated demands - will be made unviable. This would result in large water deficits with significant economic impacts. TRA therefore urges the TCEQ to recognize the full measure of unintended consequences of environmental flow standards on the legislatively-mandated water planning process. ANRA and FNI comment that it appears that the cost/benefit analysis for the public may not consider the potential impacts to future water supplies. It is unclear as to whether the proposed standards on new water rights will act similar to existing practice. Should a water supplier need to develop additional supplies, this could have significant fiscal

impacts on the public.

The commission responds that applications for new appropriations of water currently receive flow restrictions based on their location and facts provided in the application. Similarly, an application for a new appropriation of water under these rules will receive streamflow restrictions as provided by the adopted rules. The primary difference between streamflow restrictions assigned under the existing desktop methodology and streamflow restrictions assigned under the adopted rule is how the flows for the environment are distributed throughout the year. As discussed in the preamble for §298.225 and §298.280, application of the adopted flow standards to the water use scenarios had very little impact on water availability. Because streamflow restrictions currently applied to new appropriations of water under existing practice and streamflow restrictions under the proposed standards are expected to function similarly, the proposed standards are not expected to have significant fiscal implications. Additionally, under HB 3/SB 3's adaptive management provisions, the stakeholders will have future opportunities to re-evaluate the issue of balancing human and other competing needs for water in the bay and basin systems. The commission also notes that the fiscal note in the rule proposal preamble is limited by statute to a five-year outlook.

Subchapter A: General Provisions

§298.1, Definitions

TPWD comments that the definitions for "Base flow," "Pulse or high flow pulse," and "Subsistence flow" in §298.1(1), (7), and (8) should be consistent for all basins and all purposes. It is not clear why a different definition or standard for an equivalent flow regime component would vary basin by basin. In general, the terms are used extensively and with a common meaning in instream flow science where each of the flow regime components describe the same portion of the hydrograph and perform the same ecological function regardless of basin or location. TPWD recommends that the same definitions used in the TIFP, where applicable, be used in the HB 3/SB 3 rules. Of particular note is the omission from the definition for subsistence flow that characterizes these extreme low flows events as naturally occurring and infrequent and providing habitat suitable not only for survival but for recolonization. The differences in the definitions may be subtle, but they are important.

The commission notes that general definitions for "Base flow," "Pulse or high flow pulse," and "Subsistence flow" are provided in §298.1. However, the commission does not want to limit the ability of future stakeholder and expert science groups to define these terms in their future, location specific recommendations. With respect to the definition of "Subsistence flows," extreme low-flow events can be naturally occurring. However, low flows in

a stream can also result from other factors such as lawful diversions authorized by individual water rights. Therefore, the definition of "Subsistence flows" in §298.1 was not modified to reflect that aspect of the comment. The commission does agree, however, that subsistence flows provide habitat not only for survival but for recolonization, and the definition of "Subsistence flows" in §298.1 was modified in response to that portion of the comment. The adopted definition is in §298.1(10).

LGRT concurs with the proposal that including definitions for "Base flow," "Pulse or high flow pulse," and "Subsistence flow" in §298.1(1), (7), and (8) does not imply that all future recommendations for environmental flows must use these precise components as defined.

The commission agrees with this comment.

LGRT comments that the term "average" is used in the definition of "Base flow" in §298.1(1) and would like to know whether "subsistence flow" is instantaneous or also based on some average.

The commission responds that the definition of "Base flow" in adopted §298.1(2) refers to that range of flows which occur in the absence of significant rainfall events. Therefore, they are neither the highest nor the lowest flows. In this case, the word average is a descriptor and not a mathematical calculation. "Subsistence flows" are instantaneous flow values unless future bay and basin groups define them otherwise for their respective basins. The rule was not modified in response to this comment.

TPWD comments that the "Environmental flow regime" definition in proposed §298.1(2) should track the statute verbatim; the qualifying clauses in the statute are necessary for comprehension and remove any grounds for inconsistency between the rule and the statute. There is a risk that simplifying or paraphrasing the definition will create uncertainty and ambiguity.

The commission agrees with this comment. The commission modified the definition of "Environmental flow regime" in adopted §298.1(3) to track TWC, §11.002(17) in response to this comment.

TPWD comments that it is unclear why definitions for "Lower Rio Grande" and "Middle Rio Grande" (§298.1(4) and (6)) are needed in Subchapter A rather than in a later

subchapter that specifically addresses environmental flows for the Rio Grande. The inclusion of definitions §298.1(4) and (6) in Subchapter A seems inconsistent with the manner in which true basin-specific definitions are given in Subchapters B and C of the draft rules. It is also unclear why the definitions only include the main stem of the river. If the Texas portion of the Rio Grande Basin is to be segmented for purposes of HB 3/ SB 3 rulemaking, the entirety of the watersheds for each segment should be included.

The commission responds that the definitions for "Lower Rio Grande" and "Middle Rio Grande" (adopted §298.1(5) and (7)) are included in Subchapter A, General Provisions because this basin will be considered in future rulemaking. However, the commission agrees that the definitions for "Lower Rio Grande" and "Middle Rio Grande" should be modified and has modified the definitions to include the tributaries in Texas in response to this comment. If the definitions for "Lower Rio Grande" and "Middle Rio Grande" in §298.1 need further modification, that modification can be considered during the future rulemaking for the Rio Grande.

LGRT comments that the term "critical drought" used in the definition of "subsistence flow" in §298.1(8) needs clarification. What indicator, or set of indicators, will be used to define a critical drought? And how will the executive director implement this definition when parts of basins are in critical drought yet others are not?

The definition in adopted §298.1(10) for "Subsistence flow" is based on the definition used by the TIFP. "Critical drought" merely refers to those times when flows in the river are very low and subsistence conditions would be applicable. The specific flows that are applicable to a particular water use permit could vary based on the applicable measurement point. Therefore, it is possible that different water use permits in different parts of the basin could have different flow conditions. The rule was not modified in response to this comment.

TPWD comments that the definitions in §298.1(10) and (11) need refinement. When the definitions are read in concert, persons with a legal right to use state water that are exempt from permitting such as domestic, livestock, or wildlife users are not defined as water right holders. Though exempt from permitting requirements, these water users maintain a valid legal right to surface water use. The definition of "Water right holder" in §298.1(10) should include exempt domestic and livestock and wildlife users as they are a class of water right holders that are entitled to protection from junior appropriators. Their water use should be considered in any evaluation of environmental flow protection.

The commission responds that domestic and livestock users are not water right holders for the purposes of this chapter, so they are not included in the definition of "Water right holder" in adopted §298.1(12). Domestic and livestock users are unknown and mostly unregulated by the TCEQ, and therefore specific environmental flow standards for these water rights are impossible. Additionally, these uses would not be subject to the environmental flow standards because the standards apply to permits for new appropriations of water. No change was made in response to this comment.

LGRT comments that §298.1(11) defines "Water right permit" but affirmatively excludes "exempt water users." Does this suggest that domestic and livestock users are senior and superior to environmental flow standards and therefore "exempt?" How will the executive director, if at all, implement environmental flow standards in the context of "reasonable use?" How will the executive director, if at all, implement environmental flow standards in the context of a watermaster program?

The commission responds that domestic and livestock users are not water right holders for the purposes of this chapter and are not included in the definition of "Water right permit" in adopted §298.1(13). Therefore, these uses would not be subject to the environmental flow standards because the

standards apply to permits for new appropriations of water. Domestic and livestock users are unknown and mostly unregulated by the TCEQ, and therefore specific environmental flow standards for these water rights are impossible. If a permit to which these flow standards are applicable is in a watermaster area, the watermaster will ensure that the water right owner is in compliance with the terms and conditions of the permit, including any special conditions related to the environmental flow standards. No change was made in response to this comment.

TPWD comments that the last sentence should be deleted from the definition of a water right permit because "users" are not the subject of the definition, and the first clause of the definition adequately defines a water right permit.

In this definition, the commission is clarifying that exempt uses are not water rights for purposes of this chapter. The commission has changed the word "users" to "uses" in response to this comment.

§298.10, Applicability

TRA agrees with proposed §298.10. The intent of HB 3/SB 3 is that environmental flow standards and set asides be applicable only to new appropriations or amendments that

increase the amount of water to be stored, taken, or diverted. TRA believes that the TCEQ is correct in stating that potential negative impacts from all other amendments can be addressed through existing authority delegated under TWC, Chapter 11.

The commission acknowledges this comment.

KHH would like to know whether Chapter 298 is intended to cover an increase in the quantity or rate of diversion at existing, authorized diversion points if the overall quantity authorized for storage or diversion does not change.

Chapter 298 applies to new appropriations of water. An increase in the diversion rate without an increase in the total quantity for storage or diversion is not a new appropriation; therefore, the environmental flow standards in this rule do not apply. However the commission still has the authority to include special conditions in water rights permits where appropriate. No change was made in response to this comment.

LGRT concurs with the proposed rule that environmental flow standards should only apply to new appropriations of water and to amendments that grant new appropriations of water. LGRT concurs with the executive director's statement that applications

submitted pursuant to TWC, §11.042 and §11.046, should not be subject to the rules. LGRT requests that the commission clarify as fully as possible the types of applications that do not involve a new appropriation of water (particularly in the context of amendments to existing rights) such that the rules would not apply and also clarify fully the manner in which the executive director will be making determinations of rule applicability for those applications that do not fall within the types of applications so identified. For example, LGRT suggests that the following amendment applications would not represent new appropriations of water and requests the commission affirmatively address this proposal in its response to these comments: 1) a proposed interbasin transfer of water already appropriated to a water right holder in the basin of origin; 2) a bed and banks authorization, and/or an indirect reuse authorization, proposing the transfer and reuse of return flows; 3) the addition of or change in a purpose of use of an existing water right; 4) the addition of or change in a diversion point to a proposed downstream point of diversion for an existing appropriation along a stream or within a stream reach; and 5) the addition of or change in a diversion point along the perimeter of a water supply reservoir.

Chapter 298 applies to new appropriations of water. However the commission still has the authority to include special conditions in water rights permits where appropriate. The commission agrees that with the exceptions of a bed and banks authorization and/or an indirect reuse

authorization proposing the transfer and reuse of return flows, these other types of applications would generally not be considered new appropriations of water. Whether reuse of return flows is a new appropriation of water is an issue in a contested case pending at SOAH. No change was made in response to this comment.

Espey, LGRT, and ANRA suggest §298.10 be modified to clarify that interbasin transfers of water from permits senior to the proposed environmental flow standards are not subject to the proposed environmental flow standards.

Chapter 298 applies to new appropriations of water. The commission agrees that interbasin transfers of existing senior water rights where no new appropriations are being sought are not considered new appropriations of water. No change was made in response to this comment.

ANRA and FNI suggest that the TCEQ should consider waiving compliance with the environmental flow standards for water rights permits that have a diminutive impact to stream flows.

The commission notes that the proposed rules treat small and large water rights differently with respect to how the standards would apply. Under adopted §298.230 and §298.285, pulse flow requirements will not apply to new appropriations for less than 10,000 acre-feet of water. The rule was not modified in response to this comment.

ANRA and FNI suggest that the high flow pulse criteria NOT be applied to reuse permits, regardless of the quantity of return flows being appropriated. Return flows inherently do not produce pulses, and therefore it is inappropriate to apply pulse criteria to them.

Chapter 298 applies to new appropriations of water. Whether reuse of return flows is a new appropriation of water is an issue in a contested case pending at SOAH. No change was made in response to this comment.

WW comments that proposed §298.10(a) makes clear that the rules apply only to the amount of water under new appropriations regarding applications on file on or before September 1, 2007 and suggests that this clarification could be used repeatedly throughout these rules.

The commission respectfully disagrees with this comment because §298.10 clearly states that this chapter only applies to water appropriated under a permit for a new appropriation of water, the application for which was pending with the commission on September 1, 2007, or is filed with the commission on or after that date or to an increase in the amount of water authorized to be stored, taken or diverted, and the application for which was pending with the commission on September 1, 2007, or was filed with the commission on or after that date. The rule was not modified in response to this comment.

DWU comments that water right permit applicants whose applications have been declared administratively complete prior to September 1, 2007 should be granted the option to accept environmental flow special conditions based on the rules at the time of administrative completeness or the new standards.

The commission respectfully disagrees with this comment. HB 3/SB 3 states that the environmental flow standards would only apply to new appropriations of water and amendments that granted a new appropriation of water after September 1, 2007. The rule was not modified in response to this comment.

NWFSCRC comments that §298.10(a) is overbroad because it does not expressly restrict applicability of these rules to those situations for which applicable environmental flow standards have been adopted. The rules must make clear that where there are no applicable environmental flow standards, the provisions of TWC, §11.147(b) - (e) continue to apply. Accordingly, §298.10(a) should be revised to read as follows: "(a) This chapter only relates to a permit for a new appropriation of water or to an amendment to an existing water right that increases the amount of water authorized to be stored, taken, or diverted, and the chapter applies only when there is an applicable adopted environmental flow standard and only to:".

The commission agrees and modified §298.10(a) in response to this comment to clarify that Chapter 298 only applies in areas where there is an adopted environmental flow standard.

DWU notes that numerous water right applications have been filed with the TCEQ prior to September 1, 2007 and have been declared administratively complete prior to September 1, 2007. DWU comments that these applications have been under review for many years and should be grandfathered in the environmental flow standards. Change §298.10(a)(1) to read as follows: "Water appropriated under a permit for a new appropriation of water, . . . declared administratively complete by the commission on or after September 1, 2007."

The intent of HB 3/SB 3 was that the environmental flow standards would only apply to new appropriations of water and amendments that granted a new appropriation of water after September 1, 2007. The rule was not modified in response to this comment.

DWU notes that numerous water right applications have been filed with the TCEQ prior to September 1, 2007 and have been declared administratively complete prior to September 1, 2007. DWU comments that these applications have been under review for many years and should be grandfathered in the environmental flow standards. Change §298.10(a)(2) to read as follows: "The increase in the amount of water authorized to be stored, taken, or diverted under an amendment to an existing water right that increases the amount of water authorized to be stored, taken, or diverted, declared administratively complete by the commission on or after September 1, 2007."

The intent of HB 3/SB 3 was that the environmental flow standards would only apply to new appropriations of water and amendments that granted a new appropriation of water after September 1, 2007. The rule was not modified in response to this comment.

WW comments that §298.10(b) is somewhat confusing in that it states that it does not amend or restrict TCEQ authority to impose special conditions to protect environmental flows. Yet, in establishing environmental flow standards for the Trinity-San Jacinto Basin and for Galveston Bay, the commission is establishing an upward limit on special conditions to protect environmental flows. In fact, HB 3/SB 3 environmental flows procedures were adopted to change TCEQ procedures and to add certainty for all parties regarding the environmental flows needed to maintain a sound ecology at the measurement points. See also proposed §298.15(b) which states that environmental flows standards replace TWC, §11.147(b) - (e) and 30 TAC §297.53 - 297.56.

In the proposal preamble for §298.10(b), the commission stated that it still retained its existing authority to place special conditions in permits to protect the environment. The intent of this statement was to clarify that the commission would use special conditions to implement the environmental flow standards for applications for new appropriations of water and applications to increase the amount of water to be taken stored or diverted after September 1, 2007. Additionally, the commission still has authority to use special conditions for those applications which are not for new appropriations or an increase in storage, taking, or diverting of water. No change was made in response to this comment.

SRA Texas and Others concur with the approach that TCEQ staff used to address amendments to reservoirs that do not seek to increase the amount of water stored in a reservoir (increase in the diversion amount up to the firm yield of the authorized storage or adding authorization for interbasin transfer). TCEQ made the diversion right junior to the environmental flow standard and the storage right senior to the environmental flow standard and this concept should be specified in the rules.

The commission agrees that Chapter 298 only applies to new appropriations of water and not to existing water rights. The rule was not modified in response to this comment.

Austin comments that although it does not appear that an amendment to the City of Austin's Lady Bird Lake and Lake Austin impoundment rights in Certificate of Adjudication (Certificate) Number 14-5471A would cause Austin's run-of-river right under Certificate Number 14-5471A to be subject to the additional environmental conditions in these proposed rules, Austin would like the following clarifying language added to the rules to avoid any confusion on this important point: "(c) With regards to amendments of existing water rights, this chapter applies only to the specific water right for which an amendment is being sought and would not apply to other water rights under the same permit, certificate of adjudication or certified filing for which no amendment is sought." Austin understands that it is not the intent, and believes it

should not be the intent, of the proposed rules to subject all water rights housed under the same permit to be subject to new environmental flow conditions simply because a permit holder seeks amendment of one of the rights bundled into the same permit.

The commission agrees with this comment. The standards would not apply to portions of existing water rights that were not being amended to add a new appropriation of water. The rule was not modified in response to this comment.

Austin notes that in the future it may seek to add a diversion point for its run-of-river right a short distance upstream and that such an amendment would not seek an increase in appropriation. Under the proposed applicability provision it does not appear that the addition or relocation of a diversion point would subject the diversion right to environmental conditions under the proposed rules; however, clarifying language would be important in this instance also to avoid any confusion. Austin recommends an additional subsection (d) as follows: "(d) This chapter does not apply to an amendment seeking to add or relocate a diversion point." Austin requests as well that any other additional changes needed to make the remaining proposed rules conform with the above recommendations be incorporated into the proposal rules.

The standards would not apply to portions of existing water rights that were not being amended to add a new appropriation of water, including an additional diversion point that will not seek an increase in the diversion amount. The commission still has authority to use special conditions for those applications which are not for new appropriations or an increase in storage, taking, or diverting of water, including a request to add or move a diversion point. Those special conditions could include environmental flow requirements to protect the standards. The rule was not modified in response to this comment.

§298.15, Special Conditions to Protect Environmental Flow Standards and Set-Asides

ANRA and FNI agree with the TCEQ that set-asides are not appropriate for these basins. However, the language of the regulations refers to set-asides in several places. TCEQ should clearly state in the rule that no set-asides are proposed and delete other language that refers to set-asides.

The commission agrees that set-asides were not recommended for these basins. The commission responds that the preamble for §298.225 and §298.280 clearly states that no set-asides are recommended in these basins. The rule was not modified in response to this comment.

ANRA and FNI suggest that the regulations should include the option of the water right applicant to perform a site-specific instream flow study to determine an environmental flow regime if an applicant desires to do so. The results of such a study, after review and approval by the TCEQ, should override the default criteria proposed in these rules. If an applicant does not desire to perform such a study, the criteria in the rule would apply.

Similarly, TPWD does not support the proposal in §298.15(b) that adopted environmental flow standards comprehensively replace TCEQ's obligations under TWC, §11.147(b) - (e) and §§298.53 - 298.56. Proposed §298.15(b) essentially states that it is TCEQ's intent to use the published environmental flow standards for all new projects, including large reservoirs, in lieu of the site-specific studies currently considered to be necessary based on project size, location, ecological community, and potential for causing environmental degradation. While TPWD understands that §298.15(b) tracks the language of HB 3/SB 3 and TWC, §11.147(e-3), TCEQ's interpretation is overly broad. TPWD comments that TCEQ should add a rule whereby the agency retains its authority to require site-specific studies to determine environmental impacts and to craft appropriate special permit conditions to protect particular environmental needs, especially those needs not considered or precisely identified in the adopted environmental flow standard. Similarly, Espey, LGRT, NTMWD, SJRA, and SRA Texas and Others, suggest modifying §298.15(b) to read as follows: " . . . the commission shall apply any applicable environmental flow standard, including any environmental flow

set-aside, adopted in this chapter or amounts derived and provided by an applicant through a site-specific study potentially affected by any water right permit application to which this chapter applies, instead of considering factors specified . . . ". They also comment that the balancing asserted by the commission inherently acknowledges the implicit uncertainties in such flow recommendations. As such, anything that might bring more information to bear related to a specific project/location should have the capability to trump the relatively uncertain, arbitrarily defined proposed flow standards. Additionally, LGRT comments that §298.15(b) and (c) need to be adjusted to allow the commission to take into account site-specific studies. Data used to develop the proposed rules was based solely on record hydrology and should not be considered the best available science if site-specific studies associated with a proposed application are available for the agency's consideration. LGRT comments that the rule needs to be clarified to allow applicants to perform and submit site-specific studies and to acknowledge the executive director's consideration of same.

The commission respectfully disagrees with these comments. TWC, §11.147(e-3) expressly states: "Notwithstanding Subsections (b) - (e), for the purpose of determining the environmental flow conditions necessary to maintain freshwater inflows to an affected bay and estuary system, existing instream uses and water quality of a stream or river, or fish and wildlife habitats, the commission shall apply any applicable environmental flow

standard, including any environmental flow set aside, adopted under §11.1471 instead of considering the factors specified by those subsections." Subsections (b) - (e) are the statutes regulating how the commission protected the environment prior to HB 3/SB 3. It is clear that the bill and TWC, §11.147(e-3) meant for the commission to place any environmental flow standards determined under TWC, §11.1471, in a permit for new water instead of using these other statutes and site-specific data. Under TWC, §11.1471(d), all new appropriations or increases in the storage, taking, or diversion of water issued after an environmental flow standard is adopted must contain the standard. The commission acknowledges that further data may need to be developed. However, HB 3/SB 3 contemplates that this new data and new studies will be considered through adaptive management.

In the proposal preamble for §298.10, the commission stated that it still retained its existing authority to place special conditions in permits to protect the environment. The intent of this statement was to clarify that the commission would use special conditions to implement the environmental flow standards for applications for new appropriations of water and applications to increase the amount of water to be taken stored or diverted after September 1, 2007. Additionally, the commission still has authority to

use special conditions for those applications which are not for new appropriations or an increase in storage, taking, or diverting of water. The rule was not modified in response to this comment.

LGRT concurs with the proposed rule that water appropriated to a downstream water rights holder, or other water that may be left in the stream to meet environmental flow needs, should be considered in establishing flows.

The commission acknowledges the comment.

Espey and LGRT suggest adding the following clarifying language, extracted from TWC, §11.1471(d), to the end of §298.15(a): " . . . A permit for a new appropriation or an amendment to an existing water right that increases the amount of water authorized to be stored, taken, or diverted that is issued after the adoption of an applicable environmental flow set-aside must contain appropriate conditions to ensure protection of the environmental flow set-aside."

The commission agrees and §298.15(a) was modified to reflect this comment.

DWU comments that proposed language in §298.15(b) stating "the commission shall apply any applicable environmental flow standard, including any environmental flow set-aside, adopted in this chapter, instead of considering the factors specified in TWC, §11.147(b) - (e) and §§297.53 - 297.56" appears to eliminate the 200-mile provision to maintain beneficial inflows to any affected bay and estuary system. However, HB 3/SB 3 does not eliminate the 200 mile provision to maintain beneficial inflows to any affected bay and estuary system.

The commission has determined that under TWC, §11.147(e-3), the 200-river-mile limit does not apply to environmental flow standards for bays and estuaries unless the science team or stakeholders submit this recommendation to the commission for review during the environmental flows process. The rule was not modified in response to this comment.

BRA comments that §298.15 currently reads like instream flow standards are being incorporated into all water rights permits, not just those qualifying under §298.10 and recommends that this section refer to applicability requirements established in §298.10.

The standards would not apply to portions of existing water rights that were not being amended to add a new appropriation of water. The commission

still has authority to use special conditions for those applications which are not for new appropriations or an increase in storage, taking, or diverting of water. Those special conditions could include environmental flow requirements to protect the standards. The rule was not modified in response to this comment.

WW comments that §298.15(c) makes it clear that TCEQ has discretion to "incorporate into every water right permit any condition, restriction, limitation, or provision, . . . " that is reasonably necessary to protect environmental flow standards, to the maximum extent reasonable, considering other public interests and other relevant factors." The TCEQ's wise use of this discretion will become increasingly important in the permitting process. Environmental stream flow standards do not necessarily translate precisely to water rights permits terms and conditions, because operational issues must be addressed. Similar to consideration of enforcement of water rights on a priority basis, TCEQ's use of operational tools such as accounting plans could be used to translate the environmental flow standard to a permit condition regarding daily utility operations.

The commission will consider this comment when it implements the adopted standards in water rights permits. No change was made in response to this comment.

NWFSCRC comments that the proposed language in §298.15(c) is not consistent with TWC, §11.147(e-3). The proposed rule seems to attempt to incorporate a second set of balancing and discretionary review into the permitting process through which TCEQ could decide not to include permit conditions necessary to protect the adopted environmental flow standards. For permits to which the standards apply, TCEQ must apply those standards in developing permit conditions. TCEQ does not have discretion to decide to apply the standards "to the maximum extent reasonable, considering other public interests and other relevant factors" as suggested in the proposed rule. This language would introduce a second layer of balancing and would necessitate individualized permit reviews while establishing the flow standards as a cap. That is not what HB 3/SB 3 provides. To avoid that inconsistency with the statutory directive, the following language should be deleted: "to the maximum extent reasonable, considering other public interests and other relevant factors."

The commission agrees and §298.15(c) has been modified to remove this language.

NWFSCRC comments that the reference in §298.15 to any condition, restriction, limitation, or provision reasonably necessary to "protect" flow standards is a bit unclear. The term "comply with" should be substituted for "protect." Although it might be

accurate to refer to protection of an environmental flow set aside, it is not clear how permit conditions would "protect" an environmental flow standard.

The commission respectfully disagrees. Special conditions that protect environmental flow standards would be those special conditions that ensure compliance with the standards. The rule was not modified in response to this comment.

§298.20, Priority Date for Set-Asides

DWU notes that §298.20 proposes the priority date for set asides to be set to the date the commission receives environmental flow regime recommendations from each basin and bay expert science team and suggests that it would be more appropriate for this date to be set to the date the commission adopts the proposed rules for each basin.

The commission responds that the priority date for the set-asides is prescribed by TWC, §11.1471(e). The rule was not changed in response to this comment.

LGRT notes that §298.20 proposes to assign priority dates for both environmental flow set-asides and environmental flow standards and comments that the prior appropriation

doctrine in Texas and elsewhere in the Western United States is the primary foundation for surface water rights management, and the doctrine has been the subject of significant case law and agency policy for well over 100 years. Therefore, enveloping environmental flow standards with the concept of priority, and arguably making such standards subject to the prior appropriation doctrine, should be avoided if not absolutely necessary. LGRT comments that environmental flow standards should not be assigned priority dates, as they should be considered as flows reserved from appropriation, unlike environmental flow set-asides, which should be considered as stand-alone water rights that would be cloaked with priority. LGRT comments that HB 3/SB 3 did not provide and does not require that environmental flow standards be assigned priority, although HB 3/SB 3 did make it clear that the environmental flow set-asides are to be assigned priority.

The commission responds that the priority date for the environmental flow standards will be used in water rights permitting in the water availability model runs used for water availability analyses. The function of a priority date in the water availability model is to ensure that water rights are processed in seniority order. With respect to environmental flow standards, using a priority date in the water availability model ensures that the standards do not apply to existing senior water rights and do apply to new appropriations of water. By including the standards in the WAM with a

priority date, the commission protects pulse flow standards from being permitted to smaller applicants to whom the standards apply. In addition, including the standards in the WAM with a priority date ensures that new appropriations will not affect downstream flow standards. The priority date has no other purpose. In response to these comments, §298.20 has been clarified by adding this explanation.

TPWD disagrees that environmental flow standards should be assigned a priority date. The standards are descriptions of flow conditions that provide for a sound ecological environment; they are simply the technical bases for developing special environmental flow permit conditions for new appropriations or for establishing set-asides. There is no connection between priority dates and standards as standards do not reserve of appropriate a defined amount of water. Section 298.20 is titled "Priority Date for Set-Asides" and it should be limited to set-asides. The TCEQ proposal is inconsistent with HB 3/SB 3 and inserts ambiguity and confusion into the water rights priority system. TPWD suggests that if the proposed "priority date" is simply used in modeling, but it has no legal weight like a priority date for a water right permit, a new term should be used and there should be explicit language to explain the limited use of that date for specific purposes.

The commission responds that the priority date for the environmental flow standards will be used in water rights permitting in the water availability model runs used for water availability analyses. The function of a priority date in the water availability model is to ensure that water rights are processed in seniority order. With respect to environmental flow standards, using a priority date in the water availability model ensures that the standards do not apply to existing senior water rights and do apply to new appropriations of water. By including the standards in the WAM with a priority date, the commission protects pulse flow standards from being permitted to smaller applicants to whom the standards apply. In addition, including the standards in the WAM with a priority date ensures that new appropriations will not affect downstream flow standards. With respect to environmental flow standards, the priority date has no other purpose. In response to these comments, §298.20 has been clarified by adding this explanation.

§298.25, Process for Adjusting Environmental Flow Conditions in Certain Permits

NWFSCRC comments that a mechanism is needed to allow other interests, besides water right holders, to receive notice of such petitions. HB 3/SB 3 expressly acknowledges that many varied persons and groups have a critical stake in protection of environmental flows. It would not be appropriate to limit notice only to navigation

districts and those persons and groups who hold water rights. Persons who have asked to receive notice, which could easily include members of the relevant stakeholder committee and expert science team, also should be notified. In order to create a fair notice process, §298.25(c) should be revised to read as follows: "Notice of the petition . . . by the commission. The executive director shall also maintain a list of persons who have requested to receive notice of such petitions and shall provide timely notice to those persons using the address on file with the executive director. . . . The inadvertent failure . . . not an appropriator of water or to a person, other than a water right holder of record in the basin, who has requested to receive notice does not prevent . . .."

The commission already maintains a list, in the Office of the Chief Clerk, of interested parties in water rights matters. Persons on that list would also receive notice of these petitions. The rule was not modified in response to this comment.

TPWD requests that §298.25(c) add a requirement for mailed notice to TPWD consistent with existing statute (TWC, §11.147(f)) recognizing TPWD as a party on applications to store, take, or divert water.

The commission agrees, and §298.25(c) was modified in response to this comment to add a requirement for mailed notice to TPWD consistent with TWC, §11.147(f).

WW notes that proposed §298.25(d) states that the commission may act on the executive director's petition to adjust a water right with notice but without a public hearing. The proposed summary petition to adjust a water right, potentially involuntarily, does not appear to provide a modicum of due process to the water rights permit holder. It seems appropriate for the commissioners to offer some public participation as they move forward to have an impact on the property rights of water rights permittees.

The commission responds that the authority for this subsection comes from TWC, §11.147(e-1), which does not mention a public hearing for the decision to adjust these special conditions. The statute does specify that adjustments may be made after an "expedited public comment process."This may or may not include a public meeting. The rule was not modified in response to these comments.

TPWD requests that §298.25(e) add a requirement for mailed notice to TPWD consistent with existing statute (TWC, §11.147(f)) recognizing TPWD as a party on applications to store, take, or divert water.

The commission agrees, and in response to this comment, §298.25(e) was modified to add TPWD as an entity that may file a motion for rehearing consistent with changes to §298.25(c).

WW comments that §298.25(e)(2) proposes that the executive director would have a right to file a motion for rehearing in a case where it originally petitioned the commission to adjust a permit for environmental flow special conditions. Motion for Rehearing would give the executive director a right to appeal a commission decision to SOAH and would be unfair to applicants. Allowing the executive director to participate in SOAH hearings regarding permit adjustments for environmental flows is one thing; giving TCEQ staff more than one expensive bite at the apple is quite another. If TCEQ staff cannot convince their own commissioners regarding their recommended permit adjustments, then they should not be put in the position of getting a second chance at everyone else's expense. NWFSCRC comments that it is not clear what is meant by "affected persons, when authorized by law." No law expressly authorizes persons to file a motion for rehearing under Chapter 298. It appears that, as proposed, only the commission, the executive director, and the water right holder would be authorized to

file a motion for rehearing. That would be grossly unfair. Any person who can meet the test of being potentially affected should be allowed to file a motion for rehearing. HB 3/SB 3 expressly recognizes the wide variety of stakeholders who are affected by decisions about environmental flow protection. Accordingly, the provision should be rephrased to provide that "other affected persons" may file a motion for rehearing.

NWFSCRC also comments that the requirements of §298.25(f), basically requiring a written motion to be filed with the Chief Clerk, should apply to any person other than a commissioner who is filing a motion for rehearing. As drafted, it refers only to a motion for rehearing filed by an "affected person," which appears to refer only to those persons falling within the proposed language of §298.25(e)(4). OPIC requests clarification on the relationship, if any, between the motion for rehearing provided in proposed subsections §298.25(e) - (g) and the commission's rules at 30 TAC Chapters 55, 80, and 295. Although the term "affected person" is defined in TWC, §5.115(a), it is unclear whether the commission intends to cross-reference proposed §298.25 to the definition of "affected person" in §55.256, to requests by groups or associations in §55.252, and to the motion for rehearing requirements at §80.272. OPIC comments that it is also unclear whether the procedural rules in Chapter 295, specifically Subchapter D, have any bearing on motions for rehearing under proposed §298.25. Furthermore, there is no standard for determining when the commission may refer a matter to SOAH under §298.25(g) and whether there are circumstances when referral is mandatory on the

commission. In order to ensure an efficient motion and hearing process, OPIC make the following recommendations:

OPIC requests the commission consider defining the term "affected person," including requests by groups or associations, similarly to the definition already provided in Chapter 55. OPIC requests the commission to clarify whether the filing and processing requirements for a motion provided in proposed subsections §298.25(e) - (f) are the same as provided in 30 TAC Chapter 80, including whether motions for rehearing overrule by operation of law. OPIC requests the commission establish standards for determining when it will refer a petition for a public hearing at SOAH.

Because no rehearing procedure is required in TWC, §11.147(e-1), this motion for rehearing is not related to the motion for rehearing mentioned in Chapters 295 or 55. This motion for rehearing procedure is meant to be applicable only to executive director petitions to adjust permit environmental special conditions. The commission did include in §298.25 some of the same requirements that are in §50.139 concerning motions to overturn executive director decisions on permits. Because the executive director is the party that files the petition to change these standards, the executive director should also have the right to file a Motion for Rehearing on the petition. The executive director is not the only party who has the

right to file a Motion for Rehearing. The limit on the executive director's right to appeal a commission decision only applies to appeals to a court.

The commission agrees that a definition of "Affected person" would be helpful for this motion for rehearing on an adjustment of an environmental special condition in a permit. The commission adds "Affected person" to the definition section in §298.1 and defines "Affected person" as "persons who meet the requirements of §55.256 for the specific environmental special condition proposed to be adjusted."

TWC, §11.147(e-1) does not require a contested case hearing for adjustments to permits. Because a petition to adjust an environmental flow special condition shall be prepared by the executive director in the manner of an original application of a permit, however, the commission determined that a motion for rehearing by the executive director on a petition could be subject to referral to SOAH if the commission deemed it appropriate. The commission respectfully declines to specify standards for this referral at this time other than that the commission would determine that there is a fact issue to be resolved if it refers a motion for rehearing on the petition to SOAH. The commission would also consider the requirements for adjusting environmental special conditions in permits that are set out in §298.25.

Chapter 80 states that it applies to all contested case hearings at SOAH unless this is otherwise provided. Therefore, Chapter 80, to the extent it does not conflict with provisions of Chapter 298, will apply to this contested case hearing referred to SOAH.

LGRT comments that it concurs with the proposal in §298.25(h) that adjustments to water rights for environmental flows "may not exceed 12.5% of the annualized total of the amount required to be adjusted" to the extent the executive director is referring to environmental flow requirements included within water rights issued after September 1, 2007. LGRT also comments that environmental flows conditions included within water rights issued prior to that date are not subject to such adjustments. And, consistent with HB 3/SB 3, LGRT comments that, for an amendment to a water right issued after the rules are adopted, such increase may only be applied to the amount of water sought as a new appropriation pursuant to the amendment. LGRT also requests the executive director consider adding a definition and/or detail on how he will calculate the "annualized" total amount, particularly for purposes of pulse flow events.

In response to this comment, the rule was modified to clarify that the annualized total amount refers to the sum of the annual amounts of the base flow and pulse flow conditions as calculated in §298.25(h)(1) and (2).

ANRA and FNI comment that the language implies that the 12.5% change can only increase flows reserved for the environment and suggest that the rules should recognize that a decrease can also occur. DWU comments that the proposed rules only discuss the potential 12.5% increase of the environmental flow requirement and that the proposed rules also need to include a provision for the possibility of a 12.5% decrease in the environmental flow requirement.

The commission respectfully disagrees. TWC, §11.147(e-1)(1) states that the 12.5% cap only applies to increases in the standards. There is no statutory authority for a floor on decreases. The rule was not changed to add a floor on decreases.

USFWS comments that the 12.5% ceiling seeks to limit the degree to which the state can raise environmental flow requirements in future water right permits but that there is no limit on the amount an environmental flow standard or requirement can be reduced. It is clear that the legislation's authors intended to provide water right holders with certainty by limiting increases in any environmental flow requirements placed on their permits. Additionally, the authors wisely incorporated adaptive management into the process in order to refine and adjust flow requirements as knowledge and understanding of how those flows relate to the needs of the environment increases over time. It is important to note that whatever flow standards are chosen, reducing the standards or

individual permit requirements will be infinitely easier than raising them in order to maintain a sound ecological environment.

The commission acknowledges this comment.

TPWD comments that, as required by HB 3/SB 3, rules are proposed limiting increases to permit special conditions associated with environmental flow standards to a maximum of 12.5%. HB 3/SB 3 did not provide guidelines or a formula for calculating the up to 12.5% adjustment. The draft rules establish a formula for calculating the maximum adjustment using annualized amounts of instantaneous flows for base and subsistence conditions and annualized amounts of volume determined by totaling all of the required pulses per year. While this method may work, it has the potential to oversimplify the flow components, conditions, and seasonality that may be needed for an adequate flow regime. It may be more appropriate to calculate adjustments for each identified flow component within each identified category (wet, dry, average) and season. Blending seasons and flow categories could diffuse benefits from recommended flow components.

The commission does not intend to create an overly complicated rule. Adopted §298.25(h) also allows some flexibility, and this method is

sufficiently protective of the environment because it contains enough factors to sufficiently calculate the amount. The rule was not modified in response to this comment.

WW notes that §298.25(h) states that adjustments to existing permits to meet environmental flow conditions may not exceed 12.5% but comments that the calculation of this 12.5% is unclear. For example, the 12.5% is stated as "the annualized total." It seems possible that annualizing seasonal streamflow restrictions could have the impact of increasing environmental conditions more than the allowable 12.5% under low flow conditions. WW suggests that if environmental flow standards are seasonalized, then perhaps the adjustments should also be based on seasonal impacts so as not to impose a burden greater than 12.5% in any season.

The commission does not intend to create an overly complicated rule. Adopted §298.25(h) also allows some flexibility, and this method is sufficiently protective of the environment because it contains enough factors to sufficiently calculate the amount. The rule was not modified in response to this comment. However, in response to other comments, §298.25(h)(1) and (2) was modified to clarify the meaning of "annualized total."

NWFSCRC comments that it is important to provide a reasonable level of specificity about how the 12.5% calculation would apply to the proposed flows standards that are expressed in cubic feet per second and vary by season and suggests that a logical approach would be to calculate a monthly average cubic feet per second (cfs) value for the year (multiplying each seasonal value by the number of months in the season, adding the totals for each season, and dividing by 12) for each level of flow condition expressed in cfs and to apply the 12.5% calculation to the monthly average cfs value for that season. Thus, in adjusting the permit condition, the adjustment could be applied to any one or more seasons so long as the monthly average cfs value for the year for that flow level, as adjusted, is not more than 12.5% greater than the original requirement for that flow level. Another possible option would be to calculate the annual 12.5% total based on the highest level of flow standards that are expressed in cfs (e.g., the wet base flows) and then allow that total cfs amount to be allocated across the various flow levels.

Also, the reference in the proposed rule to the "original" 12.5% adjustment is confusing. Although there might be multiple smaller adjustments, there could never be more than one 12.5% adjustment. NWFSCRC suggests that the rule language might be revised to read as follows: "(1) For environmental flow conditions expressed in cubic feet per second, the maximum adjustment is calculated by multiplying the monthly average cubic feet per second value of the standard for that particular flow level in cubic feet per second by 12.5%. The monthly average cubic feet per second value is determined by multiplying each seasonal value in cubic feet per second by the number of months in the

season, adding the totals for each season, and dividing by 12. The adjustment can vary by season so long as the monthly average requirement in cubic feet per second as adjusted for any particular flow level, including the effect of any previous adjustments pursuant to this section, does not increase the monthly average cfs flow requirement for that flow level above the sum of the original monthly average flow requirement plus the 12.5% adjustment."

The commission does not intend to create an overly complicated rule. Adopted §298.25(h) also allows some flexibility, and this method is sufficiently protective of the environment. The rule was not modified in response to this comment. However, in response to other comments §298.25(h)(1) and (2) were modified to clarify the meaning of "annualized total."

Espey, LGRT, and SRA Texas and Others note that a potential discrepancy exists in the proposed language in §298.25(h)(1) and (2). The operative term is "that requirement contained in the permit," as it states that 12.5% should be applied to the annualized total of that requirement. The amount required to be passed-through to achieve an environmental flow standard is not the amount of the environmental flow standard, but is instead that amount which could have been utilized but was not. Hence, the commission should modify the text to read as follows: For §298.25(h)(1): " . . . The

adjustment, in combination with all previous adjustments, cannot increase the flow requirement above the sum of the original flow requirement plus 12.5% of the pass through or flow requirement." For §298.25(h)(2): " . . . The combination of all previous adjustments, and any new adjustment, cannot increase the flow requirement above the sum of the original flow requirement plus 12.5% of the pass through or flow requirement."

The commission responds that if a water right permit includes a special condition to protect an environmental flow standard, a water right owner would have to comply with that special condition before it could store, take or divert water. The 12.5% adjustment applies to the amount of the standard in the rule. The rule was not modified in response to this comment.

Espey, LGRT, and SRA Texas and Others comment that in §298.25(h), the commission is applying the 12.5% on the annualized amount of the environmental flow standard for each individual flow component. Thus, subsistence, base, and pulse flows can be individually increased by an annualized amount up to 12.5%. As this is applied in an annualized context, this allows the potential for much greater change in any single seasonal criterion, and little certainty regarding potential modifications to the permit. If another criterion is lowered, the potential for change is even greater. Permittees could

find that they are able to divert only a fraction of their previous amount during, for instance, a summer month when the water is needed most. This represents a much greater impact to permits than an annual 12.5% reduction. With this implementation, potential permit applicants have less certainty in their permit for water. It is suggested that the text be modified to reflect that the 12.5% adjustment be applied to the pass-through or flow requirement of individual seasonal components.

In §298.25(h), the commission is not proscribing how a flow adjustment would be distributed in a future proceeding but only addressing the calculation of this requirement. The commission disagrees that the proposed rule would allow a greater adjustment to permit conditions than the 12.5% authorized in the statute. The commission does not intend to create an overly complicated rule. At this time, the commission needs to maintain flexibility to determine how these flows would be distributed in the future as it gains experience implementing adjustments to the standards. Adopted §298.25(h) allows this flexibility. The rule was not modified in response to this comment. However, in response to other comments §298.25(h)(1) and (2) was modified to clarify the meaning of "annualized total."

NWFSCRC comments that because all of the proposed standards include more than one pulse requirement during the year, with varying flows and volumes, and because at least some of the proposed standards include more than one level of pulse requirements, more specificity is needed in defining how the adjustment should be calculated. The proposed definition appears to contemplate that the adjustment would be calculated on a per-pulse basis. That would not be consistent with the statutory requirement in TWC, §11.147(e-1)(1). Accordingly, in order to comply with the statutory directive, an annual total volume for each level of pulses should be computed and the 12.5% cap for the adjustment for that level should be calculated based on that annual total. The rule language might be revised to read as follows: "(2) For environmental flow conditions, such as a pulse, expressed with multiple characteristics, such as frequency, peak flow, volume, and duration, the maximum adjustment for any particular level of pulse requirements is calculated by adding the volumes for all of the pulses in that particular level for the entire year and multiplying that annual total volume by 12.5% to generate the maximum adjustment amount. The adjustment can vary by season so long as the new requirement, including the effect of any previous adjustments pursuant to this section, does not result in an annual total of the pulse volume requirement for that level that is greater than the sum of the annual total for the original pulse volume requirement for that level plus the 12.5% adjustment . . .."

In §298.25(h), the commission is not proscribing how a flow adjustment would be distributed in a future proceeding but only addressing the calculation of this requirement. The commission respectfully disagrees that the proposed rule would allow a greater adjustment to permit conditions than the 12.5% authorized in the statute. The commission does not intend to create an overly complicated rule. At this time, the commission needs to maintain flexibility to determine how these flows would be distributed in the future as it gains experience implementing adjustments to the standards. The adopted rule allows this flexibility. The rule was not modified in response to this comment. However, in response to other comments §298.25(h)(1) and (2) was modified to clarify the meaning of "annualized total."

