# Memorandum

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| **To:** | Scott Storment, EAHCP Program Manager |
| **From:** | ICF Team |
| **Date:** | May 13, 2025 |
| **Re:** | **[REVISED DRAFT] Recommended Changes to EAHCP Conservation Measures for the Permit Renewal** |

# 1. Introduction

The purpose of this memo is to identify recommended changes to the conservation measures covered under the Edwards Aquifer Habitat Conservation Plan (EAHCP) in the planning process to renew the EAHCP incidental take permit (ITP). This is one of several memos and reports for the Analyze and Sign-off Phase of the permit renewal process examining the major components of the EAHCP (e.g., Covered Activities, Covered Species, Monitoring and Adaptive Management) and identifying potential changes to the EAHCP and ITP to be considered by voting members of the Implementing Committee.[1] Changes to conservation measures identified in this memo will be presented to the Implementing Committee for concurrence by voting members and then will be carried forward in the permit renewal process. This permit renewal process will result in a draft Renewed EAHCP to the governing bodies of the Permittees for final approval and authorization to submit to the U.S. Fish and Wildlife Service (USFWS). The final draft Renewed EAHCP will be submitted to USFWS with the ITP amendment application. For more information about the EAHCP permit renewal process, including a detailed work plan, refer to eahcprenewal.org.

The EAHCP permit renewal is a multi-year and iterative planning process. The permit renewal process schedule anticipates completing the draft Renewed EAHCP and submitting the ITP amendment application to the USFWS in the spring of 2026. Throughout the planning process to identify changes to the EAHCP, components of the plan may need to be re-examined should circumstances change (e.g., identification of new scientific data or changes in regulatory status of species). As such, this memo serves as a check point to identify changes to conservation measures to carry forward in the permit renewal, but other changes to measures may still need to be considered later in the planning process. These changes will be documented through additional technical memoranda or draft EAHCP chapters and reviewed by EAHCP stakeholders, USFWS, and Permittees.

[1] The Implementing Committee, as defined on page 35 of the Funding and Management Agreement, is composed of voting members from each of the five Permittees and the Guadalupe-Blanco River Authority, a non-voting member. The governing bodies of the ITP Permittees will ultimately approve the final draft HCP.

The conservation measures evaluated in this memo are those identified by the EAHCP Conservation Measures Subcommittee (Subcommittee) (EAHCP Conservation Measures Subcommittee 2024).[2] The purpose of the Subcommittee was to review, discuss, and develop recommendations for conservation measures that should be considered for inclusion in the Renewed EAHCP. In this process, the Subcommittee not only recommended changes to the conservation measures, but also developed a new structure for the conservation measures that is clearly explained in the report. This memo uses the conservation measures as recommended by the Subcommittee, both in organization and substance, as a starting point and evaluates them for inclusion in the Renewed EAHCP.

A draft of this memo was circulated for review with members of the Implementing Committee, Stakeholder Committee, Science Committee, and USFWS from February 10, 2025 to March 7, 2025. Comments received are compiled in Appendix 1. Responses to comments are provided to indicate how comments are addressed in the revised draft memo, or that comments will be considered in development of draft chapters of the EAHCP.

The following sections describe the methods used to evaluate changes to conservation measures and then present the recommended changes along with rationale for consideration by the Implementing Committee.

# 2. Methods to Evaluate Changes to Conservation Measures

This section first provides context by defining conservation measures and then describes how the definition of conservation measures informed the process for evaluating potential changes.

## 2.1 Defining Conservation Measures

Conservation plans must contain measurable Biological Goals and Objectives and conservation measures that will be taken to avoid, minimize, and mitigate the impacts of the incidental take for all Covered Species (50 CFR 17.22(b)(1)). A prior technical memo addressed the Biological Goals and Objectives being considered for the permit renewal (BIO-WEST and ICF 2024). The HCP Handbook describes the purpose of conservation measures as follows:

> Conservation measures describe the specific actions that the permittee will implement to achieve the objectives in support of the HCP's goals. There may be multiple conservation measures associated with each objective. Conservation measures can be any of the avoidance, minimization, or mitigation actions taken to meet the goals and objectives of the HCP. Conservation measures can take many forms, but in all cases must be based on the biological needs of Covered Species. HCPs often combine these measures to meet the needs of species (U.S. Fish and Wildlife Service and National Marine Fisheries Service 2016).