LCRA urges that the rules adopt a more flexible approach than set forth in §298.25(h) regarding the process for adjusting environmental flow conditions in certain permits. Specifically, the proposed rules set forth only two possible methods for calculating allowed adjustments to permit conditions that necessarily, and prematurely, assume that all permit special conditions affected by these rules will fall into one of those two categories (either a flow requirement or a pulse requirement). LCRA believes this may be overly restrictive, particularly since standards have only been proposed for two bay/basin areas and no specific rules or guidelines set forth how those standards will be

applied in the development of language for specific permit special conditions. To address the potential that a permit special condition subject to these rules might not fit neatly into one of these two categories, LCRA recommends that the TCEQ add §298.25(h)(3) to read as follows: "(3) For other environmental flow conditions not expressed in the method set forth in subsections (1) or (2) above, the method for calculating the maximum adjustment allowed will be determined on a case-by-case basis."

The commission responds that adopted §298.25(h) adequately accounts for the flow components included in the Chapter 298. Adopted Chapter 298 includes standards for subsistence, base, and pulse flows, and §298.25(h) includes a method to calculate an adjustment to these flow components. If these flow components change in the future and modifications are needed, those modifications can be considered during future rulemaking. The rule was not modified in response to this comment.

NWFSCRC suggests that a new provision, §298.25(h)(3), is needed to address adjustments for freshwater inflow requirements that are stated in units of volume. TWC, §11.147(e-1) expressly directs that the reopener mechanism must include provisions for protection of freshwater inflows in addition to provisions for protection of instream flows. Because inflow requirements may be stated solely in terms of volume,

although associated with a different attainment frequency, proposed §298.25(h)(2) may not apply. The rule language might read as follows: "(3) For environmental flow conditions, such as freshwater inflow requirements, that might be expressed with multiple inflow levels and with volume totals that vary by season, the maximum adjustment for any particular inflow level is calculated by adding the volumes for all of the seasons in that particular level for the entire year and multiplying that annual total volume by 12.5% to generate the maximum adjustment amount. The adjustment can vary by season so long as the new requirement, including the effect of any previous adjustments pursuant to this section, does not increase the total volume for that inflow level above the sum of the annual total for the original volume requirement for that level plus the 12.5% adjustment."

The bay and estuary inflow standards in adopted §298.225 will not be directly placed in a permit, but will be considered during the water availability analysis for new appropriations of water. However, the commission does agree that inflow requirements would be subject to adjustment. Inflow requirements may vary by basin and bay system. Therefore, the commission will include the adjustment method for freshwater inflows in the chapter for basin and bay systems with inflow standards. Adopted §298.225(b) has been added in response to this comment.

LCRA notes that as proposed under §298.25(j)(1) and (2), a water right holder would only receive credit for a voluntary contribution to the Texas Water Trust or voluntary amendment to an existing water right if the additional amount of water provided to meet environmental flow needs was available in 75% of the years. LCRA is concerned that this prescribed annual reliability for any and all contributions or amendments ignores the fact that certain types of environmental flows need not occur with such a high frequency to provide benefit and "actually contribute toward meeting the applicable environmental flow standard." Indeed, some environmental flows are needed with higher or lower frequency. While this is recognized in some of the proposed environmental standards under consideration in this rule, it is ignored here in favor of an arbitrary standard. LCRA suggests the agency strike proposed §298.25(j)(1) and (2), which would allow the agency to actually determine, on a case-by-case basis, whether a particular contribution or water right amendment "actually contributes toward meeting the applicable environmental flow standard."

The commission respectfully disagrees with this comment. As stated in the adoption preamble for §298.25, water rights vary in reliability or the amount of time that water is actually present in a watercourse. Adopted §298.25(j) recognizes that a contribution of reliable water should be

entitled to higher consideration and credit than a similar contribution of less reliable water. The rule was not modified in response to this comment.

KHH notes that §298.25(j) provides that "any water right holder who makes a contribution or amends a water right as described herein is entitled to appropriate credit for the benefits of the contribution or amendment against the adjustment of the holder's existing water right permit conditions . . . " and would like to know whether TCEQ has considered the technical and legal viability of allowing (under appropriate circumstances) the leasing or trading of such credits, that is, allowing a credit gained by one water right holder to be applied against the adjustment of another water right holder's permit. These kinds of arrangements - either temporary or permanent - would clearly only be possible between certain water rights holders, but some flexibility in this regard might ultimately prove advantageous.

The commission respectfully declines to adopt a trade or leasing program in this rulemaking because it believes that it is not contemplated in HB 3/SB 3. HB 3/SB 3 sets up procedures for the TCEQ to follow; this type of trade or lease is not mentioned, and a statutory change would be necessary for the commission to create such a program. The commission may revisit this issue at a later time. No change has been made in response to this comment.

WW comments that §298.25(j) addresses voluntary contributions to environmental needs or bay and estuary inflows but at the same time does not define the nature of a voluntary contribution. Accordingly, voluntary contributions should be defined as any amount of water a water rights permittee voluntarily dedicates to remain as instream flows without the commission requiring a calculation or determination of the amount to be foregone. Permittees should be specifically credited with these amounts of state water available for appropriation which they have opted not to appropriate. These credits should then be used to offset additional permit adjustments for environmental flows during the relevant time periods. Otherwise, flows voluntarily set aside for the environment would only penalize the permittee in later applications.

The commission respectfully disagrees with this comment. The appropriation of state water is the commission's decision alone to make. The suggested procedure does not provide any protection for the environment for the next applicant that decides to "opt not to appropriate" the same water. Applicant after applicant could get a credit but the environment get no more protection than before these applicants started "opting not to appropriate" state water. The rule was not modified in response to this comment.

NWFSCRC comments that as drafted, the proposed language in §298.25(j)(1) and (2) seems incomplete. Amendments to add a use do not seem to be addressed in §298.25(j)(1) and do not seem to be qualified in the same way in §298.25(j)(2) as contributions to the Texas Water Trust or amendments to change a use. Also, the term "permit's time interval" is ambiguous. We have interpreted that term to refer to a permit that allows use only during certain portions of the year and have proposed clarifying language based on that interpretation. The proposed rule language might be replaced with the following text: "(1) For voluntary contributions to the Texas Water Trust or voluntary amendments to change the use or add a use that meet the requirements of this Subsection where the total volume of water is shown to be available in at least 75% of the years, the water right is entitled to credit for the contribution or amendment against the adjustment only by spreading out the amount of the contribution or amendment evenly over the year, or, if the underlying permit limits the portion of the year when use is authorized, over that portion of the year when use is authorized in the underlying permit; and (2) For voluntary contributions to the Texas Water Trust or voluntary amendments to change the use or add a use that meet the requirements of this Subsection where the total volume of water is not shown to be available in at least 75% of the years, the water right is entitled to credit for the contribution or amendment against the adjustment only by spreading out one-half of the amount of the contribution or amendment evenly over the year, or, if the underlying permit limits the portion of the year when use is authorized, over that portion of the year when use is authorized in the underlying permit; and."

The commission agrees, and §298.25(j) was modified to reflect this comment.

NWFSCRC proposes a §298.25(j)(3) that would give the commission discretion to distribute the credit for a contribution to the Texas Water Trust in a different manner where water storage is available in order to provide maximum benefit to the environment. The following rule language could be added: "(3) For water rights that are voluntarily contributed to the Texas Water Trust and that include storage allowing the water to be provided, in at least 75% of the years, during critical months of the year, the commission may allow credit for the contribution without spreading the amount of the contribution evenly across the year if the commission determines that doing so would result in better protection for the environment."

The commission agrees, and in response to this comment §298.25(j)(3) was added and requires that the underlying water right must authorize diversion from storage.

Subchapter B: Trinity, San Jacinto Rivers, and Galveston Bay

General

BLC, Environmental Stewardship, Galveston Baykeeper, GBF, Houston Audubon, Junior Anglers and Hunters of America, NWF, NWFAF, NWFSCRC, Sierra Club-Lone Star, and more than 2,300 individuals comment that the proposed environmental flow standards are deficient and fall short of being protective of a sound ecological environment.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The commission modified some of the specific numerical values for the flow components in §298.225. The commission also modified adopted §298.225 to include a seasonal component for inflows to Galveston Bay. These changes are discussed in the adoption preamble for §298.220 and §298.225, and the modified numerical values can be found in the adopted standards for §298.225.

BAHEP, Big Thicket, BLC, Environmental Stewardship, Galveston Baykeeper, GBF, Houston Audubon, Junior Anglers and Hunters of America, NWFAF, NWFSCRC, Sierra Club-Lone Star, TPWD, and more than 1,700 individuals comment that the standards need to be strengthened in accordance with the alternate rule proposal submitted by the National Wildlife Federation and Sierra Club-Lone Star.

The commission considered all of the comments and alternate

recommendations submitted in response to the proposed rules. With respect to the alternate recommendation referenced in this comment, the commission modified some of the specific numerical values for the flow components in adopted §298.225 to reflect those in the alternate recommendation. The commission also modified adopted §298.225 to include a seasonal component for inflows to Galveston Bay. These changes are discussed in the adoption preamble for §298.220 and §298.225, and the modified numerical values can be found in the adopted standards for §298.225.

BLC, CCA Texas, Environmental Stewardship, GBCPA, GBF, Houston Audubon, NWF/LSCSC, Sierra Club-Houston, and five individuals suggest that TCEQ add for public comment the alternative environmental flows recommendation "Recommended Environmental Flow Standards and Strategies for the Trinity and San Jacinto Rivers and Galveston Bay" developed by members of the basin and bay area stakeholder committee, in addition to the current pending proposal.

At the proposal agenda, the commission modified the rule proposal preamble to specifically invite commenters to provide information different from the proposed standards. The commission did receive comments on the alternate recommendations provided by NWFSCRC and is responding to those comments. The alternate recommendation was made available on

the commission's Web site.

More than 700 individuals request that TCEQ strengthen the proposed flow standards for the Trinity and San Jacinto Rivers/Galveston Bay to ensure sufficient water for wildlife, recreation, and seafood.

The commission followed its instructions in TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, alternate recommendations, and comments to the proposed rules when drafting the adopted standards. In response to comments, the commission modified some of the specific numerical values for the flow components in adopted §298.225 to reflect those in the alternate recommendation. The commission also modified adopted §298.225 to include a seasonal component for inflows to Galveston Bay. These changes are discussed in the adoption preamble for §298.220 and §298.225, and the modified numerical values can be found in the adopted standards for §298.225.

Environmental Stewardship and Houston Audubon comment that the pending proposed environmental flow standards do not meet the statutory requirements.

The commission respectfully disagrees with this comment. The commission

followed its instructions in TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, alternate recommendations, and comments to the proposed rules when drafting the adopted standards.

One individual comments in support of the proposed rules and adds that they are achievable and that there is no need to further confuse the issue by proposing another set of rules. This individual also notes that it is evident that the environmental conditions are currently satisfactory in the Trinity/San Jacinto Basin and Bay complex and has confidence that should that conditions start to change, additional rules will be considered.

The commission acknowledges the comment. At the proposal agenda, the commission did modify the rule proposal preamble to specifically invite commenters to provide information different from the proposed standards. The commission did receive alternative recommendations and comments on those alternate recommendations. The alternate recommendation is posted on the commission's Web site.

NWFSCRC comments that the adoption of flow standards inadequate to achieve the goal of protecting a sound ecological environment is not justified by other considerations.

No group actually provided an evaluation of the protectiveness of the proposed standards and found them adequate to protect a sound ecological environment as a starting point for TCEQ review. Similarly, no evaluation by TCEQ staff has been undertaken to demonstrate the protectiveness of the proposed standards and their adequacy to protect a sound ecological environment. The SAC evaluated the conditional group's recommendations on which the proposed standards are based and found them inadequate to comply with the statutory standard for an environmental flow regime. The executive director's review of potential impacts on future water supply projects concluded that implementation of the proposed standards would result in no significant impact. That finding would not justify the failure to adopt standards adequate to protect a sound ecological environment.

The commission followed its instructions in TWC, §11.1471, to determine these flow standards. The stakeholders determined that this bay and basin system was a sound ecological environment. The commission gave deference to the finding made by the stakeholders, who considered input from the science team for the basin and bay system. The commission considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, alternate recommendations, and comments to the proposed rules when drafting the adopted standards. The SAC's comments were among those considered. The commission notes that the proposed standards in §298.225 were modified in response to

comments. The changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards for §298.225.

NRG supports the environmental flow standards as written by the TCEQ. The BBEST members for the San Jacinto, Trinity, and Galveston Bay did agree that the current state of this system is that a healthy environment exists. The standards provide for protection of the environment, and adaptive management and future studies could result in changes as the science is further developed.

The commission acknowledges the comment.

TRA agrees that return flows which pass a control point should be used, in real time, to meet special conditions for environmental flows; however, return flows, historical or projected, should not be used in determining water availability for a third party in light of environmental flow standards or set asides. These return flows may not be under the control of the permittee and are subject to direct reuse along with myriad other factors that could affect future discharge volumes.

The commission acknowledges the comment concerning using return flows to satisfy special conditions for environmental flows. The possible use or non-use of return flows for water availability is not the subject of this

rulemaking, and therefore, the commission makes no response to this comment. The commission notes that at the time of the adoption of this rule, the issue of how return flows should be treated in determining water availability is an issue in a contested case pending SOAH. The commission makes no changes in response to this comment.

One individual comments that the process by which the standards have been developed was contentious, inefficient, and underfunded; however, it was inclusive and transparent, highly desirable attributes in democratic decision making. This individual suggests that TCEQ, TPWD, and TWDB evaluate the process and develop procedural guidelines that would improve efficiency without sacrificing transparency.

The commission acknowledges this comment. The process for determining the standards is outlined in HB 3/SB 3 and the commission followed this process. The agencies cannot change this process without a statutory change. No change was made in response to this comment.

BLC does not want TCEQ to adopt any rule that does not propose standards that provide a natural flow regime, fully protective of existing aquatic resources in the Trinity and San Jacinto River basins. This should include standards that are protective of the ecological integrity of the tributary streams for these rivers. At present, the alternative standard to the proposed rule, the "regime group" proposal, approved by the majority of

the members of the BBEST, is the only proposal that approaches this goal and provides some measure of protection for BLC's property interest in conservation easements located on rivers, streams, and bayous directly affected by these proposed rules and for the public trust interest that has been created for natural resource damages to these areas.

The commission followed its instructions in TWC, §11.1471, to determine these flow standards. Under HB 3/SB 3, the commission is required to balance human and other competing water needs in the river basin and bay system. The commission also considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments to the proposed rules when drafting the adopted standards. The commission made no changes in response to this comment. The commission notes that the proposed standards in §298.225 were modified in response to other comments. The changes are discussed in the adoption preamble for §298.220 and §298.225, and the modified numerical values can be found in the adopted standards for those sections.

BPA has reviewed the proposal made by the "Regime Group" and a majority of the BBEST and feel that it is a start in the right direction in trying to define the complex freshwater inflow needs of this broad ecosystem and the economic and cultural developments that depend on it. This allocation system will require periodic review in

the face of new information to determine that this allocation is sufficient to sustain the complex systems that require freshwater.

The commission acknowledges this comment. The commission modified adopted §298.225 to include a seasonal component for inflows to Galveston Bay. The changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards for those sections. The adaptive management provisions in TWC, §11.02362 require that the standards be reevaluated as more information becomes available.

BPA urges the TCEQ to continue to be attentive (as provided under existing authority) to the contributions of return flows and interbasin transfers as they impact the instream uses in area waterways and freshwater inflows to Galveston Bay.

The commission acknowledges this comment.

One individual notes that beginning in the Spring of 1973, a bi-weekly assessment of the phytoplankton in Trinity Bay was conducted. The 35 stations were sampled for eight years. The data from this study of the phytoplankton, water chemistry, zooplankton, benthos, and nekton were sent to the Environmental Protection Agency monthly. The discharge rate at Lake Livingston was recorded regularly. This individual comments

that it appears that neither the $8 million court ordered data nor the discharge data were incorporated into the current proposal.

The commission followed its instructions in TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments to the proposed rules when drafting the adopted standards. The commission notes that the proposed standards were modified in response to comments. The changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards for §298.225.

Espey and LGRT support the TCEQ basing the standards on the recommendations proffered by 15 of the 24 Trinity and San Jacinto River basins stakeholder committee members.

The commission acknowledges this comment but notes that the proposed standards were modified in response to comments. The changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

One individual comments that Galveston Bay needs to remain healthy. The quality of this ecosystem has improved greatly over the years but this proposed rule on environmental flow standards will be a regression in improving water quality and the ecosystem.

The commission notes that with respect to Galveston Bay, the adopted rule was modified in response to other comments. The changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225.

One individual requests the TCEQ to revise the proposed rule and keep the waterways clean. This individual's property backs up to the Green River which feeds to Gum Bayou and Dickinson Bayou and on into Galveston Bay. This individual wants it to be as clean as possible and continue to benefit everyone.

The commission acknowledges the comment. In response to comments, the commission modified some of the specific numerical values for the flow components in adopted §298.225 to reflect those in the alternate recommendation. The commission also modified adopted §298.225 to include a seasonal component for inflows to Galveston Bay. These changes are discussed in the adoption preamble for §298.220 and §298.225, and the modified numerical values can be found in the adopted standards for

§298.225.

Galveston Baykeeper comments as a person who has lived in Texas for a long time and who is very concerned about the water, not just in Galveston Bay, but in Texas. Galveston Baykeeper would like to know where the conservation and efficiency component comes into this issue. Conservation and efficiency have to be looked at; Galveston Bay needs water.

The HB 3/SB 3 Environmental Flows process is intended to develop environmental flow standards to be placed in permits for new appropriations of water. When evaluating new permit applications, the commission applies the applicable rules and statutes related to water conservation and efficiency. No change has been made in response to this comment.

One individual very strongly urges the TCEQ to reconsider what is best for all Texas and not just those powerful entities who are pressing to minimize the inflow standard for their own interests. This will affect everyone, including future generations. Do what is right long-term and sustainable for everyone, not just for the few in power that will benefit short-term and in a non-sustainable way. This is the time to make a very serious decision that will affect everyone.

The commission has followed its statutory responsibilities in TWC, §11.1471, to the best of its ability and balanced various interests as required by the statutes. No change was made in response to this comment.

§298.200, Applicability and Purpose

NWFSCRC comments that the language of §298.200 providing that the provisions of Subchapter B control over Subchapter A is overbroad and could produce unnecessary ambiguity. There are numerous provisions in Subchapter A addressing issues not directly addressed in Subchapter B that should continue to apply. That language should be limited to provide that in the case of "a direct conflict," the provisions of Subchapter B control over the provisions of Subchapter A.

The commission agrees, and in response to this comment modified §298.200 to clarify that in case of direct conflict, provisions of Subchapter B control over those in Subchapter A.

§298.205, Definitions

NWFSCRC comments that a single base flow level is not sufficient to meet the statutory standard of protecting a sound ecological environment to the maximum extent reasonable considering other relevant interests. It does not account for fluctuations in flow levels based on year-to-year changes reflecting wet and dry conditions. There is no reason why a multiple-level base flow component that does account for such fluctuations

cannot be implemented.

The commission followed its instructions in TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors including human and other competing needs for water, and comments to the proposed rules when drafting the adopted standards. The commission is not convinced that there is sufficient existing scientific evidence to support the need for multiple levels of base flow, at the specific flow levels included in the alternate recommendation, in this basin and bay system. The commission also considered human and other competing needs for water in developing the adopted standards. Therefore, the commission is adopting a simplified flow regime. The commission acknowledges that further analyses and studies may need to be performed in the future to determine whether the adopted standards, once implemented, are providing sufficient flow variability. HB 3/SB 3 contemplates that additional analyses and studies can be considered through adaptive management via the workplan for this basin and bay system. To the extent that additional information becomes available through monitoring and studies undertaken under the workplan, the science team could consider that information in future deliberations. The commission notes that the proposed standards were modified in response to comments. The changes

are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

NWFSCRC comments that the proposed base flow values are extremely low. Generally, they represent approximately the 5th to 10th percentile of overall flows during the historical period. As noted by the TPWD, flows as low as the base flow recommendations for three of the four seasons at the Oakwood site, just as one example, have not been experienced in the last 50 years. Although these facts alone don't represent a definitive case for rejecting the base flow values out of hand, they do illustrate the need for an affirmative demonstration that the proposed flow levels are adequate to support a sound ecological environment or that they represent the highest levels that can be protected due to other compelling considerations. No such demonstration has been, or could be, made with respect to these values.

Commission staff performed a water quality analysis on the proposed standards. The water quality analysis considered the relationship between streamflow and the water quality parameters identified by the BBEST to look for trends and criteria excursions. This analysis did not identify any areas of concern. The commission notes that it modified the proposed standards in response to other comments by incorporating specific numerical values included in an alternate recommendation into the flow

components in the adopted rule. The changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

ANRA and FNI support the ability of each BBEST/BBASC group to define a "sound ecological environment" for their basins and bays but would like to see criteria that are measurable in those definitions. As currently proposed in §298.205, metrics to establish adaptive management for the purpose of maintaining a sound ecological environment are not identified.

The commission notes that specific monitoring and studies to support adaptive management may be included in the workplans submitted by the BBASC. At this time, there is not an approved workplan for this basin and bay system. The rule was not modified in response to this comment.

WW notes that proposed §298.205(3), defining "sound ecological environment" for the Trinity-San Jacinto Rivers and Galveston Bay, differs significantly from the same definition for the Sabine-Neches Rivers and Sabine Lake Bay. There seems to be no legal justification for different definitions. To the extent that the Trinity-San Jacinto Rivers and Galveston Bay definition does not mention reservoirs as aquatic habitat and seems to call for conditions "comparable to that of the natural habitat of a region," it seems confusing and inappropriate.

The commission gave deference to the definition of "sound ecological environment" made by the stakeholders for this basin and bay system. The commission does not want to limit the ability of future stakeholder and expert science groups to define these terms in their future, location-specific recommendations. The rule was not modified in response to this comment.

NWF/LSCSC and NWFSCRC suggest adding §298.205(2) as follows: "Low condition--the hydrologic condition determined by the cumulative upstream storage that would be exceeded more than 75% of the time based on full exercise of all water rights over a period from 1940 to 1996, when the monthly upstream storage conditions are ranked from driest to wettest." NWF/LSCSC and NWFSCRC also suggest adding §298.205(4) as follows: "High condition--the hydrologic condition determined by the cumulative upstream storage that would be exceeded more than 75% of the time based on full exercise of all water rights over a period from 1940 to 1996, when the monthly upstream storage conditions are ranked from driest to wettest." NWF/LSCSC and NWFSCRC suggest adding §298.205(5) as follows: "Medium condition--the hydrologic condition that is neither a high condition nor a low condition."

Adopted §298.225 includes only one level of base flows; therefore, there is no need for definitions of hydrologic conditions. The commission is not convinced that there is sufficient existing scientific evidence to support the

need for multiple levels of base flow, at the specific levels proposed by the commenters, in this basin and bay system. The commission also considered human and other competing needs for water in developing the adopted standards. Therefore, the commission is adopting a simplified flow regime. The commission acknowledges that further analyses and studies may need to be performed in the future to determine whether the adopted standards, once implemented, are providing sufficient flow variability. HB 3/SB 3 contemplates that additional analyses and studies can be considered through adaptive management via the workplan for this basin and bay system. To the extent that additional information becomes available through monitoring and studies undertaken under the workplan, the science team could consider that information in future deliberations. The rules were not changed in response to this comment.

NWF/LSCSC and NWFSCRC suggest adding §298.205(3) as follows: "Galveston Bay system--the estuary system consisting of Galveston Bay and Trinity Bay, along with smaller associated bays including East Bay and West Bay."

The commission agrees and a definition for "Galveston Bay" was added to adopted §298.205 in response to this comment.

§298.210, Findings

One individual would like to know what TCEQ means when it says that "The Trinity and San Jacinto Rivers, their associated tributaries, Galveston Bay, and the associated estuaries are healthy and sound ecological environments . . . "and " (b) The commission finds that these sound ecological environments." TCEQ must state what "healthy and sound ecological environments" means and tell how this determination was derived.

"Sound ecological environment" is defined in adopted §298.205(4). The stakeholders made this finding. The commission gave deference to the finding made by the stakeholders, who considered input from the science team for the basin and bay system. The science team considered the available science as of this date and there is no evidence that the adopted standards would not support a sound ecological environment. The adopted standards are not based solely on scientific information. The commission followed its instructions in TWC, §11.1471, by balancing human and other competing needs for water with the scientific recommendations. HB 3/SB 3 contemplates that additional analyses and studies can be considered through adaptive management via the workplan for this basin and bay system. To the extent that additional information becomes available through monitoring and studies undertaken under the workplan, the science team could consider that information in future deliberations. The rule was not modified in response to this comment.

One individual comments it should be obvious to TCEQ that the finding that "The Trinity and San Jacinto rivers, their associated tributaries, Galveston Bay, and the associated estuaries are healthy and sound ecological environments" was made out of the necessity of applying data driven assessment methods to the analysis of impacts from changes in environmental flows. The individual further comments that many of the tributaries, reservoirs on the rivers, and portions of the estuary are listed on the Clean Water Act, §303(d) list of impaired waters and are subjects of Total Maximum Daily Load (TMDL) processes. Some native species are considered threatened, and all of the water bodies and their shorelines have been invaded by exotic species. These are not attributes of "sound ecological environments," but there is insufficient data on the water bodies prior to impacts due to pollution, land conversion and resource extraction to characterize them for assessment of future impacts. This individual suggests that the text of the proposed rule include some explanation of this finding that recognizes the documented impacts of humans on these aquatic systems. Similarly, USFWS comments that the TCEQ provides no scientific basis for the statement that the basin has a sound ecological environment and is concerned that this basin may not be sound for several reasons. There have significant losses of riparian wetlands and bottomland forest, populations of migratory birds that depend on bottomland forest have declined, several species of mollusks are either listed by the state, are species of concern, or have been petitioned for listing under the Endangered Species Act, and several stream segments do not meet water quality standards. In the bays and estuaries, significant wetlands have been lost, several commercially and recreationally important fisheries are in decline, fish

consumption advisories are in place, several species of wetland-dependent birds are in decline, a negative sediment budget prevails, and millions of dollars have been expended and continue to be sought to restore important wetlands and biological resources. USFWS states that some of these issues are directly related to changes in hydrology while others are indirectly related. There were limited to no analyses or references provided by the BBEST, BBASC, or TCEQ to support the claim that the riverine and estuarine environments are sound. USFWS recommends further analysis to determine whether the basin is a sound ecological environment consistent with the SAC and TIFP definitions and further recommends that factors associated with hydrological modifications and those that are independent be segregated in the analyses. USFWS comments that an alternative approach would be to equate a sound ecological environment to baseline conditions, thereby dispensing with historical changes through time and the negative effects of some of these changes.

"Sound ecological environment" is defined in adopted §298.205(4). The stakeholders made this finding. The commission gave deference to the finding made by the stakeholders, who considered input from the science team for the basin and bay system. The science team considered the available science as of this date and there is no evidence that the adopted standards would not support a sound ecological environment. The adopted standards are not based solely on scientific information. The commission followed its instructions in TWC, §11.1471, by balancing human and other

competing needs for water with the scientific recommendations. HB 3/SB 3 contemplates that additional analyses and studies can be considered through adaptive management via the workplan for this basin and bay system. To the extent that additional information becomes available through monitoring and studies undertaken under the workplan, the science team could consider that information in future deliberations. The rule was not modified in response to this comment.

One individual comments that the finding in §298.210 describes the causal relationship between a sound ecological environment and a set of flow standards that varies in quantity over time and space. This section specifically recognizes the importance of seasonal variation in flow amounts. This individual agrees that this is a critical characteristic of environmental flows that must be maintained to protect the ecology of these aquatic systems. However, in subsequent sections, the TCEQ does not follow this finding.

The commission agrees that seasonal variation in flow amounts is important and the adopted standards vary seasonally. No change was made in response to this comment.

NWFSCRC comments that the finding in §298.210(b) is unsubstantiated. There is simply no basis for a finding that a sound ecological environment can be maintained,

much less best be maintained, by a schedule of flow quantities that contains subsistence flows, only one level of base flows, and one level of high flow pulses. There is certainly no basis for that contention with flow quantities as low as those proposed. Such a schedule does not even meet the definition of an "environmental flow regime" because yearly fluctuations are not reflected. Although there could be differences in flow amounts in various years based on rainfall only because the standards would not be met in some years, which would also be true for a standard consisting only of a single minimum flow level, the underlying schedule simply does not reflect a flow regime as called for by HB 3/SB 3, SAC guidance, the National Research Council (NRC) review of the TIFP, or the state's "Texas Instream Flow Studies: Technical Overview" document. Furthermore, by selecting values for subsistence, base, and pulse flows in the proposed rules that represent extremely low values for each category, meaningful year-to-year variations would not be protected. Because there is no basis for finding that other public interests or factors necessitate the adoption of a less protective regime, the commission should adopt the environmental flow standards recommended in this comment letter.

The commission followed its instructions in TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards when drafting the adopted rules. The commission also considered staff's water availability analyses on the adopted standards. The commission notes that some of the specific

numerical values the commenter addresses have been modified in response to this and other comments. In the adopted rule, the commission modified the proposed numerical flow values for subsistence, base flow, and high flow pulses referenced in the comment letter for the applicable flow components in the adopted rule. The changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards for §298.225.

§298.215, Set-Asides and Standards Priority Date

LGRT notes that in §298.215, the executive director proposes to assign priority dates for both environmental flow set-asides and environmental flow standards. LGRT comments that the prior appropriation doctrine in Texas and elsewhere in the Western United States is the primary foundation for surface water rights management, and the doctrine has been the subject of significant case law and agency policy for well over 100 years. Therefore, enveloping environmental flow standards with the concept of priority, and arguably making such standards subject to the prior appropriation doctrine, should be avoided if not absolutely necessary. LGRT comments that environmental flow standards should not be assigned priority dates, as they should be considered as flows reserved from appropriation, unlike environmental flow set-asides, which should be considered as stand-alone water rights that would be cloaked with priority. LGRT comments that HB 3/SB 3 did not provide and does not require that environmental flow standards be assigned priority, although we agree that HB 3/SB 3 made it clear that the

environmental flow set-asides are to be assigned priority.

The commission responds that the priority date in §298.215 for the environmental flow standards will be used in water rights permitting in the water availability model runs used for water availability analyses. The function of a priority date in the water availability model is to ensure that water rights are processed in seniority order. With respect to environmental flow standards, using a priority date in the water availability model ensures that the standards do not apply to existing senior water rights and do apply to new appropriations of water. By including the standards in the WAM with a priority date, the commission protects pulse flow standards from being permitted to smaller applicants to whom the standards apply. In addition, including the standards in the WAM with a priority date ensures that new appropriations will not affect downstream flow standards. The priority date has no other purpose. Section 298.215 has been clarified in response to these comments.

TPWD notes that §298.215 states that the priority date for set-asides and environmental flow standards will be December 1, 2009. However, set-asides are not proposed and TPWD does not believe that priority dates are appropriate for environmental flow standards. The fact that TCEQ does not recommend any set-asides in the proposed rules package, coupled with lower flows than would be identified by current default

methodologies (i.e., Lyons and 7Q2), results in an observation that as a result of this environmental flows legislation, TCEQ has essentially increased the amount of unappropriated water available in these basins while lowering the level of environmental protection, particularly at the low end of the spectrum.

The priority date for the environmental flow standards will be used in water rights permitting in the water availability model runs used in water availability analyses. The function of a priority date in the water availability model is to ensure that water rights are processed in seniority order. With respect to environmental flow standards, using a priority date in the water availability model ensures that the standards do not apply to existing senior water rights and do apply to new appropriations of water. By including the standards in the WAM with a priority date, the commission protects pulse flow standards from being permitted to smaller applicants to whom the standards apply. In addition, including the standards in the WAM with a priority date ensures that new appropriations will not affect downstream flow standards. With respect to environmental flow standards, the priority date has no other purpose. Section 298.215 has been clarified in response to comments on this issue. The commission respectfully disagrees that the adopted standards increase the amount of unappropriated water in these basins. Unappropriated water is the amount of water remaining in the stream after all water rights have diverted their full authorized amounts.

Because the standards do not apply to existing water rights, the amount of unappropriated water in the streams has not changed as a result of this rule making.

DWU notes that §298.215 proposes the standards priority date of December 1, 2009, for the Trinity and San Jacinto Rivers and Galveston Bay, the date the commission received the BBEST recommendations and suggests that it would be more appropriate for this date to be set to the date the commission adopts the proposed rules.

The commission responds that the priority date for the environmental flow standards will be used in water rights permitting in the water availability model runs used for water availability analyses. The function of a priority date in the water availability model is to ensure that water rights are processed in seniority order. With respect to environmental flow standards, using a priority date in the water availability model ensures that the standards do not apply to existing senior water rights and do apply to new appropriations of water. By including the standards in the WAM with a priority date, the commission protects pulse flow standards from being permitted to smaller applicants to whom the standards apply. In addition, including the standards in the WAM with a priority date ensures that new appropriations will not affect downstream flow standards. The priority date has no other purpose. The December 1, 2009 date is the date the

science team submitted their recommendations. The commission used its discretion and determined that this date is appropriate for representing the standards in the water availability model for purposes of performing the balancing analysis. Section 298.215 has been clarified in response to these comments.

NTMWD and SJRA comment that the executive director needs to clarify in more detail how the rules will apply to new appropriations of water or amendments to existing rights that authorize a new appropriation of water. In particular, NTMWD and SJRA have concerns regarding how interbasin transfers will be addressed with respect to the rules. As proposed, it appears that environmental flow standards will come with a time priority, and given the provision of TWC, §11.085(s), this may have unintended consequences for moving existing appropriations of water between basins, inasmuch as affixing a priority date on an environmental flow standard in the basin of origin could impact the ability to divert water for conveyance to the receiving basin.

The commission responds that the priority date for the environmental flow standards will be used in water rights permitting in the water availability model runs used for water availability analyses. The function of a priority date in the water availability model is to ensure that water rights are processed in seniority order. With respect to environmental flow standards, using a priority date in the water availability model ensures that

the standards do not apply to existing senior water rights and do apply to new appropriations of water. By including the standards in the WAM with a priority date, the commission protects pulse flow standards from being permitted to smaller applicants to whom the standards apply. In addition, including the standards in the WAM with a priority date ensures that new appropriations will not affect downstream flow standards. The priority date has no other purpose. Additionally, a water availability analysis would not be performed in the receiving basin for water that is already appropriated in the basin of origin and the adopted standards would not apply in the receiving basin. Section 298.215 has been clarified in response to these comments.

§298.220, Schedule of Flow Quantities

LGRT requests further clarification in proposed §298.220 on whether all flow conditions "reset" each month. In other words, does the standard reset to subsistence flow if other flow conditions were not maintained in the month prior (e.g., subsistence and base flows)?

Adopted §298.220 states that each season is independent of the preceding and subsequent seasons with respect to high flow pulses. The subsistence and base flow standards are based on the flow conditions in the stream at the time a water right owner diverts water. To the extent that monthly

values for these flow components are different in different months, the water right owner would only be able to divert if the flow requirement for that month is met. The commission notes that the adopted rule was modified in response to other comments, which should clarify this issue. The changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

LGRT suggests that §298.220 needs to reflect the following: given that subsistence flows are based on the median of the lowest 10th percentile of base flows, the proposed subsistence flows should not be considered the minimum required flow when site-specific data can be provided, or as better science is secured.

The commission respectfully disagrees that site-specific data can be used for permitting. TWC, §11.147(e-3), expressly states that: "Notwithstanding Subsections (b) - (e), for the purpose of determining the environmental flow conditions necessary to maintain freshwater inflows to an affected bay and estuary system, existing instream uses and water quality of a stream or river, or fish and wildlife habitats, the commission shall apply any applicable environmental flow standard, including any environmental flow set aside, adopted under TWC, §11.1471, instead of considering the factors specified by those subsections." Subsections (b) - (e) are the statutes

regulating how the commission protected the environment prior to HB 3/SB 3. It is clear that the bill and TWC, §11.147(e-3), meant for the commission to place any environmental flow standards determined under TWC, §11.1471, in a permit for new water instead of using these other statutes and site-specific data. Under TWC, §11.1471(d), all new appropriations or increases in the storage, taking, or diversion of water issued after an environmental flow standard is adopted must contain the standard. The commission agrees that further data may be developed. However, HB 3/SB 3 contemplate that this new data and new studies will be considered through adaptive management. The rule was not modified in response to this comment.

LGRT requests further clarification in proposed §298.220 on how the executive director will implement pulse flows in evaluating applications when the WAM is based on a monthly time-step and how pulses will be addressed over a period of days when the executive director evaluates applications subject to the rules. LGRT comments that the rules need to clarify that, once pulse requirements for a season are met, no additional passage of pulse flows is required and water rights holders may immediately divert flows greater than the subsistence flow.

The SAC guidance document "Consideration of Methods for Evaluating Interrelationships Between Recommended SB-3 Environmental Flow

Regimes and Proposed Water Supply Projects" notes that the monthly WAM is "recognized as the superior method with regard to effectively representing both water availability, consistent with the way TCEQ would evaluate a permit application, and e-flow requirements in the same analysis." For future applications for new appropriations of water, the commission will use the TCEQ WAM. Individual permit applications are different; therefore, special conditions may need to vary for those permits. The commission will implement these standards in each permit granted for a new appropriation of water. At this point in the process, the commission will examine permits as they come in to determine how to implement the standards in different permits.

A water right holder can divert or store water subject to special conditions in its permit. Once a pulse requirement is met, a water right holder may divert flows greater than the subsistence or base flows, depending on which flow requirement applies. No change was made in response to this comment. The commission notes that rule was modified in response to other comments. The changes can be found in §298.220(d)(1).

LGRT suggests that the rules need to reflect that the conditions for diversion are met when the flow regimes are 95% established, whether they be related to the duration or the volume of flows. This flexibility is needed in order to incorporate potential variances

in hydrological conditions and the reliability of flow gage measuring equipment.

The commission acknowledges measurement devices may have varying degrees of accuracy. However, USGS gages are the best available tool to determine compliance with the standards. The rule has specific values which must be fully met at specified locations. The rules have not been modified in response to these comments.

NWF/LSCSC and NWFSCRC suggest replacing "base flow" with "three levels of base flow" in the first sentence of §298.220(a). Multiple levels of base flow are needed in order to provide a level of protection adequate to support a sound ecological environment to the maximum extent reasonable.

The commission followed its instructions in TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards when drafting the adopted rules. The commission also considered staff's water availability analyses on the adopted standards. The commission is not convinced that there is sufficient existing scientific evidence to support the need for multiple levels of base flow, at the specific levels proposed by the commenters, in this basin and bay system. The commission also considered human and other competing

needs for water in developing the adopted standards. Therefore, the commission is adopting a simplified flow regime. The commission acknowledges that further analyses and studies may need to be performed in the future to determine whether the adopted standards, once implemented, are providing sufficient flow variability. HB 3/SB 3 contemplate that additional analyses and studies can be considered through adaptive management via the workplan for this basin and bay system. To the extent that additional information becomes available through monitoring and studies undertaken under the workplan, the science team could consider that information in future deliberations. The rule was not modified in response to this comment.

NWF/LSCSC and NWFSCRC suggest replacing "one level of high flow pulses" to "two levels of high flow pulses" in the first sentence of §298.220(a). Two levels of pulse flows are needed in order to provide a level of protection adequate to support a sound ecological environment to the maximum extent reasonable.

The commission followed its instructions in TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards when drafting the adopted rules. The commission also considered staff's water availability analyses on the

adopted standards. The commission is not convinced that there is sufficient existing scientific evidence to support the need for multiple levels of pulse flows, at the specific levels proposed by the commenters, in this basin and bay system. The commission also considered human and other competing needs for water in developing the adopted standards. Therefore, the commission is adopting a simplified flow regime. The commission acknowledges that further analyses and studies may need to be performed in the future to determine whether the adopted standards, once implemented, are providing sufficient flow variability. HB 3/SB 3 contemplate that additional analyses and studies can be considered through adaptive management via the workplan for this basin and bay system. To the extent that additional information becomes available through monitoring and studies undertaken under the workplan, the science team could consider that information in future deliberations. The rule was not modified in response to this comment.

NWF/LSCSC and NWFSCRC suggest replacing "six separate measurement locations" with "ten separate measurement locations plus evaluation points for Galveston Bay inflows" in the second sentence of §298.220(a). A total of six measurement locations in the extensive Trinity and San Jacinto basins simply is not sufficient to provide for an adequately protective environmental flow standard. Consistent with the recommendations of the regime group of the BBEST, as simplified and modified by a

subset of the BBASC, ten measurement points should be provided. One measurement point considered by the regime group, Elm Fork Trinity River near Carrollton, should not be used based on determinations, as reflected in stakeholder committee determinations, that alterations to the system at, and upstream of, that location make it inappropriate. There has been no showing that ten measurement points are excessive or that there are specific factors justifying exclusion of those additional measurement points. This provision should also acknowledge the role of evaluation points for Galveston Bay inflows.

The commission respectfully disagrees with the comment. The number of measurement points in the adopted rule is adequate because it reflects the geographic scope of the basin and bay systems by representing the major watersheds in the basin. The commission followed its instructions in TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards when drafting the adopted rules. The commission also considered staff's water availability analyses on the adopted standards. The rule was not modified in response to this comment.

NWF/LSCSC and NWFSCRC suggest replacing "in §298.230 of this title (relating to Water Right Permit Conditions)" with "in §298.225 of this title (relating to

Environmental Flow Standards)" in the second sentence of §298.220(a).

The commission agrees, and §298.220(a) was modified to incorporate the wording in this comment.

NWF/LSCSC and NWFSCRC suggest inserting the word "applicable" into the first sentence of §298.220(b), modifying the sentence to read as follows: "(b) Subsistence flow. For a water right holder . . . unless the flow at the measurement point is above the applicable subsistence flow standard for that point."

The commission agrees, and §298.220(b) was modified in response to this comment.

NWF/LSCSC and NWFSCRC suggest changing the second sentence in §298.220(b) to read as follows: "During low hydrologic conditions, if the flow at the measurement point . . .."

The adopted flow standards in §298.225 only include one level of base flows; therefore, there is no need to include hydrologic conditions. The rules were not changed in response to this comment.

NWF/LSCSC and NWFSCRC note that the proposed §298.220 does not describe how

the determination is to be made about whether a measurement point "applies to the water right" and suggest adding the following sentence to the end of this paragraph: "Permit conditions will be imposed, as appropriate, to establish individual permit subsistence flow values, based on a watershed area basis, in order to ensure that flows immediately below the diversion or storage point are adequately protected consistent with applicable flow standards."

The commission agrees, in part, with this comment. For subsistence flows, a watershed area ratio may be appropriate. The commission will implement these standards in each permit granted for a new appropriation of water. However, at this point in the process, the commission needs the flexibility to examine permits as they come in to determine how to implement the standards in different permits. The rule was not modified in response to this comment.

LGRT notes that §298.220(b) - (d) each includes provisions restricting an appropriator's right to store or divert water pursuant to its impoundment rights until certain hydrologic events have occurred, i.e., the subsistence requirement (§298.220(b)), the base flow requirement (§298.220(c)), or the pulse flow requirements (§298.220(d)) have each been met. LGRT comments that it should be made clear in these rules that an appropriator that has lawfully stored inflows pursuant to its water right, and in compliance with whatever environmental flow standard, regime, or requirement existed

at the time of such storage, may lawfully divert water from storage, even when an environmental flow standard adopted pursuant to the rules would not allow the appropriator to store or divert inflows during such time period.

The commission agrees and has added §298.220(e) to the adopted rule in response to this comment.

NWF/LSCSC and NWFSCRC comment that the proposed §298.220(c) only includes one level of base flows, and those are extremely low. This single level of extremely low base flows does not provide for protection of inter-annual fluctuations in flow levels as required to constitute and environmental flow regime. NWF/LSCSC and NWFSCRC suggest changing §298.220(c) to read as follows: "The applicable base flow standard varies depending on the seasons and on hydrological conditions as described in Subsection (e) of this section. For a water right holder . . . the water right is subject to the base flow standard for the hydrologic condition prevailing at that time, i.e., the water right will be subject to either: a low base flow; a medium base flow; or a high base flow standard."