Conservation measures are, collectively, all avoidance measures, minimization measures, and mitigation measures taken to meet the goals and objectives of the HCP. These terms are defined

[2] Available here: https://www.eahcprenewal.org/wp-content/uploads/2024/10/EAHCP-Conservation-Measures-Subcommittee-Report.pdf

below and help to establish how conservation measures should be considered in the EAHCP; that is, does this conservation measure avoid, minimize, or mitigate impacts to Covered Species?

- **Avoidance measure.** An action or condition for siting, designing, or implementing a covered activity in a way that avoids impacts on covered or listed species.
- **Minimization measure.** An action or condition that will reduce the impacts of the taking that have been identified during the development of the HCP.
- **Mitigation measure.** An action to offset impacts of taking on the species.

Conservation measures are commitments, specified in the HCP and the ITP that the Permittees make to properly implement the HCP and comply with the terms of the ITP. As such, conservation measures must be feasible and enforceable. This means that the conservation measures included in the HCP can be achieved by the Permittees (i.e., they have the legal, financial, or other means to properly implement the conservation measures as described in the HCP) and they have the authority to regulate or control conservation measures so the terms of the HCP are enforceable.

## 2.2 Process for Evaluating Conservation Measures

This memo uses the conservation measures as recommended by the Subcommittee (EAHCP Conservation Measures Subcommittee 2024) as a starting point for the conservation measures to be evaluated for inclusion in the Renewed EAHCP. The Subcommittee report recommended text for the conservation measures to be included in the Renewed EAHCP and provided "Comments for Consideration" consisting of other topics raised by Subcommittee members to be considered in conservation measures or elsewhere in the Renewed EAHCP.

This memo evaluates changes to conservation measures in two main ways in the following Section 3, *Evaluation of Changes to Conservation Measures*:

1. Provides recommended edits to the Subcommittee report text with annotations.
2. Evaluates each Comment for Consideration provided in the Subcommittee report and recommends how it should be considered in the EAHCP renewal process (e.g., conservation measures should be ~~changed, or~~changed or should be considered in monitoring and adaptive management).

In evaluating changes to conservation measures, the key questions considered relate~~d~~ to how conservation measures are defined (described above) and the purpose they serve in the EAHCP.

Is the conservation measure—

- A specific action taken by the Permittees?
- Based on the biological needs of the species?
- An action implemented to achieve a Biological Goal or Objective?
- An action or condition that will avoid, minimize, or mitigate impacts to Covered Species?
- Feasible and enforceable?

Consideration of these questions drives the recommended Subcommittee text changes and the rationale and recommendations for the Comments for Consideration.

# 3. Evaluation of Changes to Conservation Measures

This section maintains the way the Subcommittee report organizes conservation measures, using the following headings:

- Springflow Protection Measures
- Comal Springs System
- San Marcos Springs System
- ~~Refugia~~
- Measures that Contribute to Recovery

Under each heading, there are two main subsections to recommend changes to conservation measures: *Subcommittee Report Text with Recommended Changes* and *Evaluation of Comments for Consideration*.