Adopted §298.220 and §298.225 only include one level of base flows. The commission is not convinced that there is sufficient existing scientific evidence to support the need for multiple levels of base flow, at the specific levels proposed by the commenters, in this basin and bay system. The

commission also considered human and other competing needs for water in developing the adopted standards. Therefore, the commission is adopting a simplified flow regime. The commission acknowledges that further analyses and studies may need to be performed in the future to determine whether the adopted standards, once implemented, are providing sufficient flow variability. HB 3/SB 3 contemplate that additional analyses and studies can be considered through adaptive management via the workplan for this basin and bay system. To the extent that additional information becomes available through monitoring and studies undertaken under the workplan, the science team could consider that information in future deliberations. Therefore, hydrologic conditions are not included. The rules were not changed in response to this comment.

NWF/LSCSC and NWFSCRC comment that the proposed language in §298.220 seems to indicate that all permit conditions would be tied directly to flows at the listed measurement points and suggest adding the following sentence to the end of §298.220(c): "Permit conditions will be imposed, as appropriate, to establish individual permit base flow values, normally calculated on a watershed area basis, in order to ensure that flows immediately below the diversion or storage point are adequately protected consistent with applicable flow standards." This additional sentence also acknowledges TCEQ's authority to establish specific permit conditions in order to protect tributaries and long stretches of river from undue damage as a result of distance

from an applicable measurement point, or other special circumstances.

The commission agrees, in part, with this comment. For base flows, a watershed area ratio may be appropriate. The commission will implement these standards in each permit granted for a new appropriation of water. However, at this point in the process, the commission needs flexibility to examine permits as they come in to determine how to implement the standards in different permits. The rule was not modified in response to this comment.

ANRA and FNI suggest that language be added to §298.220 that specifically states that when the pulse criteria for the season have been met, no additional pulses are required and the water right holder does not have to cease diversions if a pulse trigger occurs.

Adopted §298.220(d)(3) states that each season is independent of the preceding and subsequent seasons with respect to high flow pulses. The commission believes that this provision is adequate to convey that no catch up is required. A water right can divert or store water subject to special conditions in their permit. Once a pulse requirement is met, a water right can divert flows greater than the subsistence or base flows, depending on which flow requirement applies. The rule was not modified in response to this comment.

NWF/LSCSC and NWFSCRC suggest changing the semicolon in §298.220(d) after "short-duration" to a comma.

The commission agrees, and adopted §298.220(d) reflects this change.

NWF/LSCSC and NWFSCRC suggest changing the first sentence of §298.220(d)(1) to read as follows: "Two smaller-magnitude pulses per season are to be passed . . . if the applicable peak flow trigger level is met at the measurement point that applies to the water right."

The adopted rules only include one level of high flow pulses, so the rule need not distinguish between large and small pulses. Multiple measurement points may apply to a water right depending on the geographic scope of a particular water right application, therefore the adopted rule should be flexible enough to accommodate this situation. The rules were not changed in response to this comment.

NWFSCRC proposes adding language to the second sentence of §298.220(d)(1), so it reads as follows: "The water right holder shall not divert or store water, except during times that flows immediately downstream equal or exceed the applicable pulse flow trigger rate, until either the volume amount has passed . . .." This language would allow

a water right holder subject to the flow standard to divert or impound water during a pulse event if the flow immediately downstream of the diversion or impoundment equals or exceeds the applicable pulse flow trigger amount. This seems consistent with the commission's intent in establishing pulse flow requirements.

The commission agrees and §298.220(d)(1) has been modified to reflect this comment.

NWF/LSCSC and NWFSCRC comment that pulse flow protection also would suffer as a result of the time-lag effect and the tributary-stream effect unless language is added to make clear that TCEQ normally would be establishing permit-specific conditions to implement environmental flow standards and suggest adding the following sentence to the end of §298.220(d)(1): "Permit conditions will be imposed, as appropriate, to establish individual permit pulse flow values, normally calculated on a watershed area basis, in order to ensure that flows immediately below the diversion or storage point are adequately protected consistent with applicable flow standards."

The commission respectfully disagrees with this comment. Although it is possible that a watershed area basis may be appropriate for subsistence or base flows, time lag effects and tributary stream effects would make this method inappropriate for translating pulse flow conditions to other points in the watershed. The commission will implement these standards in each

permit granted for a new appropriation of water. However, at this point in the process, the commission needs flexibility and will examine permits as they come in to determine how to implement the standards in different permits. The rule was not modified in response to this comment.

TRA states its understanding that flow volume and duration targets for pulses are defined as starting when the peak flow trigger is met, regardless of when a change in stage first occurred and comments that this accounting method can significantly underestimate the actual amount of water that has passed a given location and/or the duration of a rise event. It is more appropriate to calculate pulse flow volumes and durations from the beginning of a rising hydrograph, provided the peak flow target is eventually met. TRA therefore suggests that the last sentence be deleted from proposed §298.220(d)(1), that is: "The water right holder shall not divert or store water until either the volume amount has passed the measurement point or the duration time has passed since the peak flow trigger rate occurred." Similar language, including a process for determining the beginning and end of a pulse, can be included in permit special conditions.

The commission agrees that determining whether a water right is in compliance with the terms and conditions of its permit should be considered based on the specific facts in an application. However, the adopted rule has specific values which must be met at specified locations.

Variations in methods for calculating pulses would not allow the commission to consistently apply the standards in a permit. The rule was not modified in response to this comment.

BRA comments that the last sentence of §298.220(d)(1) "The water right holder shall not divert or store water until either the volume amount has passed the measurement point or the duration time has passed since the peak flow trigger rate occurred" imposes a condition inconsistent with the development of the hydrologic statistics that may result in an imbalance in the environment and water supply. It also imposes a condition that does not exist in nature. In many cases a water supply diversion would have minimal impact on the characteristics and ecological functions of a pulse, and curtailment of that diversion would not truly enhance the environment. It is recommended that diversions should not be curtailed but regulated during a high flow pulse. Several ideas that may be used to regulate diversions during a high flow pulse event include: 1) apply a diversion rate limit based on percent impact to the pulse; 2) apply a "diversion rate threshold" to establish a constant diversion rate limit during pulses; and 3) allow diversion limited to the difference between the actual peak discharge of the pulse and the high flow pulse criteria. Lastly, since statistics used to define the pulse days and pulse volume were based on the entire pulse, from start to finish and not from peak to finish, it is recommended that: 1) the water right holder be allowed to divert once the volume and the peak or the duration and the peak are met from the beginning of the high flow pulse event; or 2) recalculate the volume and

duration flow recommendations beginning at the peak of the high flow pulse.

The commission acknowledges the comment. These are interesting concepts that future science teams may want to consider and the science team for this basin may also want to consider as it studies conditions in the basins for the next round of recommendations under adaptive management. The commission considered the recommendations of the science team and stakeholders for the basin and bay systems. The adopted rule was based in part on the specific recommendations of the expert science team. The comments to the proposed rule provided by the stakeholder group in this area did not make changes to the science team recommendation. While other methods to implement and manage high flow pulse requirements may be recommended in other areas, these rules were not modified in response to this comment.

BRA comments that it is beneficial to state that a water right holder is not required to produce a pulse from storage and that pulses occur because of high rainfall events. This statement as currently drafted in proposed §298.220(d)(2) adds clarity to the expectation on the actions required for meeting pulse requirements. No change to this language is recommended.

The commission acknowledges this comment. With the minor exception of

changing the term "peak flow" to "high flow pulse," the commission did not change the provision in §298.220(d)(2).

NWF/LSCSC and NWFSCRC suggest changing the first sentence of §298.220(d)(2), so it reads as follows: "If an applicable peak flow trigger rate . . .."

The commission agrees, and adopted §298.220(d)(2) was modified to add the word "applicable." The commission notes that in response to other comments, the term "peak flow" was replaced with the term "high flow pulse" in §298.220(d)(2).

NWF/LSCSC and NWFSCRC note that proposed §298.220 includes protection for only a single level of extremely small pulse flows, which, even with the requirement to pass two such pulses per season, is simply not adequate to perform the full suite of functions for which adequate pulse flows are needed. An additional level of larger pulse flows should be included in the Winter and Spring seasons during normal and high hydrologic conditions in order to protect critical aspects of the flow regime. No higher level pulses are suggested during low hydrologic conditions in order to help minimize potential impacts on potential water supply projects. NWF/LSCSC and NWFSCRC recommend §298.220(d) reads as follows: "In addition, one larger-magnitude pulse per season is to be passed (i.e., no storage or diversion by an applicable water right holder) if the applicable hydrologic condition is medium or high, if the flows are above the applicable

base flow standards and if the peak flow trigger level is met at the measurement point. The water right holder shall not divert or store water until either the volume amount has passed the measurement point or the duration time has passed since the peak flow trigger rate occurred. Permit conditions will be imposed, as appropriate, to establish individual permit pulse flow values, normally calculated on a watershed area basis, in order to ensure that flows immediately below the diversion or storage point are adequately protected consistent with applicable flow standards."

The commission followed its instructions in TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards when drafting the adopted rules. The commission also considered staff's water availability analyses on the adopted standards. The commission applied balancing in formulating the rules. Commission staff used the WAM to determine the impact of the adopted standards on a future water use scenario and found that there would be no significant impact from implementation of the adopted standards. The rule was not modified in response to this comment to include hydrologic conditions or additional levels of high flow pulses. The commission did adopt changes to the proposed rule and these changes are discussed in the adoption preamble in §298.220 and §298.225. The modified numerical values can be found in the adopted standards in

§298.225.

NWF/LSCSC and NWFSCRC suggest deleting §298.220(d)(3).

The commission considered all of the comments and alternate proposals submitted in response to the proposed rules. The commission modified the seasonal distribution of high flow pulses in the adopted rule and therefore agrees that this paragraph can be deleted. The specific changes are discussed in the adoption preamble for §298.220.

BRA notes that the importance of the concept of seasonality is recognized considering a linkage between flow and ecology is established and agrees, as stated, that there should be no requirement for carry-over of pulse requirements from one season to another, if the previous season did not meet its pulse minimum. Trying to "catch up" in the summer quarter for a missed pulse in the Spring quarter will do little to help aquatic species. This "catch-up" issue is discussed in the Background and Summary of the proposed rules but is not clearly articulated in §298.220(d)(4). It is recommended that language in this section be clarified to articulate that there is no need for "catch-up" if the mandated pulses are not observed in one season.

The adopted rules for this basin and bay system state in §298.220(d)(3) that each season is independent of the preceding and subsequent seasons with

respect to high flow pulses. This provision is adequate to convey that no catch up is required. As stated in the preamble, if, in a particular season, only one of the high flow pulses identified in the adopted rule is generated, then there would be no need to "catch up" or allow more than two high flow pulses to pass in the following season. The rule was not modified in response to this comment.

NWF/LSCSC and NWFSCRC suggest modifying the language in proposed §298.220(d)(4) to read as follows: "With the exception of summer and fall, which are treated as a single season for purposes of pulse flow compliance, each season is independent of the preceding and subsequent seasons with respect to high flow pulse frequency."

The commission modified the seasonal distribution of high flow pulses in the adopted rule, and this suggested change is consistent with those modifications. The specific changes are discussed in the adoption preamble for §298.220.

NWF/LSCSC and NWFSCRC suggest adding §298.220(e) and a new figure in §298.220(e) - *Reservoirs and Storage Volumes for Calculating Hydrologic Conditions for Measurement Points in the Trinity and San Jacinto River Basins, including Buffalo Bayou and Brays Bayou*. The suggested language for §298.220(e)

is as follows: "The determination of the hydrologic condition for a particular season shall be determined once per season. The conditions present on the last day of the month of the preceding season will determine the hydrologic condition for the following season. For each measurement point specified in this subsection, the cumulative storage in the major reservoirs located upstream of that measurement point will determine the hydrologic condition. Measurement points, associated reservoirs to be used in determining hydrologic condition, and storage levels and conditions are:" This new subsection and figure should be added to establish a methodology for determining hydrologic condition in order to implement the needed multi-level base flow and pulse flow components of a protective flow standard. In order to achieve consistency across basins, this methodology is very similar to that proposed in Subchapter C for the Sabine and Neches Rivers and Sabine Lake Bay.

The adopted rules only include one level of base flows; therefore, there is no need to include hydrologic conditions. The commission does not want to limit the ability of future stakeholder and expert science groups to define basin specific implementation scenarios in their future, location-specific recommendations. The rules were not changed in response to this comment.

§298.225, Environmental Flow Standards

WW comments that the environmental flow standards for the Trinity and San Jacinto

Rivers and Galveston Bay may impose a reasonable environmental flow regime, consistent with the scientific limitations of the data. Because the scientific data does not make the necessary correlation between seasonal stream flows and aquatic life viability, an overly complex environmental flow regime is not called for. Moreover, the ability of TCEQ and water rights holders to administer the environmental flow standards also has to be taken into account and argues for the more basic environmental flow standards.

The commission acknowledges the comment. The commission also notes that the specific numerical flow values for the flow components in adopted §298.225 have been modified in response to other comments on the proposed standards. The changes are discussed in the adoption preamble for §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

Espey and LGRT comment that historically, the system has experienced flows lower than the subsistence flow amounts, yet has remained ecologically sound. While setting subsistence flows in §298.225 as a floor is a more readily implementable criterion, it creates a criterion with no environmental justification. It is suggested that subsistence flow criteria be evaluated with the frequencies recommended by the majority of stakeholders.

The commission responds that in the absence of additional scientific

evidence that allowing diversions below the subsistence level would be sufficiently protective of the environment, the subsistence flows in the adopted rule are a floor below which diversions should not occur. Further analyses and studies may need to be performed in the future to determine whether the adopted standards, once implemented, are adequate to protect the river during low flow times. HB 3/SB 3 contemplate that additional analyses and studies can be considered through adaptive management via the workplan for this basin and bay system. To the extent that additional information becomes available through monitoring and studies undertaken under the workplan, the science team could consider that information in future deliberations.

The commission also notes that the specific numerical flow values for the flow components in the adopted rule have been modified in response to other comments on the proposed standards. The changes are discussed in the adoption preamble for §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225. The rule was not modified in response to this comment.

Foodways Texas and five individuals comment that the proposed flow levels of the Trinity and San Jacinto Rivers in §298.225 are inadequate and should be increased to ensure that Galveston Bay receives sufficient freshwater, particularly during times of

drought.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules and balanced the interests listed in the statutes. The commission modified adopted §298.225 to include a seasonal component for inflows to Galveston Bay. These changes are discussed in the adoption preamble in §298.225 and the modified numerical values can be found in the adopted standard for this section.

TPWD comments that the proposed subsistence flows in §298.225 represent quantities that are lower than much of the recorded historical streamflows over the past forty years. These flows are lower than those where water quality data have been collected and thus have very limited water quality justification. For these basins, TPWD supports the Regime group's use of the 5th percentile of flows for subsistence levels. TPWD also supports the subsistence flows proposed in the alternate recommendations by NWF and Sierra Club, which are nearly identical.

Commission staff performed a water quality analysis on the standards. The water quality analysis considered the relationship between streamflow and the water quality parameters identified by the science team to look for trends and criteria excursions. This analysis did not identify any areas of

concern. There is less data available at lower flow levels, and this issue may be addressed in the workplan. No change was made in response to this comment. In response to other comments, the commission modified some of the specific numerical values for the flow components in adopted §298.225. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

BAHEP**,** BLC, CCA Texas, GBF, Sierra Club-Houston, and more than ten individuals comment that the base and subsistence target flows in §298.225 are extremely low, far below the historical flows, and would greatly jeopardize the rivers and tributaries' living species and water quality.

Commission staff performed a water quality analysis on the standards in §298.225. The water quality analysis considered the relationship between streamflow and the water quality parameters identified by the science team to look for trends and criteria excursions. This analysis did not identify any areas of concern. No change was made in response to this comment. In response to other comments, the commission modified some of the specific numerical values for the flow components in the adopted rule. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in adopted §298.225.

BAHEP, BLC, CCA Texas, GBF, Sierra Club-Houston, and more than ten individuals comment that the pending proposal does not contain base flow targets in §298.225 that would provide the natural variability required to sustain an ecologically sound riverine environment.

The commission is not convinced that there is sufficient existing scientific evidence to support the need for multiple levels of base flow in this basin and bay system. The commission also considered human and other competing needs for water in developing the adopted standards. Therefore, the commission is adopting a simplified flow regime. The commission acknowledges that further analyses and studies may need to be performed in the future to determine whether the adopted standards, once implemented, are providing sufficient flow variability. HB 3/SB 3 contemplate that additional analyses and studies can be considered through adaptive management via the workplan for this basin and bay system. To the extent that additional information becomes available through monitoring and studies undertaken under the workplan, the science team could consider that information in future deliberations. No change was made in response to this comment. In response to other comments, the commission modified some of the specific numerical values for the flow components in the adopted rule, although the adopted rule only includes

one level of base flows that vary seasonally. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards for §298.225.

Sierra Club-Lone Star comments that the base river flow standards in the Trinity that are being proposed in §298.225 have been exceeded approximately 95% of the time during the historical record and suggests that any set of standards that is so low that historically they have been 95% of the time simply does not indicate a protective enough level to maintain a sound ecological environment.

Commission staff performed a water quality analysis on the standards. The water quality analysis considered the relationship between streamflow and the water quality parameters identified by the science team to look for trends and criteria excursions. This analysis did not identify any areas of concern. No change was made in response to this comment. In response to other comments, the commission modified some of the specific numerical values for the flow components in the adopted rule. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards for §298.225.

TPWD comments that the proposed base flow standards in §298.225 lack any inter-

annual variability and thus do not depend on weather conditions as specified in §298.1(1), where a "base flow" is defined as "the range of average flow conditions, in the absence of significant rainfall events that may vary depending on current weather patterns."

The definition of "Base flow" in adopted §298.1(2) is not intended to prescribe multiple levels of base flows. It is intended to reflect that base flows are neither the highest not the lowest flows in the river. No change was made in response to this comment. In response to other comments, the commission modified some of the specific numerical values for the flow components in the adopted rule. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

NWF comments that the proposed standards in §298.225 for the Trinity and San Jacinto basins and Galveston Bay do not capture the inter-annual variations in the instream flow standards.

In response to other comments, the commission modified some of the specific numerical values for the flow components in adopted §298.225. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted

standards in §298.225. The commission notes that further analyses and studies may be performed in the future to determine whether the adopted standards, once implemented, are providing sufficient inter annual variability. HB 3/SB 3 contemplate that additional analyses and studies can be considered through adaptive management via the workplan. No change was made in response to this comment.

TPWD notes that the listed base flows are far below "average flow conditions" as specified in the definition of "Base flows" in §298.1. The proposed base flow standards represent not average conditions but exceedingly low flow conditions when compared to contemporary hydrology. Even when compared to the "early" period of record upon which they were developed, the proposed base flows approach the 10th percentile of all "early period" flows. This is far below any reasonable interpretation of "average." TPWD continues to support the Regime group recommendations which included three levels of base flows at each of the control points in the Trinity and San Jacinto basins. At the present time, TPWD also supports the alternate rules proposed by NWF/Sierra Club, which include similar flow magnitudes, albeit generally at reduced frequencies. Various levels of base flows are an important ecological component of a flow regime in order to provide instream habitat diversity through time to support Texas' rich aquatic communities. By specifying one base level, the proposed rules do not provide a diversity of habitat conditions needed to maintain a "sound ecological environment" as defined by §298.205(3).

The commission followed its instructions in TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards when drafting the adopted rules. The commission is not convinced that there is sufficient existing scientific evidence to support the need for multiple levels of base flow, at the specific flow levels included in the alternate recommendation, in this basin and bay system. The commission also considered human and other competing needs for water in developing the adopted standards. Therefore, the commission is adopting a simplified flow regime. The commission acknowledges that further analyses and studies may need to be performed in the future to determine whether the adopted standards, once implemented, are providing sufficient flow variability. HB 3/SB 3 contemplate that additional analyses and studies can be considered through adaptive management via the workplan for this basin and bay system. To the extent that additional information becomes available through monitoring and studies undertaken under the workplan, the science team could consider that information in future deliberations. No change was made in response to this comment. In response to other comments, the commission modified some of the specific numerical values in for the flow components in adopted §298.225 to reflect those in the alternate

recommendation. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

BAHEP, BLC, CCA Texas, GBF, Sierra Club-Houston, and more than ten individuals comment that the pending proposal does not provide suitable high flow pulse targets in §298.225 that are necessary for life cycle histories of many riverine species, channel maintenance, and sediment transport.

The commission considered all of the comments and alternate proposals submitted in response to the proposed rules. The commission is not convinced that there is sufficient existing scientific evidence to support the need for multiple levels of pulse flows in §298.225 in this basin and bay system. Therefore, the commission is adopting a simplified flow regime. The commission also considered human and other competing needs for water in developing the adopted standards. The commission acknowledges that further analyses and studies may need to be performed in the future to determine whether the adopted standards, once implemented, are providing the ecological functions the commenter describes. HB 3/SB contemplate that additional analyses and studies can be considered through adaptive management via the workplan for this basin and bay system. To the extent that additional information becomes available through

monitoring and studies undertaken under the workplan, the science team could consider that information in future deliberations. No change was made in response to this comment. In response to other comments, the commission modified the numerical values and seasonal distribution of high flow pulses in adopted §298.225 to reflect those in the alternate recommendation. The specific changes are discussed in the adoption preamble in §298.220 and §298.225.

TPWD comments that the schedule of high flow pulses in the proposed rules is inadequate to protect a sound ecological environment. The proposed rules only provide for two small pulses per season. The pulses in the proposed rules are a very small subset of historically observed events. Concerns remain that the proposed schedule of flow pulses does not provide adequate flow variability and maintenance of critical ecological functions. Although key characteristics of the high flow pulse schedule are lower than the majority BBEST recommendations, TPWD endorses the schedule of high flow pulses included in the alternate rules proposed by NWF/Sierra Club. From an implementation perspective, if a large high flow pulse occurs in a season, then it would also count as one of the two required small high flow pulses.

The commission followed its instructions in TWC, §11.1471, to determine these flow standards. The commission is not convinced that there is sufficient existing scientific evidence to support the need for multiple levels

of pulse flows, at the specific flow levels included in the alternate recommendation, in this basin and bay system. The commission also considered human and other competing needs for water in developing the adopted standards in §298.225. Therefore, the commission is adopting a simplified flow regime. The commission acknowledges that further analyses and studies may need to be performed in the future to determine whether the adopted standards, once implemented, are providing sufficient flow variability and maintaining the ecological functions the commenter describes. HB 3/SB 3 contemplate that additional analyses and studies can be considered through adaptive management via the workplan for this basin and bay system. To the extent that additional information becomes available through monitoring and studies undertaken under the workplan, the science team could consider that information in future deliberations. The commission considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards when drafting the adopted rules. No change was made in response to this comment. In response to other comments, the commission modified the numerical values and seasonal distribution of high flow pulses in adopted §298.225 to reflect those in the alternate recommendation. These changes are discussed in the adoption preamble in §298.220 and §298.225.

BAHEP, BLC, CCA Texas, GBF, Sierra Club-Houston, and more than ten individuals comment that as there are only six flow measurement points in §298.225 where environmental flow standards are established, this proposal does not provide geographic coverage necessary to protect riverine environments. USFWS similarly comments that there is no justification for TCEQ choosing to use only six gage locations for proposing the standards. The Trinity BBEST Regime report used 11 gage locations and the Trinity BBASC Regime report used 10 gage locations. USFWS recommends the use of as many gage locations as is required to fully characterize the basin. USFWS comments that it would be prudent to include a wider set of data sources and information points at the onset of a process and winnow the extraneous information moving forward through the process. USFWS also encourages the use of tributaries in setting the standards. TPWD comments that the proposed measurement points in §298.225 lack the geographic scope to adequately protect flows in the Trinity and San Jacinto River Basins. Four measurement points in the Trinity River Basin and two in the San Jacinto River Basin are simply too few to address the nearly 23,000 square miles of drainage area in these basins. At a minimum, TPWD suggests including the recommended measurement points in the alternative set of rules proposed by the National Wildlife Federation and Sierra Club-Lone Star, which provide greater geographic coverage for the basins.

The commission respectfully disagrees with this comment. The commission followed its instructions in TWC, §11.1471, to determine these flow

standards. It considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards when drafting the adopted rules. The number of measurement points in the adopted rule represents a balance between the two recommendations of the stakeholder group. The measurement points reflect the geographic scope of the basin and bay system because they represent the major watersheds in the basin. The rule was not modified in response to this comment.

BLC comments that the proposed environmental flows in §298.225 do not provide for a flow regime that would preserve wetland functional values in conservation easements set aside as mitigation for loss due to development and as compensation for natural resource damages due to hazardous substance releases. This will result in a net loss of functional values to the public trust.

The standards in §298.225 prescribe a flow regime for maintenance of a sound ecological environment and will be applied to applications for new appropriations of water. The commission notes that further analyses and studies may be performed in the future to determine whether the adopted standards, once implemented, are maintaining a sound ecological environment. HB 3/SB 3 contemplate that additional analyses and studies can be considered through adaptive management via the workplan. No

change was made in response to this comment.

Environmental Stewardship and one individual comment that the weak and limited standard in §298.225 sets a dangerous precedent for current and future stakeholder committees and expert science teams.

The commission respectfully disagrees that these standards impact future rule proposals. Future rule proposals in other basin and bay systems will be based on recommendations made by the science teams and stakeholders for those basin and bay systems and adaptive management. No change was made in response to this comment.

One individual comments that the proposed standards lack scientific studies.

The commission notes that the recommendations of the science teams are based on reasonably available science. The commission relied, in part, on the recommendations of the science team in formulating the standards. The commission notes that further analyses and studies may be performed in the future. HB 3/SB 3 contemplate that additional analyses and studies can be considered through adaptive management via the workplan. No change was made in response to this comment.

One individual comments that all one needs to do is study the file on the San Bernard River and the effects that the Freeport and Quintana jetties have had on this body of water's flow to the Gulf. It is open now after spending millions to clear the sediment. Five years from now we will be facing the same closure of flow and its effects. Also consider the Rio Grande Valley where that river no longer flows into the Gulf and look at the millions of dollars that are lost to the area's economies because of this man-made situation of Mexico building numerous dams to steal the water.

The commission notes that further analyses and studies may be performed in the future to determine whether the adopted standards, once implemented, are maintaining a sound ecological environment. HB 3/SB 3 contemplate that additional analyses and studies can be considered through adaptive management via the workplan. No change was made in response to this comment.

One individual comments that the proposed rule is significantly deficient in that it does not provide specific protections for average and wet hydrologic conditions. A cursory comparison of the flows recommended by TCEQ and the basin stakeholders group shows the rule based flows to be in the "ball park" of the stakeholders dry base flows recommendations at Romayor on the Trinity River. A comparison of subsistence flows shows the flows recommended in the rule to be about 50% of the flows the stakeholders recommended for the Winter and Spring seasons. The stakeholder group offered base

flows for dry, average, and wet conditions. In fact, the proposed rule for the Neches and Sabine basin uses the same approach (dry, average, wet). It seems as if the rule for the Trinity runs counter to the guiding principle for establishing environmental flows. If left in this form, the ongoing work in other basins would suffer from a sense of futility that would be introduced into the process.

The commission followed its instructions in TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards when drafting the adopted rules. The adopted rule represents a balance between the two recommendations of the stakeholder group. No change was made in response to this comment. In response to other comments, the commission modified some of the specific numerical values for the flow components in the adopted rule. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

One individual who participated as a member of the Trinity/San Jacinto River and Galveston Bay Stakeholder Group comments that the recommended flows standards do not conform to the recommendations of either report of the BBEST, the standards in the Region H Water Plan, the recommendations of the SAC, or TPWD.

The commission followed its instructions in TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards when drafting the adopted rules. The adopted rule represents a balance between the two recommendations of the stakeholder group. No change was made in response to this comment. In response to other comments, the commission modified some of the specific numerical values for the flow components in the adopted rule. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

TRA comments that the proposed standards in §298.225 include more gages and flow components than recommended by the conditional group of expert scientists and the majority of stakeholders. TRA recommends that all instream flow requirements §298.225(d)(1) and (2) applicable to the Grand Prairie and Dallas gages be removed from the proposed standards.

The commission followed its instructions in TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and

comments on the proposed standards when drafting the adopted rules. The number of measurement points in the adopted rule represents a balance between the two recommendations of the stakeholder group. The measurement points reflect the geographic scope of the basin and bay system because they represent the major watersheds in the basin. The rule was not modified in response to this comment.

TRA recommends that volumetric pulse-flow requirements at the Oakwood and Romayor gages in §298.225(d)(3) and (4) be removed from the proposed rules.

Pulse flows are important to maintain aquatic habitat and other ecosystem functions in the river. The commission followed its instructions in TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards when drafting the adopted rules. The rule was not modified in response to this comment.

TRA agrees with TCEQ's decision to not propose environmental flow set asides for the Trinity and San Jacinto Rivers and that using existing authority will maximize water availability while protecting instream uses.

The commission acknowledges this comment.

BLC comments that less water in the Trinity and San Jacinto Rivers would be detrimental to the number and diversity of macroinvertebrates, and this would in turn affect the birds migrating through Texas. Macroinvertebrates are also bio-indicators; their presence or lack thereof is an indicator of water quality. With less water in the waterways, pollution will be more concentrated and the diversity of small organisms we find in these waterways will disappear along with the adult insects most of them metamorphose into. Please consider the needs of the organisms that live in these waterways when looking at flow rates in the Trinity and San Jacinto Rivers. They are a small but vital part of the web of life in our region. Without them, or even with fewer of them, we stand to lose birds and other fauna that live in and stop in Texas.

The recommendations of the science teams are based on reasonably available science. The commission relied, in part, on the recommendations of the science team in formulating the standards in §298.225. The environmental flows process under HB 3/SB 3 has an adaptive management component which may consider additional science, as it becomes available, to develop future science team and stakeholder recommendations. No change was made in response to this comment.

BLC requests the TCEQ to consider flow rates in §298.225 that more accurately reflect

the natural flow of these rivers.

The commission followed its instructions in TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards when drafting the adopted rules. No change was made in response to this comment. In response to other comments, the commission modified some of the specific numerical values for the flow components in the adopted rule. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

BLC comments that it holds five conservation easements with frontage on the San Jacinto or East Fork San Jacinto Rivers and that it has contractual agreements with the U.S. Army Corps of Engineers, county governments, and local private landowners to uphold the conservation values of these 8,500 acres. Reducing the hydrological flow to the riverine and palustrine wetlands would cause detriment to the sustainability of these fragile ecosystems and will violate these conservation easements. In addition, since the proposed environmental flows do not provide for a flow regime that would preserve the functional values of the wetlands, the result may be a net loss of functional value to the public trust. All of these tracts were set aside in perpetuity for the water-quality buffering that the wetlands provide as well as for the general public benefits of floodway

and floodplain protection and for the wildlife value that they provide to offset the impacts on other lands. Having the San Jacinto continue to flow, at significant levels, adjacent to these lands is imperative in order to maintain the conservation values that were set aside for the public good. The habitat connectivity that BLC helps provide in relation to this riparian corridor is equally important to bobcats, white-tailed deer, and the diminishing amphibian and freshwater mussel species that need this water in these waterways.

The commission considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards when drafting the adopted rules. The recommendations of the science teams are based on reasonably available science. The commission relied, in part, on the recommendations of the science team in formulating the standards. The environmental flows process under HB 3/SB 3 has an adaptive management component which may consider additional science, as it becomes available, to develop future science team and stakeholder recommendations. No changes were made in response to this comment. In response to other comments, the commission modified some of the specific numerical values for the flow components in the adopted rule. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

BPA comments that freshwater instream uses through the bayous, streams, and rivers, and freshwater inflows into Galveston Bay are an important resource to preserve for the local ecosystem and economic welfare. Failing to secure this resource will result in the collapse of habitats and would cause serious damage to the tourism, fisheries, and economic systems that depend on healthy coastal waterways. The proposed rule does not provide sufficient critical detail on flow timing across the seasons and across the area, to maintain the balance needed to support the current habitats, ecosystems, and economy.

The commission considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards when drafting the adopted rules. The recommendations of the science teams are based on reasonably available science. The commission relied, in part, on the recommendations of the science team in formulating the standards. The environmental flows process under HB 3/SB 3 has an adaptive management component which may consider additional science, as it becomes available, to develop future science team and stakeholder recommendations. No change was made in response to this comment. In response to other comments, the commission modified some of the specific numerical values for the flow components in the adopted rule. These changes are discussed in the adoption preamble in

§298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

BPA recommends the establishment of environmental flow standards for instream flows in §298.225 that consist of several flow components that define the needed flows in greater detail across the seasons of the year and across the geographic area.

The commission considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards when drafting the adopted rules. The adopted rule includes flows that vary across the seasons and are measured at specific points in the basin. No change was made in response to this comment. In response to other comments, the commission modified some of the specific numerical values for the flow components in the adopted rule. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

USFWS comments that a comparison of the proposed subsistence flow standards in §298.225 to information from the USGS gages demonstrates that the proposed standards are extremely low values compared to the data available. For example, the proposed subsistence standard for Romayor in §298.225(d)(4) is lower than the lowest

daily mean in the period of record for most days of the year. A subsistence flow that is lower than the lowest daily mean on record is not adequate. Subsistence flows must provide minimal aquatic habitat space for survival of aquatic organisms and they are expected to occur rarely. USFWS recommends that TCEQ re-assess these values for all gages to ensure that they will maintain survival of aquatic organisms. Big Thicket supports a more robust protection of environmental flows in the Trinity and San Jacinto Rivers and Galveston Bay than have been proposed in §298.225. Subsistence and base flows for the USGS gage at Romayor in §298.225(d)(4), a short distance from where the Preserve's Menard Creek Corridor Unit meets the Trinity River, appear low and strangely constant (e.g., subsistence flow only varies from 223 cfs in summer months to 295 cfs in winter months). These subsistence and base values do not resemble a pattern of natural flow variability needed to sustain the ecological health of the river.

The commission considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards when drafting the adopted rules. The flow values at this gage were based on the historical record. In response to other comments, the commission modified some of the specific numerical values for the flow components in the adopted rule. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

BRA comments that although it appears to be the intent of proposed §298.225 to have diversion or storage controlled by a single downstream measurement point, the proposed rules do not clearly state this intent. It would be beneficial to define where flow standards will be enforced in relation to a "measurement point," as it may not be intuitive in all circumstances. Issues may arise when one measurement point has higher flow standards than another when either one could be used to regulate a single diversion. It is recommended that the diversion be regulated by only the nearest downstream "measurement point" since the impacts of a diversion are unlikely to significantly impact streamflow at measurement points several travel days downstream.

The measurement point that would be applicable to a water right depends on the specific fact situation for an application for a new appropriation of water. The measurement point applicable to a specific application could take into consideration the geographic extent of the impacts resulting from that application. Individual permit applications are different; therefore, special conditions may need to vary for those permits. No change was made in response to this comment.

TPWD recommends that TCEQ develop and apply a methodology for transferring environmental flow standards in §298.225 to upstream segments, reaches, and sites hydrologically distanced from the measurement points specified in the rules. TCEQ

should consider factors related to stream size, stream order, contributing drainage area, hydrology, occurrence of species of concern and/or other factors in transferring the proposed standards to tributary and upstream locations. TPWD understands that TCEQ has initiated a research project to address this issue; however, this is an important issue that should be addressed in the current rulemaking process. Numerous approaches are available for TCEQ to consider as the default until better information is available, and TPWD is ready to assist in this effort.

The commission respectfully disagrees that this needs to be addressed in this rulemaking process. Individual permit applications are different; therefore, special conditions may need to vary for those permits. The commission will implement these standards in each permit granted for a new appropriation of water. At this point in the process the commission will examine permits as they come in to determine how to implement the standards in different permits. The commission will consider comments on this issue when processing each permit. No change was made in response to this comment.

USFWS notes that the Trinity BBEST and BBASC reports chose to use pre-1964 gage data as the basis for their recommendations. The justification is that the pre-1964 period of record is representative of a natural functional ecosystem without return flows and reservoirs. If that is indeed the case then, the statement that the basin has a

currently sound ecological environment may not be supported. As an alternative, USFWS recommends that TCEQ use the gages that are available to the greatest extent possible, the entire period of record, and then isolate confounding factors such as reservoirs and existing in-channel water transfers. If return flows are not considered part of an existing water right, then TCEQ should consider them as existing flow components and available for set-asides.

The commission followed its instructions in TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards when drafting the adopted rules. The commission acknowledges that return flows, to the extent they are discharged are part of the flow in the river. At the time of adoption of this rule, the issue of how return flows should be treated in water rights permitting is an issue in a contested case pending at SOAH. The commission gave deference to the recommendations of the science teams and the stakeholders with respect to the appropriate period of record to consider in determining the adopted standards. No change was made in response to this comment.

USFWS comments that a comparison of the proposed base flow standards in §298.225 to the 25th percentile of daily mean flows for each gage demonstrates that the standard

is significantly lower for the entire period of record. The 25th percentile is typically considered a low base flow indicative of dry conditions. In some cases, the proposed standard is lower than the minimum daily mean for the record (June 16 at the Oakwood gage). USFWS recommends that TCEQ re-evaluate the proposed standards so that they are more reflective of average base flows conditions, typically closer to the 50th percentile.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The commission modified some of the specific numerical values for the flow components in the adopted rule to reflect those in an alternate recommendation. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

USFWS notes that its review of aerial imagery provided by Google Earth™ and USGS data for the Romayor gage indicate that proposed pulse flow standards in §298.225(d)(4) would be insufficient to ensure connectivity with the floodplain in order to maintain characteristic vegetation communities and fish and wildlife resources dependent on those communities. Under these proposed standards many of the wetland habitats that depend on pulse flows would be placed at risk and left solely dependent on direct rainfall. Since riverine pulse flows define these ecological communities, it is

extremely important that sufficient flows of appropriate intensity, duration, and volume are provided. Again, recognizing that human health and safety are paramount; the goal of HB 3/SB 3 is not to reduce the floodplain risk but to ensure that future water rights holders do not negatively affect the environment. USFWS recommends that TCEQ perform an analysis at all six gage locations as well as other gage sites to ensure that connectivity is sufficient to maintain wetland, oxbow, and slough habitats and the animal populations dependent on these habitats. An example of a species that could be used as an indicator is the alligator gar, which is dependent on access to these habitats for reproduction and juvenile development.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The commission acknowledges that overbank flows are a component of a flow regime for a sound ecological environment and has modified the Section by Section discussion of §298.1 in the preamble to reflect this acknowledgement. Overbank flows are a result of naturally occurring large rainfall events, which will likely continue to occur. Therefore, the commission is not including overbank flows as a component of the adopted standards. The commission also notes that the recommendations of the science teams are based on reasonably available science. The commission relied, in part, on the recommendations of the science team in formulating the standards. The commission modified some of the specific numerical

values for the flow components in the adopted rule. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

Espey and LGRT recommend removal of any language relating to high flow pulses in §298.225. These were labeled as "conditional" in the Trinity and San Jacinto BBASC report because of insufficient analytical basis to include them as recommendations but as appropriate subjects for further study.

Pulse flows are important to maintain aquatic habitat and other ecosystem functions in the river. The commission followed its instructions in TWC, §11.1471, to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards when drafting the adopted rules. Including one level of pulses in the adopted rule represents a balance between the two recommendations of the stakeholder group. The rule was not modified in response to this comment.

One individual comments that if this freshwater inflow recommendation is the sole option to go forward for public comment, then the bay and its economic and quality of life values will be placed at great risk, as its target flows are not sufficient. Many jobs

depend on the health of Galveston Bay. Damage to the Bay will result in loss of seafood which will negatively affect restaurants, grocery stores, and other related industries.

The commission modified the adopted rule to include seasonal components for inflows to Galveston Bay. Implementation of the adopted rule was changed to conform to the modifications and incorporates parts of this comment. The specific changes are discussed in the adoption preamble in §298.225, and the specific numerical values and implementation aspects can be found in the adopted standards for §298.225(a).

NWF/LSCSC and NWFSCRC suggest replacing §298.225(a) with the following language: "A water right application in the Trinity or San Jacinto river basins, which increases the amount of water authorized to be stored, taken, or diverted as described in §298.10 of this title (relating to Applicability), shall not cause or contribute to a failure to achieve the listed attainment frequencies, on either a seasonal or annual basis, for the listed volumes of freshwater inflows when evaluated over the period of record for the relevant water availability model. When assessing attainment frequency achievement under this subsection, inflows are evaluated at an evaluation point just above the Galveston Bay system and the listed attainment values are compared to all years within the evaluation period regardless of hydrologic conditions. Although acknowledged as an issue that merits consideration for future refinement, no standards are included here for coastal basins that drain to the Galveston Bay system. Accordingly, permit conditions

for applications for water right permits in those coastal basins will be developed through the Commission's existing authority as described in §298.10 of this title." This text clarifies how impacts to attainment frequencies are to be assessed (by using the listed attainment frequencies as the basis for comparison and specifying the use of the period of record for the relevant WAM in undertaking the evaluation), incorporates the use of seasonal attainment frequencies, and acknowledges that standards are not being proposed for other coastal basins flowing into Galveston Bay.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The commission modified the adopted rule to include seasonal components for inflows Galveston Bay. Implementation of the adopted rule was changed to conform to the modifications and incorporates parts of this comment. The commission did not receive specific numeric recommendations from the science team or stakeholders for freshwater inflows standards for these coastal basins. Therefore, the commission does not adopt freshwater inflow standards for these coastal basins at this time. Determination of these values may be addressed through adaptive management in the future. Specific changes are discussed in the adoption preamble in §298.225 and the specific numerical values and implementation aspects can be found in the adopted standards for §298.225(a).

NWF/LSCSC and NWFSCRC comment that the proposed flow standards for Galveston Bay in §298.225(a) are seriously inadequate. They fail to provide any seasonality aspect, lack any drought-level inflow amounts (an especially serious deficiency), and include unduly low attainment frequencies. In order to address the critical need to specify seasonal inflow values, to provide more appropriate attainment frequencies, both seasonal and annual, and to provide appropriate drought-period inflow values, NWF/LSCSC and NWFSCRC recommend deleting the figure in proposed §298.225(a) (Bay and Estuary Freshwater Inflow Standards for the Galveston Bay System) and replacing it with a revised figure.

The commission modified the adopted rule to include seasonal components for inflows Galveston Bay. In developing the modifications to the adopted rule, the commission considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards when drafting the adopted rules. The commission also considered staff's water availability analyses on the adopted standards. These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225(a).

One individual comments that the provision for minimum seasonal flows into the estuaries and bays fed by the Trinity and San Jacinto Rivers in §298.225(a) is

inadequate and that the standard must include minimum seasonal flows adequate to sustain the marine life in Galveston Bay. Establishing only a total annual quantity of fresh water is not adequate. A minimum flow, mirroring historical seasonal flows, is necessary to sustain life in the brackish waters of Galveston Bay and its adjacent marshes. The wildlife there includes resident and migratory birds and the marine life includes shrimp, oysters, crabs and fish that are of significant commercial and recreational value to the state. Similarly, BAHEP, BLC, CCA Texas, GBF, Sierra Club-Houston, Galveston Baykeeper, and more than 20 individuals comment that instead of setting monthly and/or seasonal inflow targets based on natural rainfall patterns, the pending proposal in §298.225(a) sets only a marginally enforceable annual total. It is important to note that the proposal's annual inflow total is based upon previously derived needs estimates of TPWD, which have a clearly defined monthly pattern. Thus, TCEQ is ignoring the underlying science upon which the annual total is based; leaving the bay vulnerable to a lack of flows in months after the annual flow requirement has been met. Similarly, NWF comments that the lack of seasonal distribution for the bay inflows is a big deficiency in the proposed standards in §298.225(a). Similarly**,** one individual comments that the figure in §298.225(a) shows a set of freshwater inflow standards for the Galveston Bay system that are not consistent with §298.210(b). Based on previous statements, one of the flow values listed for the Trinity and San Jacinto Rivers must correspond to a base flow value, which, according to §298.210(b) will vary by season and by year. In §298.220(c) it states that "The applicable base flow standard varies depending on the seasons . . .." Freshwater inflow standards that do not

incorporate seasonality do not meet the criteria established by TCEQ in this document. The freshwater inflow standards proposed for Galveston Bay must be changed to provide, at a minimum, flow levels for each of the four seasons. In particular, high flows should be protected in the spring because spawning and germination of important species depend on these pulses of freshwater. Another individual comments that TCEQ should carefully consider the recommendations for seasonal freshwater inflow values for Galveston Bay in the minority report from the BBASC as the basis for setting a standard. These recommendations, although they do not have the temporal and spatial resolution that should ultimately be incorporated in environmental flow standards, are based on carefully selected biological indicators of the impact of changes in freshwater inflow on the ecology of Galveston Bay.

The commission modified the adopted rule to include seasonal components for inflows to Galveston Bay in part based on these comments. These changes are discussed in the adoption preamble in §298.225 and the modified numerical values can be found in the adopted standards for §298.225(a).

TPWD supports the freshwater inflow standards for Galveston Bay in the alternate rule proposed by NWF/Sierra Club. While the TCEQ proposed §298.225(a) addresses total annual inflows and achievement frequencies associated with those annual inflows, certain critical elements such as seasonal distribution of inflows are omitted. The

alternate proposed rules provide seasonal inflow volume recommendations that include attainment frequencies for "drought," "medium," and "low" hydrologic conditions.

The commission modified the adopted rule to include seasonal components for inflows to Galveston Bay in part based on these comments. These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225(a). The commission clarifies that the alternate recommendations of NWF and Sierra Club were not TCEQ "proposed rules." They were, however, placed on the TCEQ Web site for comment.

USFWS comments that the proposed standard is not an environmental flow regime because it lacks duration and seasonality and therefore does not meet the requirements of HB 3/SB 3. It is not clear how TCEQ would apply this standard to a water right permit holder or how it might be evaluated through adaptive management. The Trinity BBASC's Regime report provides a clear and meaningful alternative environmental flow regime that meets the requirements of HB 3/SB 3. The approach provides seasonality, duration, and volume. While more information is needed to verify these inflows through adaptive management, the Trinity BBASC Regime report is based on measurable responses from biological resources in the estuary. USFWS recommends consideration of the Trinity BBASC Regime inflow recommendation as the proposed standard for Galveston Bay.

The commission modified the adopted rule to include seasonal components for inflows to Galveston Bay in part based on this comment. The bay and estuary freshwater inflow standards will be applied to an application for a new appropriation of water as part of the water availability determination for that application. These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225(a). The environmental flows process under HB 3/SB 3 has an adaptive management component which may consider additional science, as it becomes available, to develop future science team and stakeholder recommendations which the commission could consider in future rulemaking.

TRA supports the Galveston Bay inflows based upon annual-flow frequency-targets. These recommendations are consistent with the Region H plan under SB 1 and represent a regime in that they cover a range of flows and allow for year-to-year variation. These proposed standards are implementable during both the technical review of a new application to determine if requested flow volumes are available and during the permit drafting phase as a basis for special conditions to ensure those flow targets are met.

The commission modified adopted §298.225(a) to include seasonal components for inflows Galveston Bay in part based on this comment.

These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225(a).

BAHEP, BLC, CCA Texas, GBF, Sierra Club-Houston, Galveston Baykeeper, and more than 15 individuals comment that the pending proposal ignores the species-specific inflow recommendations of the majority of the basin and bay area expert science team.

The commission modified adopted §298.225(a) to include seasonal components for inflows to Galveston Bay in response to this and other comments. The freshwater inflow standards in the adopted rule represent a balance between the two recommendations of the stakeholder group. These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225(a).

BAHEP, BLC, CCA Texas, Galveston Baykeeper, GBF, Sierra Club-Houston, and more than 15 individuals comment that the pending proposal leaves the bay completely unprotected when protection is most needed - during droughts. NWF comments that the issue of drought protection for the bay is a concern in the proposed standards.

The commission considered all of the comments and alternate

recommendations submitted in response to the proposed rules. The commission modified adopted §298.225(a) to include seasonal components for inflows to Galveston Bay. Including seasonal components should provide additional protection during lower flow seasons. These changes are discussed in the adoption preamble in §298.225 and the modified numerical values can be found in the adopted standards for §298.225(a).

GBF comments that with regard to freshwater inflows, it is most troubled that the standards omit the low flow criteria. This omission leaves Galveston Bay unprotected during droughts when plant and animal species in the Bay are most stressed, in particular, oysters, which are the keystone species, essentially, for Galveston Bay. Oysters are particularly sensitive to high salinity; both disease and predators attack them when salinity levels get high. If fresh water is lost, the oysters are really going to suffer. GBF understands and agrees with the expert science team and the stakeholder group that man is not required to supply water that nature is not naturally providing, but the absence of a low flow criteria standard will allow the bay to get into a critical situation needlessly.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The commission modified the adopted rule to include seasonal components for inflows to Galveston Bay, which may address commenters' concerns.

Including seasonal components should provide additional protection during lower flow seasons. These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225(a).

One individual comments that the proposed targets for flows (omitting low flow criteria) in §298.225(a) will cause serious damage to the bay ecosystems in the near future. This will result in major economic damage to the coastal residents who earn their living by harvesting or providing recreation in our coastal areas. Please strengthen the proposed rule.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The commission modified the adopted rule to include seasonal components for inflows to Galveston Bay. Including seasonal components should provide additional protection during lower flow seasons. These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225(a).

BAHEP, BLC, BPA, CCA Texas, Galveston Baykeeper, GBF, Sierra Club-Houston, and more than ten individuals comment that there are no criteria in §298.225(a) for inflows from coastal basin streams, which account for 18% of the flows of freshwater to

Galveston Bay.

The commission acknowledges this comment. The commission also acknowledges the importance of coastal basin contributions to freshwater inflows to Galveston Bay. The commission notes that the stakeholders for this bay and basin system did not provide quantified values for the coastal basins. Therefore, the commission is not adopting standards for these coastal basins at this time. Determination of these values may be addressed through adaptive management in the future. The rule was not modified in response to this comment.

One individual comments that the proposed freshwater inflow standards to Galveston Bay in §298.225(a) are woefully below what the majority of scientists have recommended. With an expected doubling of the population in the Galveston Bay watershed over the next 40 or 50 years, these standards are placing the two largest cities on a slippery slide towards disaster. Adequate freshwater inflow is vital to Galveston Bay which is the second largest estuary system in the nation. Without proper freshwater inflow, the Galveston Bay system will face a catastrophic disaster from which it is likely to never recover.

The commission modified the adopted rule to include seasonal components for inflows to Galveston Bay. Including seasonal components should

provide additional protection during lower flow seasons. These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225(a).

BPA comments that proposed §298.225(a) should be modified to list a minimum flow quantity with a target frequency of 90%. Lack of a specific minimum flow leaves the ecological and economic health of Galveston Bay and the waterways leading to it in jeopardy of insufficient flows.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The commission modified the adopted rule to include seasonal components for inflows to Galveston Bay. Including seasonal components should provide additional protection during lower flow seasons. The freshwater inflow quantities and frequencies in the adopted rule represent a balance between the two recommendations of the stakeholder group. These changes are discussed in the adoption preamble in §298.225 and the modified numerical values can be found in the adopted standards for §298.225(a).

One individual comments that "long-term frequency," as used in §298.225(a), is not sufficiently specific to permit scientific evaluation of the efficacy of the standards proposed for the Bay. One interpretation of long-term is another period of record equal

to the period of record used in the analysis on which the values in the figure in §298.225(a) are based, i.e., 40 years. The scientists who are committed to participating in the validation and improvement of environmental flow standards in Texas, find this unsatisfactory. A reasonable period of years, e.g., five or ten, should be substituted for "long-term."

The bay and estuary freshwater inflow standards will be applied to an application for a new appropriation of water as part of the water availability determination for that application. The long-term frequency applied in this evaluation is the period of record of the applicable water availability model. No change was made in response to this comment.

Espey and LGRT note that proposed §298.225(a) asserts that a water right application " . . .shall not reduce the long-term frequency at which the following volumes of freshwater inflows occur." It is unclear how the commission has evaluated, or intends to evaluate, the "long-term" frequencies proposed for the estuarine standards. The utilization of frequencies in a recommendation must be further investigated. If such frequencies are based upon a 30-year period of record, then the resultant statistics reflect characterizations over that long of a period. In other words, a pulse experienced in ten years out of 30 years does not equate to a frequency of one out of three years. How such a frequency is to be implemented should be made clearer in the present language. It is suggested that for the evaluation of a permit application, the estuarine

standard not be placed in the WAM model, but instead be evaluated via post-processing analysis of the WAM results, to determine if the annual standards are exceeded at the appropriate frequencies. Such an analysis is an inelegant solution for assessing the standards' potential impact should the frequency not be achieved, likely requiring an iterative process to develop a strategy to achieve the environmental flow criterion.

The bay and estuary freshwater inflow standards will be applied to an application for a new appropriation of water as part of the water availability determination for that application. The long-term frequency applied in this evaluation is the period of record of the applicable water availability model. The commission agrees that this analysis would be an iterative process and may require a strategy to achieve the environmental flow criterion, although this would depend on the fact situation of a particular permit to which the adopted standards are applicable. No change was made in response to this comment.

LGRT requests the executive director explain how the annual target frequency in the figure in §298.225(a) will be implemented in water rights subject to the rules, and how these numbers were derived given that there was no explanation in the preamble in this regard. LGRT also suggests that there needs to be a definition of the annual target frequency.

The bay and estuary freshwater inflow standards will be applied to an application for a new appropriation of water as part of the water availability determination for that application. The long-term frequency applied in this evaluation is the period of record of the applicable water availability model. The commission agrees that this analysis would be an iterative process and may require a strategy to achieve the environmental flow criterion, although this would depend on the fact situation of a particular application to which the adopted standards are applicable. In response to this comment, the modified rule clarifies annual and seasonal target frequencies. No change was made in response to this comment.

DWU notes that the figure in §298.225(a), the annual target frequency for the Trinity River inflow quantity of 1,357,133 acre-feet per year should be 70%, based on application of the Trinity WAM Run 3.

The commission modified the adopted rule to include seasonal components for inflows to Galveston Bay. The freshwater inflow quantities and frequencies in the adopted rule represent a balance between the two recommendations of the stakeholder group. These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225(a).

One individual comments that the TCEQ has the power and responsibility to ensure a healthy future for Galveston Bay, an important resource to all Texans and an important marine nursery to the already-beleaguered Gulf Coast, and requests the TCEQ to reconsider its position and to provide for the protection of future environmental flows to Galveston Bay.

The commission modified the adopted rule to include seasonal components for inflows to Galveston Bay. Including seasonal components should provide additional protection during lower flow seasons. These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225(a).

One individual requests that the TCEQ balance upstream water needs with those of Galveston Bay, and ensure that the Bay does not fail to receive the fresh water it needs to remain a healthy fish and shellfish nursery, recreational and commercial fishing resource, and a high-quality ecosystem.

The commission modified the adopted rule to include seasonal components for inflows to Galveston Bay. Including seasonal components should provide additional protection during lower flow seasons. In developing modifications to the adopted rule, the commission considered the recommendations provided by the science team and the stakeholder

groups, other relevant factors, and comments on the proposed standards. The freshwater inflow quantities and frequencies in the adopted rule represent a balance between the two recommendations of the stakeholder group. The commission also considered staff's water availability analyses on the adopted standards. These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225(a).

One individual comments that the TCEQ has to separate upstream water issues from sustaining the health of the Bay and protect the Bay system first, while looking for new ways to meet the water needs of communities upstream. Destroying the ecosystem in the Bay should not be an option in this or any other rule.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The commission modified the adopted rule to include seasonal components for inflows to Galveston Bay. In developing modifications to the adopted rule, the commission considered the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards. The freshwater inflow quantities and frequencies in the adopted rule represent a balance between the two recommendations of the stakeholder group. The commission also considered staff's water

availability analyses on the adopted standards. These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225(a).

Three individuals comment that Galveston Bay needs more freshwater for oyster cultivation and that the oyster beds and seafood industry are just now recovering from Hurricane Ike damage. They request that the Environmental Flow Standards for the Trinity and San Jacinto Rivers in §298.225(a) be revised to ensure that adequate water reaches Galveston Bay. Reducing the amount of water available to maintain salinity levels will be a devastating and possible fatal blow to the oystermen and their families.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The commission modified the adopted rule to include seasonal components for inflows to Galveston Bay. Including seasonal components should provide additional protection during lower flow seasons. In developing modifications to the adopted rule, the commission considered the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards. These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225(a).

Eagle Point Fishing Camp, Inc. comments that low freshwater inflow inflicts damage upon the many oyster reefs that make up the base of the marine system. It is essential to have a healthy freshwater flow from both the Trinity and San Jacinto rivers and the TCEQ should place Galveston Bay "first" when it considers where fresh water is to be allocated.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The commission modified the adopted rule to include seasonal components for inflows to Galveston Bay. Including seasonal components should provide additional protection during lower flow seasons. In developing modifications to the adopted rule, the commission considered the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards. The commission also considered staff's water availability analyses on the adopted standards. These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225(a).

Sierra Club-Houston and one individual comment that the very low environmental flows that §298.225 of the draft proposal allows for in the Trinity and San Jacinto Rivers will

make droughts more damaging because these very low flows result in a greater amount of salinity entering and persisting in Galveston Bay and traveling up both rivers. This would decimate freshwater and brackish water aquatic and plant communities and allow excessive numbers of oyster predators, like oyster drills, to enter and remain in Galveston Bay. The ultimate outcome of these low environmental flows would result in the severe degradation of oyster reefs in Galveston Bay which are critical for birds, finfish, shellfish, recreation (fishing), and economic activities (commercial oyster harvests).

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. Including seasonal components should provide additional protection during lower flow seasons. The commission modified the adopted rule to include seasonal components for inflows to Galveston Bay. In developing modifications to the adopted rule, the commission considered the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards. The commission also considered staff's water availability analyses on the adopted standards. These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225(a). The commission acknowledges that further analyses and studies may be performed in the future to determine whether

the adopted standards, once implemented, are providing sufficient freshwater inflows to Galveston Bay.

Café Express, Louisiana Foods Global Seafood Source, and more than ten individuals request TCEQ to keep plenty of fresh, clean water flowing into Galveston Bay and to maintain salinity levels that will keep the oysters and other shellfish and the seafood industry alive and well. The amount of water proposed in §298.225(a) is too low, looking at historical flows. The levels of water going into the bay should be increased to levels that will sustain the ecosystem.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The commission modified the adopted rule to include seasonal components for inflows to Galveston Bay. Including seasonal components should provide additional protection during lower flow seasons. In developing modifications to the adopted rule, the commission considered the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards when drafting the adopted rules. These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225(a).

CEA, Fish City Grill, Evangeline Café, Louisiana Foods Global Seafood Source and more than 45 individuals comment that more freshwater inflows to Galveston Bay are needed for Texas oysters and seafood to protect from potential negative economic impact on the seafood and recreational fishing industries and to preserve Galveston Bay seafood future for generations.

The commission understands the need to protect Galveston Bay. The commission considered all of the comments and alternate proposals submitted in response to the proposed rules. The commission modified the adopted rule to include a seasonal component for inflows to Galveston Bay. In developing modifications to the adopted rule, the commission considered the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards. The freshwater inflow quantities and frequencies in the adopted rule represent a balance between the two recommendations of the stakeholder group. The commission also considered staff's water availability analyses on the adopted standards. These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for that section.

Galveston Baykeeper, Junior Anglers and Hunters of America, and more than 20 individuals comment that the health of Galveston Bay - and the plants and animals that

inhabit it - is dependent upon an adequate amount of freshwater flowing into the bay from the Trinity and San Jacinto rivers to dilute the seawater from the Gulf and bring in nutrients and sediments. These environmental flows are threatened by the current proposal.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The commission modified the adopted rule to include seasonal components for inflows to Galveston Bay. Including seasonal components should provide additional protection during lower flow seasons. These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225(a).

One individual comments that freshwater from the Trinity and San Jacinto Rivers brings sediment to Galveston Bay, which builds up habitats such as saltwater marshes and the barrier islands.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The freshwater inflow quantities and frequencies in the adopted rule represent a balance between the two recommendations of the stakeholder group. The commission also considered staff's water availability analyses on the

adopted standards. The commission modified the adopted rule to include seasonal components for inflows to Galveston Bay. These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225(a).

Houston Audubon and three individuals expressed concern that the proposed standards in §298.225(a) will limit the amount of freshwater flow to Galveston Bay, making it vulnerable to increased salinity, particularly during times of drought, which could negatively impact birds and wildlife that depend on the bay for survival.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The commission modified the adopted rule to include seasonal components for inflows to Galveston Bay. Including seasonal components should provide additional protection during lower flow seasons. These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225(a).

BLC, GBCPA, and two individuals comment that freshwater is important for the environmental quality of the estuarine system. Without this freshwater, these areas cannot be the diverse habitat required for the nursery systems they provide to species such as shrimp, crabs, and oysters. In particular, for sustained development of oysters,

there is a defined range of salinity that optimizes growth and breeding. If the TCEQ allows the amount of fresh water that is directed into the bay be reduced, not only do the bacteria levels go up but the salinity will significantly increase over time and kill off the oysters. Keep the freshwater flows as they are.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The commission modified the adopted rule to include seasonal components for inflows to Galveston Bay. Including seasonal components should provide additional protection during lower flow seasons. These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225(a).

One individual comments that the amount of fresh water that flows down from the Trinity River greatly influences the overall water quality of the bay. Keep the fresh water flows as they are.

Freshwater inflows to the bay are influenced by a number of factors including water use and rainfall patterns. The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The commission modified the adopted rule to include seasonal components for inflows to Galveston Bay. Including seasonal

components should provide additional protection during lower flow seasons. These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225(a).

One individual comments that the economic and environmental consequences of failure to assure sufficient freshwater inflows to Trinity and Galveston Bays are devastating.

The commission recognizes the negative economic and environmental consequences of failing to provide adequate freshwater inflows to Galveston Bay. The commission based its decision on the recommendation of the majority of the stakeholders, which were based in part on the recommendations of seven members of the science team rather than the recommendations of the eight other members. The bay and estuary standards in the adopted rule are also used in Regional Water Planning. The commission considers the final rule provides for adequate freshwater inflows to preserve the sound ecological environment of Galveston Bay. The commission modified the adopted rule to include seasonal components for inflows to Galveston Bay. Including seasonal components should provide additional protection during lower flow seasons. These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225(a).

One individual is very concerned that the rules under consideration (§298.225(a)) seem to disregard the natural flow levels needed to sustain a healthy environment in the Galveston Bay system and hopes that the TCEQ will take a step back and reconsider the potentially devastating, long-term, and potentially irreversible impacts of lowering the natural levels of fresh water flows into the Bay system. Under no circumstances should the TCEQ, or any other state agency entrusted with environmental protection, consider a rule that has obvious, unmitigatable, negative environmental impacts.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The commission modified the adopted rule to include seasonal components for inflows to Galveston Bay. Including seasonal components should provide additional protection during lower flow seasons. These changes are discussed in the adoption preamble in §298.225, and the modified numerical values can be found in the adopted standards for §298.225(a). The commission acknowledges that further analyses and studies may be performed in the future to determine whether the adopted standards, once implemented, are providing sufficient freshwater inflows to Galveston Bay

DWU suggests adding the following text to the end of §298.225(a): "For permits issued within an area that is 200 river miles from the coast, to commence from the mouth of

the river thence inland, the commission shall include in the permit any conditions considered necessary to maintain beneficial inflows to any affected bay and estuary system, to the extent practicable when considering all public interests, those conditions considered necessary to maintain beneficial inflows to any affected bay and estuary system."

With respect to the 200-river-mile boundary, the commission has determined that under TWC, §11.147(e-3), the 200-river-mile limit does not apply to environmental flow standards for bays and estuaries unless the science team or stakeholders submit this recommendation to the commission for review during the environmental flows process. The rule was not modified in response to this comment.

One individual comments that the proposed standards in §298.225 for the San Jacinto and Trinity Rivers are woefully inadequate to protect wildlife and the rivers themselves. These watersheds would be in danger of being reduced to a trickle.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The instream standards in the adopted rule represent a balance between the two recommendations of the stakeholder group. The commission modified some of the specific numerical values for the flow components in the

adopted rule. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

One individual comments that in most places, TCEQ's recommended flow levels in §298.225 would allow Trinity River flows to be reduced to levels seen only about 5% of the time in the last 50+ years. This could harm water quality and could affect the ongoing plans for restoring the Trinity in the DFW area. Low water levels could impact fish and wildlife up and down the river basins.

Commission staff performed a water quality analysis on the proposed standards. The water quality analysis considered the relationship between streamflow and the water quality parameters identified by the science team to look for trends and criteria excursions. This analysis did not identify any areas of concern. The commission modified some of the specific numerical values for the flow components in the adopted rule. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225. These changes may address commenters' concerns.

BLC comments that it would be prudent to establish additional measurement points in §298.225 on the San Jacinto and Trinity Rivers to better monitor actual flow conditions

for ongoing evaluation and planning.

The commission respectfully disagrees with this comment. The number of measurement points in the adopted rule represents a balance between the two recommendations of the stakeholder group. The measurement points reflect the geographic scope of the basin and bay system because they represent the major watersheds in the basin. The rule was not modified in response to this comment.

Espey and LGRT comment that the geographic extent to which a flow regime recommendation applies is not clearly identified and spatial variations in the hydroclimatologies of contributing watersheds are not addressed and that it is unclear if measurements at a particular location are to be related to measurements at control points (i.e., the gaged site where instream flow criteria are assessed).

In adopted §298.220, a water right owner to whom the rules apply would be subject to the standards as they are implemented in special conditions in the water right permit. At this point in the process, the commission will examine permits as they come in to determine how to implement the standards in different permits. These specific comments are questions that will be decided in that process. The rule was not modified in response to this comment.

NTMWD and SJRA comment that it is unclear how permittees will be required to adhere to the proposed environmental flow standards in §298.225. It would be very difficult for a water rights holder to monitor all gages in a river basin associated with a water right that includes special conditions drafted to implement the rules. The executive director should clarify in the rules as finally adopted that he will not be requiring permittees to adhere to all flow standards in the basin, but only at a gage location near a proposed new appropriation of water. Without making this clarification, future permittees with authorizations issued subject to the rules could be subject to an overbearing task of monitoring conditions throughout the basin prior to diversion.

The commission responds that individual permit applications are different; therefore, special conditions may need to vary for those permits. The measurement point that would be applicable to a water right depends on the specific fact situation for an application for a new appropriation of water. The measurement point applicable to a specific application could take into consideration the geographic extent of the impacts resulting from that application and a water right owner may need to monitor additional gages. No change was made in response to this comment.

NWF/LSCSC and NWFSCRC suggest deleting the following figures in proposed §298.225(b)(1) (USGS Gage 08049500, West Fork Trinity River near Grand Prairie);

§298.225(b)(2) (USGS Gage 08057000, Trinity River at Dallas); §298.225(b)(3) (USGS Gage 08065000, Trinity River near Oakwood); §298.225(b)(4) (USGS Gage 08066500, Trinity River at Romayor); §298.225(b)(5) (USGS Gage 08070000, East Fork San Jacinto River near Cleveland); and §298.225(b)(6) (USGS Gage 08068000, West Fork San Jacinto River near Conroe) and replacing them with suggested revised figures.

The commission modified some of the specific numerical values for the flow components in the adopted rule. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225. The table format in the adopted rule adequately represents the flow standards in the adopted §298.225.

Espey and LGRT recommend removal of any language relating to flow quantities at this measurement point (proposed §298.225(b)(1), West Fork Trinity near Grand Prairie). These flow conditions were labeled as "conditional" in the Trinity and San Jacinto BBASC report because of insufficient analytical basis to include them as recommendations but as appropriate subjects for further study.

Including the measurement point West Fork Trinity near Grand Prairie in the adopted rule represents a balance between the two recommendations of the science team and stakeholder group. The commission considered all of

the comments and alternate recommendations submitted in response to the proposed rules. The commission modified some of the specific numerical values for the flow components in the adopted rule. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

One individual commends the TCEQ for inclusion of pulse flow standards in §298.225 but strongly urges TCEQ to add a standard for very high flow pulses. The pulse flows that are proposed do not have sufficient volume to cause significant habitat modification. One key to maintaining biodiversity in riverine systems is variation in physical conditions, much of which is caused by variation in flow. If high pulse flows are not protected, the potential exists for permits to be issued for harvesting of flood flows and subsequent removal of these critical ecological events. Large high flow pulses need to be included in the standards to protect the biodiversity in the rivers.

The pulse flows included in adopted §298.225 represent a balance between the two recommendations of the science team and stakeholder group. The commission considered all of the comments and alternate proposals submitted in response to the proposed rules. The commission modified some of the specific numerical values for the flow components in the adopted rule. These changes are discussed in the adoption preamble in

§298.220 and §298.225 and the modified numerical values can be found in the adopted standards for those sections.

NWF/LSCSC and NWFSCRC suggest changing "near" Dallas to "at" Dallas in proposed §298.225(b)(2).

The commission agrees and the proposed §298.225(b)(2), adopted and renumbered as proposed §298.225(c)(2) has been modified to reflect this comment.

Espey and LGRT recommend removal of any language relating to flow quantities at this measurement point (proposed §298.225(b)(2), Trinity River at Dallas). These flow conditions were labeled as "conditional" in the Trinity and San Jacinto BBASC report because of insufficient analytical basis to include them as recommendations but as appropriate subjects for further study.

Including this measurement point in the adopted rule represents a balance between the two recommendations of the science team and stakeholder group. The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The commission modified some of the specific numerical values for the flow components in the adopted rule. These changes are discussed in the

adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

Sierra Club-Houston and one individual comment that the recommended environmental flow level for the Trinity River near Oakwood for May is greatly below what the Trinity River has experienced historically. This exceptionally low flow would result in a flow that is not sustainable for fish, wildlife, aquatic, and riparian communities.

The commission modified some of the specific numerical values for the flow components in the adopted rule, which may address commenter's concerns. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

NWF/LSCSC, NWFSCRC suggest adding §298.225(b)(3) as follows: "Trinity River near Rosser, Texas, generally described as USGS gage 08062500, and more specifically described as Latitude 32 degrees 25 minutes 35 seconds; Longitude 96 degrees 27 minutes 46 seconds" and to add a figure in §298.225(b)(3) (USGS Gage 08062500, Trinity River near Rosser).

Omitting the measurement point, Trinity River near Rosser, from the

adopted rule represents a balance between the two recommendations of the science team and stakeholder group. The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The commission modified some of the specific numerical values for the flow components in the adopted rule. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

NWF/LSCSC and NWFSCRC suggest adding §298.225(b)(8) as follows: "Spring Creek near Spring, Texas, generally described as USGS gage 08068500, and more specifically described as Latitude 30 degrees 6 minutes 37 seconds; Longitude 95 degrees 26 minutes 10 seconds" and adding a figure in §298.225(b)(8) (USGS Gage 08068500, Spring Creek near Spring).

Omitting the measurement point, Spring Creek near Spring, Texas, from the adopted rule represents a balance between the two recommendations of the science team and stakeholder group. The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The commission modified some of the specific numerical values for the flow components in the adopted rule. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the

modified numerical values can be found in the adopted standards in §298.225.

NWF/LSCSC and NWFSCRC suggest adding §298.225(b)(9) as follows: "Brays Bayou at Houston, Texas, generally described as USGS gage 08075000, and more specifically described as Latitude 29 degrees 41 minutes 49 seconds; Longitude 95 degrees 24 minutes 43 seconds" and adding a figure in §298.225(b)(9) (USGS Gage 08075000, Brays Bayou at Houston).

Omitting the measurement point, Brays Bayou at Houston, Texas, from the adopted rule represents a balance between the two recommendations of the science team and stakeholder group. The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The commission modified some of the specific numerical values for the flow components in the adopted rule. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

NWF/LSCSC and NWFSCRC suggest adding §298.225(b)(10) as follows: "Buffalo Bayou at Piney Point, Texas, generally described as USGS gage 08073700, and more specifically described as Latitude 29 degrees 44 minutes 48 seconds; Longitude 95

degrees 31 minutes 24 seconds" and adding a figure in §298.225(b)(10) (USGS Gage 08073700, Buffalo Bayou at Piney Point).

Omitting the measurement point, Buffalo Bayou at Piney Point, Texas, from the adopted rule represents a balance between the two recommendations of the science team and stakeholder group. The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The commission modified some of the specific numerical values for the flow components in the adopted rule. These changes are discussed in the adoption preamble in §298.220 and §298.225, and the modified numerical values can be found in the adopted standards in §298.225.

§298.230, Water Right Permit Conditions

TPWD notes that draft §298.230 sets a limit for applying high flow pulse requirements to water rights that are greater than 10,000 acre-feet/year. TPWD agrees that certain appropriations may not require a permit condition to protect high flow pulses, but believes that the criterion used to set an exemption threshold should be based on a water right's maximum authorized diversion rate and not on authorized annual diversion amount. In some instances at tributary and other locations, the 10,000 acre-feet/year exemption amount exceeds recommended pulse volumes and could significantly impact the proposed high flow pulses depending on the permit's authorized maximum diversion

rate. TPWD is concerned about the potential cumulative effect of exemptions from the high flow pulse flow requirement on downstream high flow pulse characteristics. TPWD recommends that TCEQ adopt a rule for exemptions that sets a diversion rate threshold based on high flow pulse initiation triggers and limits the potential cumulative impacts on required high flow pulse that might result from the exercise of all such exempt permits to less than 10%. TPWD staff suggests the following alternative language for the appropriate sentences of §298.230: "Water right permits with a cumulative maximum diversion rate less than 10% of the smallest high flow pulse trigger flow as measured at the most immediate downstream environmental flow standard location shall not be subject to the special conditions relative to high flow pulses."

The commission respectfully disagrees. Time lag effects and tributary stream effects would make using a percentage of a pulse flow trigger inappropriate for translating the impacts of specific diversion rates for individual water rights into impacts on downstream pulse flow conditions. A water right diversion of 10,000 acre-feet would be unlikely to occur over a small number of days. In the event that such a situation occurred, only one pulse event would likely be impacted. Using a maximum diversion amount is a more straightforward method for determining whether pulse flow requirements should be included in special conditions of a water right permit. The rule was not modified in response to this comment.

NWFSCRC comments that 10,000 acre-feet per year of diversion or storage is an inappropriate cut-off point for exemption from complying with the pulse flow standards. Because many of the pulse flow proposals involve a total volume of less than 10,000 acre-feet, this exemption would allow these new water rights to fully capture pulse flows that are required to be passed by other holders of new water rights. That would frustrate the intended environmental flow protections and would be unfair to other water right holders. Given the variability of pulse flow volumes and pulse flow triggers, a simple volume-based exemption is not a reasonable approach. NWFSCRC does not oppose the concept of exempting certain very small water rights from undue complexities; however, such an exemption should be based on the relative size of the diversion or impoundment right to the applicable flow standards at that location. Rather than a one-size-fits-all standard, a standard should be adopted that compares the authorized storage or diversion to the size, in terms of volume and pulse flow trigger rate, of the protected pulse at that location. NWFSCRC suggests the following replacement language: In §298.230(a), "For water right permits with an authorization to store an annual amount that is greater than 20% of the smallest applicable pulse flow volume at the location of the storage authorization or to divert at a rate that is greater than 20% of the smallest applicable pulse flow trigger rate at the location of the authorized diversion in the Trinity and San Jacinto River basins, and to which the environmental flow standards apply, that are issued after the effective date of this subchapter, the water right permit or amendment shall contain flow restriction special conditions that are adequate to comply with the environmental flow standards of this

subchapter." In §298.230(b), "For water right permits with an authorization to store an annual amount that is equal to or less than 20% of the smallest applicable pulse flow volume at the location of the storage authorization or to divert at a rate that is equal to or less than 20% of the smallest applicable pulse flow trigger rate at the location of the authorized diversion in the Trinity and San Jacinto River basins, and to which the environmental flow standards apply, that are issued after the effective date of this subchapter, the water right permit or amendment shall contain flow restriction special conditions that are adequate to protect the environmental flow standards of this subchapter; however, no special conditions are necessary to preserve or pass high flow pulses unless the annual storage or diversion right exceeds 20,000 acre-feet."

Time lag effects and tributary stream effects would make using a percentage of the pulse flow volume inappropriate for translating the impacts of specific diversion rates for individual water rights into impacts on downstream pulse flow conditions. A water right diversion of 10,000 acre-feet would be unlikely to occur over a small number of days. In the event that such a situation occurred, only one pulse event would likely be impacted. Using a maximum diversion amount is a more straightforward method for determining whether pulse flow requirements should be included in special conditions of a water right permit. The rule was not modified in response to this comment.

One individual comments that 10,000 acre-feet is an incredible amount of water to allow to be diverted or stored without any special conditions for environmental flows. (10,000 acre-feet is 3,258,514,000 gallons of water per year) and urges TCEQ to amend §298.230 to reduce this amount to 500 acre-feet (which is still 162,925,700 gallons per year) so that more water rights permit holders are made responsible for the protection of our streams, rivers, and bays and estuaries from the cumulative impacts of water diversions and storage.

All water right applications that are subject to the standards would include special conditions to protect the standards. Smaller water rights, requesting an amount less than 10,000 acre-feet, would still be subject to subsistence and base flow standards under the adopted rule.

NWFSCRC comments that the proposed language in §298.230 that purports to establish a second balancing test in incorporating permit conditions is not consistent with TWC, §11.147(e-3). The language seems to suggest that the commission would undertake a balancing exercise and discretionary review in the permitting process through which TCEQ could decide not to include permit conditions necessary to protect the adopted environmental flow standards. For permits to which the standards apply, TCEQ must apply those standards in developing permit conditions. TCEQ does not have discretion to decide to apply the standards "to the maximum extent reasonable, considering other public interests and other relevant factors" as suggested in the proposed rule. A

balancing test has already been incorporated into the adoption of the standards. This language would introduce a second layer of balancing and would necessitate individualized permit reviews while establishing the flow standards as a cap on environmental flow protection. That is not what HB 3/SB 3 provides. To avoid that inconsistency with the statutory directive, the following language should be deleted: "to the maximum extent reasonable, considering other public interests and other relevant factors."

The commission agrees and §298.230 has been modified to remove this language.

NWFSCRC comments that the reference in §298.230 to flow restriction special conditions that are adequate to "protect" environmental flow standards is a bit unclear. The term "comply with" should be substituted for "protect." Although it might be accurate to refer to protection of an environmental flow set aside, it is not clear how permit conditions would "protect" an environmental flow standard.

The commission respectfully disagrees. Special conditions that protect environmental flow standards would be those special conditions that ensure compliance with the standards. The rule was not modified in response to this comment.

TRA is concerned that the proposed rules make no allowances for the use of site-specific data and studies. Site-specific studies represent a better understanding of the relationship between flows and the health of aquatic ecosystems at a given location or within a given reach and are therefore more appropriate than the hydrology-based statistical methods that have been used heretofore. TRA believes language in the proposed rules should allow for the use of site-specific studies and suggests that §298.230(a) be changed to read as follows: "For water rights permits . . . considering other public interests, site-specific studies, and other relevant factors."

The commission respectfully disagrees with this comment. TWC, §11.147(e-3), expressly states that: "Notwithstanding Subsections (b) - (e), for the purpose of determining the environmental flow conditions necessary to maintain freshwater inflows to an affected bay and estuary system, existing instream uses and water quality of a stream or river, or fish and wildlife habitats, the commission shall apply any applicable environmental flow standard, including any environmental flow set aside, adopted under TWC, §11.1471, instead of considering the factors specified by those subsections." TWC, §11.147(b) - (e) are the statutes regulating how the commission protected the environment prior to HB 3/SB 3. It is clear that the bill and TWC, §11.147(e-3), meant for the commission to protect any environmental flow standards determined under TWC, §11.1471, in a permit for new water instead of using these other statutes and site-specific data. Under TWC,

§11.1471(d), all new appropriations or increases in the storage, taking, or diversion of water issued after an environmental flow standard is adopted must contain the standard. The commission acknowledges that further data may be developed. However, HB 3/SB 3 contemplate that this new data and new studies will be considered through adaptive management.

In the commission's proposal preamble, the commission stated that it still retained its existing authority to place special conditions in permits to protect the environment. The intent of this statement was to clarify that the commission would use special conditions to implement the environmental flow standards for applications for new appropriations of water and applications to increase the amount of water to be taken stored or diverted after September 1, 2007. Additionally, the commission still has authority to use special conditions for those applications which are not for new appropriations or an increase in storage, taking, or diverting of water.

WW comments that the main concern of water users is the impact of the adopted environmental flow standards on their ability to predict available water supply. For that reason, the more simplified the environmental flow regime, the better, in terms of its use and administration. Oversimplification, however, without reference to site-specific conditions of the location and conditions of the diversion, can be burdensome with no real payoff in terms of supporting a sound ecological environment. In looking at each

water rights permit application, TCEQ should consider how the applicant could reasonably support environmental flow standards while also balancing the water supply development aspect of the project. The commission is empowered to undertake this balancing and doing so does not negate the environmental benefits of establishing bay and basin wide flow regimes. Consequently, the language in §298.230(a) seems reasonable on its face. Let us hope that this provision allows for a dialog among applicants, TCEQ staff, and affected persons regarding reasonable water rights permit terms and conditions, considering the specifics of the application under consideration.

The commission respectfully disagrees with this comment. TWC, §11.147(e-3), expressly states that: "Notwithstanding Subsections (b) - (e), for the purpose of determining the environmental flow conditions necessary to maintain freshwater inflows to an affected bay and estuary system, existing instream uses and water quality of a stream or river, or fish and wildlife habitats, the commission shall apply any applicable environmental flow standard, including any environmental flow set aside, adopted under TWC, §11.1471, instead of considering the factors specified by those subsections." TWC, §11.147(b) - (e) are the statutes regulating how the commission protected the environment prior to HB 3/SB 3. It is clear that the bill and TWC, §11.147(e-3), meant for the commission to place any environmental flow standards determined under TWC, §11.1471, in a permit for new water instead of using these other statutes and site-specific data. Under TWC,

§11.1471(d), all new appropriations or increases in the storage, taking, or diversion of water issued after an environmental flow standard is adopted must contain the standard. The commission acknowledges that further data may be developed. However, HB 3/SB 3 contemplate that this new data and new studies will be considered through adaptive management.

In the proposal preamble, the commission stated that it still retained its existing authority to place special conditions in permits to protect the environment. The intent of this statement was to clarify that the commission would use special conditions to implement the environmental flow standards for applications for new appropriations of water and applications to increase the amount of water to be taken, stored, or diverted after September 1, 2007. Additionally, the commission still has authority to use special conditions for those applications which are not for new appropriations or an increase in storage, taking, or diverting of water. The commission also notes that one of the factors considered in developing the adopted standards was consideration of human and other competing needs for water. To the extent that this balancing already occurred during the development of the adopted standards, further balancing on an application specific basis would be inappropriate. Additionally, such further balancing is not contemplated in the statute.

§298.240, Schedule for Revision of Standards

Two individuals comment that ten years is too long for TCEQ to wait to re-examine environmental flow standards. Since the water planning cycle is five years, the re-examination should occur just before each Regional Water Planning Group completes its updated Regional Water Plan. Similarly, BPA recommends that the review period stated in the proposed rule be shortened to five years instead of ten years and to allow the local stakeholders to submit work plans at any frequency the local stakeholders select. Similarly, WW comments that the ten-year period for the rules to be effective seems excessive, if it becomes clear that the environmental flow standards need to be revised sooner. Why not allow for a petition process to revise the rules in the same manner that the commission or the executive director can adjust permits, except allowing full notice and comment rulemaking?

HB 3/SB 3 preclude the commission from providing that the rulemaking process occur more frequently than once every ten years unless a stakeholder workplan approved by the advisory group calls for a more frequent schedule. At this time there is not an approved workplan for this basin and bay system. The work groups can set a more frequent schedule if they choose to. The rule was not modified in response to these comments.

BRA comments that scientific studies performed under the SB 2 process should be incorporated into the HB 3/SB 3 recommendations. It is recommended that if the SB 2

process cannot be incorporated into the process, the adaptive management process have a five-year mandatory review period and revision of the regulations by river basin until all data gaps are filled. Additionally, funding should be provided to generate the science identified by the BBESTs to fill the data gaps and make necessary, consequential adjustments to the regulations during adaptive management reviews.

The commission acknowledges the comment but notes that it is prohibited by HB 3/SB 3 from providing that the rulemaking process occur more frequently than once every ten years unless a stakeholder workplan approved by the advisory group calls for a more frequent schedule. At this time there is not an approved workplan for this basin and bay system. The work groups can set a more frequent schedule if they choose to. The rule was not modified in response to these comments.

Espey and LGRT comment that the commission notes that it is prohibited from providing a rulemaking process that occurs more frequently than once every ten years unless the stakeholders' workplan approved by the Advisory Group under TWC, §11.02362(p), calls for a more frequent schedule. Considering the historical frequency of actions of the Advisory Group, Espey, and LGRT suggest that the commission strongly consider any schedule recommended by the Trinity-San Jacinto Stakeholder Committee, regardless of its status of approval by the Advisory Group.

The commission acknowledges the comment but notes that it is prohibited by HB 3/SB 3 from providing that the rulemaking process occur more frequently than once every ten years unless a stakeholder workplan approved by the advisory group calls for a more frequent schedule. At this time there is not an approved workplan for this basin and bay system. The work groups can set a more frequent schedule if they choose to. The rule was not modified in response to these comments.

NWFSCRC comments that the basic premise of HB 3/SB 3 is that participation by a balanced representation of stakeholder interests is essential to an appropriate outcome. That basic policy is memorialized in TWC, §11.0235(d-6) and §11.02362(f)(1). That policy also must be reflected in the rules governing the commission's process for revisions of the environmental flow standards. Accordingly, the last sentence of this proposed section should be changed to read as follows: "The rulemaking process shall include participation by a balanced representation of stakeholders . . .."

The commission agrees and modified adopted §298.240 to reflect this comment.

Subchapter C: Sabine, Neches Rivers, and Sabine Lake Bay

General

NWFAF and over 1,600 individuals comment that no weakening of these proposed

standards should be considered.

The commission responds that it is not clear what the commenters would consider "weakening" of the standards. The commission considered all comments submitted in response to the proposed rules and balanced the interests in its standards. Changes were made to the rule based on comments. These changes are explained in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280.

Two individuals comment that the rules proposed by the TCEQ are inadequate to maintain a sound ecological environment for the Neches and Sabine Rivers and the Sabine Lake Estuary and request the TCEQ to select the maximum possible flows necessary to protect residents of east Texas, including wildlife and protected species.

The commission cannot respond specifically to this comment because the development of these standards involves a balancing of interests. The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. Some changes to the adopted rule were made in response to these comments. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found

in the adopted standards for §298.275 and §298.280.

NWFSCRC comments that the proposed flow standards for the Sabine and Neches basins and Sabine Lake, although marginal in some key aspects, do appear, based on information currently available, to be adequate overall to support a sound ecological environment. Friends of the Neches River and six individuals comment that the rules proposed by the TCEQ would be the bare minimum to maintain a sound ecological environment for these ecosystems but encourage the TCEQ to protect these necessary flows by staying with these bare minimum flows as originally proposed.

The commission responds that some changes to the adopted rule were made in response to comments and alternative recommendations. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280.

NWFSCRC is aware of a filing, under a letter dated December 7, 2010, on behalf of the SNBBASC, that recommends the commission should adopt a version of the proposed standards that includes only the subsistence flows, the dry condition base flows, and a version of the dry condition tier of pulse flows. NWFSCRC notes that SB 3 provides that the commission is to give specific consideration to BBASC recommendations developed under TWC, §11.02362(o), which establishes a mandatory schedule with an explicit

deadline for submission of those recommendations to the TCEQ. NWFSCRC comments that the time period for such a submission has long expired, and accordingly, this latest submission does not qualify as a BBASC report. In addition, the December 7, 2010 submission on behalf of the SNBBASC was developed largely behind closed doors rather than in the open and transparent manner aimed at achieving consensus as envisioned by SB 3. NWFSCRC comments that allowing stakeholder committees to wait to develop flow standard recommendations until after the commission has proposed draft rules, and to do so through a non-transparent process, would thwart the intricate public participation process that is at the heart of SB 3. Friends of the Neches River and more than five individuals comment that the proposal by the Sabine/Neches BBASC to reduce these instream flows will not provide adequate instream flows to protect these vital ecosystems. The Sabine/Neches BBASC attempts to balance the "needs of man" with its proposal; however, the proposal goes far beyond providing the necessary water for East Texas' future water demands and economic growth. BTA comments that the December 7, 2010 stakeholder report proposes flow standards that put potential and undocumented human needs over environmental needs. SB 2 and SB 3 were intended to protect the water needs of the environment, not urban golf courses. The TCEQ proposed standards, on the other hand, do attempt to balance environmental and human needs. They try to ensure that critical habitats have an adequate supply of water, at least most of the time.