## 3.1 Springflow Protection Measures

### Subcommittee Report Text with Recommended Edits

**Water ~~Forbearance and~~ Control Programs**

The Edwards Aquifer Authority (EAA) will administer a combination of programs to control sufficient water rights to ensure pumping from the Edwards Aquifer is reduced in adequate amounts, and at appropriate times, to achieve minimum springflow objectives for the Comal and San Marcos Springs as set forth in the *Revised Recommended Biological Goals and Objectives for the Permit Renewal* memorandum (BIO-WEST and ICF, 2024). These programs are intended to minimize incidental take from low springflows resulting from groundwater withdrawals ~~primarily~~ by ~~suspending, or~~ forbearing, or interrupting, the withdrawal of specified volumes of Edwards Aquifer water during the various applicable drought conditions associated with each particular control program. These programs will be implemented in addition to, and are designed to build on, the continued implementation by the Edwards Aquifer Authority of Critical Period Management Plan Stages I-IV

**Target Volumes and Administration**

The total volumetric goal for the water ~~forbearance and~~ control programs is 101,795 acre-feet/year (ac-ft/yr.). Holders of irrigation, industrial, and municipal permits in Atascosa, Bexar, Comal, Hays, Medina, and Uvalde counties will be approached for voluntary enrollment in the various control programs ~~and/or lease agreements~~. Within that total annual volume, control of at least 10,000 ac-ft will be pursued to the maximum extent practicable in Atascosa, Bexar, Comal, and Hays counties because these counties are closest to the springs where temporary forbearance ~~suspension~~ of pumping is likely to be the most effective.

**Commented [ICF1]:** Refugia is now a subsection under "Measures that Contribute to Recovery"

**Commented [ICF2]:** Unless otherwise noted, text edits on pages 4-7 are provided by Darcy Frownfelter.

**Commented [ICF3]:** Comments will be considered during HCP chapter development.

ID #s 040, 049, 050:

I have concern that the proposed springflow protection measures will not be able to meet all the proposed springflow objectives. The modeling shows that the minimums of 30 cfs and 45cfs at Comal and SM would mostly be achieved but no analysis on how often or not be able to achieve the 11-month minimums and 3yr rolling averages. I'd like to ensure that the springflow protection measures are adequate to most often meet all springflow objectives and not just the minimums of 30cfs and 45cfs for Comal and SM. As such, I'd like to ensure that we include in the Adaptive Mgmt section routine evaluation of whether we are achieving all flow objectives and, if not, a process for adjusting the springflow protection.

The CoNB wants to emphasize the importance of the adaptive management procedures to allow for assessment and reevaluation of the springflow protection measures in the event that springflow protections are not met in consecutive years. The CoNB is unsure if the proposed Springflow protection measures will meet the proposed objectives, and wants springflow protection to extend past only meeting the minimum requirements when the 3-year averages are also important to the species viability.

SMRF is concerned that the Springflow Protection as proposed is not sufficient to meet springflow BGO based on what we are seeing today, specifically the 3 year rolling average and possibly the 11 month goals for both the Comal and San Marcos Rivers.

**Commented [ICF4]:** Edit suggested by Myron Hess.

All strategies utilized by the EAA for control of the rights will be pooled together and implemented to meet ~~forbearance and control~~withdrawal reduction requirements as specified triggers for each control program occur. Strategies implemented to control rights will include, but not be limited to:

- ~~Long-term l~~Leases of Edwards groundwater withdrawal rights, with forbearance as may be required;
- Purchases of Edwards groundwater withdrawal rights, with forbearance as may be required;~~;~~
- Forbearance agreements for Edwards groundwater withdrawal rights;
- Placement of Edwards groundwater withdrawal rights in the EAA's Groundwater ~~Trust~~ Trust, with forbearance as may be required;~~and the forbearance of such rights;~~ and
- Acquisition of groundwater conservation easements, with forbearance as may be required.~~.~~

**~~Suspension /~~Forbearance Triggers**

***~~Suspension~~ Forbearance Increment One***

Forbearance~~Suspension~~ of pumping of 41,795 ac-ft of Edwards Aquifer Groundwater Withdrawal Rights will occur during the calendar year following a year during ~~when~~ which the Bexar County Index Well (J-17) is at or below 635 feet-mean sea level (ft-MSL) on the annual trigger date of October 1. This date provides affected permit holders ample time to make decisions to mitigate impacts resulting from the loss of the ability to access ~~the~~ forborne Edwards~~suspended~~ groundwater rights. The EAA General Manager's issuance of a notice of commencement of a forbearance year for this~~Announcing implementation of the~~ program after that date will result in ~~a~~ the complete ~~suspension~~ forbearance of the associated withdrawals for the following calendar year beginning on January 1.

***~~Suspension~~ Forbearance Increment Two***

~~Suspension~~ Forbearance of pumping of 50,000 ac-ft of Edwards Aquifer Groundwater Withdrawal Rights will be triggered in any year when the most currently available 10-year moving annual average of Edwards Aquifer recharge is at or below 500,000 ac-ft/yr, as determined by the EAA. U.S. Geological Survey (USGS) typically estimates the amount of recharge in the prior year by the end of April, ~~A~~and EAA will announce the triggering of the program by the end of May in any given year. ~~A~~nnouncing the triggering of the program will result in the~~a~~ complete forbearance~~suspension~~ of the associated withdrawals the following calendar year beginning on January 1.

***Supplementary ~~Suspension~~ Forbearance Increment Three***

~~Suspension~~ Forbearance of pumping of an~~the~~ additional 10,000 ac-ft/yr will occur in any year during which either ~~Suspension~~ Forbearance Increment One or ~~Suspension~~ Forbearance Increment Two is implemented.

**Control of Target Volume**

The EAA has consistently controlled over 100,000 ~~90,000~~ ac-ft of Edwards groundwater rights through leases and forbearance agreements under the predecessor components of obtaining the forbearance of Edwards groundwater rights through the use of this program for the past ten years. This experience in the Edwards Aquifer water market, coupled with the added flexibility of multiple

**Commented [ICF5]:** This comment will be considered during HCP chapter development.

ID # 051:

SMRF is concerned that the rolling recharge triggers are not sensitive enough based on what is happening this year, so we'd like to see the trigger number raised to 550,000 or 600,00 acre feet of recharge.

**Commented [ICF6]:** Text added to clarify timing of announcement of recharge threshold and when forbearance of pumping would take effect.

vehicles for control provided by this modified measure, indicates a reasonable likelihood of achieving control of the full target volume of Edwards Aquifer Groundwater Withdrawal Rights once funding is available and contracting begins.

## Interruptions Under Critical Period Management – Stage V

The EAA will continue to implement the interruption of groundwater withdrawal amounts for initial Rregular Ppermits through a Stage V permitted withdrawal reduction of 44 percent below authorized permitted pumping levels groundwater withdrawal amounts applicable in both the San Antonio and Uvalde pools. Stage V reductions for the San Antonio pool will be triggered at any time when (1) the 10-day rolling average of the J-17 index well levels is below 625 ft-MSL, or (2) springflows at Comal Springs are less than 45 cubic feet per second (cfs) as calculated as a ten-day rolling average, or less than 40 cfs as calculated as a three-day rolling average. Stage V reductions for the Uvalde pool will be triggered at any time when the 10-day rolling average for the J-27 Index Well water level is below 840 ft MSL. It is possible that some of the smaller municipal water providers who are entirely dependent on the Edwards Aquifer may not have sufficient water supplies to meet public health and safety needs when subject to Stage V critical period reductions. In such cases, municipal water providers will not be denied the use of groundwater from the Edwards Aquifer to meet public health and safety needs, but if they do not achieve the mandated reductions, they will incur substantial fines and penalties as determined by the EAA, pursuant to its enforcement rules and policies.

**Commented [ICF7]:** Suggested addition by Myron Hess for consistency with Uvalde pool reference in next sentence.

## Aquifer Storage and Recovery (ASR) or Equivalent Water Forbearance

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ID # 152:

[Insertion]: "or Equivalent Water Forebearance" after subsection title Aquifer Storage and Recovery

San Antonio Water System's (SAWS) ASR can be used to help maintain springflow in the Comal and San Marcos Springs by forbearing from and offsetting Edwards Aquifer permitted demand during a drought -of -record conditions as described below. The SAWS ASR facility will be used for recharge and storage and delivery of Edwards groundwater rights leased by the EAA, andEAA and delivered to SAWS for injection (i.e. recharge) into the ASR. When triggers are reached, as described below, SAWS may usewill recover water stored in the ASR, or other non-Edwards sources, to serve as a baseload supply in its service area and forbear making permitted Edwards withdrawals from certain identified wells nearest to the springs. As described below, an amount equivalent to the water in storage in recovered from the ASR may will be used recovered from the ASR to offset SAWS's forbearance of its permitted Edwards rights that would otherwise be available to meet its Edwards Aquifer demand.