The SNBBASC recommendations were considered as a comment, which was

considered with all of the comments submitted in response to the proposed rules. Some changes to the adopted rule were made in response to these comments. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280.

NWFSCRC comments that the December 7, 2010 submission on behalf of the SNBBASC provides almost no seasonal or inter-annuals fluctuations; provides protection only for very dry year flow levels even during normal and wet periods; provides almost no pulse flow protections; and includes no evaluation of the adequacy of the proposed flow schedule, which does not constitute an environmental flow regime, to protect a sound ecological environment. Its sole goal appears to be to propose a minimal level of flow protection in order to reduce as much as possible any potential impact on yield of hypothetical new water projects without regard to the adequacy of the standards to protect a sound ecological environment. That approach is not consistent with SB 3. In addition, the submission recommends that environmental flow standards should include an explicit limit on the amount of yield impact on proposed new projects. That is not a reasonable approach. It would amount to a determination that any new water project should be given precedence over preserving the ecological productivity of an estuary and the economic activity associated with commercial and recreational fishing and nature tourism that might be destroyed by the construction of that project. The basic premise of SB 3 is that reasonable levels of environmental flows must be protected.

As future water supply projects are developed, they must be designed to accommodate that protection. If it becomes absolutely necessary to change the standards to lessen that protection, SB 3 allows that, but only upon meeting a high burden of showing that protecting a sound ecological environment is not reasonable. Such a determination cannot be made in advance.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. The commission notes that during adaptive management, the science team and stakeholders will re-evaluate the rules to determine if more environmental protection is required. With respect to the alternate rule recommendation referenced in this comment, the commission removed the hydrologic conditions and modified some of the specific numerical values for the flow components in the adopted rule. Some changes to the adopted rule were made in response to these comments. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280.

NWFSCRC comments that the proposed standards: protect only a relatively small amount of the overall flow, regardless of hydrologic condition; provide for seasonal and annual fluctuations of flow; provide for maintaining a subset of naturally occurring

pulse flows; actually protect less overall flow, although distributing it more efficiently, than the current default methodology; and would allow more water to be available during dry hydrological conditions.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. Some changes to the adopted rule were made in response to other comments. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280.

Friends of the Neches River, Texas Conservation Alliance, and more than five individuals comment that the recommendation of the BBASC to reduce flows is unfortunately based on the desire to sell water rather than the science of necessary instream flows for a healthy and productive environment and that the proposed water needs do not represent the actual water needs of the citizens of East Texas. The BBASC's proposed "balancing act" will be damaging to these rivers and the estuary. It goes far beyond what the BBEST found to be the bare minimum necessary flows, and it violates both the spirit and letter of what the Texas Legislature intended when HB 3/SB 3 were passed.

The commission considered all of the comments and alternate

recommendations submitted in response to the proposed rules as well as commission staff's water availability analyses of the adopted standards. With respect to the alternate rule recommendation referenced in this comment, the commission removed the hydrologic conditions and modified some of the specific numerical values for the flow components in the adopted rule. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280.

Three individuals comment that while they appreciate the water needs of growing communities, they feel that the low growth rates of east Texas imply that water need not be withdrawn from critically important stream/rivers in the region. Water should not be exported from the Sabine or Neches watersheds to urban areas outside those drainages. Drought and global warming need to be considered, and metro areas should first put in place water conservation measures for all their citizens before anyone considers talking about selling water to them.

The transfer or sale of water outside of East Texas was not involved in this rulemaking. HB 3/SB 3 do not address water sales. The rule was not modified in response to this comment.

LGRT, LNVA, SRA Texas, TXOGA, and UNRMWA comment that the SB 3 periodic

review schedule should be aligned such that the review is available for the regional water planning groups to consider in each round of SB 1 regional planning (five-year cycle).

The commission responds that it is prohibited by HB 3/SB 3 from environmental flows rulemaking more frequently than once every ten years, unless the stakeholder's workplan, approved by the advisory group, calls for more frequent scheduling. The rule was not modified in response to this comment.

ANRA supports the TCEQ's decisions to not establish environmental flow set asides, to apply pulse flow standards only to large-scale projects, and to not require overbanking flows.

The commission acknowledges this comment.

Big Thicket believes that the environmental flow recommendations from the BBEST for maintenance of a sound ecological environment are balanced with water needs for other public purposes. The science team recommendations did consider additional factors such as potential operator liability, property damage, implementation issues, and water planning and development scenarios. This additional balancing is significant in that it led to a recommendation that did not include overbank flows. Big Thicket commends the Sabine-Neches BBEST for their work overall, including the balancing factors they

considered, which turned out to be prescient given the lack of recommendations from the stakeholder committee. Big Thicket also applauds the TCEQ for using the science team's recommendations as a basis for analysis for the proposed rulemaking.

The commission acknowledges this comment but notes that the adopted standards were modified in response to comments on the proposed rule. The commission removed the hydrologic conditions and modified some of the specific numerical values for the flow components in the adopted rule. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280.

Big Thicket comments that the revised standards submitted by the SNBBASC remove all of the wet season and average season flows, thus stripping away most high-flow pulses, and defaults to the dry season subsistence and base flow conditions. This new recommendation would effectively weaken environmental flow standards for the Sabine-Neches to the schedule of flow quantities recommended for the Trinity-San Jacinto. Further, the basis for these comments relies upon potential impacts to water projects that are not included in regional water plans (i.e., Big Sandy, Mineola, Rockland) and primarily measure the impacts of the TCEQ-proposed standards to no environmental flows (as opposed to comparison with the default Lyons method). Given that the TCEQ has authority in TWC, §5.506 and §11.148, plus proposed amendments to

§35.101, to temporarily make water set aside for environmental flows available for other beneficial uses (e.g., domestic, municipal, agriculture, industry, etc.) during emergency conditions, the position of a majority of stakeholders to withhold water from inclusion in an environmental flow prescription is over-protective and unnecessary.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules as well as commission staff's water availability analyses of the adopted standards. With respect to the alternate rule recommendation referenced in this comment, the commission removed the hydrologic conditions and modified some of the specific numerical values for the flow components in the adopted rule. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280.

LNVA urges the commission to incorporate in its rules and/or processes the mechanisms necessary to track and propagate to new permits the requirements placed in special conditions of permits issued under these proposed rules. In comments dated August 13, 2010, LNVA requested recognition of the contribution senior downstream water rights holders make in meeting instream flow targets. Not only is it imperative that the TCEQ recognize: 1) senior water rights; and 2) the beneficial environmental effects of bed and bank transfers to satisfy downstream water rights, but also; 3) special

conditions on downstream permits to maintain certain stream flow conditions. For example, the Neches River Saltwater Barrier, in Permit 5743 Special Condition (b)(i), is required to pass a minimum 400 cfs average daily stream flow when in salinity control operations. Therefore, permits issued in the Neches Basin after February 25, 2002 should be required to pass their pro-rata share of water to satisfy senior downstream rights, including the environmental flow requirements of those rights, such as required at the Neches River Saltwater Barrier. LNVA adds that it proposed three control points in the Neches Basin where those needs to satisfy downstream water right holders exceeded the subsistence, and in many cases, the base flow recommendations of the stakeholder report.

This rulemaking is to establish environmental flow standards that must be met. The commission has found that impacts on senior water rights should be minimal based on a water availability analysis for the adopted standards which considered all senior water rights at their fully authorized amounts. Requiring that senior water right needs be met at certain points is not part of this rulemaking and is not a requirement of HB 3/SB 3. The rule was not modified in response to this comment.

WW comments that the environmental flow standards for the Sabine and Neches Rivers and Sabine Lake Bay seem more complex and difficult to administer than the Trinity-San Jacinto Basin standards. At the same time, the complex standards are

recommended by the Bay-Basin Stakeholders group. Accordingly, in looking at each water rights permit application, TCEQ should consider how the applicant could reasonably support environmental flow standards while also balancing the water supply development aspect of the project. The commission is empowered to undertake this balancing and doing so does not negate the environmental benefits of establishing bay and basin wide flow regimes.

The commission applied balancing in formulating the rules. Commission staff used the WAM to determine the impact of the adopted standards on a future water use scenario and found that there would be no significant impact from implementation of the adopted standards. Applying additional balancing to individual permit applications, that would change the environmental flow standards, is not allowed by HB 3/SB 3. The rule was not modified in response to this comment.

One individual comments that the state must adopt the flow-standards proposals for the Neches and Sabine rivers/Sabine Lake watershed submitted by the National Wildlife Federation and Sierra Club-Lone Star.

The commission respectfully disagrees. The commission considered all comments, statutory factors, and balancing in this rulemaking and is not required to adopt any one submission.

§298.250, Applicability and Purpose

NWFSCRC comments that the language in §298.250 providing that the provisions of Subchapter C control over the provisions of Subchapter A is overbroad and could produce unnecessary ambiguity. There are numerous provisions in Subchapter A addressing issues not directly addressed in Subchapter C that should continue to apply. That language should be limited to provide that in the case of "a direct conflict," the provisions of Subchapter C control over the provisions of Subchapter A.

The commission agrees and modified §298.250 in response to this comment.

§298.255, Definitions

BRA comments that the idea of a wet, average, or dry hydrologic condition is important but has little meaning when the hydrologic condition is based on statistics for the entire period of record and implemented based on a single day at the initiation of a season. Conditions in Texas rivers and tributaries are dynamic and change rapidly, such that dry hydrologic events as identified by HEFR will be experienced during average and wet seasons and wet hydrologic events will be experienced during dry and average seasons (See §298.255(1), (2) and (7) and §298.270(a)). Consideration should be given to development of flow standards that changed according to the weather to reflect actual conditions. The National Weather Service or the River Forecast Center may be a

resource for determining actual short term hydrologic conditions based on soil moisture and weather forecasting for a more meaningful implementation.

The commission acknowledges this comment and notes that in response to other comments, the hydrologic conditions that were in proposed §298.270 have been removed from the adopted rule. The reason hydrologic conditions were removed from the adopted rule is discussed further in the adoption preamble for §298.275 and §298.280, and the modified numerical values can be found in the adopted standards for those sections. The commission will consider this comment in future rulemaking proceedings should future groups recommend hydrologic conditions.

TPWD comments that the definitions of dry and wet hydrologic conditions are predicated on "upstream storage conditions." Section 298.270 further clarifies that hydrologic conditions for each measurement point will be based on "the cumulative storage in the major reservoirs located upstream of that measurement point." However, it is not clear if the intent is to base hydrologic conditions on: 1) all reservoirs physically upstream of the location; or 2) all reservoirs physically upstream of the location and upstream of where the tributary that the location is on meets the main stem of the river. Based on the construction the figure in §298.270(b), it would appear that the intent is option (2), but this is not clearly stated in the text. If no upstream reservoirs exist (under either option (1) or (2)), there appears to be no proposed alternative. Also, the

term "major" should be defined to avoid ambiguity. Clarification is needed to address these issues.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules. Based on that review, the commission removed the hydrologic conditions in the adopted rule. These changes are discussed in the adoption preamble for §298.275. No further clarification was made in response to this comment because the adopted rule does not contain hydrologic conditions.

ANRA and FNI support the ability of each BBEST/BBASC group to define a "sound ecological environment" for their basins and bays but would like to see criteria that are measurable in those definitions. As currently proposed in §298.255, metrics to establish adaptive management for the purpose of maintaining a sound ecological environment are not identified.

The commission notes that specific monitoring and studies to support adaptive management may be included in the workplans submitted by the BBASC. At this time, there is not an approved workplan for this basin and bay system. The rule was not modified in response to this comment.

Big Thicket comments that the proposed definition of a "Sound ecological environment"

in the proposed rule is inferior to the definition proposed by the SAC and the Sabine-Neches BBEST. The proposed definition would place reservoir "habitat types" on equal footing with natural habitat features, and "important" species (i.e., non-native game fishes) on par with native species. Big Thicket recommends instead the definition used by the SAC or the BBEST, which places greater emphasis on native biodiversity and natural flow regimes and which set clearer targets for future monitoring which may be performed under a work plan.

"Sound ecological environment" is defined in adopted §298.255(3). The stakeholders made this finding. The stakeholders with their broader mandate considered additional factors in developing their definition of sound ecological environment. The commission gave deference to the finding made by the stakeholders, who considered input from the science team for the basin and bay system. The science team considered the available science as of this date and there is no evidence that the adopted standards would not support a sound ecological environment. The adopted standards are not based solely on scientific information. The commission followed its instructions in the TWC by balancing human and other competing needs for water with the scientific recommendations. The rule was not modified in response to this comment.

§298.260, Findings

One individual would like to know what TCEQ means when it says that "The Sabine and Neches Rivers, their associated tributaries, Sabine Lake Bay, and associated Sabine-Neches estuary are substantially sound ecological environments . . ..The commission finds that this sound ecological environment." TCEQ must state what "substantially sound ecological environments" and "sound ecological environment" mean; what the difference between these two are because of their wording difference; why one is plural and one is singular; and tell how this determination was derived.

"Sound ecological environment" is defined in adopted §298.255(3). The stakeholders made this finding. The commission gave deference to the finding made by the stakeholders, who considered input from the science team for the basin and bay system. The science team considered the available science as of this date and there is no evidence that the adopted standards would not support a sound ecological environment. The adopted standards are not based solely on scientific information. The commission followed its instructions in the TWC by balancing human and other competing needs for water with the scientific recommendations. The rule was not modified in response to this comment.

Big Thicket comments that the TCEQ's finding that the Sabine and Neches Rivers, their associated tributaries, Sabine Lake Bay, and the associated Sabine-Neches estuary are substantially sound ecological environments is not supported by present water quality

or ecological criteria. Waters of Big Thicket National Preserve are impaired under several state standards. Water quality impairments within the Preserve include elevated mercury levels in fish, elevated bacteria, depressed dissolved oxygen, and low pH. Ecologically, some species of fish and freshwater mussels are not presently on a sustainable trajectory under current conditions. Altered flow regimes have been identified as a contributor (among others) to these declines. More than 90% of the wetland marshes of the Neches River delta have been converted to open water, and non-native species (plants and animals) are present in the basin's waters and can negatively impact native species, ecosystems, and other public benefits. While historic conditions achieved a sound ecological environment, present conditions are measurably degraded. Big Thicket recommends a frank acknowledgement of the ecological condition of the basin's waters and that achieving a sound ecological environment will require active restoration and recovery of habitats and species. USFWS comments that the TCEQ provides no scientific basis for the statement that the basin has a sound ecological environment and is concerned that this basin may not be sound for several reasons. There have been significant losses of riparian wetlands and bottomland forest, populations of migratory birds that depend on bottomland forest have declined, several species of mollusks are either listed by the State, are species of concern, or have been petitioned for listing under the Endangered Species Act, and several stream segments do not meet water quality standards. In the bays and estuaries, significant wetlands have been lost, several commercially and recreationally important fisheries are in decline, fish consumption advisories are in place, several species of wetland-dependent birds are in

decline, a negative sediment budget prevails, and millions of dollars have been expended and continue to be sought to restore important wetlands and biological resources. Some of these issues are directly related to changes in hydrology while others are indirectly related. There were limited to no analyses or references provided by the BBEST, BBASC, or TCEQ to support the claim that the riverine and estuarine environments are sound. USFWS recommends further analysis to determine whether the basin is a sound ecological environment consistent with the SAC and TIFP definitions and further recommends that factors associated with hydrological modifications and those that are independent be segregated in the analyses. An alternative approach would be to equate a sound ecological environment to baseline conditions, thereby dispensing with historical changes through time and the negative effects of some of these changes.

"Sound ecological environment" is defined in adopted §298.255(3). The stakeholders made this finding. The stakeholders with their broader mandate considered additional factors in developing their definition of sound ecological environment. The commission gave deference to the finding made by the stakeholders, who considered input from the science team for the basin and bay system. The science team considered the available science as of this date and there is no evidence that the adopted standards would not support a sound ecological environment. The adopted standards are not based solely on scientific information. The commission followed its instructions in the TWC by balancing human and other

competing needs for water with the scientific recommendations. The rule was not modified in response to this comment.

NWFSCRC comments that the proposed flow regime includes three levels of base flows and that those levels should be reflected in the text of the proposed findings, consistent with the reference to two levels of high flow pulses.

The commission considered all of the comments and alternate recommendations submitted in response to the proposed rules, as well as commission staff's water availability analyses. With respect to three levels of base flow, after considering all relevant factors, including human needs for water, the commission is removing the hydrologic conditions and including only one level of base flow in the adopted standards. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280.

§298.265, Set-Asides and Standards Priority Date

TPWD notes that §298.265 states that the priority date for set-asides and environmental flow standards will be November 30, 2009. However, set-asides are not proposed and TPWD does not believe that priority dates are appropriate for environmental flow standards. LGRT notes that in §298.265, the ED proposes to assign priority dates for

both environmental flow set-asides and environmental flow standards. LGRT comments that the prior appropriation doctrine in Texas and elsewhere in the Western United States is the primary foundation for surface water rights management, and the doctrine has been the subject of significant case law and agency policy for well over 100 years. Therefore, enveloping environmental flow standards with the concept of priority, and arguably making such standards subject to the prior appropriation doctrine, should be avoided if not absolutely necessary. LGRT comments that environmental flow standards should not be assigned priority dates, as they should be considered as flows reserved from appropriation, unlike environmental flow set-asides, which should be considered as stand-alone water rights that would be cloaked with priority. LGRT comments that SB 3/HB 3 did not provide and does not require that environmental flow standards be assigned priority but agrees that SB 3/HB 3 made it clear that the environmental flow set-asides are to be assigned priority.

The commission responds that the priority date for the environmental flow standards will be used in water rights permitting in the water availability model runs used for water availability analyses. The function of a priority date in the water availability model is to ensure that water rights are processed in seniority order. With respect to environmental flow standards, using a priority date in the water availability model ensures that the standards do not apply to existing senior water rights and do apply to new appropriations of water. By including the standards in the WAM with a

priority date, the commission protects pulse flow standards from being permitted to smaller applicants to whom the standards apply. In addition, including the standards in the WAM with a priority date ensures that new appropriations will not affect downstream flow standards. The priority date has no other purpose. The commission has clarified the language in §298.265 in response to these comments.

§298.270, Calculation of Hydrologic Conditions

LGRT, Big Thicket, TPWD, UNRMWA, ANRA, and FNI all expressed concerns with, requested clarification on, or suggested changes to various aspects of the hydrologic condition determination proposed in §298.270 of the draft rule.

With respect to three levels of base flow, after considering all relevant factors, including human needs for water and responses to comments, the commission is removing the hydrologic conditions and including only one level of base flow in the adopted standards. Section 298.270, Calculation of Hydrologic Conditions,is withdrawn from proposal. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280.

§298.275, Schedule of Flow Quantities

ANRA and FNI support the TCEQ's approach to meet the pulse criteria by either duration or volume for a qualifying pulse. However, the rules are vague as to how a qualifying event for a pulse will be documented and recorded for compliance with the instream flow criteria. ANRA and FNI recommend that more definitive language be added to the rule that recognizes compliance with meeting the instream flow standard should a water right holder cease diversions and/or storage for the specified volume or time. Should the specified volume pass the measurement point without ceasing diversions or storage, the qualifications for a pulse event should be considered met.

A water right holder to whom these rules apply can divert or store water subject to special conditions in their permit. Those special conditions could include accounting plans or other means to determine whether a water right holder is in compliance with its permit requirements related to pulse flows. Once a pulse requirement is met, a water right holder can divert flows greater than the subsistence or base flows, depending on which flow requirement applies. The adopted rule also requires that a water right holder not divert or store water until the specified volume or duration requirements are met after the peak flow trigger level occurred. This requirement allows a water right holder to divert or impound flows above the high flow pulse peak value subject to the needs of senior water rights and other special conditions included in an individual permit. The rule was not modified in response to this comment.

FNI comments that the rules define a high flow pulse as beginning when the peak flow criterion is met; this is inconsistent with the method used by the Sabine-Neches BBEST. FNI agrees that a simpler method of identifying a pulse may be more practical than the complex method employed by the BBEST. TCEQ may want to consult with the stakeholder and science groups to determine how duration or volume criteria should be adjusted based on the revised definition.

The commission agrees that the science team used different methods to generate their specific numeric recommendations for pulse flows. However, the commission responds that the methods adopted in the rule to determine compliance with the standards must be both practical and enforceable. The commission acknowledges that further data may need to be developed, or existing data may need to be adjusted. However, HB 3/SB 3 contemplate that additional data and/or studies will be considered through adaptive management. The rule was not modified in response to this comment.

UNRMWA comments that in the schedule of flow quantities, TCEQ proposes that under wet conditions two smaller magnitude high flow pulses and one larger magnitude high flow pulse be allowed to pass during a three-month season. This is clearly in conflict with the Sabine-Neches BBEST report (page.180), which specifies that only one larger

magnitude high flow pulse need be allowed to pass during a three-month season under wet hydrologic conditions. If TCEQ chooses not to adopt the BBASC recommendation, which includes only one seasonal tier of high flow pulse and excludes determination of hydrologic condition, it is respectfully requested that the TCEQ modify its draft rules for consistency with the BBEST report.

With respect to the large magnitude high flow pulse, after considering all relevant factors, including human needs for water and response to comments, the commission is removing the hydrologic conditions and including only one level of pulse flows in the adopted standards. The adopted rule has been modified to delete hydrologic conditions and the adopted rule only includes one level of base flows and one level of high flow pulses. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280.

TPWD comments that the BBEST used the HEFR default parameters to identify subsistence flow recommendations, which, in large part because of the hydrographic separation approach taken by the BBEST, results in flows around the 2nd percentile. In some seasons, the hydrographic separation procedure did not identify any subsistence flows, and the BBEST ultimately recommended the larger of the minimum flow ever recorded in that season or the summertime subsistence flow recommendation. The end

result is subsistence flows that are very low and generally represent flows lower than those where water quality data have been collected. These flows have no biological justification and very limited water quality justification. In the Sabine and Neches basins for this process, TPWD supports the use of the seasonal 5th percentile of flows (also referred to as the Q95) for subsistence flows until further monitoring and research on flow-ecology relationships is available. The Q95 statistic, while not based on site-specific data, has been used in several other instream flow studies around the world, including some in Texas, and was endorsed by most members of the BBEST biology committee.

Commission staff reviewed the numerical values in the proposed standards in response to comments and performed a water quality analysis on the adopted standards. The water quality analysis considered the relationship between water quality parameters, identified by the science team, and streamflows to look for trends and criteria excursions. This analysis did not identify any areas of concern. The commission acknowledges that there is less data available at lower flow levels. This issue may be addressed in the workplan for this bay and basin system. The rule was not modified in response to this comment.

TPWD comments that in the Sabine and Neches basins for this process it supports the use of a minimum threshold of the 7Q2 (except at sites downstream of the hydropower

dams, i.e., Neches River at Evadale, Sabine River near Ruliff, and Sabine River near Bon Wier). The 7Q2 flow is used by TCEQ as a flow standard in routine water right permit conditions to minimize the risk that diversions will lead to water quality problems, at least when no modeling is available to determine flows necessary to maintain water quality standards. It is also a minimum threshold in the consensus water planning environmental flow criteria and was recommended by the Technical Review Group in 2008 that reviewed desktop methods. TPWD is not aware of any modeling that has been done to determine if flows less than 7Q2 would maintain standards. 7Q2 flows would be more protective of water quality conditions and should be used as a minimum threshold at all control points other than those downstream of hydropower dams (given their influence on the magnitude of 7Q2) until modeling, monitoring, and research on flow-ecology relationships under subsistence and base flow conditions are available.

Commission staff reviewed the numerical values in the proposed standards in response to comments and performed a water quality analysis on the adopted standard. The water quality analysis considered the relationship between water quality parameters, identified by the science team, and streamflows to look for trends and criteria excursions. This analysis did not identify any areas of concern. The commission acknowledges that there is less data available at lower flow levels. This issue may be addressed in the workplan for this bay and basin system. The rule was not modified in response to this comment.

ANRA and FNI comment that the language is not clear as to when the subsistence flow criteria will apply versus the base flow criteria for the dry conditions. There are definitions of dry, average, and wet conditions, but there is no definition for subsistence conditions. As currently written, §298.275(b) and (c) appear to conflict under dry conditions. In §298.275(c), the permit holder would never be able to divert below the base flows as defined in §298.280 under dry conditions.

With respect to three levels of base flow, after considering all relevant factors, including human needs for water and responses to comments, the commission is removing the hydrologic conditions and including only one level of base flow in the adopted standards. The adopted rule has been modified to delete hydrologic conditions and the average and wet base flow levels. This change will also clarify that a water rights owner cannot divert if flows are below the applicable subsistence flow and may divert down to the subsistence flow if flows are between the applicable base flow level and subsistence flow level. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280.

LGRT requests further clarification in proposed §298.275 on whether all flow conditions

"reset" each month? In other words, does the standard reset to subsistence flow if other flow conditions were not maintained in the month prior (e.g., subsistence and base flows)?

The adopted rules state that each season is independent of the preceding and subsequent seasons with respect to high flow pulses. The subsistence and base flow standards are based on the flow conditions in the stream at the time a water right holder diverts water. To the extent that monthly values for these flow components are different in different months, the water right owner would only be able to divert if the flow requirement for that month is met. The commission notes that the adopted rule was modified in response to other comments, which should clarify this issue. The changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280.

LGRTsuggests that §298.275 needs to reflect the following: given that subsistence flows are based on the median of the lowest 10th percentile of base flows, the proposed subsistence flows should not be considered the minimum required flow when site-specific data can be provided, or as better science is secured.

The commission respectfully disagrees with this comment. TWC, §11.147(e-

3), expressly states that: "Notwithstanding Subsections (b) - (e), for the purpose of determining the environmental flow conditions necessary to maintain freshwater inflows to an affected bay and estuary system, existing instream uses and water quality of a stream or river, or fish and wildlife habitats, the commission shall apply any applicable environmental flow standard, including any environmental flow set aside, adopted under TWC, §11.1471, instead of considering the factors specified by those subsections." TWC, § 11.147(b) - (e) are the statutes regulating how the commission protected the environment prior to HB 3/SB 3. It is clear that the bill and TWC, §11.147(e-3), meant for the commission to place any environmental flow standards determined under TWC, §11.1471, in a permit for new water instead of using these other statutes and site-specific data. Under TWC, §11.1471(d), all new appropriations or increases in the storage, taking, or diversion of water issued after an environmental flow standard is adopted must contain the standard. The commission acknowledges that further data may need to be developed. However, HB 3/SB 3 contemplate that this new data and new studies will be considered through adaptive management. The rule was not modified in response to this comment.

LGRT requests further clarification in proposed §298.275 on how the executive director will implement pulse flows in evaluating applications when the WAM is based on a monthly time-step and how pulses will be addressed over a period of days when the

executive director evaluates applications subject to the rules. LGRT comments that the rules need to clarify that, once pulse requirements for a season are met, no additional passage of pulse flows is required and water rights holders may immediately divert flows greater than the subsistence flow.

The SAC guidance document "Consideration of Methods for Evaluating Interrelationships Between Recommended SB-3 Environmental Flow Regimes and Proposed Water Supply Projects" notes that the monthly WAM is "recognized as the superior method with regard to effectively representing both water availability, consistent with the way TCEQ would evaluate a permit application, and e-flow requirements in the same analysis." To determine availability for future applications for new appropriations of water which are subject to these rules, the commission will use the TCEQ WAM. The commission also notes that individual permit applications are different; therefore, special conditions may need to vary for those permits. The commission will implement these standards in each permit granted for a new appropriation of water. At this point in the process the commission will examine permits as they come in to determine how to implement the standards in different permits.

A water right holder may divert or store water subject to special conditions in its permit. Once a pulse requirement is met, a water right holder may

divert flows greater than the subsistence or base flows, depending on which flow requirement applies. The rule was modified in response to other comments. These changes can be found in §298.275(d)(1).

Big Thicket comments that the proposed rule may not adequately provide for sufficient fluvial sediment transport, fluvial geomorphic processes, and alluvial and estuarine sediment deposition. The reason for this is that the cumulative majority of sediment transport is expected to occur during high-pulse flows and overbank flows, and that under these recommendations these flow components may occur less frequently than the historical frequency of occurrence (high-flow pulses) or not be recommended (overbank flows). It is important to address sediment transport in future study under the work plan. Big Thicket recommends that monitoring of all flow components at the 11 measurement points in the basin, including scheduled and unscheduled high-flow pulses and naturally occurring overbank flows, be undertaken by TCEQ to gauge whether the historical frequency, duration, and magnitude of such flows is attained. The failure to attain high-flow and overbank flows, or other evidence of channel disequilibrium (e.g., reduction in bed-material load) could indicate insufficient sediment transport and the need to adaptively manage environmental flow standards.

The science team considered the best available science at the time these rules were developed. The commission agrees that this issue can be addressed in the workplan for the basin. To the extent that additional

information becomes available through monitoring and studies undertaken under the workplan, the science team could consider that information in future deliberations. The rule was not modified in response to this comment.

NWFSCRC comments that the proposed rules do not describe how the determination is to be made about whether a measurement point "applies to a water right" and suggests adding the following sentence to the end of §298.275(b): "Permit conditions will be imposed, as appropriate, to establish individual permit subsistence flow values, based on a watershed area basis, in order to ensure that flows immediately below the diversion or storage point are adequately protected consistent with applicable flow standards." The rules should expressly provide for the commission to include language in individual permits specifying the applicability of measurement points as listed in the rules or specifying alternate measurement points, specific to the permit at issue, with associated flow levels. Those permit-specific conditions would reflect an appropriate adjustment of flow values to account for local considerations based on factors such as watershed-area ratio or significant springflow contributions and available channel-loss information. The rules should provide discretion for the commission to specify the appropriate measurement point and value in individual permits.

The commission agrees, in part, with this comment. For subsistence flows, a watershed area ratio may be appropriate. The commission will

implement these standards in each permit granted for a new appropriation of water. However, at this point in the process, the commission needs the flexibility to examine permits as they come in to determine how to implement the standards in different permits. The rule was not modified in response to this comment.

NWFSCRC suggests inserting the word "applicable" into the first sentence of §298.275(b), so it reads as follows: "(b) Subsistence flow. For a water right holder . . . unless the flow at the measurement point is above the applicable subsistence flow standard."

The commission agrees and modified the rule to reflect this comment.

NWFSCRC comments that during normal and wet conditions, diversions should not be authorized below base flow levels and suggests changing the second sentence of §298.275(b) to read as follows: "During dry hydrologic conditions, if the flow at the measurement point is above the subsistence flow standard but below the applicable base flow standard, then the water right holder may divert . . .." It is important to make clear in the rules because the flow standards in §298.280 do not establish applicable subsistence flow values for average and wet conditions.

With respect to three levels of base flow and hydrologic conditions, after

considering all relevant factors and responses to comments, including human needs for water, the commission is removing the hydrologic conditions and including only one level of base flow in the adopted standards. Hydrologic condition triggers were removed from the adopted rule, and the adopted rule only includes one level of base flows. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280. The rule was not modified in response to this comment.

LGRT comments that §298.275(b) - (d) includes provisions restricting an appropriator's right to store or divert water pursuant to its impoundment rights until certain hydrologic events have occurred, i.e., the subsistence requirement (b), the base flow requirement (c), or the pulse flow requirements (d) have each been met. LGRT comments that it should be made clear in these rules that an appropriator that has lawfully stored inflows pursuant to its water right, and in compliance with whatever environmental flow standard, regime, or requirement existed at the time of such storage, may lawfully divert water from storage, even when an environmental flow standard adopted pursuant to the rules would not allow the appropriator to store or divert inflows during such time period.

The commission agrees and has added §298.275(e) to the adopted rule to

clarify this issue.

NWFSCRC comments that the proposed rules do not describe how the determination is to be made about whether a measurement point "applies to a water right." Language should be added to the rules explaining how that determination will be made for individual permits or amendments and suggests adding the following sentence to the end of §298.275(c): "Permit conditions will be imposed, as appropriate, to establish individual permit measurement points and base flow values, normally calculated on a watershed area basis, in order to ensure that flows immediately below the diversion or storage point are adequately protected consistent with applicable flow standards." The rules should expressly provide for the commission to include language in individual permits specifying the applicability of measurement points as listed in the rules or specifying alternate measurement points, specific to the permit at issue, with associated flow levels. Those permit-specific conditions would reflect an appropriate adjustment of flow values to account for local considerations based on factors such as watershed-area ratio or significant springflow contributions and available channel-loss information. The rules should provide discretion for the commission to specify the appropriate measurement point and value in individual permits.

The commission agrees, in part, with this comment. For base flows, a watershed area ratio may be appropriate. The commission will implement these standards in each permit granted for a new appropriation of water.

However, at this point in the process, the commission needs the flexibility to examine permits as they come in to determine how to implement the standards in different permits. The rule was not modified in response to this comment.

NWFSCRC suggests changing the third sentence of §298.275(c) to read as follows: "For a water right holder to which an environmental flow standard applies . . . but below any applicable high flow pulse trigger levels . . .."

The commission agrees and the rule was modified to reflect this comment.

LGRT, LNVA, SNBBASC, TXOGA, and UNRMWA comment that no requirement to pass through high flow pulses in excess of the SNBBASC recommended flow regime should be imposed on a water supply reservoir operator until a liability shield is in place.

The commission responds that the pulses it is protecting are not calculated to result in water flowing out of the banks of the river. A liability shield is beyond the scope of this rulemaking. The commission has no authority to require a liability shield for high flow pulses. The rule was not modified in response to this comment.

ANRA and FNI suggest adding language to §298.275 that specifically states that when

the pulse criteria for the season have been met, no additional pulses are required and the water right holder does not have to cease diversions if a pulse trigger occurs.

Adopted §298.275 states that each season is independent of the preceding and subsequent seasons with respect to high flow pulses. The commission believes that this provision is adequate to convey that no catch up is required. A water right holder can divert or store water subject to special conditions in its permit. Once a pulse requirement is met, a water right holder can divert flows greater than the subsistence or base flows, depending on which flow requirement applies. The rule was not modified in response to this comment.

UNRMWA notes that the TCEQ proposes that a "water right holder shall not divert or store water" until a specified volume of water or duration of time has passed. This conflicts with the Sabine-Neches BBEST report which specified that "all inflow up to the high flow pulse peak value must be passed" until a specified volume of water or duration of time has passed. It is respectfully requested that the TCEQ modify or clarify its draft rules to provide for diversion or impoundment of inflows above the high flow pulse peak value to the extent available subject to senior water rights as recommended by the BBEST.

The commission acknowledges this comment. The adopted rule requires

that a water right holder not divert or store water until the specified volume or duration requirements are met after the peak flow trigger level occurred. This requirement allows a water right holder to divert or impound flows above the high flow pulse peak value subject to the needs of senior water rights and other special conditions included in an individual permit. The rule was not modified in response to this comment.

TPWD believes that the schedule of high flow pulses in the proposed rules does not provide adequate flow variability and maintenance of critical ecological functions needed to maintain a sound ecological environment. While the BBEST classified a substantial majority of days as high flow pulse events, the proposed rules only provide for: 1) one small pulse per spring and summer during dry conditions; 2) two small pulses per season during average conditions; and 3) one large pulse plus two small pulses per season during wet conditions. The schedules of high flow pulses evaluated by the BBEST's consultant, the National Wildlife Federation, in its separate analyses of adequate freshwater inflows to Sabine Lake, and TWDB in its analysis of sediment transport, were all higher than that ultimately recommended by the BBEST and proposed by the TCEQ. TPWD believes that because of the small size of the proposed high flow pulses, and the clear understanding that they be passed if naturally occurring (but not required to be produced by legally impounded water), that two small high flow pulses and one large high flow pulse be set as the standard for each season regardless of hydrologic condition. If a large high flow pulse occurs in the season, then it would count

as one of the two required small high flow pulses.

The commission followed its instructions in the TWC to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards when drafting the adopted rules. The commission also considered staff's water availability analyses on the adopted standards. With respect to high flow pulses, after considering all relevant factors, including human needs for water, the commission is removing the hydrologic conditions and including only one level of base flow and one level of pulse flows in the adopted standards. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280. The rule was not modified in response to this comment.

NWFSCRC suggests changing the semicolon after "short-duration" to a comma in §298.275(d).

The commission agrees and the rule was modified to reflect this change.

NWFSCRC suggests changing the word "peak" to "pulse" throughout §298.275(d).

The commission agrees and the rule was modified to reflect this comment.

BRA comments that the sentence in §298.275(d)(1) "The water right holder shall not divert or store water until either the volume amount has passed the measurement point or the duration time has passed since the peak flow trigger rate occurred" imposes a condition inconsistent with the development of the hydrologic statistics that may result in an imbalance in the environment and water supply. It also imposes a condition that does not exist in nature. In many cases a water supply diversion would have minimal impact on the characteristics and ecological functions of a pulse, and curtailment of that diversion would not truly enhance the environment. It is recommended that diversions should not be curtailed but regulated during a high flow pulse. Several ideas that may be used to regulate diversions during a high flow pulse event include: 1) apply a diversion rate limit based on percent impact to the pulse; 2) apply a "diversion rate threshold" to establish a constant diversion rate limit during pulses; and 3) allow diversion limited to the difference between the actual peak discharge of the pulse and the high flow pulse criteria. Lastly, since statistics used to define the pulse days and pulse volume were based on the entire pulse, from start to finish and not from peak to finish, it is recommended that: 1) the water right holder be allowed to divert once the volume and the peak or the duration and the peak are met from the beginning of the high flow pulse event; or 2) recalculate the volume and duration flow recommendations beginning at the peak of the high flow pulse.

The commission acknowledges the comment. These are interesting concepts that future science teams may want to consider and the science team for this basin may also want to consider as it studies conditions in the basins for the next round of recommendations. The commission considered the recommendations of the science team and stakeholders for the basin and bay systems. The adopted rule was based in part on the specific recommendations of the expert science team. The comments to the proposed rule provided by the stakeholder group in this area did not make changes to the science team recommendation. While other methods to implement and manage high flow pulse requirements may be recommended in other areas, these rules were not modified in response to this comment.

NWFSCRC comments that the proposed rules do not describe how the determination is to be made about whether a measurement point "applies to a water right" and suggests changing the first sentence of §298.275(d)(1) to read as follows: "Two smaller magnitude pulses per season are to be passed (i.e., no storage or diversion by the applicable water right holder), if the hydrologic conditions is average or wet, and if the applicable pulse flow trigger level is met at a measurement point that applies to the water right." In addition, the third sentence of §298.275(d)(1) should be modified by replacing "the measurement point" with "an applicable measurement point."

NWFSCRC also suggests inserting the following sentence between the second and third sentences of §298.275(d)(1): "Permit conditions will be imposed, as appropriate, to establish individual permit measurement points and pulse flow values, normally calculated on a watershed area basis, in order to ensure that flows immediately below the diversion or storage point are adequately protected consistent with applicable flow standards." The rules should expressly provide for the commission to include language in individual permits specifying the applicability of measurement points as listed in the rules or specifying alternate measurement points, specific to the permit at issue, with associated flow levels. Those permit-specific conditions would reflect an appropriate adjustment of flow values to account for local considerations based on factors such as watershed-area ratio or significant springflow contributions and available channel-loss information. The rules should provide discretion for the commission to specify the appropriate measurement point and value in individual permits.

Although it is possible that a watershed area basis may be appropriate for subsistence or base flows, time lag effects and tributary stream effects would make this method inappropriate for translating pulse flow conditions to other points in the watershed. The commission will implement these standards in each permit granted for a new appropriation of water. However, at this point in the process, the commission will examine permits as they come in to determine how to implement the standards in different permits. In addition, the measurement point that

would be applicable to a water right depends on the specific fact situation for an application for a new appropriation of water. The measurement point applicable to a specific application could take into consideration the geographic extent of the impacts resulting from that application. Individual permit applications are different; therefore, special conditions may need to vary for those permits. The rule was not modified in response to this comment.

NWFSCRC comments that based on its understanding of the BBEST recommendations on which the proposed rules are based, flows above the specified peak flow trigger rate could be available for diversion even prior to the time that the flow volume has been satisfied or the pulse duration has been satisfied. NWFSCRC proposes changing the second sentences of §298.275(d)(1) and (2) to read as follows: "The water right holder shall not divert or store water, except during times that flows immediately downstream equal or exceed the applicable pulse flow trigger rate, until either the volume amount has passed the measurement point, or the duration time has passed since the pulse flow trigger rate occurred."

The commission agrees and the rule was modified, in part, to reflect this comment. The modification did not include the language "immediately downstream" because the measurement point that would be applicable to a water right depends on the specific fact situation for an application for a

new appropriation of water. The measurement point applicable to a specific application could take into consideration the geographic extent of the impacts resulting from that application. In addition, the commission also modified the adopted rule to add §298.275(e) to clarify that a water right holder who has lawfully stored inflows pursuant to its water right in compliance with these standards, may divert that water from storage during a later time period, even when an environmental flow standard adopted pursuant to the rules would not allow the appropriator to store or divert inflows during that later time period.

TPWD comments that for high flow pulses, the draft rules appear to require passage of all flows until either the volume or duration is achieved. Section 298.275(d)(1) states "The water right holder shall not divert or store water until either the volume amount has passed the measurement points, or the duration time has passed since the peak flow trigger rate occurred." However, in oral descriptions of the intent of this text, the TCEQ has allowed that diversions above the peak flow trigger rate would be permissible. This latter interpretation is consistent with the BBEST recommendation, but it seems contrary to the proposed rule. TPWD supports the diversion prohibition. At a minimum, it would appear that the rule text should be modified for clarity.

The adopted rule requires that a water right holder not divert or store water until the specified volume or duration requirements are met after the peak

flow trigger level occurred. This requirement allows a water right holder to divert or impound flows above the high flow pulse peak value subject to the needs of senior water rights and other special conditions included in an individual permit. The rule was not modified in response to this comment.

TPWD believes that a simple passage of the required duration is inadequate and that both duration and volume should be protected, as in the following suggested text for §298.275(d)(1): "The water right holder shall not divert or store water below the peak flow trigger rate until both the volume amount has passed the measurement points and the duration time has passed since the peak flow trigger occurred."

The commission respectfully disagrees with this comment because requiring both the volume and duration requirements to apply would be inconsistent with how the requirements were derived and with the BBEST recommendations. The rule was not modified to reflect this comment.

NWFSCRC comments that the proposed rules do not describe how the determination is to be made about whether a measurement point "applies to a water right" and suggests changing the first sentence of §298.275(d)(2) to read as follows: "During wet conditions and in addition to the two smaller-magnitude pulses, a single larger-magnitude pulse must be passed if the applicable pulse flow trigger level is met at a measurement point that applies to the water right." In addition, the second sentence of §298.275(d)(2)

should be modified by replacing "the measurement point" with "the applicable measurement point." NWFSCRC also suggests adding the following sentence to the end of §298.275(d)(2): "Permit conditions will be imposed, as appropriate, to establish individual permit measurement points and pulse flow values, normally calculated on a watershed area basis, in order to ensure that flows immediately below the diversion or storage point are adequately protected consistent with applicable flow standards." The rules should expressly provide for the commission to include language in individual permits specifying the applicability of measurement points as listed in the rules or specifying alternate measurement points, specific to the permit at issue, with associated flow levels. Those permit-specific conditions would reflect an appropriate adjustment of flow values to account for local considerations based on factors such as watershed-area ratio or significant springflow contributions and available channel-loss information. The rules should provide discretion for the commission to specify the appropriate measurement point and value in individual permits.

The commission agrees, in part, with this comment. For subsistence flows, a watershed area ratio may be appropriate. The commission agrees that it will implement these standards in each permit granted for a new appropriation of water. However, at this point in the process, the commission will examine permits as they come in to determine how to implement the standards in different permits. In addition, the measurement point that would be applicable to a water right depends on

the specific fact situation for an application for a new appropriation of water. The measurement point applicable to a specific application could take into consideration the geographic extent of the impacts resulting from that application. Individual permit applications are different; therefore, special conditions may need to vary for those permits. The rule was not modified in response to this comment.

NWFSCRC comments that based on its understanding of the BBEST recommendations on which the proposed rules are based, flows above the specified peak flow trigger rate could be available for diversion even prior to the time that the flow volume has been satisfied or the pulse duration has been satisfied. NWFSCRC proposes changing §298.275(d)(2) to read as follows: "A water right holder shall not divert or store water, except during times that flows immediately downstream equal or exceed the applicable pulse flow trigger rate, until either the volume amount has passed the applicable measurement point, or the duration time has passed since the pulse flow trigger rate occurred."