**Commented [ICF9]:** Edit suggested by Myron Hess.

**Commented [ICF10]:** Edit suggested by Myron Hess.

**Commented [ICF11]:** Edit suggested by Myron Hess.

**Commented [ICF12]:** This comment will be considered during HCP chapter development.

ID # 024:

Use of may suggests there is no actual commitment.

The trigger condition for implementation of ASR springflow protection through SAWS's forbearance of its permitted Edwards rights in accordance with the EAHCP will be an aquifer level of less than 630 ft MSL or less at the J-17 index well during a repeat of drought conditions similar to the drought of record as indicated by a ten-year rolling average of Edwards recharge of 500,000 ac-ft or less, as determined by the EAA. When the trigger condition is met, SAWS will forbear from making Edwards withdrawals under its EAA-issued groundwater withdrawal permits from certain specified wells closest to the Comal Springs and may, at its discretion, recover groundwater from the ASR to offset the Edwards groundwater that SAWS was required to forbear pumping the ASR or other non-Edwards supplies capable of utilizing shared infrastructure will be activated by SAWS to deliver up to 60 million gallons per day to the SAWS distribution system. When the trigger condition, as described above, is met, pumping of from selected SAWS wells, including those on the northeast side of SAWS water distribution system—i.e., those nearer the springs—will be reduced forborne in an amount and timing that is defined in a forbearance schedule, on a monthly basis, equals the amount

**Commented [ICF13]:** This comment will be considered during HCP chapter development.

ID #s 041, 052:

Can more specificity be provided here regarding the dual trigger of J-17 level and rolling recharge? If following the same trigger protocol for Suspension Increment 2, which specifies announcement of annual and 10-yr rolling recharge by end of May, would the j-17 level also be assessed at end of May to determine if less than 630? Would the j-17 trigger be an instantaneous reading at end of May when rolling recharge <500k ac-ft announced?

SMRF is concerned that the rolling recharge triggers are not sensitive enough based on what is happening this year, so we'd like to see the trigger number raised to 550,000 or 600,00 acre feet of recharge.

~~of water returned from the ASR or obtained for this purpose from or other non-Edwards supplies capable of utilizing shared infrastructure~~. The total ~~reduction~~ amount to be forborne and available for recovery will be limited to the extent of the Edwards Aquifer water provided by the EAA for storage in the ASR. ~~SAWS will use up to 100 percent of the conveyance capacity of existing SAWS ASR facilities to recover water made available by EAA to offset SAWS's Edwards Aquifer demand.~~

In the injection (i.e. recharge) and recovering water from the ASR ~~and/or offsetting pumping~~ in response to the trigger condition being met, SAWS will attempt, to the extent practicable or necessary, to mimic the pattern of ~~delivery~~ injection and recovery developed by HDR (2011). That pattern ~~of delivery, however,~~ was intended to represent how the water in the ASR would have been managed in response to the drought of record that occurred in the 1950s. Future droughts of similar duration and magnitude undoubtedly will differ in the timing and pattern of recharge in a given year. Thus, the actual pattern of delivery of water from the ASR or of offsetting pumping may differ from what HDR used in its modeling simulations depending on the actual course of the drought (see HDR 2011) to achieve the intended level of springflow protection. Decisions as to the actual pattern of delivery will be determined by ~~SAWS~~ the EAA General Manager in conjunction with the Regional Advisory Group described below.

The use of the SAWS ASR is predicated on an assumption, informed by the groundwater modeling undertaken by HDR, that the SAWS ASR will be utilized to deliver approximately 126,000 ac-ft of water to SAWS's distribution system during a decadal drought similar to the drought of record. It is further predicated on the assumption from HDR (2011) that the maximum amount of water that will be delivered in a given year is 46,300 ac-ft. ~~SAWS retains the option to use other non-Edwards supplies in lieu of ASR recovery to achieve the same levels of springflow protection.~~

The management of the ASR to protect springflow involves some judgment and flexibility. SAWS will make decisions necessary to fulfill the ASR commitment consistent with the EAHCP. A Regional Advisory Group consisting of representatives from SAWS, the EAHCP program, the EAA, and key stakeholders including EAA irrigation permit holders, small municipal pumpers, the Spring cities (New Braunfels and San Marcos), environmental interests (inclusive of the Texas Parks and Wildlife Department), industrial pumpers, and downstream interests will provide advice to SAWS regarding the implementation of the program. If different from its representation on the EAHCP Stakeholder Committee, each entity or group will designate its representative(s). The Regional Advisory Group will meet as needed, generally once annually, and more frequently as significant implementation decisions are under consideration, with SAWS organizing and facilitating the meetings.

With a 30-year permit term, the potential, although presumably slight, exists for experiencing more than one drought similar to~~, or worse than,~~ the drought of record or for beginning the renewed EAHCP permit ~~new~~ term without full ASR storage available for offsetting pumping. Accordingly, it may be necessary to refill storage in the ASR emptied pursuant to this provision and the EAA will ensure that Edwards pumping rights ~~controlled~~ leased pursuant to the Water ~~Forbearance and~~ Control Programs are available to refill that storage as needed, consistent with the operational parameters for the ASR set out in the EAHCP and the implementation contract between SAWS and the EAA~~, forbearance, critical period management, and pumping reduction commitments.~~

**Commented [ICF14]:** Edits suggested by Myron Hess were replaced by edits suggested by Darcy Frownfelter.

**Commented [ICF15]:** Note this sentence reflects D. Frownfelter's edits where D. Frownfelter's edits and M. Hess's edits conflict.

**Commented [ICF16]:** Note this sentence reflects D. Frownfelter's edits where D. Frownfelter's edits and M. Hess's edits conflict.

## Evaluation of Comments for Consideration

### Comments for Consideration that will be Considered for Monitoring and Adaptive Management ~~and Monitoring~~

The following comments for consideration included in the Subcommittee report do not directly address changes to conservation measures, but the monitoring and adaptive management of conservation measures throughout implementation of the EAHCP. These comments for consideration will be addressed in a forthcoming memo that addresses monitoring and adaptive management in the EAHCP renewal and are not addressed herein further.

- Ongoing scientific evaluations during the permit term should consider relevant, new information that may improve springflow protection such as refined climate modeling and improved understanding of Edwards Aquifer recharge characteristics, inter-formational recharge (e.g., Trinity Aquifer levels and inter-formational connections), and/or surface water recharge (e.g., Medina Lake water levels and surface water flow changes).
- Routine adaptive management evaluations, or "check-ins," should occur during the 30-year ITP at ~~either~~ defined temporal intervals (e.g., every 10 years) and~~/or after extreme droughts if the Biological Objectives are not met~~ following periods when all the Springflow and Water Quality Objectives, as outlined in the Revised Recommended Biological Goals and Objectives for the Permit Renewal Memorandum (BIO-WEST and ICF, 2024), are not achieved.~~.~~ These evaluations could assess the effectiveness of forbearance programs and their triggers, updating them based on climate change impacts, recharge, pumping, aquifer levels, and springflow.
    - ~~An example of the ASR or equivalent water forbearance could be managed by creating create two triggers under Suspension Increment Two where there is a trigger at an 8-year moving average (recharge below 500,000 acre feet and J-17 below 230ft) for 20,000 acre feet forbearance and a second trigger at 10-years for additional 30,000 (if recharge remains below 500,000 acre feet and J-17 is below 230ft). Hypothetically - with the 126,000 available through ASR (or other SAWS water sources) this could result in multiple years of spring flow protections by providing buffer to extremely low flows that may occur between the previous trigger of 10-years and flow protection implementation.~~
- Adaptive management ought to be reserved for specific response to environmental changes, helping to ensure the long-term success of conservation efforts within the HCP and should not be included in the conservation measures section of the HCP.
- The adequacy and sensitivity of the ten-year rolling recharge trigger for ~~Suspension~~Forbearance Increment Two and ASR ~~recovery/offset trigger~~forbearance should be re-evaluated during the 30-year ITP based on a defined temporal interval (e.g., every 10 or 15 years) and after instances when springflow and water quality objectives are not achieved, to assess how observed effects of climate change and updated modeling efforts, if such updated modeling is needed to reflect significant advances in science, match the results of current modeling efforts, particularly as it relates to recharge, pumping, aquifer level, and springflow. The trigger should be adjusted, as appropriate, based on those evaluations.
- The annual USGS recharge estimations may not accurately account for changes in the inter-formational flows between the Trinity and the Edwards aquifers, more information is