The commission agrees and the rule was modified, in part, to reflect this comment. The modification did not include the language "immediately downstream" because the measurement point that would be applicable to a water right depends on the specific fact situation for an application for a new appropriation of water. The measurement point applicable to a

specific application could take into consideration the geographic extent of the impacts resulting from that application. In addition, the commission also modified the adopted rule to add §298.275(e) to clarify that a water right holder who has lawfully stored inflows pursuant to its water right in compliance with these standards, may lawfully divert that water from storage, even when an environmental flow standard adopted pursuant to the rules would not allow the appropriator to store or divert inflows during a later time period.

BRA comments that it is beneficial to state that a water right holder is not required to produce a pulse from storage and that pulses occur because of high rainfall events. This statement as currently drafted in the proposed rules adds clarity to the expectation on the actions required for meeting pulse requirements. No change to this language is recommended.

The commission acknowledges this comment.

BRA comments that the importance of the concept of seasonality is recognized considering a linkage between flow and ecology is established. BRA agrees, as stated, that there should be no requirement for carry-over of pulse requirements from one season to another, if the previous season did not meet its pulse minimum. Trying to "catch up" in the summer quarter for a missed pulse in the spring quarter will do little to

help aquatic species. This "catch-up" issue is discussed in the Background and Summary of the proposed rules but is not clearly articulated in §298.275(d)(4). It is recommended that language in this section be clarified to articulate that there is no need for "catch-up" if the mandated pulses are not observed in one season.

The adopted rules for this basin and bay system state that each season is independent of the preceding and subsequent seasons with respect to high flow pulses. This provision is adequate to convey that no catch up is required. As stated in the preamble, if, in a particular season, depending on the seasonal requirement, either none or one of the high flow pulses identified in the adopted rule is generated, then there would be no need to "catch up" or allow more than one or two high flow pulses to pass in the following season. The rule was not modified in response to this comment.

§298.280, Environmental Flow Standards

SNBBASC proposes that the TCEQ replace its proposed environmental flow standards with those submitted in Table 1, which includes seasonal subsistence flows and seasonal base flows equal to the dry condition base flows in the proposed rule. It also includes one pulse per season for Spring and Fall; the pulse trigger, volume, and duration are equal to those for the small pulse in the proposed rule. Measurement points are the same with the exception of Sabine River near Bon Wier, which is proposed to not be used at this time.

The commission agrees that USGS gage 08028500, Sabine River at Bon Weir, should not be used as a measurement point at this time and the adopted rule does not include this point. With respect to the number of pulse flows, including only one pulse per season for the Spring and Fall would not be sufficiently protective of the environment. A sufficient number of pulses are required to ensure adequate inflows to Sabine Lake. The adopted rule requires one pulse per season in the Summer and Winter, and two pulses per season in the Spring and Fall, with the pulse trigger, volume and duration equal to the small pulse in the proposed rule.

NWFAF and more than 1,600 individuals comment that the proposed subsistence flow levels are too low and should be increased. BTA would like to see higher subsistence flow standards. Those in the TCEQ proposals are a bit too low. The subsistence flow standards are extremely important for the salinity of Sabine Lake and the accompanying marshes. Those marshes are the nursery for a large amount of both fin fish and shell fish, which are very important for commercial reasons and recreation. Big Thicket and Texas Conservation Alliance support the strengthening of the subsistence flow values across all measurement points in the proposed rule, recalculating subsistence flow as the 5th percentile flow. NWFSCRC comments that the subsistence flow levels should be increased to reflect the flow value that has been exceeded 95% of the time over the full period of record. The recommended flow values are inadequate and certainly do not

allow a margin of safety adequate to account for the reality that it will not be possible to achieve perfect implementation of the new standards. NWFSCRC also comments that, as noted by TPWD, the use of such low flow values, generally in the 1st to 3rd percentiles, could, as water use increases, lead to serious impacts to fish and wildlife resources. TPWD proposes a schedule of subsistence flow values to be placed in the tables in §298.280.

Commission staff reviewed the numerical values in the proposed standards in response to comments and performed a water quality analysis on the adopted standards. The water quality analysis considered the relationship between streamflow and the water quality parameters identified by the science team to look for trends and criteria excursions. This analysis did not identify any areas of concern. The commission acknowledges that there is less data available at lower flow levels. This issue may be addressed in the workplan for this bay and basin system. To the extent that additional information becomes available through monitoring and studies undertaken under the workplan, the science team could consider that information in future deliberations. The rule was not modified in response to this comment.

Big Thicket suggests that constraints be placed upon the environmental flow standard tables to ensure that subsistence flow does not occur more frequently or for longer

durations than have occurred in the pre-impoundment hydrologic record. These additional constraints could be described much as high-flow pulses are currently, with an attainment frequency maximum (e.g., x per season), a trigger, and a maximum duration based on the hydrologic record.

The commission considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, and comments on the proposed standards when drafting the adopted rules. The commission acknowledges that further analyses and studies may need to be performed in the future to determine whether the adopted standards, once implemented, provide sufficient protection at lower flow levels. HB 3/SB 3 contemplate that this data and new studies can be considered through adaptive management via the workplan for this basin and bay system. To the extent that additional information becomes available through monitoring and studies undertaken under the workplan, the science team could consider that information in future deliberations. The rule was not modified in response to this comment.

One individual comments,as a member of the Sabine-Neches BBEST, on the necessity of providing minimum flows to these ecosystems. The report prepared by the BBEST represented at best bare minimum flows that will sustain a sound ecological environment in these rivers and in Sabine Lake. These flows were reached by

compromise between the biological subcommittee and the rest of the BBEST and are already dangerously low. Reducing all base flows to dry base, along with potentially greater frequency of occurrence of subsistence flows, will be damaging to these ecosystems. There is a great deal of scientific literature from this and the other basins that substantiate this, along with the information contained in the BBEST Biological Overlay section.

The commission followed its instructions in the TWC to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, comments on the proposed standards, and alternate recommendations when drafting the adopted rules. In addition, the commission considered staff's water availability analyses on the adopted standards, which evaluated the effects of the proposed standards on human and other competing needs for water. Some changes to the adopted rule were made in response to other comments. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280.

Friends of the Neches River, Texas Conservation Alliance, and more than five individuals comment that the proposal by the Sabine/Neches BBASC to reduce normal base flows to levels only encountered during infrequent droughts will be damaging to

these ecosystems.

The commission followed its instructions in the TWC to determine these flow standards. It considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, comments on the proposed standards, and alternate recommendations when drafting the adopted rules. In addition, the commission considered staff's water availability analyses on the adopted standards, which evaluated the effects of the proposed standards on human and other competing needs for water. Some changes to the adopted rule were made in response to other comments. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280.

TPWD believes that, as part of a full environmental flow regime, the schedule of base flows in the proposed rules is minimally adequate to maintain a sound ecological environment. The BBEST classified much of the hydrograph as high flow pulses, thereby diminishing the statistical computation of base flows. This, combined with the implementation rules, results in relatively low potential streamflows.

After consideration of all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, comments on the

proposed standards, and alternate recommendations, some changes were made to the adopted rule in response to other comments. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280.

Two individuals comment that the proposed flows are inadequate because they reduce normal base flows to levels only encountered during infrequent droughts.

After consideration of all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, comments on the proposed standards, and alternate recommendations, some changes were made to the adopted rule in response to other comments. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280.

Friends of the Neches River, Texas Conservation Alliance, and more than five individuals comment that capturing and storing the high flow pulses necessary for spawning triggers and habitat maintenance for both estuarine and riverine species during dry seasons will be incredibly damaging.

The commission respectfully disagrees with the comment. After consideration of all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, comments on the proposed standards, and alternate recommendations, some changes were made to the adopted rule in response to other comments. The adopted rule requires one high flow pulse in the Summer and Winter and two high flow pulses in the Spring and Fall. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280.

One individual comments that bare minimum high flow pulses were prescribed in the BBEST recommendations. Any reduction in these pulses will not provide necessary spawning triggers and habitat maintenance. The science of instream flows has progressed to the point where we do understand the necessity of these flow components and the damaging ecological consequences of not providing necessary flows at critical seasons.

After consideration of all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, comments on the proposed standards, and alternate recommendations, some changes were made to the adopted rule in response to other comments. The adopted rule

requires one high flow pulse in the Summer and Winter and two high flow pulses in the Spring and Fall. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280.

USFWS recommends that the TCEQ include dry condition, dry season high pulse flow events in the standards to ensure that natural resources are protected. There are currently no high flow pulses proposed for Summer and Fall during dry conditions. However, high pulse flows under dry conditions during the two driest seasons would be critical in ensuring that when these flows do occur in the dry period, that wetting of riparian areas is sufficient to maintain the wetland dependent tree species present and to minimize the encroachment of upland species. These high pulse flows have been shown to be important for a variety of tree species and vegetation communities. Flooding of riparian wetland bodies such as oxbows, sloughs, and other water bodies are critical for several species of wetland dependent fish, bird, amphibian, reptile, and mammal species. There are distinct vegetation communities associated with river systems and flooding frequencies. For Texas rivers, this is most apparent in the Sabine basin. The high pulse flows are extremely important in maintaining vegetation communities that are represented in no other basin in Texas in such magnitude and diversity. High pulse flows are very important to maintain these systems. While we expect high pulse flows to be infrequent during the dry period, it should be recognized

that they are extremely important and ensure that organisms survive and for short-lived species, in allowing for successful reproduction and population maintenance.

After consideration of all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, comments on the proposed standards, and alternate recommendations, some changes were made to the adopted rule in response to other comments. The adopted rule requires one high flow pulse in the Summer and Winter and two high flow pulses in the Spring and Fall. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280.

Two individuals comment that the lack of seasonal fluctuations in flows will be damaging to these ecosystems and in particular to the state listed rare, endangered, and threatened species that rely on these aquatic habitats. These stream systems and their inhabitants rely on periodic high flow pulses for spawning and habitat maintenance, particularly during dry seasons. It is not clear how the TCEQ can recommend inadequate flows when state listed species rely on these systems. Not enough is known about these species to determine the effects of reduced flows on their survival. Presumably, if they are already listed, they are struggling to adapt to a changing landscape. The State of Texas devotes considerable resources to identifying and

describing species that are endemic to the Sabine and Neches rivers, and protecting these instream flows to the greatest extent possible could be the most important action the TCEQ takes to protect these species.

After consideration of all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, comments on the proposed standards, and alternate recommendations, some changes were made to the adopted rule in response to other comments. The commission acknowledges that further data may need to be developed to quantify the relationship between stream flows and species needs. However, HB 3/SB 3 contemplate that this data and new studies can be considered through adaptive management via the workplan for this basin and bay system. To the extent that additional information becomes available through monitoring and studies undertaken under the workplan, the science team could consider that information in future deliberations.

NWF comments that overall, the proposed rule on Sabine is good in reflecting seasonal variation and inter-annual variation on the instream flow side.

The commission acknowledges the comment but points out that after consideration of all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, comments on the

proposed standards, and alternate recommendations, some changes were made to the adopted rule in response to other comments. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280.

One individual requests that the TCEQ increase the amount of water allocated for environmental flows in the Sabine and Neches Rivers into Sabine Lake; the proposed flow standards are fairly low compared to historical conditions.

After consideration of all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, comments on the proposed standards, and alternate recommendations, some changes were made to the adopted rule in response to other comments. Hydrologic condition triggers and average and wet base flows were deleted and high flow pulse requirements were modified. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280.

NWFAF and more than 1,600 individuals comment that the standards should acknowledge the importance of protecting overbanking flows which are essential for

maintaining bottomland hardwood forest habitat. Big Thicket comments that overbank flows are a critical component of an environmental flow regime, with many well-recognized ecological benefits. Less appreciated are the direct and indirect human benefits: recharge of floodplain groundwater helps to return water to the channel in later periods of drought and periodic inundation of bottomland hardwood sites managed for conservation provides flood mitigation downstream. Big Thicket does not recommend the deliberate production (through intentional water releases) of an overbank flow to a developed area of the floodplain; however, it likely that such events will occur naturally and occur on conservation sites. Big Thicket recommends that overbank flows be defined in the rule, and that such flows as naturally occur be monitored for their magnitude, duration, volume, and effects on the floodplain. TPWD comments that if the freshwater inflow recommendations proposed by the BBEST are the only inflows to Sabine Lake, the result would be inflows substantially lower than those experienced historically and could subsequently increase salinities farther upstream, with Rangia populations moving upstream in a like manner. To ensure an ecologically sound environment in the Sabine Lake Estuary, TPWD supports the BBEST recommendation but would augment freshwater inflow to Sabine Lake to periodically provide higher inflow volumes. Figure 12 of the BBEST recommendation report demonstrates that inflow volumes augmented by periodic overbank flow events achieve inflow volumes recommended by TPWD. TPWD acknowledges the BBEST's decision to recognize, rather than recommend, overbank flood events due to the potential for damage to private property and threats to human safety. However, in instances where

these events can safely occur, a sound ecological environment in Sabine Lake is but one of the many environmental benefits provided by overbank flood events. Texas Conservation Alliance urges the TCEQ to strengthen the draft rule by including a provision for naturally-occurring overbanking flows. Ecologists familiar with the bottomland ecosystems of the Sabine and Neches Rivers, particularly with Big Thicket ecosystems, are well aware of the crucial nature of overbanking flows in maintaining those habitats. Failure to provide adequate overbanking flows could be devastating to the biodiversity of the Neches and Sabine bottomland hardwood forests and to the world-renowned diversity of the Big Thicket National Preserve. BTA would also like to see the standards accept out of bank flows and notes that the Neches floodplain, which is the focal feature of the Big Thicket National Preserve, depends on occasional floods. If these are not allowed or are prevented by legal management, the ecology of the Big Thicket and that entire environment will greatly change.

The commission acknowledges that the overbank flows are a component of a flow regime for a sound ecological environment and has modified the Section by Section discussion of §298.1 in the preamble to reflect this acknowledgement. Overbank flows are a result of naturally occurring large rainfall events, which will likely continue to occur. The commission notes that monitoring of these naturally occurring events could be included as part of the workplan for this basin and bay system. However, the commission is not including overbank flows as a component of the adopted

standards. The rule was not modified in response to this comment.

ANRA, DWU, LGRT, LNVA, SRA Texas, SRA Texas and Others, TXOGA, and UNRMWA suggest adopting the qualified flow regime recommended by the Sabine and Neches Rivers and Sabine Lake Bay BBASC in its December 7, 2010 submission of comments and recommendations.

The commission considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, comments on the proposed standards, and alternate recommendations. Some changes were made to the adopted rule in response to these comments. The commission agrees that the Sabine River at Bon Weir USGS gage should not be used as a measurement point at this time and the adopted rule does not include this point. With respect to the number of pulse flows, including only one pulse per season for the Spring and Fall would not be sufficiently protective of the environment. The adopted rule requires one pulse per season in the Summer and Winter, and two pulses per season in the Spring and Fall, with the pulse trigger, volume, and duration equal to the small pulse in the proposed rule. Hydrologic condition triggers and average and wet base flows were also deleted. These changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275

and §298.280.

SRA Texas suggests that the TCEQ not establish additional freshwater inflow requirements for the estuary.

The commission agrees with this comment. Neither the science team nor the stakeholders recommended specific freshwater inflow requirements for the estuary. Therefore, the commission did not include these requirements in the adopted standards.

Big Thicket comments that a notable gap in the proposed rule is the recommendation that fluvial matrices (i.e., the HEFR-calculated stream inflow values) are adequate for maintaining a sound ecological environment downriver in the estuary, leaving the tidal reaches of the Neches River and the Sabine River and the Sabine-Neches estuary in an unmeasured state with regard to environmental flow. Big Thicket is concerned that the proposed environmental flow standards (e.g., 228 cfs at Evadale for Summer, dry, subsistence flow) would be insufficient to prevent saltwater intrusion from impacting freshwater marsh and cypress-tupelo wetlands. The final recommendations from the Sabine-Neches BBEST contained a reduction in flows from preliminary versions that had been used as the basis of estuarine analyses in the report. Big Thicket recommends that the estuarine analyses be performed again using the proposed (not the preliminary) environmental flow standard and that interim freshwater flow standards be established

for Sabine Lake to ensure that sufficient volumes of freshwater are provided, by season, based upon volumes attained during the pre-impoundment hydrologic record.

Neither the science team nor the stakeholders recommended specific freshwater inflow requirements for the estuary. After reviewing the information from these groups, the commission did not include freshwater inflow requirements in the adopted standards. Pulse flow requirements in permits for new appropriations of water and naturally occurring flood events should provide sufficient freshwater inflows to Sabine Lake. The commission acknowledges that further analyses and studies may need to be performed in the future to determine whether the adopted standards, once implemented, are providing sufficient freshwater inflows to Sabine Lake. However, HB 3/SB 3 contemplate that additional analyses and studies can be considered through adaptive management via the workplan for this basin and bay system. To the extent that additional information becomes available through monitoring and studies undertaken under the workplan, the science team could consider that information in future deliberations. The rule was not modified in response to this comment.

UNRMWA notes that the TCEQ states that "the science team did not recommend bay and estuary standards for Sabine Lake Bay." This is clearly in conflict with the BBEST report which states in Recommendation 9 page that "fluvial matrices inflow

recommendations are adequate to maintain a sound ecological environment in the Sabine-Neches Estuary." More specifically, the BBEST stated that flow component recommendations for the Sabine River near Ruliff, Neches River at Evadale, Village Creek near Kountze, and other ungaged inflows are adequate to maintain a sound ecological environment in the Sabine-Neches estuary. It is respectfully requested the TCEQ modify or clarify its draft rules for consistency with the Sabine-Neches BBEST report.

The commission acknowledges that the report includes the stated comment. However, neither the science team nor the stakeholders recommended specific freshwater inflow requirements for the estuary. The rule was not modified in response to this comment.

NWF comments that with respect to the bay, there isn't a specific recommendation other than saying if instream flows are adequately protected, then that should be adequate for the bay. The proposed rules are not clear that the instream flows would be protected all the way to Sabine Lake. That's a critical assumption in the BBEST report, and so it's critically important that the rules do address that.

The commission agrees that neither the science team nor the stakeholders recommended specific freshwater inflow requirements for the estuary. Therefore, the commission did not include freshwater inflow requirements

in the adopted standards. Pulse flow requirements in permits for new appropriations of water and naturally occurring flood events should provide sufficient freshwater inflows to Sabine Lake. The adopted rules provide specific flow requirements at downstream measurement points in the bay and basin system. How those measurement points would be applicable to a water right depends on the specific fact situation for an application for a new appropriation of water. The measurement point applicable to a specific application could take into consideration the geographic extent of the impacts resulting from that application. The commission will implement these standards in each permit granted for a new appropriation of water. However, at this point in the process, the commission will examine permits as they come in to determine how to implement the standards in different permits. The rule was not modified in response to this comment.

NWFAF and more than 1, 600 individuals comment that the standards should expressly provide for the protection of freshwater inflows into Sabine Lake.

Neither the science team nor the stakeholders recommended specific freshwater inflow requirements for the estuary. Therefore, the commission did not include freshwater inflow requirements in the adopted standards. The rule was not modified in response to this comment.

USFWS comments that there are currently no environmental inflow standards proposed for the Sabine Lake estuary. The Sabine Lake estuary is an exceptionally diverse and productive system. It is unique in its salinity regime, geology, and its complimentary ecological communities from other bays in Texas. This system has lost significant resources, specifically wetlands, due to the effects of salinity intrusion, subsidence, and sea level rise. This estuary is an extremely important nursery for commercially important species including blue crabs, white shrimp, and Gulf menhaden. The Chenier Plain wetland communities in both Texas and Louisiana are in constant struggle to balance salinity issues, wetland loss, and fisheries productivity. Freshwater inflows into this estuary can be extremely critical to ensure this balance is maintained. Conservation lands that are threatened by reductions in freshwater flows include the Nelda Stark Wildlife Management Area (WMA), Texas Point National Wildlife Refuge (NWR), McFaddin NWR, Sea Rim State Park, J.D. Murphree WMA, and Sabine NWR. The commercial and recreational value of these areas to anglers, hunters, and wildlife watchers is substantial. USFWS encourages the state to revisit the proposed standards and incorporate a flow regime standard for freshwater inflows into Sabine Lake to ensure that these resources are conserved into the future and meet the SB 3 charge.

Neither the science team nor the stakeholders recommended specific freshwater inflow requirements for the estuary. Therefore, the commission did not include freshwater inflow requirements in the adopted standards.

Pulse flow requirements in permits for new appropriations of water and naturally occurring flood events should provide sufficient freshwater inflows to Sabine Lake. The commission acknowledges that further analyses and studies may need to be performed in the future to determine whether the adopted standards, once implemented, are providing sufficient freshwater inflows to Sabine Lake. However, HB 3/SB 3 contemplate that those additional analyses and studies can be considered through adaptive management via the workplan for this basin and bay system. To the extent that additional information becomes available through monitoring and studies undertaken under the workplan, the science team could consider that information in future deliberations. The rule was not modified in response to this comment.

USFWS comments that the Sabine-Neches BBEST's comparison of the State Methodology results and HEFR-generated flow component results demonstrates that the use of HEFR-generated flow components are lower than those developed with the State Methodology and therefore may be insufficient to maintain the estuary. USFWS believes providing an estuarine inflow standard is imperative given that requirements associated with any water right granted cannot be raised beyond 12.5%. If there is no standard for estuarine flow in the proposed rule, then there will never be a freshwater inflow requirement on any future permit nor any mechanism to revisit those permits and incorporate a freshwater inflow requirement. This lack of a proposed standard for

estuarine inflows appears to be inconsistent with the intent and purpose of the SB 3 legislation, which states that " . . . the foundation of work accomplished by the state should be improved." Accordingly, USFWS recommends that the TCEQ establish environmental flow regime standards for the estuary and also address the difference between the HEFR-generated flow component results and the State Methodology results in those standards.

Neither the science team nor the stakeholders recommended specific freshwater inflow requirements for the estuary. Therefore, the commission did not include freshwater inflow requirements in the adopted standards. Pulse flow requirements in permits for new appropriations of water and naturally occurring flood events should provide sufficient freshwater inflows to Sabine Lake. The commission acknowledges that further analyses and studies may need to be performed in the future to determine whether the adopted standards, once implemented, are providing sufficient freshwater inflows to Sabine Lake. However, HB 3/SB 3 contemplate that those additional analyses and studies can be considered through adaptive management via the workplan for this basin and bay system. To the extent that additional information becomes available through monitoring and studies undertaken under the workplan, the science team could consider that information in future deliberations. The rule was not modified in response to this comment.

BRA comments that although it appears to be the intent of proposed §298.280 to have diversion or storage controlled by a single downstream measurement point, the proposed rules do not clearly state this intent. It would be beneficial to define where flow standards will be enforced in relation to a "measurement point," as it may not be intuitive in all circumstances. Issues may arise when one measurement point has higher flow standards than another when either one could be used to regulate a single diversion. It is recommended that the diversion be regulated by only the nearest downstream "measurement point" since the impacts of a diversion are unlikely to significantly impact streamflow at measurement points several travel days downstream.

The measurement point that would be applicable to a water right depends on the specific fact situation for an application for a new appropriation of water. The measurement point applicable to a specific application could take into consideration the geographic extent of the impacts resulting from that application. Individual permit applications are different; therefore, special conditions may need to vary for those permits. The rule was not modified in response to this comment.

UNRMWA comments that it is not clear how permittees will be required to adhere to the environmental flow standards that are ultimately adopted. In addressing implementation, the executive director should clarify and adopt language that will not

require permittees to adhere to all flow standards in the basin, but only a gage location near a proposed new appropriation of water. Without doing so, future permittees with authorizations issued subject to the rules could be subject to an overbearing task of monitoring conditions throughout the basin prior to diversion.

The adopted rules provide specific flow requirements at specific measurement points in the bay and basin system. How those measurement points would be applicable to a water right depends on the specific fact situation for an application for a new appropriation of water. The measurement point applicable to a specific application could take into consideration the geographic extent of the impacts resulting from that application. The commission will implement these standards in each permit granted for a new appropriation of water. However, at this point in the process, the commission will examine permits as they come in to determine how to implement the standards in different permits. The rule was not modified in response to this comment.

NWFSCRC comments that the dry-year protected freshwater inflows to Sabine Lake in the proposed standards are very low in relation to the historical gaged flow, the current default methodology, and the State Methodology (MinQsal). On the basis of cumulative freshwater inflow volume (1977-1996), the proposed standards would protect less total inflow than the current default (Lyons) approach. Protection under the recently

submitted BBASC proposal would approximate the dry-year level of inflows in the proposed standards, even during wet years. The already marginal levels of inflows that would be protected under the proposed standards would be reduced to grossly unacceptable levels under the suggested approach. Protections for seasonal variations would be minimized and protection for inter-annual variations would disappear. Only a dry-year level of inflows, lower than the lowest levels of recommendations from the State Methodology, would ever be protected. There is already uncertainty about the adequacy of the levels of freshwater inflows protected by the BBEST's recommendations, and by the proposed standards, to maintain salinity levels consistent with protection of brackish marsh communities.

Neither the science team nor the stakeholders recommended specific freshwater inflow requirements for the estuary. Therefore, the commission did not include freshwater inflow requirements in the adopted standards. Pulse flow requirements in permits for new appropriations of water and naturally occurring flood events should provide sufficient freshwater inflows to Sabine Lake. The adopted rules provide specific flow requirements at downstream measurement points in the bay and basin system. How those measurement points would be applicable to a water right depends on the specific fact situation for an application for a new appropriation of water. The measurement point applicable to a specific application could take into consideration the geographic extent of the

impacts resulting from that application. The commission will implement these standards in each permit granted for a new appropriation of water. However, at this point in the process, the commission will examine permits as they come in to determine how to implement the standards in different permits. The rule was not modified in response to this comment.

LGRT, LNVA, SNBBASC, SRA Texas, TXOGA, and UNRMWA comment that the Sabine River near Bon Wier USGS gage should not be used as a measurement point due to discrepancies in flow measurements and the Sabine River near Ruliff USGS gage should be used to exclusively represent environmental flow standards for the lower Sabine River.

The commission agrees with this comment, and the adopted standards do not include a measurement point at the Sabine River near Bon Weir USGS gage.

TPWD comments that it is aware that some of the proposed flow standards are numerically higher at the Sabine River near Bon Wier site than at the (downstream) Sabine River near Ruliff site. This result is a function of the different hydrologic patterns at these locations and the decisions made by the BBEST in their hydrographic separation. TPWD is not aware of any evidence that either of these USGS flow gages is in error, nor is there any reason to eliminate one or both of these sites from inclusion in

the rules. TPWD is happy to discuss this further, should a more complete explanation be desired. NWFSCRC comments that there is much greater disparity between the default methodology flows and the recommended standards for Ruliff than for Evadale. Unless and until it is clearly established that the Ruliff flow standards are adequately protective throughout the relevant upstream reach, the Bon Wier measurement point and applicable standards must be maintained in the standards.

The commission considered all of the recommendations provided by the science team and the stakeholder groups, other relevant factors, comments on the proposed standards, and alternate recommendations. Some changes were made to the adopted rule in response to these comments. The adopted rule does not include the Sabine River at Bon Weir USGS gage as a measurement point because of issues related to the calculation of flows at this gage. Further analyses can be performed in the future to determine appropriate flow requirements for this location. HB 3/SB 3 contemplate that additional analyses and studies can be considered through adaptive management via the workplan. The changes are discussed in the adoption preamble for §298.275 and §298.280, and the modified numerical values and flow levels can be found in the adopted standards for §298.275 and §298.280.

TPWD comments that no specific freshwater inflow recommendation for Sabine Lake is

included in the draft rule; however, TPWD recommends that the BBEST's intent to protect instream flows at Ruliff downstream to Sabine Lake be reflected in the environmental flow standards. Without such language, the environmental flow standards provide no protection for freshwater inflows to Sabine Lake. TPWD recommends adding the following sentence to the end of §298.280(6): "These environmental flow standards will also apply downstream of Ruliff to the confluence of the Sabine River with Sabine Lake."

Neither the science team nor the stakeholders recommended specific freshwater inflow requirements for the estuary. Therefore, the commission did not include freshwater inflow requirements in the adopted standards. The adopted rules provide specific flow requirements at downstream measurement points in the bay and basin system. How those measurement points would be applicable to a water right depends on the specific fact situation for an application for a new appropriation of water. The measurement point applicable to a specific application could take into consideration the geographic extent of the impacts resulting from that application. The commission will implement these standards in each permit granted for a new appropriation of water. However, at this point in the process, the commission will examine permits as they come in to determine how to implement the standards in different permits. The rule was not modified in response to this comment.

NWFSCRC comments that the small pulse flow volume listed in the figure in §298.280(8), Neches River at Rockland, for the Fall season is not correct. With a pulse trigger of 515 cfs and a duration of eight days, a volume of 649 acre-feet does not make sense. That same erroneous value appears in the BBEST report. Because a volume of 6,490 acre-feet does appear to be about right and could be explained by a simple error of not entering a zero, we suggest that a pulse volume of 6,490 acre-feet be used.

The commission agrees with this comment, and the rule was modified to reflect this change.

TPWD comments that no specific freshwater inflow recommendation for Sabine Lake is included in the draft rule; however, TPWD recommends that the BBEST's intent to protect instream flows at Evadale downstream to Sabine Lake be reflected in the environmental flow standards. Without such language, the environmental flow standards provide no protection for freshwater inflows to Sabine Lake. TPWD recommends adding the following sentence to the end of §298.280(10): "These environmental flow standards will also apply downstream of Evadale to the confluence of the Neches River with Sabine Lake."

Neither the science team nor the stakeholders recommended specific freshwater inflow requirements for the estuary. Therefore, the commission

did not include freshwater inflow requirements in the adopted standards. Pulse flow requirements in permits for new appropriations of water and naturally occurring flood events should provide sufficient freshwater inflows to Sabine Lake. The adopted rules provide specific flow requirements at downstream measurement points in the bay and basin system. How those measurement points would be applicable to a water right depends on the specific fact situation for an application for a new appropriation of water. The measurement point applicable to a specific application could take into consideration the geographic extent of the impacts resulting from that application. The commission will implement these standards in each permit granted for a new appropriation of water. However, at this point in the process, the commission will examine permits as they come in to determine how to implement the standards in different permits. The rule was not modified in response to this comment.

§298.285, Water Right Permit Conditions

LGRT, LNVA, SNBBASC, SRA Texas, TXOGA, and UNRMWA comment that the impact on the annual minimum firm yield of a water supply project should not exceed 10% of the amount of appropriated water that is subject to the environmental flow standards.

The commission respectfully disagrees with this comment. In order to address its requirement to consider the human and other competing water

needs in this basin and bay system, commission staff performed a water availability analysis on the adopted standards. The results of this analysis indicated that there would be no significant impact from implementation of the adopted standards. To the extent that balancing already occurred during the development of the adopted standards, further balancing on an application specific basis would be inappropriate. Additionally, such further balancing is not contemplated in the statute. The rule was not modified in response to this comment.

TPWD notes that proposed §298.285 sets a limit for applying high flow pulse requirements to water rights that are greater than 10,000 acre-feet/year. TPWD agrees that certain appropriations may not require a permit condition to protect high flow pulses, but believes that the criterion used to set an exemption threshold should be based on a water right's maximum authorized diversion rate and not on authorized annual diversion amount. In some instances at tributary and other locations, the 10,000 acre-feet/year exemption amount exceeds recommended pulse volumes. For example, the summer season small high flow pulse volume at Big Sandy is only 671 acre-feet and the peak flow is only 50 cfs. This suggests that a 10,000 acre-feet/year diversion could significantly impact the proposed high flow pulses depending on the permit's authorized maximum diversion rate. TPWD is concerned about the potential cumulative effect of exemptions from the high flow pulse flow requirement on downstream high flow pulse characteristics. TPWD recommends that TCEQ adopt a

rule for exemptions that sets a diversion rate threshold based on high flow pulse initiation triggers and limits the potential cumulative impacts on required high flow pulse that might result from the exercise of all such exempt permits to less than 10%. TPWD staff suggests the following alternative language for the appropriate sentences of §298.285: "Water right permits with a cumulative maximum diversion rate less than 10% of the smallest high flow pulse trigger flow as measured at the most immediate downstream environmental flow standard location shall not be subject to the special conditions relative to high flow pulses."

Time lag effects and tributary stream effects would make using a percentage of the pulse flow trigger inappropriate for translating the impacts of specific diversion rates for individual water rights into impacts on downstream pulse flow conditions. A water right diversion of 10,000 acre-feet would be unlikely to occur over a small number of days. In the event that such a situation occurred, only one pulse event would likely be impacted. Using a maximum diversion amount is a more straightforward method for determining whether pulse flow requirements should be included in special conditions of a water right permit. The rule was not modified in response to this comment.

NWFSCRC comments that 10,000 acre-feet per year of diversion or storage is an inappropriate cut-off point for exemption from complying with the pulse flow standards.

Because many of the pulse flow proposals involve a total volume of less than 10,000 acre-feet, this exemption would allow these new water rights to fully capture pulse flows that are required to be passed by other holders of new water rights. That would frustrate the intended environmental flow protections and would be unfair to other water right holders. Given the variability of pulse flow volumes and pulse flow triggers, a simple volume-based exemption is not a reasonable approach. NWFSCRC does not oppose the concept of exempting certain very small water rights from undue complexities. However, such an exemption should be based on the relative size of the diversion or impoundment right to the applicable flow standards at that location. Rather than a one-size-fits-all standard, a standard should be adopted that compares the authorized storage or diversion to the size, in terms of volume and pulse flow trigger rate, of the protected pulse at that location. NWFSCRC suggests the following language in §298.285: "(a) For water right permits with an authorization to store an annual amount that is greater than 20% of the smallest applicable pulse flow volume at the location of the storage authorization or to divert at a rate that is greater than 20% of the smallest applicable pulse flow trigger rate at the location of the authorized diversion in the Sabine and Neches river basins, and to which the environmental flow standards apply, that are issued after the effective date of this subchapter, the water right permit or amendment shall contain flow restriction special conditions that are adequate to comply with the environmental flow standards of this subchapter." and in "(b) For water right permits with an authorization to store an annual amount that is equal to or less than 20% of the smallest applicable pulse flow volume at the location of the storage

authorization or to divert at a rate that is equal to or less than 20% of the smallest applicable pulse flow trigger rate at the location of the authorized diversion in the Sabine and Neches river basins, and to which the environmental flow standards apply, that are issued after the effective date of this subchapter, the water right permit or amendment shall contain flow restriction special conditions that are adequate to protect the environmental flow standards of this subchapter; however, no special conditions are necessary to preserve or pass high flow pulses unless the annual storage or diversion right exceeds 20,000 acre-feet."

Time lag effects and tributary stream effects would make using a percentage of the pulse flow volume inappropriate for translating the impacts of specific diversion rates for individual water rights into impacts on downstream pulse flow conditions. A water right diversion of 10,000 acre-feet would be unlikely to occur over a small number of days. In the event that such a situation occurred, only one pulse event would likely be impacted. Using a maximum diversion amount is a more straightforward method for determining whether pulse flow requirements should be included in special conditions of a water right permit. The rule was not modified in response to this comment.

One individual comments about §298.285 that 10,000 acre-feet is an incredible amount of water to allow to be diverted or stored without any special conditions for

environmental flows (10,000 acre-feet is 3,258,514,000 gallons of water per year) and urges TCEQ to reduce this amount to 500 acre-feet (which is still 162,925,700 gallons per year) so that more water rights permit holders are made responsible for the protection of our streams, rivers, and bays and estuaries from the cumulative impacts of water diversions and storage.

All water right applications that are subject to the standards would include special conditions to protect the standards. Smaller water rights, requesting an amount less than 10,000 acre-feet, would still be subject to subsistence and base flow standards under the adopted rule. The rule was not modified in response to this comment.

NWFSCRC comments that the proposed language in §298.285(a) and (b) that purports to establish a second balancing test in incorporating permit conditions is not consistent with TWC, §11.147(e-3). The language seems to suggest that the commission would undertake a balancing exercise and discretionary review in the permitting process through which TCEQ could decide not to include permit conditions necessary to protect the adopted environmental flow standards. For permits to which the standards apply, TCEQ must apply those standards in developing permit conditions. TCEQ does not have discretion to decide to apply the standards "to the maximum extent reasonable, considering other public interests and other relevant factors" as suggested in the proposed rule. A balancing test has already been incorporated into the adoption of the

standards. This language would introduce a second layer of balancing and would necessitate individualized permit reviews while establishing the flow standards as a cap on environmental flow protection. That is not what HB 3/SB 3 provides. To avoid that inconsistency with the statutory directive, the following language should be deleted: "to the maximum extent reasonable, considering other public interests and other relevant factors."

The commission agrees, and §298.285 has been modified to remove this language.

NWFSCRC comments that the reference to flow restriction special conditions that are adequate to "protect" environmental flow standards is a bit unclear. The term "comply with" should be substituted for "protect." Although it might be accurate to refer to protection of an environmental flow set aside, it is not clear how permit conditions would "protect" an environmental flow standard.

The commission respectfully disagrees. Special conditions that protect environmental flow standards would be those special conditions that ensure compliance with the standards. The rule was not modified in response to this comment.

UNRMWA comments that the executive director needs to clarify how the rules will

apply to existing permits that authorize a new appropriation of water. In particular, UNRMWA has concerns regarding how interbasin transfers will be addressed with respect to the rules. As proposed, it appears that environmental flow standards will come with a time priority, and given the provision of TWC, §11.085(s), this may have unintended consequences for moving existing appropriations of water between basins. While it is clear why set-asides may come with priority in a basin, it is unclear why environmental flow standards should be treated with priority. The executive director needs to consider only applying priority for standards as a tool in water availability modeling and developing special conditions for permit - not in adhering to priority under prior appropriation doctrine.

The commission responds that the priority date for the environmental flow standards will be used in water rights permitting in the water availability model runs used for water availability analyses. The function of a priority date in the water availability model is to ensure that water rights are processed in seniority order. With respect to environmental flow standards, using a priority date in the water availability model ensures that the standards do not apply to existing senior water rights and do apply to new appropriations of water. By including the standards in the WAM with a priority date, the commission protects pulse flow standards from being permitted to smaller applicants to whom the standards apply. In addition, including the standards in the WAM with a priority date ensures that new

appropriations will not affect downstream flow standards. The priority date has no other purpose. The commission has clarified the language in §298.265 in response to this and other comments. A water availability analysis would not be performed in the receiving basin for water that is already appropriated in the basin of origin and the adopted standards would not apply in the receiving basin.

§298.290, Schedule for Revision of Standards

One individual comments that ten years is too long for TCEQ to wait to re-examine environmental flow standards. A lot can happen in ten years and the TCEQ must ensure that streams, rivers, and bays and estuaries are protected by using a shorter timeframe to re-examine environmental flow standards. Since the water planning cycle is five years, the re-examination should occur just before each Regional Water Planning Group completes its updated Regional Water Plan.

The commission acknowledges the comment but notes that it is prohibited by HB 3/SB 3 from environmental flows rulemaking more frequently than once every ten years unless a stakeholder workplan approved by the advisory group calls for a more frequent schedule. At this time there is not an approved workplan for this basin and bay system. The work groups can set a more frequent schedule if they choose to. The rule was not modified in response to this comment.

BRA comments that scientific studies performed under the SB 2 process should be incorporated into the SB 3 recommendations. It is recommended that if the HB 2/SB 2 process cannot be incorporated into the process, the adaptive management process have a five-year mandatory review period and revision of the regulations by river basin until all data gaps are filled. Additionally, funding should be provided to generate the science identified by the BBESTs to fill the data gaps and make necessary, consequential adjustments to the regulations during adaptive management reviews.

The commission acknowledges the comment but notes that it is prohibited by HB 3/SB 3 from environmental flows rulemaking more frequently than once every ten years unless a stakeholder workplan approved by the advisory group calls for a more frequent schedule. At this time there is not an approved workplan for this basin and bay system. The work groups can set a more frequent schedule if they choose to. The rule was not modified in response to this comment.

SRA Texas and Others comment that the commission notes that it is prohibited from providing a rulemaking process that occurs more frequently than once every ten years unless the stakeholders' workplan approved by the Advisory Group under TWC, §11.02362(p), calls for a more frequent schedule. Considering the historical frequency of actions of the Advisory Group, the commenters suggest that the commission strongly

consider any schedule recommended by the SNBBASC, regardless of its status of approval by the Advisory Group.

The commission notes that it is prohibited by HB 3/SB 3 from providing that the rulemaking process occur more frequently than once every ten years unless a stakeholder work plan approved by the advisory group calls for a more frequent schedule. At this time there is not an approved workplan for this basin and bay system. The work groups can set a more frequent schedule if they choose to. The rule was not modified in response to this comment.

NWFSCRC notes that the basic premise of SB 3 is that participation by a balanced representation of stakeholder interests is essential to an appropriate outcome. That basic policy is memorialized in TWC, §11.0235(d-6) and §11.02362(f)(1). That policy also must be reflected in the rules governing the commission's process for revisions of the environmental flow standards. Accordingly, the last sentence of this proposed section should be changed to read as follows: "The rulemaking process shall include participation by a balanced representation of stakeholders . . .."

The commission agrees, and the rule was modified to reflect this comment.

SUBCHAPTER A: GENERAL PROVISIONS

§§298.1, 298.5, 298.10, 298.15, 298.20, 298.25

Statutory Authority

The new sections are adopted under Texas Water Code (TWC), §§5.102, concerning General Powers; 5.103, concerning Rules; and 5.105 concerning General Policy, which authorize the commission to adopt rules as necessary to carry out its power and duties under the TWC. The new sections are also adopted under TWC, §§5.506, concerning Emergency Suspension of Permit Condition Relating to, and Emergency Authority to Make Available Water Set Aside For, Beneficial Inflows to Affected Bays and Estuaries and Instream Uses; 11.0235, concerning Policy Regarding Waters of the State; 11.147, concerning Effects of Permit on Bays and Estuaries and Instream Uses; 11.148, concerning Emergency Suspension of Permit Conditions and Emergency Authority to Make Available Water Set Aside for Environmental Flows; and 11.1471, concerning Environmental Flow Standards and Set-Asides.

The adopted new sections implement TWC, §§5.102, 5.103, 5.105, 5.506, 11.0235, 11.147, 11.148, and 11.1471.

§298.1. Definitions.

The following words or phrases, when used in this chapter, have the following meanings, unless the context clearly indicates otherwise, or unless a subchapter has a different definition that only applies to that subchapter:

(1) **Affected person**—a person who meets the requirements of §55.256 of this title (relating to Determination of Affected Person) for the specific environmental condition proposed to be adjusted.

(2) ~~(1)~~ **Base flow**--the range of average flow conditions, in the absence of significant rainfall events, that may vary depending on current weather patterns.

(3) ~~(2)~~ **Environmental flow regime**--a schedule of flow quantities that reflects seasonal and yearly fluctuations that typically would vary geographically, by specific location in a watershed, and that are shown to be adequate to support a sound ecological environment and to maintain the productivity, extent, and persistence of key aquatic habitats in and along the affected water bodies.

(4) ~~(3)~~ **Environmental flow standards**--those requirements contained in this chapter, adopted by the commission under Texas Water Code, §11.1471.

(5) ~~(4)~~ **Lower Rio Grande**--the main stem of the Rio Grande, and its tributaries in Texas, from just above Falcon Reservoir to the mouth of the Rio Grande.

(6) ~~(5)~~ **Measurement point**--a specific geographical location on a watercourse where environmental flow standards are established.

(7) ~~(6)~~ **Middle Rio Grande**--the main stem of the Rio Grande, and its tributaries in Texas, from just above Amistad Reservoir to just above Falcon Reservoir.

(8) ~~(7)~~ **Pulse or high flow pulse**--relatively short-duration, high flows within the stream channel that occur during or immediately following a storm event.

(9) **Set-aside**-an amount of unappropriated water, if available, to be set aside to satisfy the environmental flow standards to the maximum extent reasonable when considering human water needs.

(10) ~~(8)~~ **Subsistence flow**--the minimum streamflow needed during critical drought periods to maintain tolerable water quality conditions and to provide minimal aquatic habitat space for the survival and recolonization of aquatic organisms.

(11) ~~(9)~~ **USGS**--United States Geological Survey.

(12) ~~(10)~~ **Water right holder**--a person or entity that owns a valid certificate of adjudication, certified filing, or water right permit.

(13) ~~(11)~~ **Water right permit**--a valid certificate of adjudication, certified filing, or water right permit. The term does not include exempt water uses ~~users~~, such as domestic and livestock water uses ~~users~~.

§298.5. General.

This chapter contains the environmental flow standards and set-asides required by Texas Water Code (TWC), §11.1471. The commission adopts these environmental flow standards for each river basin and bay system in this state as the commission receives recommendations from basin and bay area stakeholders in accordance with TWC, §11.02362. The commission finds that the environmental flow standards adopted herein are adequate to support a sound ecological environment, to the maximum extent reasonable, considering other public interests and other relevant factors as described in TWC, §11.1471(b). The environmental flow standards adopted herein are schedules of flow quantities, reflecting seasonal and yearly fluctuations that vary geographically by specific location in a river basin and bay system.

§298.10. Applicability.

(a) This chapter only relates to a permit for a new appropriation of water or to an amendment to an existing water right that increases the amount of water authorized to

be stored, taken, or diverted, and the chapter applies only when there is an applicable adopted environmental flow standard and only to:

(1) Water appropriated under a permit for a new appropriation of water, the application for which was pending with the commission on September 1, 2007, or is filed with the commission on or after that date; or

(2) The increase in the amount of water authorized to be stored, taken, or diverted under an amendment to an existing water right that increases the amount of water authorized to be stored, taken, or diverted, and the application for which was pending with the commission on September 1, 2007, or was filed with the commission on or after that date.

(b) This chapter does not otherwise amend or restrict the commission's authority to impose special conditions on water right permits, including special conditions to protect environmental flows. The commission retains any and all authority to place special conditions on interbasin transfers; on amendments, such as an amendment to move a diversion point upstream; and on authorizations under Texas Water Code (TWC), §11.042 and §11.046, to protect environmental flows or senior water rights. This chapter also does not expand the commission's authority to impose special conditions on water right permits beyond the authority granted to the commission in TWC, Chapter

11, or expressed by the commission in Chapter 297 of this title (relating to Water Rights, Substantive).

§298.15. Special Conditions to Protect Environmental Flow Standards and Set-Asides ~~Set Asides~~.

(a) The commission may not grant an appropriation for state water that has been set aside by the commission under this chapter to meet downstream instream flow needs or freshwater inflow needs. The commission may not issue a permit for a new appropriation or an amendment to an existing water right that increases the amount of water authorized to be stored, taken, or diverted, after the adoption of an environmental flow set-aside, if the issuance of the permit or amendment would impair an environmental flow set-aside established by this chapter.

(b) For purposes of determining any environmental flow conditions in any water right permit application to which this chapter applies that are necessary to maintain: freshwater inflows to an affected bay and estuary system; existing instream uses and water quality of a stream or river; or fish and wildlife habitats; the commission shall apply any applicable environmental flow standard, including any environmental flow set-aside, adopted in this chapter, instead of considering the factors specified in Texas Water Code, §11.147(b) - (e) and §§297.53 - 297.56 of this title (relating to Habitat

Mitigation; Water Quality Effects; Estuarine Considerations; and Instream Uses, respectively).

(c) The commission will incorporate into every water right permit any condition, restriction, limitation, or provision, as provided in Chapter 297 of this title (relating to Water Rights, Substantive) that is reasonably necessary to protect environmental flow standards~~, to the maximum extent reasonable, considering other public interests and other relevant factors~~.

§298.20. Priority Date for Set-Asides.

An environmental flow standard or set-aside established under this chapter for a river basin and bay system other than the middle and lower Rio Grande shall be assigned a priority date corresponding to the date the commission receives environmental flow regime recommendations from the applicable basin and bay expert science team as set forth in these rules. This priority date shall be included in the appropriate water availability models maintained by the commission in connection with an application for a permit for a new appropriation or for an amendment to an existing water right that increases the amount of water authorized to be stored, taken, or diverted. The priority date for the environmental flow standards will be used in the water availability determination for a new appropriation or for an amendment to an

existing water right that increases the amount of water authorized to be stored, taken, or diverted and has no other purpose.

§298.25. Process for Adjusting Environmental Flow Conditions in Certain Permits.

(a) On the petition of the executive director, the commission may amend a water right permit for a new appropriation or an amendment for an increase in the amount of water authorized to be stored, taken, or diverted issued after September 1, 2007, in order to adjust environmental flow special conditions, if the commission determines, through the process set forth herein, that such an adjustment is appropriate to achieve compliance with applicable environmental flow standards adopted in this chapter.

(b) A petition to adjust an environmental flow special condition shall be prepared by the executive director in the manner of an original application for a permit and have a title that indicates that it is to adjust environmental flow special conditions. The petition shall be filed with the Chief Clerk in the same manner as a water right permit application.

(c) Notice of the petition, with an opportunity for public comment, shall be mailed by the executive director by first-class mail, postage prepaid, to each water right holder of record within the basin, to the Texas Parks and Wildlife Department, and to all

navigation districts within the river basin concerned not less than 30 days before the date of action on the petition by the commission. The executive director will also cause a copy of the notice to be posted to the commission's Web site at least 30 days before the date of action on the petition by the commission. A temporary outage of service of the commission's Web site during the 30-day ~~30 day~~ notice period does not prevent the commission's consideration of the petition. The inadvertent failure of the executive director to mail notice to a navigation district that is not an appropriator of water does not prevent the commission's consideration of the petition.

(d) The commission may act on the petition without holding a public hearing. The commission shall consider all written public comment received on the petition prior to the commission's decision on the petition.

(e) A motion for rehearing of the commission's action must be filed no later than 23 days after the Chief Clerk mails (or otherwise transmits) the decision on the petition and provides instructions for requesting that the commission reconsider the decision or hold a contested case hearing. The following may file a motion for rehearing under this chapter:

(1) the commission on its own motion;

(2) the executive director;

(3) the water right holder; ~~and~~

(4) Texas Parks and Wildlife Department; and

(5) ~~(4)~~ affected persons, when authorized by law.

(f) A motion for rehearing by an affected person must be in writing, and must be filed with the Chief Clerk within the time provided by subsection (e) of this section.

(g) If the motion for rehearing is granted, the commission may refer the matter to the State Office of Administrative Hearings.

(h) The environmental flow adjustment, in combination with any previous adjustments made under this section may not increase the amount of the environmental flow pass-through or release requirement for a water right permit by more than 12.5% of the annualized total of that requirement contained in the permit as issued or of that requirement contained in the amended water right and applicable only to the increase in the amount of water authorized to be stored, taken, or diverted under the amended water right permit. Any new permit conditions must be consistent with the environmental flow standards to the maximum extent practicable.

(1) For environmental flow conditions expressed in cubic feet per second, the maximum adjustment is calculated by summing the monthly rate in cubic feet per second for each month and then multiplying the sum of the monthly rates in ~~annual amount of~~ the original standard in cubic feet per second by 12.5% to generate the maximum annualized adjustment ~~and calculate the new condition~~ expressed in cubic feet per second. The adjustment, in combination with all previous adjustments, cannot increase the annualized flow requirement above the sum of the original annualized flow requirement plus the original 12.5% adjustment.

(2) For environmental flow conditions, such as a pulse, expressed with multiple characteristics, such as frequency, peak flow, volume, and duration, the maximum adjustment is calculated by summing the original pulse volume for each season and multiplying that ~~the original pulse~~ volume ~~component~~ by 12.5% to generate the maximum annualized adjustment amount. The combination of all previous adjustments, and any new adjustment, cannot increase the annualized pulse volume above the sum of the original annualized pulse volume requirement plus the original 12.5% adjustment.

(i) The environmental flow adjustment must be based on appropriate consideration of the priority dates and diversion locations of any other water rights granted in the same river basin that are subject to adjustment under this section.

(j) The environmental flow adjustment must be based on appropriate consideration of any voluntary contributions to the Texas Water Trust, and of any voluntary amendments to existing water rights to change the use of a specified quantity of water to or add a use of a specified quantity of water for instream flows dedicated to environmental needs or bay and estuary inflows as authorized by Texas Water Code, §11.0237(a), that actually contribute toward meeting the applicable environmental flow standard. Any water right holder who makes a contribution or amends a water right as described herein is entitled to appropriate credit for the benefits of the contribution or amendment against the adjustment of the holder's existing water right permit conditions under this section.

(1) Water rights that are voluntarily contributed to the Texas Water Trust or voluntary amendments to change the use where the total volume of water is available in at least 75% of the years, are entitled to credit the contribution or amendment against the adjustment only by spreading out the amount contributed evenly over the year, or, if the underlying permit limits the portion of the year when use is authorized, over that portion of the year when use is authorized in the underlying permit ~~permit's time interval~~; and

(2) Water rights that are voluntarily contributed to the Texas Water Trust or voluntary amendments to change the use where the reliability of the water does not meet the criteria that the water is available in at least 75% of the years, or amendments

to add a use of a specified quantity of water for instream flows dedicated to environmental needs or bay and estuary inflows are entitled to credit the contribution or amendment against the adjustment only by spreading out one half of the amount contributed evenly over the year, or, if the underlying permit limits the portion of the year when use is authorized, over that portion of the year when use is authorized in the underlying permit; and ~~permit's time interval.~~

(3) For water rights that are voluntarily contributed to the Texas Water Trust and include storage, and providing that the underlying water right authorizes diversion from that storage, allowing the water to be provided in at least 75% of the years, the commission may allow credit for the contribution without spreading the amount of the contribution evenly across the year if the commission determines that doing so would better ensure protection of the standards and any applicable environmental flow set-aside.

SUBCHAPTER B: TRINITY, SAN JACINTO RIVERS, AND GALVESTON BAY

§§298.200, 298.205, 298.210, 298.215, 298.220, 298.225, 298.230, 298.240

Statutory Authority

The new sections are adopted under Texas Water Code (TWC), §§5.102, concerning General Powers; 5.103, concerning Rules; and 5.105 concerning General Policy, which authorize the commission to adopt rules as necessary to carry out its power and duties under the TWC. The new sections are also adopted under TWC, §§5.506, concerning Emergency Suspension of Permit Condition Relating to, and Emergency Authority to Make Available Water Set Aside For, Beneficial Inflows to Affected Bays and Estuaries and Instream Uses; 11.0235, concerning Policy Regarding Waters of the State; 11.147, concerning Effects of Permit on Bays and Estuaries and Instream Uses; 11.148, concerning Emergency Suspension of Permit Conditions and Emergency Authority to Make Available Water Set Aside for Environmental Flows; and 11.1471, concerning Environmental Flow Standards and Set-Asides.

The adopted new sections implement TWC, §§5.102, 5.103, 5.105, 5.506, 11.0235, 11.147, 11.148, and 11.1471.

§298.200. Applicability and Purpose.

This subchapter contains the environmental flow standards for the Trinity and San Jacinto rivers, their associated tributaries, and Galveston Bay. In case of a direct conflict, provisions ~~Provisions~~ of this subchapter control over any provisions of Subchapter A of this chapter (relating to General Provisions) for purposes of environmental flow standards and regulation in the Trinity and San Jacinto rivers, their associated tributaries, and Galveston Bay.

§298.205. Definitions.

The following words or phrases have the following meanings, in this subchapter, unless the context clearly indicates otherwise:

(1) **Galveston Bay**--the estuary system consisting of Galveston Bay and Trinity Bay, along with smaller associated bays including East Bay and West Bay.

(2) ~~(1)~~ **Fall**--the period of time September through November, inclusive.

(3) ~~(2)~~ **Spring**--the period of time March through May, inclusive.

(4) ~~(3)~~ **Sound ecological environment**--a resilient, functioning ecosystem characterized by intact, natural processes, and a balanced, integrated, and adaptive community of organisms comparable to that of the natural habitat of a region.

(5) ~~(4)~~ **Summer**--the period of time June through August, inclusive.

(6) ~~(5)~~ **Winter**--the period of time December through February, inclusive.

§298.210. Findings.

(a) The Trinity and San Jacinto rivers, their associated tributaries, Galveston Bay, and the associated estuaries are healthy and sound ecological environments.

(b) The commission finds that these sound ecological environments can best be maintained by a set of flow standards that implement a schedule of flow quantities that contain subsistence flow, base flow, and one level of high flow pulses at defined measurement points. Minimum flow levels for these components will vary by season and by year since the amount of precipitation and, therefore, whether a system is in subsistence or base flow conditions, will vary from year to year and within a year from season to season, and the number of pulses protected will also vary with the amount of precipitation.

§298.215. Set-Asides and Standards Priority Date.

The priority date for the environmental flow standards and set-asides established by this subchapter is December 1, 2009. The priority date for the environmental flow standards will be used in the water availability determination for a new appropriation or for an amendment to an existing water right that increases the amount of water authorized to be stored, taken, or diverted and has no other purpose.

§298.220. Schedule of Flow Quantities.

(a) The environmental flow standards adopted by this subchapter constitute a schedule of flow quantities made up of subsistence flow, base flow, and one level of high flow pulses. Environmental flow standards are established at six separate measurement locations in §298.225 ~~§298.230~~ of this title (relating to Environmental Flow Standards ~~Water Right Permit Conditions~~).

(b) Subsistence flow. The applicable subsistence flow standard varies depending on the seasons as described in §298.205 of this title (relating to Definitions). For a water right holder to which an environmental flow standard applies, at a measurement point that applies to the water right, the water right holder may not store or divert water unless the flow at the measurement point is above the applicable subsistence flow standard for that point. If the flow at the measurement point is above the subsistence flow standard but below the applicable base flow standard, then the water right holder may divert or store water according to its permit, subject to senior and superior water

rights, as long as the flow at the measurement point does not fall below the applicable subsistence flow standard.

(c) Base flow. The applicable base flow standard varies depending on the seasons as described in §298.205 ~~§298.230~~ of this title. For a water right holder to which an environmental flow standard applies, at a measurement point that applies to the water right, the water right is subject to a base flow standard. For a water right holder to which an environmental flow standard applies, at a measurement point that applies to the water right, when the flow at that point is above the applicable base flow standard, and below the applicable high flow pulse ~~peak flow~~ trigger level, the water right holder may store or divert water according to its permit, subject to senior and superior water rights, as long as the flow at the measurement point does not fall below the applicable base flow standard.

(d) High flow pulses. High flow pulses are relatively short-duration, ~~;~~ high flows within the watercourse that occur during or immediately following a storm event.

(1) Two pulses per season are to be passed (i.e., no storage or diversion by an applicable water right holder) if the flows are above the applicable base flow standard, and if the applicable high flow pulse ~~peak flow~~ trigger level is met at the measurement point. The water right holder shall not divert or store water except during times that streamflow at the applicable measurement point exceeds the applicable high

flow pulse trigger level and until either the applicable volume amount has passed the measurement point or the applicable duration time has passed since the high flowpulse ~~peak flow~~ trigger level ~~rate~~ occurred.

(2) If the applicable high flow pulse ~~peak flow~~ trigger level ~~rate~~ does not occur in a season, then the water right holder need not stop storing or diverting water to produce a high flow pulse ~~peak~~. The water right holder is not required to store water to be released later to produce a high flow pulse ~~peak~~.

~~(3) For purposes of this section, compliance with seasonal high flow pulse frequency requirements is determined by Fall, defined as October through November; Spring, defined as March through June; Summer, defined as July through September; and Winter, defined as December through February.~~

(3) ~~(4)~~ With the exception of summer and fall, which are treated as a single season for purposes of pulse flow compliance, each ~~Each~~ season is independent of the preceding and subsequent seasons with respect to high flow pulse frequency.

(e) A water right owner that has stored water in accordance with the terms and conditions of its water right, including any applicable environmental flow requirement in effect at the time the water was stored, may divert, release, or use this water, even if

the applicable environmental flow requirement is not met at the time of the subsequent diversion, release, or use of that stored water.

§298.225. Environmental Flow Standards.

(a) A water right application in the Trinity or San Jacinto river basins, ~~or associated coastal basins that drains to Galveston Bay~~, which increases the amount of water authorized to be stored, taken or diverted as described in §298.10 of this title (relating to Applicability), shall not reduce the long-term frequency on either a seasonal or annual basis at which the ~~following~~ volumes of freshwater inflows, to Galveston Bay, as described in the figure in this subsection, occur.

Figure: 30 TAC §298.225(a)

~~Figure: 30 TAC §298.225(a)~~

Bay and Estuary Freshwater Inflow Standards for the Galveston Bay System

Basin	Annual Inflow Quantity (af)	Annual Target Frequency	Winter Inflow Quantity (af)	Winter Target Frequency	Spring Inflow Quantity (af)	Spring Target Frequency	Summer Inflow Quantity (af)	Summer Target Frequency	Fall Inflow Quantity (af)	Fall Target Frequency
Trinity	2,816,532	50%	500,000	40%	1,300,000	40%	245,000	40%	N/A	N/A
	2,245,644	60%	250,000	50%	750,000	50%	180,000	50%	N/A	N/A
	1,357,133	75%	160,000	60%	500,000	60%	75,000	60%	N/A	N/A
San Jacinto	1,460,424	50%	450,000	40%	500,000	40%	220,000	40%	200,000	40%
	1,164,408	60%	278,000	50%	290,000	50%	100,000	50%	150,000	50%
	703,699	75%	123,000	60%	155,000	60%	75,000	60%	90,000	60%

af = acre-feet

~~Bay and Estuary Freshwater Inflow Standards for the Galveston Bay System~~

~~**Basin**~~	~~**Inflow Quantity (acre-feet per year)**~~	~~**Annual Target Frequency**~~
~~Trinity~~	~~2,816,532~~	~~50%~~
	~~2,245,644~~	~~60%~~
	~~1,357,133~~	~~75%~~
~~San Jacinto~~	~~1,460,424~~	~~50%~~
	~~1,164,408~~	~~60%~~
	~~703,699~~	~~75%~~

(b) The freshwater inflow standards are subject to adjustment, in accordance with Texas Water Code, 11.147(e-1). The adjustment for each inflow level is calculated by adding the volumes for all of the seasons in that inflow level for the entire year and multiplying that annual total volume by 12.5% to generate the maximum adjustment amount. The maximum adjustment, including the effect of any previous adjustments, cannot increase the total volume for that inflow level above the sum of the annual total of the original volume requirement for that level plus the 12.5% adjustment.

(c) ~~(b)~~ The following environmental flow standards are established for the following described measurement points:

(1) West Fork Trinity River near Grand Prairie, Texas, generally described as United States Geological Survey (USGS) ~~USGS~~ gage 08049500, and more specifically described as Latitude 32° 45' 45"; Longitude 96° 59' 40".

Figure: 30 TAC §298.225(c)(1)

~~Figure: 30 TAC §298.225 (b)(1)~~

United States Geological Survey (USGS) Gage 08049500, West Fork Trinity River near Grand Prairie

Season	Subsistence	Base	Pulse
Winter	19 cfs	45 cfs	Trigger: 300 cfs Volume: 3,500 af Duration: 4 days
Spring	25 cfs	45 cfs	Trigger: 1,200 cfs Volume: 8,000 af Duration: 8 days
Summer	23 cfs	35 cfs	Trigger: 300 cfs Volume: 1,800 af Duration: 3 days
Fall	21 cfs	35 cfs	Trigger: 300 cfs Volume: 1,800 af Duration: 3 days

cfs = cubic feet per second
af = acre-feet

~~USGS Gage 08049500, West Fork Trinity River near Grand Prairie~~

~~Month~~	~~Subsistence~~	~~Base~~	~~Pulse~~

~~January~~	~~19 cfs~~	~~45 cfs~~	~~Trigger: 392 cfs Volume: 3,830 af Duration: 4 days~~
~~February~~	~~19 cfs~~	~~45 cfs~~	~~Trigger: 392 cfs Volume: 3,830 af Duration: 4 days~~
~~March~~	~~17 cfs~~	~~45 cfs~~	~~Trigger: 1,280 cfs Volume: 8,345 af Duration: 8 days~~
~~April~~	~~17 cfs~~	~~45 cfs~~	~~Trigger: 1,280 cfs Volume: 8,345 af Duration: 8 days~~
~~May~~	~~17 cfs~~	~~45 cfs~~	~~Trigger: 1,280 cfs Volume: 8,345 af Duration: 8 days~~
~~June~~	~~16 cfs~~	~~35 cfs~~	~~Trigger: 1,280 cfs Volume: 8,345 af Duration: 8 days~~
~~July~~	~~16 cfs~~	~~35 cfs~~	~~Trigger: 293 cfs Volume: 1,899 af Duration: 3 days~~
~~August~~	~~16 cfs~~	~~35 cfs~~	~~Trigger: 293 cfs Volume: 1,899 af Duration: 3 days~~
~~September~~	~~15 cfs~~	~~35 cfs~~	~~Trigger: 293 cfs Volume: 1,899 af Duration: 3 days~~
~~October~~	~~15 cfs~~	~~35 cfs~~	~~N/A~~
~~November~~	~~15 cfs~~	~~35 cfs~~	~~N/A~~
~~December~~	~~19 cfs~~	~~45 cfs~~	~~Trigger: 392 cfs Volume: 3,830 af Duration: 4 days~~

~~cfs = cubic feet per second~~
~~af = acre-feet~~
~~N/A = not applicable~~

(2) Trinity River at ~~near~~ Dallas, Texas, generally described as USGS gage 08057000, and more specifically described as Latitude 32° 46' 29"; Longitude 96° 49' 18".

Figure: 30 TAC §298.225(c)(2)

~~Figure: 30 TAC §298.225(b)(2)~~

United States Geological Survey (USGS) Gage 08057000, Trinity River at Dallas

Season	Subsistence	Base	Pulse
Winter	26 cfs	50 cfs	Trigger: 700 cfs Volume: 3,500 af Duration: 3 days
Spring	37 cfs	70 cfs	Trigger: 4,000 cfs Volume: 40,000 af Duration: 9 days
Summer	22 cfs	40 cfs	Trigger: 1,000 cfs Volume: 8,500 af Duration: 5 days
Fall	15 cfs	50 cfs	Trigger: 1,000 cfs Volume: 8,500 af Duration: 5 days

cfs = cubic feet per second
af = acre-feet

~~USGS Gage 08057000, Trinity River at Dallas~~

~~Month~~	~~Subsistence~~	~~Base~~	~~Pulse~~
~~January~~	~~15 cfs~~	~~31 cfs~~	~~Trigger: 758 cfs Volume: 3,968 af Duration: 3 days~~
~~February~~	~~15 cfs~~	~~31 cfs~~	~~Trigger: 758 cfs Volume: 3,968 af Duration: 3 days~~
~~March~~	~~15 cfs~~	~~37 cfs~~	~~Trigger: 4,120 cfs Volume: 41,998 af Duration: 9 days~~
~~April~~	~~15 cfs~~	~~37 cfs~~	~~Trigger: 4,120 cfs Volume: 41,998 af Duration: 9 days~~
~~May~~	~~15 cfs~~	~~37 cfs~~	~~Trigger: 4,120 cfs Volume: 41,998 af Duration: 9 days~~
~~June~~	~~15 cfs~~	~~32 cfs~~	~~Trigger: 4,120 cfs Volume: 41,998 af Duration: 9 days~~
~~July~~	~~15 cfs~~	~~32 cfs~~	~~Trigger: 660 cfs Volume: 685 af Duration: 3 days~~
~~August~~	~~15 cfs~~	~~32 cfs~~	~~Trigger: 660 cfs Volume: 685 af Duration: 3 days~~
~~September~~	~~15 cfs~~	~~26 cfs~~	~~Trigger: 660 cfs Volume: 685 af Duration: 3 days~~
~~October~~	~~15 cfs~~	~~26 cfs~~	~~N/A~~
~~November~~	~~15 cfs~~	~~26 cfs~~	~~N/A~~
~~December~~	~~15 cfs~~	~~31 cfs~~	~~Trigger: 758 cfs Volume: 3,968 af Duration: 3 days~~

~~cfs = cubic feet per second~~
~~af = acre-feet~~
~~N/A = not applicable~~

(3) Trinity River near Oakwood, Texas, generally described as USGS gage 08065000, and more specifically described as Latitude 31° 38' 54"; Longitude 95° 47' 21".

Figure: 30 TAC §298.225(c)(3)

~~Figure: 30 TAC §298.225(b)(3)~~

USGS Gage 08065000, Trinity River near Oakwood

Season	Subsistence	Base	Pulse
Winter	120 cfs	340 cfs	Trigger: 3,000 cfs Volume: 18,000 af Duration: 5 days
Spring	160 cfs	450 cfs	Trigger: 7,000 cfs Volume: 130,000 af Duration: 11 days
Summer	75 cfs	250 cfs	Trigger: 2,500 cfs Volume: 23,000 af Duration: 5 days
Fall	100 cfs	260 cfs	Trigger: 2,500 cfs Volume: 23,000 af Duration: 5 days

cfs = cubic feet per second
af = acre-feet

~~USGS Gage 08065000, Trinity River near Oakwood~~

~~Month~~	~~Subsistence~~	~~Base~~	~~Pulse~~
~~January~~	~~98 cfs~~	~~265 cfs~~	~~Trigger: 3,200 cfs Volume: 18,931 af~~

			~~Duration: 5 days~~
~~February~~	~~98 cfs~~	~~265 cfs~~	~~Trigger: 3,200 cfs~~ ~~Volume: 18,931 af~~ ~~Duration: 5 days~~
~~March~~	~~80 cfs~~	~~322 cfs~~	~~Trigger: 7,840 cfs~~ ~~Volume: 141,705 af~~ ~~Duration: 11 days~~
~~April~~	~~80 cfs~~	~~322 cfs~~	~~Trigger: 7,840 cfs~~ ~~Volume: 141,705 af~~ ~~Duration: 11 days~~
~~May~~	~~80 cfs~~	~~322 cfs~~	~~Trigger: 7,840 cfs~~ ~~Volume: 141,705 af~~ ~~Duration: 11 days~~
~~June~~	~~75 cfs~~	~~186 cfs~~	~~Trigger: 7,840 cfs~~ ~~Volume: 141,705 af~~ ~~Duration: 11 days~~
~~July~~	~~75 cfs~~	~~186 cfs~~	~~Trigger: 1,180 cfs~~ ~~Volume: 4,866 af~~ ~~Duration: 2 days~~
~~August~~	~~75 cfs~~	~~186 cfs~~	~~Trigger: 1,180 cfs~~ ~~Volume: 4,866 af~~ ~~Duration: 2 days~~
~~September~~	~~85 cfs~~	~~162 cfs~~	~~Trigger: 1,180 cfs~~ ~~Volume: 4,866 af~~ ~~Duration: 2 days~~
~~October~~	~~85 cfs~~	~~162 cfs~~	~~N/A~~
~~November~~	~~85 cfs~~	~~162 cfs~~	~~N/A~~
~~December~~	~~98 cfs~~	~~265 cfs~~	~~Trigger: 3,200 cfs~~ ~~Volume: 18,931 af~~ ~~Duration: 5 days~~

~~cfs = cubic feet per second~~
~~af = acre-feet~~
~~N/A = not applicable~~

(4) Trinity River near Romayor, Texas, generally described as USGS gage 08066500, and more specifically described as Latitude 30° 25' 30"; Longitude 94° 51' 02".

Figure: 30 TAC §298.225(c)(4)

~~Figure: 30 TAC §298.225(b)(4)~~

United States Geological Survey Gage 08066500, Trinity River at Romayor

Season	Subsistence	Base	Pulse
Winter	495 cfs	875 cfs	Trigger: 8,000 cfs Volume: 80,000 af Duration: 7 days
Spring	700 cfs	1150 cfs	Trigger: 10,000 cfs Volume: 150,000 af Duration: 9 days
Summer	200 cfs	575 cfs	Trigger: 4,000 cfs Volume: 60,000 af Duration: 5 days
Fall	230 cfs	625 cfs	Trigger: 4,000 cfs Volume: 60,000 af Duration: 5 days

cfs = cubic feet per second
af = acre-feet

~~USGS Gage 08066500, Trinity River at Romayor~~

~~Month~~	~~Subsistence~~	~~Base~~	~~Pulse~~
~~January~~	~~295 cfs~~	~~744 cfs~~	~~Trigger: 10,100 cfs Volume: 152,814 af Duration: 13 days~~
~~February~~	~~295 cfs~~	~~744 cfs~~	~~Trigger: 10,100 cfs Volume: 152,814 af Duration: 13 days~~
~~March~~	~~290 cfs~~	~~923 cfs~~	~~Trigger: 10,900 cfs Volume: 184,186 af Duration: 15 days~~
~~April~~	~~290 cfs~~	~~923 cfs~~	~~Trigger: 10,900 cfs Volume: 184,186 af Duration: 15 days~~
~~May~~	~~290 cfs~~	~~923 cfs~~	~~Trigger: 10,900 cfs Volume: 184,186 af Duration: 15 days~~
~~June~~	~~223 cfs~~	~~510 cfs~~	~~Trigger: 10,900 cfs Volume: 184,186 af Duration: 15 days~~
~~July~~	~~223 cfs~~	~~510 cfs~~	~~Trigger: 1,870 cfs Volume: 18,417 af Duration: 7 days~~
~~August~~	~~223 cfs~~	~~510 cfs~~	~~Trigger: 1,870 cfs Volume: 18,417 af Duration: 7 days~~
~~September~~	~~240 cfs~~	~~515 cfs~~	~~Trigger: 1,870 cfs Volume: 18,417 af Duration: 7 days~~
~~October~~	~~240 cfs~~	~~515 cfs~~	~~N/A~~
~~November~~	~~240 cfs~~	~~515 cfs~~	~~N/A~~
~~December~~	~~295 cfs~~	~~744 cfs~~	~~Trigger: 10,100 cfs Volume: 152,814 af Duration: 13 days~~

~~cfs = cubic feet per second~~
~~af = acre-feet~~
~~N/A = not applicable~~

(5) East Fork San Jacinto River near ~~,~~ Cleveland, Texas, generally described as USGS gage 08070000, and more specifically described as Latitude 30° 20' 11"; Longitude 95° 06' 14".

Figure: 30 TAC §298.225(c)(5)

~~Figure: 30 TAC §298.225(b)(5)~~

United States Geological Survey Gage 08070000, East Fork San Jacinto River near Cleveland

Season	Subsistence	Base	Pulse
Winter	22 cfs	30 cfs	Trigger: 400 cfs Volume: 4,500 af Duration: 8 days
Spring	18 cfs	28 cfs	Trigger: 600 cfs Volume: 5,000 af Duration: 6 days
Summer	9 cfs	16 cfs	Trigger: 200 cfs Volume: 1,300 af Duration: 4 days
Fall	9 cfs	16 cfs	Trigger: 200 cfs Volume: 1,300 af Duration: 4 days

cfs = cubic feet per second
af = acre-feet

~~USGS Gage 08070000, East Fork San Jacinto River near Cleveland~~

~~**Month**~~	~~**Subsistence**~~	~~**Base**~~	~~**Pulse**~~
~~January~~	~~10 cfs~~	~~27 cfs~~	~~Trigger: 475 cfs Volume: 5,055 af Duration: 8 days~~
~~February~~	~~10 cfs~~	~~27 cfs~~	~~Trigger: 475 cfs Volume: 5,055 af Duration: 8 days~~
~~March~~	~~10 cfs~~	~~28 cfs~~	~~Trigger: 687 cfs Volume: 6,769 af Duration: 8 days~~
~~April~~	~~10 cfs~~	~~28 cfs~~	~~Trigger: 687 cfs Volume: 6,769 af Duration: 8 days~~
~~May~~	~~10 cfs~~	~~28 cfs~~	~~Trigger: 687 cfs Volume: 6,769 af Duration: 8 days~~
~~June~~	~~9 cfs~~	~~16 cfs~~	~~Trigger: 687 cfs Volume: 6,769 af Duration: 8 days~~
~~July~~	~~9 cfs~~	~~16 cfs~~	~~Trigger: 94 cfs Volume: 288 af Duration: 2 days~~
~~August~~	~~9 cfs~~	~~16 cfs~~	~~Trigger: 94 cfs Volume: 288 af Duration: 2 days~~
~~September~~	~~9 cfs~~	~~16 cfs~~	~~Trigger: 94 cfs Volume: 288 af Duration: 2 days~~
~~October~~	~~9 cfs~~	~~16 cfs~~	~~Trigger: 56 cfs Volume: 188 af Duration: 2 days~~
~~November~~	~~9 cfs~~	~~16 cfs~~	~~Trigger: 56 cfs Volume: 188 af Duration: 2 days~~
~~December~~	~~10 cfs~~	~~27 cfs~~	~~Trigger: 475 cfs Volume: 5,055 af Duration: 8 days~~

~~cfs = cubic feet per second~~
~~af = acre-feet~~

(6) West Fork San Jacinto River near Conroe, Texas, generally described as USGS gage 08068000, and more specifically described as Latitude 30° 14' 40"; Longitude 95° 27' 25".

Figure: 30 TAC §298.225(c)(6)

~~Figure: 30 TAC §298.225(b)(6)~~

United States Geological Survey Gage 08068000, West Fork San Jacinto River near Conroe

Season	Subsistence	Base	Pulse
Winter	23 cfs	38 cfs	Trigger: 400 cfs Volume: 3,500 af Duration: 7 days
Spring	24 cfs	47 cfs	Trigger: 1,100 cfs Volume: 12,000 af Duration: 9 days
Summer	10 cfs	17 cfs	Trigger: 200 cfs Volume: 1,300 af Duration: 3 days
Fall	10 cfs	20 cfs	Trigger: 200 cfs Volume: 1,300 af Duration: 3 days

cfs = cubic feet per second
af = acre-feet

~~USGS Gage 08068000, West Fork San Jacinto River near Conroe~~

~~Month~~	~~Subsistence~~	~~Base~~	~~Pulse~~
~~January~~	~~10 cfs~~	~~38 cfs~~	~~Trigger: 420 cfs Volume: 3,679 af Duration: 7 days~~
~~February~~	~~10 cfs~~	~~38 cfs~~	~~Trigger: 420 cfs Volume: 3,679 af Duration: 7 days~~
~~March~~	~~12 cfs~~	~~47 cfs~~	~~Trigger: 1,100 cfs Volume: 12,377 af Duration: 9 days~~
~~April~~	~~12 cfs~~	~~47 cfs~~	~~Trigger: 1,100 cfs Volume: 12,377 af Duration: 9 days~~
~~May~~	~~12 cfs~~	~~47 cfs~~	~~Trigger: 1,100 cfs Volume: 12,377 af Duration: 9 days~~
~~June~~	~~10 cfs~~	~~17 cfs~~	~~Trigger: 1,100 cfs Volume: 12,377 af Duration: 9 days~~
~~July~~	~~10 cfs~~	~~17 cfs~~	~~Trigger: 74 cfs Volume: 380 af Duration: 2 days~~
~~August~~	~~10 cfs~~	~~17 cfs~~	~~Trigger: 74 cfs Volume: 380 af Duration: 2 days~~
~~September~~	~~10 cfs~~	~~16 cfs~~	~~Trigger: 74 cfs Volume: 380 af Duration: 2 days~~
~~October~~	~~10 cfs~~	~~16 cfs~~	~~N/A~~
~~November~~	~~10 cfs~~	~~16 cfs~~	~~N/A~~
~~December~~	~~10 cfs~~	~~38 cfs~~	~~Trigger: 420 cfs Volume: 3,679 af Duration: 7 days~~

~~cfs = cubic feet per second~~
~~af = acre-feet~~
~~N/A = not applicable~~

§298.230. Water Right Permit Conditions.

(a) For water right permits with an authorization to store or divert more than 10,000 acre-feet per year in the Trinity and San Jacinto River basins, and to which the environmental flow standards apply, that are issued after the effective date of this subchapter, the water right permit or amendment shall contain flow restriction special conditions that are adequate to protect the environmental flow standards of this subchapter~~, to the maximum extent reasonable, considering other public interests and other relevant factors~~.

(b) For water right permits with an authorization to store or divert 10,000 acre-feet or less per year in the Trinity and San Jacinto river basins and to which the environmental flow standards apply, that are issued after the effective date of this subchapter, the water right permit or amendment shall contain flow restriction special conditions that are adequate to protect the environmental flow standards of this subchapter~~, to the maximum extent reasonable, considering other public interests and other relevant factors~~; however, no special conditions are necessary to preserve or pass high flow pulses.

§298.240. Schedule for Revision of Standards.

The environmental flow standards or environmental flow set-asides adopted herein for the Trinity and San Jacinto rivers, their associated tributaries, and Galveston Bay may be revised by the commission through the rulemaking process. The final revised rules shall be effective no sooner than ten years from the effective date of this rule, unless the Trinity and San Jacinto basin and bay area stakeholder committee submits a work plan approved by the advisory group under Texas Water Code, §11.02362(p), that provides for a periodic ~~period~~ review to occur more frequently. In that event, the commission may provide for the rulemaking process to be undertaken in conjunction with the periodic review if the commission determines that schedule to be appropriate. The rulemaking process shall include participation by a balanced representation of stakeholders having interests in the Trinity and San Jacinto Rivers, their associated tributaries, and Galveston Bay.

SUBCHAPTER C: SABINE AND NECHES RIVERS, AND SABINE LAKE BAY

§§298.250, 298.255, 298.260, 298.265, ~~298.270,~~ 298.275, 298.280, 298.285, 298.290

Statutory Authority

The new sections are adopted under Texas Water Code (TWC), §§5.102, concerning General Powers; 5.103, concerning Rules; and 5.105 concerning General Policy, which authorize the commission to adopt rules as necessary to carry out its power and duties under the TWC. The new sections are also adopted under TWC, §§5.506, concerning Emergency Suspension of Permit Condition Relating to, and Emergency Authority to Make Available Water Set Aside For, Beneficial Inflows to Affected Bays and Estuaries and Instream Uses; 11.0235, concerning Policy Regarding Waters of the State; 11.147, concerning Effects of Permit on Bays and Estuaries and Instream Uses; 11.148, concerning Emergency Suspension of Permit Conditions and Emergency Authority to Make Available Water Set Aside for Environmental Flows; and 11.1471, concerning Environmental Flow Standards and Set-Asides.

The adopted new sections implement TWC, §§5.102, 5.103, 5.105, 5.506, 11.0235, 11.147, 11.148, and 11.1471.

§298.250. Applicability and Purpose.

This subchapter contains the environmental flow standards for the Sabine and Neches Rivers, their associated tributaries, and Sabine Lake Bay. In case of a direct conflict, provisions ~~Provisions~~ of this subchapter control over any provisions of Subchapter A of this chapter (relating to General Provisions) for purposes of environmental flow standards and regulation in the Sabine and Neches Rivers, their associated tributaries, and Sabine Lake Bay.

§298.255. Definitions.

The following words or phrases have the following meanings in this subchapter, unless the context clearly indicates otherwise:

~~(1) **Average condition**--the hydrologic condition that is neither a wet condition nor a dry condition.~~

~~(2) **Dry condition**--the hydrologic condition determined by the cumulative upstream storage that would be exceeded more than 75% of the time based on full exercise of all water rights over a period from 1940 to 1998, when the monthly upstream storage conditions are ranked from driest to wettest.~~

(1) ~~(3)~~**Fall**--the period of time October through December, inclusive.

(2) ~~(4)~~ **Spring**--the period of time April through June, inclusive.

(3) ~~(5)~~ **Sound ecological environment**--an ecological environment that: supports a healthy diversity of fish and other aquatic life; sustains a full complement of important species; provides for all major habitat types including rivers and streams, reservoirs, and estuaries; sustains key ecosystem processes; and maintains water quality adequate for aquatic life.

(4) ~~(6)~~ **Summer**--the period of time July through September, inclusive.

~~(7) **Wet condition**--the hydrologic condition determined by the cumulative upstream storage that would be exceeded less than 25% of the time based on full exercise of all water rights over a period from 1940 to 1998, when the monthly upstream storage conditions are ranked from driest to wettest.~~

(5) ~~(8)~~ **Winter**--the period of time January through March, inclusive.

§298.260. Findings.

(a) The Sabine and Neches Rivers, their associated tributaries, Sabine Lake Bay, and the associated Sabine-Neches estuary are substantially sound ecological environments.

(b) The commission finds that these ~~this~~ sound ecological environments ~~environment~~ can best be maintained by a set of flow standards that implement a schedule of flow quantities that contain ~~includes~~ subsistence flow, base flow, and one level ~~two levels~~ of high flow pulses at defined measurement points. Minimum flow levels for these components will ~~shall~~ vary by season and by year ~~by hydrological conditions~~ since the amount of precipitation and, therefore, whether a system is in subsistence or base flow conditions, will vary from year to year and within a year from season to season, and the number of pulses protected will also vary with the amount of precipitation ~~streamflow varies from year to year~~.

§298.265. Set-Asides and Standards Priority Date.

The priority date for the environmental flow standards and set-asides established by this subchapter is November 30, 2009. The priority date for the environmental flow standards will be used in the water availability determination for a new appropriation or for an amendment to an existing water right that increases the amount of water authorized to be stored, taken, or diverted and has no other purpose.

~~**§298.270. Calculation of Hydrologic Conditions.**~~

~~(a) The determination of the hydrologic condition for a particular season shall be determined once per season. The conditions present on the last day of the month of the preceding season will determine the hydrologic condition for the following season. For each measurement point specified in this section, the cumulative storage in the major reservoirs located upstream of that measurement point will determine the hydrologic condition.~~

~~(b) Measurement points, associated reservoirs, and storage levels and conditions are:~~

~~Figure: 30 TAC §298.270(b)~~

~~Reservoirs and Storage Volumes for Calculating Hydrologic Conditions for Measurement Points in the Sabine and Neches River Basins~~

			~~END OF SEASON COMBINED STORAGE VOLUME (acre-feet)~~		
~~BASIN~~	~~MEASUREMENT POINTS~~	~~RESERVOIRS~~	~~DRY~~	~~AVG~~	~~WET~~
~~NECHES~~	~~Neches River at Neches, Texas Angelina River near Alto, Texas~~	~~Lake Palestine~~	~~less than 181,000~~	~~181,000 - 400,400~~	~~greater than 400,400~~
~~NECHES~~	~~Neches River at Rockland, Texas Village Creek near Kountze, Texas Neches River at~~	~~Lake Palestine and Sam Rayburn Reservoir~~	~~less than 2,675,000~~	~~2,675,000 - 3,263,400~~	~~greater than 3,263,400~~

	~~Evadale, Texas~~				
~~SABINE~~	~~Sabine River near Gladewater, Texas Big Sandy Creek near Big Sandy, Texas Sabine River near Beckville, Texas~~	~~Lake Fork and Lake Tawakoni~~	~~less than 1,157,600~~	~~1,157,600 - 1,513,800~~	~~greater than 1,513,800~~
~~SABINE~~	~~Sabine River near Bon Weir, Texas Big Cow Creek near Newton, Texas Sabine River near Ruliff, Texas~~	~~Lake Fork, Lake Tawakoni, and Toledo Bend Reservoir~~	~~less than 4,947,200~~	~~4,947,200 - 5,928,900~~	~~greater than 5,928,900~~

§298.275. Schedule of Flow Quantities.

(a) The environmental flow standards adopted by this subchapter constitute a schedule of flow quantities made up of subsistence flow, base flow, and one level of high flow pulses. Environmental flow standards are established for ten ~~eleven~~ measurement points in §298.280 ~~§298.270~~ of this title (relating to Environmental Flow Standards ~~Calculation of Hydrologic Conditions~~) and this section.

(b) Subsistence flow. The applicable subsistence flow standard varies depending on the seasons as described in §298.255 of this title (relating to Definitions). For a water right holder to which an environmental flow standard applies, at a measurement point that applies to the water right, the water right holder may not store or divert water,

unless the flow at the measurement point is above the applicable subsistence flow standard for that point. If the flow at the measurement point is above the subsistence flow standard but below the applicable base flow standard ~~level~~, then the water right holder may divert or store water according to its permit, subject to senior and superior water rights, as long as the flow at the measurement point does not fall below the applicable subsistence flow standard.

(c) Base flow. The applicable base flow level varies depending on the seasons as ~~hydrologic conditions~~ described in §298.255 ~~§298.270~~ of this title. For a water right holder to which an environmental flow standard applies, at a measurement point that applies to the water right, the water right holder is subject to a ~~the~~ base flow standard ~~for the climatic condition prevailing at that time, i.e., the water right will be subject to either : a dry base flow; an average base flow; or a wet base flow standard~~. For a water right holder to which an environmental flow standard applies, at a measurement point that applies to the water right, when the flow at the measurement point is above the applicable base flow standard, but below any applicable high flow pulse trigger levels, the water right holder may store or divert water according to its permit, subject to senior and superior water rights, as long as the flow at the measurement point does not fall below the applicable base flow standard.

(d) High flow pulses. High flow pulses are relatively short-duration, ~~:~~ high flows within the watercourse that occur during or immediately following a storm event. They

flush fine sediment deposits and waste products, restore normal water quality following prolonged low flows, and provide longitudinal connectivity for species movement along the river.

(1) Two ~~smaller magnitude~~ pulses per season are to be passed during the Spring and Fall seasons and one pulse per season is to be passed during the Winter and Summer seasons (i.e., no storage or diversion by an applicable water right holder), if the flows are above the applicable base flow standard, ~~hydrologic condition is average or wet,~~ and if the applicable high flow pulse ~~peak flow~~ trigger level is met at the measurement point. The water right holder shall not divert or store water except during times that streamflow at the applicable measurement point exceeds the applicable high flow pulse trigger level and until either the applicable volume amount has passed the measurement point, or the duration time has passed since the high flow pulse ~~peak flow~~ trigger level ~~rate~~ occurred. ~~Under dry hydrologic conditions during the spring and summer seasons, only one smaller-magnitude pulse shall be passed, if the peak flow trigger level is met at the measurement point. Under dry hydrologic conditions during the fall and winter, no high flow pulses need be passed.~~

~~(2) During wet conditions and in addition to the two smaller-magnitude pulses, a single larger-magnitude pulse must be passed; a water right holder shall not divert or store water until either the volume amount has passed the measurement point, or the duration time has passed since the peak flow trigger rate occurred.~~

(2) ~~(3)~~ If the applicable high flow pulse ~~peak~~ flow trigger level ~~rate~~ does not occur in a season, then the water right holder need not stop storing or diverting to produce a high flow pulse ~~peak~~. The water right holder is not required to release water lawfully stored to produce a high flow pulse ~~peak~~.

(3) ~~(4)~~ Each season is independent of the preceding and subsequent seasons with respect to high flow pulse frequency.

(e) A water right owner that has stored water in accordance with the terms and conditions of its water right, including any applicable environmental flow requirement in effect at the time the water was stored, may divert, release, or use this water, even if the applicable environmental flow requirement is not met at the time of the subsequent diversion, release, or use of that stored water.

§298.280. Environmental Flow Standards.

The following environmental flow standards are established for the following described measurement points:

(1) Big Sandy Creek near Big Sandy, Texas, generally described as United States Geological Survey (USGS) gage 08019500, and more particularly described as Latitude 32° 36' 14"; Longitude 95° 05' 29".

Figure: 30 TAC §298.280(1)

~~Figure: 30 TAC §298.280(1)~~

United States Geological Survey Gage 08019500, Big Sandy Creek near Big Sandy

Season	Subsistence	Base	Pulse
Winter	20 cfs	66 cfs	1 per season Trigger: 358 cfs Volume: 5,932 af Duration: 10 days
Spring	9 cfs	30 cfs	2 per season Trigger: 313 cfs Volume: 5,062 af Duration: 13 days
Summer	8 cfs	14 cfs	1 per season Trigger: 50 cfs Volume: 671 af Duration: 6 days
Fall	8 cfs	20 cfs	2 per season Trigger: 130 cfs Volume: 2,189 af Duration: 9 days

cfs = cubic feet per second
af = acre-feet

~~USGS Gage 08019500, Big Sandy Creek near Big Sandy~~

~~Season~~	~~Condition~~	~~Subsistence~~	~~Base~~	~~Small Pulse~~	~~Large Pulse~~
~~Winter~~	~~Dry~~	~~20 cfs~~	~~66 cfs~~	~~N/A~~	~~N/A~~
~~Winter~~	~~Average~~	~~N/A~~	~~106 cfs~~	~~2 per season Trigger: 358 cfs Volume: 5,932 af Duration: 10 days~~	~~N/A~~
~~Winter~~	~~Wet~~	~~N/A~~	~~163 cfs~~	~~2 per season Trigger: 358 cfs Volume: 5,932 af Duration: 10 days~~	~~1 per season Trigger: 942 cfs Volume: 14,544 af Duration: 16 days~~
~~Spring~~	~~Dry~~	~~9 cfs~~	~~30 cfs~~	~~1 per season Trigger: 313 cfs Volume: 5,062 af Duration: 13 days~~	~~N/A~~
~~Spring~~	~~Average~~	~~N/A~~	~~51 cfs~~	~~2 per season Trigger: 313 cfs Volume: 5,062 af Duration: 13 days~~	~~N/A~~
~~Spring~~	~~Wet~~	~~N/A~~	~~111 cfs~~	~~2 per season Trigger: 313 cfs Volume: 5,062 af Duration: 13 days~~	~~1 per season Trigger: 950 cfs Volume: 12,852 af Duration: 19 days~~
~~Summer~~	~~Dry~~	~~8 cfs~~	~~14 cfs~~	~~1 per season Trigger: 50 cfs Volume: 671 af Duration: 6 days~~	~~N/A~~
~~Summer~~	~~Average~~	~~N/A~~	~~18 cfs~~	~~2 per season Trigger: 50 cfs Volume: 671 af Duration: 6 days~~	~~N/A~~
~~Summer~~	~~Wet~~	~~N/A~~	~~26 cfs~~	~~2 per season Trigger: 50 cfs Volume: 671 af Duration: 6 days~~	~~1 per season Trigger: 132 cfs Volume: 2,054 af Duration: 11 days~~
~~Fall~~	~~Dry~~	~~8 cfs~~	~~20 cfs~~	~~N/A~~	~~N/A~~
~~Fall~~	~~Average~~	~~N/A~~	~~36 cfs~~	~~2 per season Trigger: 130 cfs Volume: 2,189 af Duration: 9 days~~	~~N/A~~

~~Fall~~	~~Wet~~	~~N/A~~	~~63 cfs~~	~~2 per season Trigger: 130 cfs Volume: 2,189 af Duration: 9 days~~	~~1 per season Trigger: 367 cfs Volume: 6,055 af Duration: 14 days~~

~~cfs = cubic feet per second~~
~~af = acre-feet~~
~~N/A = not applicable~~

(2) Sabine River near Gladewater, Texas, generally described as USGS gage 08020000, and more particularly described as Latitude 32° 31' 37"; Longitude 94° 57' 36".

Figure: 30 TAC §298.280(2)

~~Figure: 30 TAC §298.280(2)~~

United States Geological Survey Gage 08020000, Sabine River near Gladewater

Season	Subsistence	Base	Pulse
Winter	45 cfs	277 cfs	1 per season Trigger: 1,880 cfs Volume: 48,599 af Duration: 15 days
Spring	22 cfs	119 cfs	2 per season Trigger: 1,580 cfs Volume: 51,150 af Duration: 16 days
Summer	14 cfs	34 cfs	1 per season Trigger: 168 cfs Volume: 2,752 af Duration: 7 days

Fall	17 cfs	49 cfs	2 per season Trigger: 380 cfs Volume: 1,098 af Duration: 11 days

cfs = cubic feet per second
af = acre-feet

~~USGS Gage 08020000, Sabine River near Gladewater~~

~~**Season**~~	~~**Condition**~~	~~**Subsistence**~~	~~**Base**~~	~~**Small Pulse**~~	~~**Large Pulse**~~
~~Winter~~	~~Dry~~	~~45 cfs~~	~~277 cfs~~	~~N/A~~	~~N/A~~
~~Winter~~	~~Average~~	~~N/A~~	~~472 cfs~~	~~2 per season Trigger: 1,880 cfs Volume: 48,599 af Duration: 15 days~~	~~N/A~~
~~Winter~~	~~Wet~~	~~N/A~~	~~836 cfs~~	~~2 per season Trigger: 1,880 cfs Volume: 48,599 af Duration: 15 days~~	~~1 per season Trigger: 5,570 cfs Volume: 194,743 af Duration: 24 days~~
~~Spring~~	~~Dry~~	~~22 cfs~~	~~119 cfs~~	~~1 per season Trigger: 1,580 cfs Volume: 51,150 af Duration: 16 days~~	~~N/A~~
~~Spring~~	~~Average~~	~~N/A~~	~~283 cfs~~	~~2 per season Trigger: 1,580 cfs Volume: 51,150 af Duration: 16 days~~	~~N/A~~
~~Spring~~	~~Wet~~	~~N/A~~	~~664 cfs~~	~~2 per season Trigger: 1,580 cfs Volume: 51,150 af Duration: 16 days~~	~~1 per season Trigger: 5,070 cfs Volume: 140,612 af Duration: 25 days~~
~~Summer~~	~~Dry~~	~~14 cfs~~	~~34 cfs~~	~~1 per season Trigger: 168 cfs Volume: 2,752 af Duration: 7 days~~	~~N/A~~
~~Summer~~	~~Average~~	~~N/A~~	~~46 cfs~~	~~2 per season Trigger: 168 cfs~~	~~N/A~~

				~~Volume: 2,752 af~~ ~~Duration: 7 days~~	
~~Summer~~	~~Wet~~	~~N/A~~	~~78 cfs~~	~~2 per season~~ ~~Trigger: 168 cfs~~ ~~Volume: 2,752 af~~ ~~Duration: 7 days~~	~~1 per season~~ ~~Trigger: 730 cfs~~ ~~Volume: 13,480 af~~ ~~Duration: 17 days~~
~~Fall~~	~~Dry~~	~~17 cfs~~	~~49 cfs~~	~~N/A~~	~~N/A~~
~~Fall~~	~~Average~~	~~N/A~~	~~105 cfs~~	~~2 per season~~ ~~Trigger: 380 cfs~~ ~~Volume: 1,098 af~~ ~~Duration: 11 days~~	~~N/A~~
~~Fall~~	~~Wet~~	~~N/A~~	~~232 cfs~~	~~2 per season~~ ~~Trigger: 380 cfs~~ ~~Volume: 1,098 af~~ ~~Duration: 11 days~~	~~1 per season~~ ~~Trigger: 2,240 cfs~~ ~~Volume: 66,875 af~~ ~~Duration: 21 days~~

~~cfs = cubic feet per second~~
~~af = acre-feet~~
~~N/A = not applicable~~

(3) Sabine River near Beckville, Texas, generally described as USGS gage 08022040, and more particularly described as Latitude 32° 19' 38"; Longitude 94° 21' 12".

Figure: 30 TAC §298.280(3)

~~Figure: 30 TAC §298.280(3)~~

United States Geological Survey Gage 08022040, Sabine River near Beckville

Season	Subsistence	Base	Pulse

Winter	66 cfs	438 cfs	1 per season Trigger: 2,900 cfs Volume: 84,998 af Duration: 15 days
Spring	28 cfs	232 cfs	2 per season Trigger: 2,160 cfs Volume: 72,092 af Duration: 15 days
Summer	22 cfs	51 cfs	1 per season Trigger: 285 cfs Volume: 5,436 af Duration: 6 days
Fall	22 cfs	75 cfs	2 per season Trigger: 628 cfs Volume: 7,245 af Duration: 9 days

cfs = cubic feet per second
af = acre-feet

~~USGS Gage 08022040, Sabine River near Beckville~~

~~**Season**~~	~~**Condition**~~	~~**Subsistence**~~	~~**Base**~~	~~**Small Pulse**~~	~~**Large Pulse**~~
~~Winter~~	~~Dry~~	~~66 cfs~~	~~438 cfs~~	~~N/A~~	~~N/A~~
~~Winter~~	~~Average~~	~~N/A~~	~~807 cfs~~	~~2 per season Trigger: 2,900 cfs Volume: 84,998 af Duration: 15 days~~	~~N/A~~
~~Winter~~	~~Wet~~	~~N/A~~	~~1,580 cfs~~	~~2 per season Trigger: 2,900 cfs Volume: 84,998 af Duration: 15 days~~	~~1 per season Trigger: 7,200 cfs Volume: 302,174 af Duration: 24 days~~
~~Spring~~	~~Dry~~	~~28 cfs~~	~~232 cfs~~	~~1 per season Trigger: 2,160 cfs Volume: 72,092 af Duration: 15 days~~	~~N/A~~
~~Spring~~	~~Average~~	~~N/A~~	~~526 cfs~~	~~2 per season Trigger: 2,160 cfs Volume: 72,092 af~~	~~N/A~~

				Duration: 15 days	
Spring	Wet	N/A	1,260 cfs	2 per season Trigger: 2,160 cfs Volume: 72,092 af Duration: 15 days	1 per season Trigger: 7,030 cfs Volume: 220,513 af Duration: 27 days
Summer	Dry	22 cfs	51 cfs	1 per season Trigger: 285 cfs Volume: 5,436 af Duration: 6 days	N/A
Summer	Average	N/A	74 cfs	2 per season Trigger: 285 cfs Volume: 5,436 af Duration: 6 days	N/A
Summer	Wet	N/A	122 cfs	2 per season Trigger: 285 cfs Volume: 5,436 af Duration: 6 days	1 per season Trigger: 1,120 cfs Volume: 19,863 af Duration: 16 days
Fall	Dry	22 cfs	75 cfs	N/A	N/A
Fall	Average	N/A	141 cfs	2 per season Trigger: 628 cfs Volume: 7,245 af Duration: 9 days	N/A
Fall	Wet	N/A	356 cfs	2 per season Trigger: 628 cfs Volume: 7,245 af Duration: 9 days	1 per season Trigger: 3,250 cfs Volume: 100,717 af Duration: 21 days

cfs = cubic feet per second
af = acre-feet
N/A = not applicable

(4) Sabine River near Bon Wier, Texas, generally described as USGS gage 08028500, and more particularly described as Latitude 30° 44' 49"; Longitude 93° 36' 30".

~~Figure: 30 TAC §298.280(4)~~

~~USGS Gage 08028500, Sabine River near Bon Weir~~

~~Season~~	~~Condition~~	~~Subsistence~~	~~Base~~	~~Small Pulse~~	~~Large Pulse~~
~~Winter~~	~~Dry~~	~~479 cfs~~	~~1,460 cfs~~	~~N/A~~	~~N/A~~
~~Winter~~	~~Average~~	~~N/A~~	~~5,870 cfs~~	~~2 per season Trigger: 13,800 cfs Volume: 421,966 af Duration: 14 days~~	~~N/A~~
~~Winter~~	~~Wet~~	~~N/A~~	~~15,400 cfs~~	~~2 per season Trigger: 13,800 cfs Volume: 421,966 af Duration: 14 days~~	~~1 per season Trigger: 20,600 cfs Volume: 690,800 af Duration: 17 days~~
~~Spring~~	~~Dry~~	~~279 cfs~~	~~857 cfs~~	~~1 per season Trigger: 6,700 cfs Volume: 151,163 af Duration: 12 days~~	~~N/A~~
~~Spring~~	~~Average~~	~~N/A~~	~~1,590 cfs~~	~~2 per season Trigger: 6,700 cfs Volume: 151,163 af Duration: 12 days~~	~~N/A~~
~~Spring~~	~~Wet~~	~~N/A~~	~~6,680 cfs~~	~~2 per season Trigger: 6,700 cfs Volume: 151,163 af Duration: 12 days~~	~~1 per season Trigger: 16,500 cfs Volume: 483,992 af Duration: 21 days~~
~~Summer~~	~~Dry~~	~~241 cfs~~	~~478 cfs~~	~~1 per season Trigger: 5,880 cfs Volume: 132,571 af Duration: 13 days~~	~~N/A~~
~~Summer~~	~~Average~~	~~N/A~~	~~656 cfs~~	~~2 per season Trigger: 5,880 cfs Volume: 132,571 af Duration: 13 days~~	~~N/A~~
~~Summer~~	~~Wet~~	~~N/A~~	~~1,120 cfs~~	~~2 per season Trigger: 5,880 cfs~~	~~1 per season Trigger: 7,360 cfs~~

				~~Volume: 132,571 af~~ ~~Duration: 13 days~~	~~Volume: 175,009 af~~ ~~Duration: 14 days~~
~~Fall~~	~~Dry~~	~~241 cfs~~	~~478 cfs~~	~~N/A~~	~~N/A~~
~~Fall~~	~~Average~~	~~N/A~~	~~615 cfs~~	~~2 per season~~ ~~Trigger: 2,590 cfs~~ ~~Volume: 40,957 af~~ ~~Duration: 7 days~~	~~N/A~~
~~Fall~~	~~Wet~~	~~N/A~~	~~1,110 cfs~~	~~2 per season~~ ~~Trigger: 2,590 cfs~~ ~~Volume: 40,957 af~~ ~~Duration: 7 days~~	~~1 per season~~ ~~Trigger: 8,960 cfs~~ ~~Volume: 249,617 af~~ ~~Duration: 17 days~~

~~cfs = cubic feet per second~~
~~af = acre-feet~~
~~N/A = not applicable~~

(4) ~~(5)~~ Big Cow Creek near Newton, Texas, generally described as USGS gage 08029500, and more particularly described as Latitude 30° 49' 08"; Longitude 93° 47' 08".

Figure: 30 TAC §298.280(4)

~~Figure: 30 TAC §298.280(5)~~

United States Geological Survey Gage 08029500, Big Cow Creek near Newton

Season	Subsistence	Base	Pulse
Winter	28 cfs	56 cfs	1 per season Trigger: 693 cfs Volume: 4,911 af Duration: 8 days
Spring	20 cfs	38 cfs	2 per season

			Trigger: 350 cfs Volume: 2,545 af Duration: 7 days
Summer	20 cfs	28 cfs	1 per season Trigger: 109 cfs Volume: 873 af Duration: 5 days
Fall	20 cfs	36 cfs	2 per season Trigger: 322 cfs Volume: 2,232 af Duration: 7 days

cfs = cubic feet per second
af = acre-feet

~~USGS Gage 08029500, Big Cow Creek near Newton~~

~~**Season**~~	~~**Condition**~~	~~**Subsistence**~~	~~**Base**~~	~~**Small Pulse**~~	~~**Large Pulse**~~
~~Winter~~	~~Dry~~	~~28 cfs~~	~~56 cfs~~	~~N/A~~	~~N/A~~
~~Winter~~	~~Average~~	~~N/A~~	~~78 cfs~~	~~2 per season Trigger: 693 cfs Volume: 4,911 af Duration: 8 days~~	~~N/A~~
~~Winter~~	~~Wet~~	~~N/A~~	~~106 cfs~~	~~2 per season Trigger: 693 cfs Volume: 4,911 af Duration: 8 days~~	~~1 per season Trigger: 1,080 cfs Volume: 7,387 af Duration: 10 days~~
~~Spring~~	~~Dry~~	~~20 cfs~~	~~38 cfs~~	~~1 per season Trigger: 350 cfs Volume: 2,545 af Duration: 7 days~~	~~N/A~~
~~Spring~~	~~Average~~	~~N/A~~	~~52 cfs~~	~~2 per season Trigger: 350 cfs Volume: 2,545 af Duration: 7 days~~	~~N/A~~
~~Spring~~	~~Wet~~	~~N/A~~	~~74 cfs~~	~~2 per season Trigger: 350 cfs Volume: 2,545 af Duration: 7 days~~	~~1 per season Trigger: 862 cfs Volume: 6,075 af Duration: 10 days~~

~~Summer~~	~~Dry~~	~~20 cfs~~	~~28 cfs~~	~~1 per season Trigger: 109 cfs Volume: 873 af Duration: 5 days~~	~~N/A~~
~~Summer~~	~~Average~~	~~N/A~~	~~36 cfs~~	~~2 per season Trigger: 109 cfs Volume: 873 af Duration: 5 days~~	~~N/A~~
~~Summer~~	~~Wet~~	~~N/A~~	~~48 cfs~~	~~2 per season Trigger: 109 cfs Volume: 873 af Duration: 5 days~~	~~1 per season Trigger: 191 cfs Volume: 1,447 af Duration: 7 days~~
~~Fall~~	~~Dry~~	~~20 cfs~~	~~36 cfs~~	~~N/A~~	~~N/A~~
~~Fall~~	~~Average~~	~~N/A~~	~~46 cfs~~	~~2 per season Trigger: 322 cfs Volume: 2,232 af Duration: 7 days~~	~~N/A~~
~~Fall~~	~~Wet~~	~~N/A~~	~~64 cfs~~	~~2 per season Trigger: 322 cfs Volume: 2,232 af Duration: 7 days~~	~~1 per season Trigger: 790 cfs Volume: 5,038 af Duration: 9 days~~

~~cfs = cubic feet per second~~
~~af = acre-feet~~
~~N/A = not applicable~~

(5) ~~(6)~~ Sabine River near Ruliff, Texas generally described as USGS gage 08030500, and more particularly described as Latitude 30° 18' 13"; Longitude 93° 44' 37".

Figure: 30 TAC §298.280(5)

~~Figure: 30 TAC §298.280(6)~~

United States Geological Survey Gage 08030500, Sabine River near Ruliff

Season	Subsistence	Base	Pulse
Winter	949 cfs	1,520 cfs	1 per season Trigger: 1,600 cfs Volume: 10,202 af Duration: 3 days
Spring	436 cfs	1,208 cfs	2 per season Trigger: 3,250 cfs Volume: 42,883 af Duration: 8 days
Summer	396 cfs	670 cfs	1 per season Trigger: 3,380 cfs Volume: 54,321 af Duration: 11 days
Fall	396 cfs	735 cfs	2 per season Trigger: 2,020 cfs Volume: 17,662 af Duration: 5 days

cfs = cubic feet per second
af = acre-feet

~~USGS Gage 08030500, Sabine River near Ruliff~~

~~Season~~	~~Condition~~	~~Subsistence~~	~~Base~~	~~Small Pulse~~	~~Large Pulse~~
~~Winter~~	~~Dry~~	~~949 cfs~~	~~1,520 cfs~~	~~N/A~~	~~N/A~~
~~Winter~~	~~Average~~	~~N/A~~	~~2,565 cfs~~	~~2 per season Trigger: 1,600 cfs Volume: 10,202 af Duration: 3 days~~	~~N/A~~
~~Winter~~	~~Wet~~	~~N/A~~	~~5,063 cfs~~	~~2 per season Trigger: 1,600 cfs Volume: 10,202 af Duration: 3 days~~	~~1 per season Trigger: 9,880 cfs Volume: 261,464 af Duration: 22 days~~

~~Spring~~	~~Dry~~	~~436 cfs~~	~~1,208 cfs~~	~~1 per season Trigger: 3,250 cfs Volume: 42,883 af Duration: 8 days~~	~~N/A~~
~~Spring~~	~~Average~~	~~N/A~~	~~1,795 cfs~~	~~2 per season Trigger: 3,250 cfs Volume: 42,883 af Duration: 8 days~~	~~N/A~~
~~Spring~~	~~Wet~~	~~N/A~~	~~3,035 cfs~~	~~2 per season Trigger: 3,250 cfs Volume: 42,883 af Duration: 8 days~~	~~1 per season Trigger: 9,880 cfs Volume: 253,851 af Duration: 21 days~~
~~Summer~~	~~Dry~~	~~396 cfs~~	~~670 cfs~~	~~1 per season Trigger: 3,380 cfs Volume: 54,321 af Duration: 11 days~~	~~N/A~~
~~Summer~~	~~Average~~	~~N/A~~	~~870 cfs~~	~~2 per season Trigger: 3,380 cfs Volume: 54,321 af Duration: 11 days~~	~~N/A~~
~~Summer~~	~~Wet~~	~~N/A~~	~~1,430 cfs~~	~~2 per season Trigger: 3,380 cfs Volume: 54,321 af Duration: 11 days~~	~~1 per season Trigger: 6,600 cfs Volume: 157,936 af Duration: 19 days~~
~~Fall~~	~~Dry~~	~~396 cfs~~	~~735 cfs~~	~~N/A~~	~~N/A~~
~~Fall~~	~~Average~~	~~N/A~~	~~970 cfs~~	~~2 per season Trigger: 2,020 cfs Volume: 17,662 af Duration: 5 days~~	~~N/A~~
~~Fall~~	~~Wet~~	~~N/A~~	~~1,400 cfs~~	~~2 per season Trigger: 2,020 cfs Volume: 17,662 af Duration: 5 days~~	~~1 per season Trigger: 6,030 cfs Volume: 110,471 af Duration: 15 days~~

~~cfs = cubic feet per second~~
~~af = acre-feet~~
~~N/A = not applicable~~

(6) ~~(7)~~ Neches River at Neches, Texas, generally described as USGS gage 08032000, and more particularly described as Latitude 31° 53' 32"; Longitude 95° 25' 50".

Figure: 30 TAC §298.280(6)

~~Figure: 30 TAC §298.280(7)~~

United States Geological Survey Gage 08032000, Neches River at Neches

Season	Subsistence	Base	Pulse
Winter	51 cfs	178 cfs	1 per season Trigger: 833 cfs Volume: 19,104 af Duration: 10 days
Spring	21 cfs	87 cfs	2 per season Trigger: 820 cfs Volume: 20,405 af Duration: 12 days
Summer	12 cfs	42 cfs	1 per season Trigger: 113 cfs Volume: 1,339 af Duration: 4 days
Fall	13 cfs	73 cfs	2 per season Trigger: 345 cfs Volume: 5,391 af Duration: 8 days

cfs = cubic feet per second
af = acre-feet

~~USGS Gage 08032000, Neches River at Neches~~

~~Season~~	~~Condition~~	~~Subsistence~~	~~Base~~	~~Small Pulse~~	~~Large Pulse~~
~~Winter~~	~~Dry~~	~~51 cfs~~	~~178 cfs~~	~~N/A~~	~~N/A~~
~~Winter~~	~~Average~~	~~N/A~~	~~408 cfs~~	~~2 per season Trigger: 833 cfs Volume: 19,104 af Duration: 10 days~~	~~N/A~~
~~Winter~~	~~Wet~~	~~N/A~~	~~814 cfs~~	~~2 per season Trigger: 833 cfs Volume: 19,104 af Duration: 10 days~~	~~1 per season Trigger: 1,370 cfs Volume: 39,549 af Duration: 13 days~~
~~Spring~~	~~Dry~~	~~21 cfs~~	~~87 cfs~~	~~1 per season Trigger: 820 cfs Volume: 20,405 af Duration: 12 days~~	~~N/A~~
~~Spring~~	~~Average~~	~~N/A~~	~~194 cfs~~	~~2 per season Trigger: 820 cfs Volume: 20,405 af Duration: 12 days~~	~~N/A~~
~~Spring~~	~~Wet~~	~~N/A~~	~~524 cfs~~	~~2 per season Trigger: 820 cfs Volume: 20,405 af Duration: 12 days~~	~~1 per season Trigger: 1,370 cfs Volume: 31,846 af Duration: 15 days~~
~~Summer~~	~~Dry~~	~~12 cfs~~	~~42 cfs~~	~~1 per season Trigger: 113 cfs Volume: 1,339 af Duration: 4 days~~	~~N/A~~
~~Summer~~	~~Average~~	~~N/A~~	~~73 cfs~~	~~2 per season Trigger: 113 cfs Volume: 1,339 af Duration: 4 days~~	~~N/A~~
~~Summer~~	~~Wet~~	~~N/A~~	~~108 cfs~~	~~2 per season Trigger: 113 cfs Volume: 1,339 af Duration: 4 days~~	~~1 per season Trigger: 248 cfs Volume: 4,029 af Duration: 7 days~~
~~Fall~~	~~Dry~~	~~13 cfs~~	~~73 cfs~~	~~N/A~~	~~N/A~~
~~Fall~~	~~Average~~	~~N/A~~	~~104 cfs~~	~~2 per season Trigger: 345 cfs Volume: 5,391 af Duration: 8 days~~	~~N/A~~

~~Fall~~	~~Wet~~	~~N/A~~	~~172 cfs~~	~~2 per season Trigger: 345 cfs Volume: 5,391 af Duration: 8 days~~	~~1 per season Trigger: 782 cfs Volume: 19,996 af Duration: 12 days~~

~~cfs = cubic feet per second~~
~~af = acre-feet~~
~~N/A = not applicable~~

(7) ~~(8)~~ Neches River near ~~at~~ Rockland, Texas, generally described as USGS gage 08033500, and more particularly described as Latitude 31° 01' 30"; Longitude 94° 23' 58".

Figure: 30 TAC §298.280(7)

~~Figure: 30 TAC §298.280(8)~~

United States Geological Survey Gage 08033500, Neches River near Rockland

Season	Subsistence	Base	Pulse
Winter	67 cfs	548 cfs	1 per season Trigger: 3,080 cfs Volume: 82,195 af Duration: 14 days
Spring	29 cfs	382 cfs	2 per season Trigger: 1,720 cfs Volume: 39,935 af Duration: 12 days
Summer	21 cfs	61 cfs	1 per season Trigger: 195 cfs Volume: 1,548 af Duration: 5 days

Fall	21 cfs	82 cfs	2 per season Trigger: 515 cfs Volume: 8,172 af Duration: 8 days

cfs = cubic feet per second
af = acre-feet

~~USGS Gage 08033500, Neches River at Rockland~~

~~**Season**~~	~~**Condition**~~	~~**Subsistence**~~	~~**Base**~~	~~**Small Pulse**~~	~~**Large Pulse**~~
~~Winter~~	~~Dry~~	~~67 cfs~~	~~548 cfs~~	~~N/A~~	~~N/A~~
~~Winter~~	~~Average~~	~~N/A~~	~~1,390 cfs~~	~~2 per season Trigger: 3,080 cfs Volume: 82,195 af Duration: 14 days~~	~~N/A~~
~~Winter~~	~~Wet~~	~~N/A~~	~~2,500 cfs~~	~~2 per season Trigger: 3,080 cfs Volume: 82,195 af Duration: 14 days~~	~~1 per season Trigger: 6,910 cfs Volume: 256,523 af Duration: 22 days~~
~~Spring~~	~~Dry~~	~~29 cfs~~	~~382 cfs~~	~~1 per season Trigger: 1,720 cfs Volume: 39,935 af Duration: 12 days~~	~~N/A~~
~~Spring~~	~~Average~~	~~N/A~~	~~1,020 cfs~~	~~2 per season Trigger: 1,720 cfs Volume: 39,935 af Duration: 12 days~~	~~N/A~~
~~Spring~~	~~Wet~~	~~N/A~~	~~2,160 cfs~~	~~2 per season Trigger: 1,720 cfs Volume: 39,935 af Duration: 12 days~~	~~1 per season Trigger: 5,600 cfs Volume: 167,866 af Duration: 23 days~~
~~Summer~~	~~Dry~~	~~21 cfs~~	~~61 cfs~~	~~1 per season Trigger: 195 cfs Volume: 1,548 af Duration: 5 days~~	~~N/A~~

~~Summer~~	~~Average~~	~~N/A~~	~~88 cfs~~	~~2 per season Trigger: 195 cfs Volume: 1,548 af Duration: 5 days~~	~~N/A~~
~~Summer~~	~~Wet~~	~~N/A~~	~~151 cfs~~	~~2 per season Trigger: 195 cfs Volume: 1,548 af Duration: 5 days~~	~~1 per season Trigger: 615 cfs Volume: 13,365 af Duration: 11 days~~
~~Fall~~	~~Dry~~	~~21 cfs~~	~~82 cfs~~	~~N/A~~	~~N/A~~
~~Fall~~	~~Average~~	~~N/A~~	~~168 cfs~~	~~2 per season Trigger: 515 cfs Volume: 649 af Duration: 8 days~~	~~N/A~~
~~Fall~~	~~Wet~~	~~N/A~~	~~381 cfs~~	~~2 per season Trigger: 515 cfs Volume: 649 af Duration: 8 days~~	~~1 per season Trigger: 2,240 cfs Volume: 72,600 af Duration: 17 days~~

~~cfs = cubic feet per second~~
~~af = acre-feet~~
~~N/A = not applicable~~

(8) ~~(9)~~ Angelina River, near Alto, Texas, generally described as USGS gage 08036500, and more particularly described as Latitude 31° 40' 10"; Longitude 94° 57' 24".

Figure: 30 TAC §298.280(8)

~~Figure: 30 TAC §298.280(9)~~

United States Geological Survey Gage 08036500, Angelina River near Alto

Season	Subsistence	Base	Pulse
Winter	55 cfs	252 cfs	1 per season Trigger: 1,620 cfs Volume: 37,114 af Duration: 13 days
Spring	18 cfs	82 cfs	2 per season Trigger: 1,100 cfs Volume: 24,117 af Duration: 14 days
Summer	11 cfs	36 cfs	1 per season Trigger: 146 cfs Volume: 2,632 af Duration: 8 days
Fall	16 cfs	47 cfs	2 per season Trigger: 588 cfs Volume: 12,038 af Duration: 12 days

cfs = cubic feet per second
af = acre-feet

~~USGS Gage 08036500, Angelina River near Alto~~

~~Season~~	~~Condition~~	~~Subsistence~~	~~Base~~	~~Small Pulse~~	~~Large Pulse~~
~~Winter~~	~~Dry~~	~~55 cfs~~	~~252 cfs~~	~~N/A~~	~~N/A~~
~~Winter~~	~~Average~~	~~N/A~~	~~581 cfs~~	~~2 per season Trigger: 1,620 cfs Volume: 37,114 af Duration: 13 days~~	~~N/A~~
~~Winter~~	~~Wet~~	~~N/A~~	~~971 cfs~~	~~2 per season Trigger: 1,620 cfs Volume: 37,114 af Duration: 13 days~~	~~1 per season Trigger: 3,530 cfs Volume: 89,332 af Duration: 18 days~~
~~Spring~~	~~Dry~~	~~18 cfs~~	~~82 cfs~~	~~1 per season Trigger: 1,100 cfs Volume: 24,117 af Duration: 14 days~~	~~N/A~~
~~Spring~~	~~Average~~	~~N/A~~	~~206 cfs~~	~~2 per season~~	~~N/A~~

				~~Trigger: 1,100 cfs~~ ~~Volume: 24,117 af~~ ~~Duration: 14 days~~	
~~Spring~~	~~Wet~~	~~N/A~~	~~518 cfs~~	~~2 per season~~ ~~Trigger: 1,100 cfs~~ ~~Volume: 24,117 af~~ ~~Duration: 14 days~~	~~1 per season~~ ~~Trigger: 2,760 cfs~~ ~~Volume: 59,278 af~~ ~~Duration: 20 days~~
~~Summer~~	~~Dry~~	~~11 cfs~~	~~36 cfs~~	~~1 per season~~ ~~Trigger: 146 cfs~~ ~~Volume: 2,632 af~~ ~~Duration: 8 days~~	~~N/A~~
~~Summer~~	~~Average~~	~~N/A~~	~~48 cfs~~	~~2 per season~~ ~~Trigger: 146 cfs~~ ~~Volume: 2,632 af~~ ~~Duration: 8 days~~	~~N/A~~
~~Summer~~	~~Wet~~	~~N/A~~	~~69 cfs~~	~~2 per season~~ ~~Trigger: 146 cfs~~ ~~Volume: 2,632 af~~ ~~Duration: 8 days~~	~~1 per season~~ ~~Trigger: 397 cfs~~ ~~Volume: 7,129 af~~ ~~Duration: 13 days~~
~~Fall~~	~~Dry~~	~~16 cfs~~	~~47 cfs~~	~~N/A~~	~~N/A~~
~~Fall~~	~~Average~~	~~N/A~~	~~92 cfs~~	~~2 per season~~ ~~Trigger: 588 cfs~~ ~~Volume: 12,038 af~~ ~~Duration: 12 days~~	~~N/A~~
~~Fall~~	~~Wet~~	~~N/A~~	~~176 cfs~~	~~2 per season~~ ~~Trigger: 588 cfs~~ ~~Volume: 12,038 af~~ ~~Duration: 12 days~~	~~1 per season~~ ~~Trigger: 1,500 cfs~~ ~~Volume: 34,291 af~~ ~~Duration: 16 days~~

~~cfs = cubic feet per second~~
~~af = acre-feet~~
~~N/A = not applicable~~

(9) ~~(10)~~ Neches River at Evadale, Texas, generally described as USGS gage 08041000, and more particularly described as Latitude 30° 21' 20"; Longitude 94° 05' 35".

Figure: 30 TAC §298.280(9)

~~Figure: 30 TAC §298.280(10)~~

United States Geological Survey Gage 08041000, Neches River at Evadale

Season	Subsistence	Base	Pulse
Winter	228 cfs	1,750 cfs	1 per season Trigger: 2,020 cfs Volume: 20, 920 af Duration: 6 days
Spring	266 cfs	1,640 cfs	2 per season Trigger: 3,830 cfs Volume: 68,784 af Duration: 12 days
Summer	228 cfs	527 cfs	1 per season Trigger: 1,540 cfs Volume: 21,605 af Duration: 9 days
Fall	228 cfs	465 cfs	2 per season Trigger: 1,570 cfs Volume: 17,815 af Duration: 7 days

cfs = cubic feet per second
af = acre-feet

~~USGS Gage 08041000, Neches River at Evadale~~

~~Season~~	~~Condition~~	~~Subsistence~~	~~Base~~	~~Small Pulse~~	~~Large Pulse~~
~~Winter~~	~~Dry~~	~~228 cfs~~	~~1,750 cfs~~	~~N/A~~	~~N/A~~
~~Winter~~	~~Average~~	~~N/A~~	~~2,635 cfs~~	~~2 per season Trigger: 2,020 cfs Volume: 20, 920 af~~	~~N/A~~

				Duration: 6 days	
Winter	Wet	N/A	4,988 cfs	2 per season Trigger: 2,020 cfs Volume: 20, 920 af Duration: 6 days	1 per season Trigger: 8,700 cfs Volume: 246,099 af Duration: 22 days
Spring	Dry	266 cfs	1,640 cfs	1 per season Trigger: 3,830 cfs Volume: 68,784 af Duration: 12 days	N/A
Spring	Average	N/A	3,210 cfs	2 per season Trigger: 3,830 cfs Volume: 68,784 af Duration: 12 days	N/A
Spring	Wet	N/A	3,960 cfs	2 per season Trigger: 3,830 cfs Volume: 68,784 af Duration: 12 days	1 per season Trigger: 8,700 cfs Volume: 246,099 af Duration: 22 days
Summer	Dry	228 cfs	527 cfs	1 per season Trigger: 1,540 cfs Volume: 21,605 af Duration: 9 days	N/A
Summer	Average	N/A	2,250 cfs	2 per season Trigger: 1,540 cfs Volume: 21,605 af Duration: 9 days	N/A
Summer	Wet	N/A	3,230 cfs	2 per season Trigger: 1,540 cfs Volume: 21,605 af Duration: 9 days	1 per season Trigger: 3,680 cfs Volume: 69,561 af Duration: 13 days
Fall	Dry	228 cfs	465 cfs	N/A	N/A
Fall	Average	N/A	1,570 cfs	2 per season Trigger: 1,570 cfs Volume: 17,815 af Duration: 7 days	N/A
Fall	Wet	N/A	2,730 cfs	2 per season Trigger: 1,570 cfs Volume: 17,815 af Duration: 7 days	1 per season Trigger: 4,160 cfs Volume: 71,531 af Duration: 13 days

cfs = cubic feet per second
af = acre-feet
N/A = not applicable

(10) ~~(11)~~ Village Creek near Kountze, Texas, generally described as USGS gage 08041500, and more particularly described as Latitude 30° 23' 52"; Longitude 94° 15' 48".

Figure: 30 TAC §298.280(10)

~~Figure: 30 TAC §298.280(11)~~

United States Geological Survey Gage 08041500, Village Creek near Kountze

Season	Subsistence	Base	Pulse
Winter	83 cfs	240 cfs	1 per season Trigger: 2,010 cfs Volume: 36,927 af Duration: 13 days
Spring	49 cfs	106 cfs	2 per season Trigger: 1,380 cfs Volume: 23,093 af Duration: 13 days
Summer	41 cfs	70 cfs	1 per season Trigger: 341 cfs Volume: 6,159 af Duration: 8 days
Fall	41 cfs	89 cfs	2 per season Trigger: 712 cfs Volume: 11,426 af Duration: 9 days

cfs = cubic feet per second
af = acre-feet

~~USGS Gage 08041500, Village Creek near Kountze~~

~~Season~~	~~Condition~~	~~Subsistence~~	~~Base~~	~~Small Pulse~~	~~Large Pulse~~
~~Winter~~	~~Dry~~	~~83 cfs~~	~~240 cfs~~	~~N/A~~	~~N/A~~
~~Winter~~	~~Average~~	~~N/A~~	~~424 cfs~~	~~2 per season Trigger: 2,010 cfs Volume: 36,927 af Duration: 13 days~~	~~N/A~~
~~Winter~~	~~Wet~~	~~N/A~~	~~672 cfs~~	~~2 per season Trigger: 2,010 cfs Volume: 36,927 af Duration: 13 days~~	~~1 per season Trigger: 2,070 cfs Volume: 38,134 af Duration: 13 days~~
~~Spring~~	~~Dry~~	~~49 cfs~~	~~106 cfs~~	~~1 per season Trigger: 1,380 cfs Volume: 23,093 af Duration: 13 days~~	~~N/A~~
~~Spring~~	~~Average~~	~~N/A~~	~~189 cfs~~	~~2 per season Trigger: 1,380 cfs Volume: 23,093 af Duration: 13 days~~	~~N/A~~
~~Spring~~	~~Wet~~	~~N/A~~	~~335 cfs~~	~~2 per season Trigger: 1,380 cfs Volume: 23,093 af Duration: 13 days~~	~~1 per season Trigger: 2,070 cfs Volume: 31,650 af Duration: 15 days~~
~~Summer~~	~~Dry~~	~~41 cfs~~	~~70 cfs~~	~~1 per season Trigger: 341 cfs Volume: 6,159 af Duration: 8 days~~	~~N/A~~
~~Summer~~	~~Average~~	~~N/A~~	~~91 cfs~~	~~2 per season Trigger: 341 cfs Volume: 6,159 af Duration: 8 days~~	~~N/A~~
~~Summer~~	~~Wet~~	~~N/A~~	~~135 cfs~~	~~2 per season Trigger: 341 cfs Volume: 6,159 af Duration: 8 days~~	~~1 per season Trigger: 814 cfs Volume: 11,418 af Duration: 13 days~~
~~Fall~~	~~Dry~~	~~41 cfs~~	~~89 cfs~~	~~N/A~~	~~N/A~~
~~Fall~~	~~Average~~	~~N/A~~	~~138 cfs~~	~~2 per season Trigger: 712 cfs~~	~~N/A~~

				~~Volume: 11,426 af~~ ~~Duration: 9 days~~	
~~Fall~~	~~Wet~~	~~N/A~~	~~236 cfs~~	~~2 per season~~ ~~Trigger: 712 cfs~~ ~~Volume: 11,426 af~~ ~~Duration: 9 days~~	~~1 per season~~ ~~Trigger: 2,070 cfs~~ ~~Volume: 31,143 af~~ ~~Duration: 13 days~~

~~cfs = cubic feet per second~~
~~af = acre-feet~~
~~N/A = not applicable~~

§298.285. Water Right Permit Conditions.

(a) For water right permits with an authorization to store or divert more than 10,000 acre-feet per year in the Sabine and Neches river basins and to which the environmental flow standards apply, that are issued after the effective date of this subchapter, the water right permit or amendment shall contain flow restriction special conditions that are adequate to protect the environmental flow standards of this subchapter~~, to the maximum extent reasonable, considering other public interests and other relevant factors~~.

(b) For water right ~~rights~~ permits with an authorization to store or divert 10,000 acre-feet or less per year in the Sabine and Neches river basins and to which the environmental flow standards apply, that are issued after the effective date of this subchapter, the water right permit or amendment shall contain flow restriction special conditions that are adequate to protect the environmental flow standards of this

subchapter~~, to the maximum extent reasonable, considering other public interests and other relevant factors~~; however, no special conditions are necessary to preserve or pass high flow pulses.

§298.290. Schedule for Revision of Standards.

The environmental flow standards or environmental flow set-asides adopted herein for the Sabine and Neches Rivers, their associated tributaries, and Sabine Lake Bay may be revised ~~altered~~ by the commission through the rulemaking process. The final revised rules shall be effective no sooner than ten years from the effective date of this rule, unless the Sabine and Neches basin and bay area stakeholder committee submits a work plan approved by the advisory group under Texas Water Code, §11.02362(p), that provides for a periodic ~~period~~ review to occur more frequently. In that event, the commission may provide for the rulemaking process to be undertaken in conjunction with the periodic review if the commission determines that schedule to be appropriate. The rulemaking process shall include participation by a balanced representation of stakeholders having interests in the Sabine and Neches Rivers, their associated tributaries, and Sabine Lake Bay.