**Commented [ICF17]:** This comment will be considered during HCP chapter development.

ID # 153:

[Insertion to this section]: An example of the ASR or equivalent water forbearance could be managed by creating create two triggers under Suspension Increment Two where there is a trigger at an 8-year moving average (recharge below 500,000 acre feet and J-17 below 230ft) for 20,000 acre feet forbearance and a second trigger at 10-years for additional 30,000 (if recharge remains below 500,000 acre feet and J-17 is below 230ft). Hypothetically - with the 126,000 available through ASR (or other SAWS water sources) this could result in multiple years of spring flow protections by providing buffer to extremely low flows that may occur between the previous trigger of 10-years and flow protection implementation.

**Commented [ICF18]:** Insertion here is by Kimberly Meitzen.

**Commented [ICF19]:** Text edits are suggestions of Mark Enders.

**Commented [ICF20]:** Text edits are suggestions of Mark Enders.

needed to better understand that relationship. Drought impacts and increases in Trinity Aquifer withdrawals may appreciably reduce recharge to the Edwards Aquifer through reduced subsurface contributions and reduced baseflow of creeks and rivers that provide recharge to the Edwards. Ongoing research about the Trinity and Edwards Aquifer inter-formational flows relationship is needed to evaluate the effect of climate change on the ten-year rolling recharge triggers.

- In the current version of the EAHCP, Stage V cutbacks greater than 44 percent are discussed in the transition to Phase II. Something similar could be included for the renewed EAHCP through adaptive management evaluations.

**Commented [ICF21]:** This comment for consideration was moved here from the prior draft as it suggests this consideration through adaptive management.

The following sections evaluate comments for consideration raised by the Subcommittee for the Springflow Protection Measures.

### Controlling more than 10,000 ac-ft/year east of Cibolo Creek

**Comment for Consideration:** It would be beneficial to explore long-term options for controlling more than the proposed minimum of 10,000 ac-ft/yr east of Cibolo Creek, closer to the Comal and San Marcos Springs systems.

**Rationale and Challenges:** Controlling more water east of Cibolo Creek to allow for a greater extent of groundwater pumping forbearance ~~suspension~~ closer to the Comal and San Marcos Springs systems may increase the marginal effectiveness of ~~suspending~~ forbearing groundwater pumping to maintain springflows that meet the springflow objectives. However, some flexibility as to the geographic extent across which this minimum of 10,000 ac-ft would be controlled is necessary to make the measure feasible to achieve for EAA.

**Recommendation:** No change to conservation measures. The current conservation measure already includes prioritizing control of 10,000 ac-ft of groundwater within Comal, Hays, Atascosa, and Bexar counties, acknowledging the importance of controlling water closer to the Comal and San Marcos Springs systems while allowing for necessary flexibility to make this measure achievable. It is important to note that the programs designed to control water during severe drought are voluntary in nature and successful implementation is dependent on availability and cost. Additionally, the 10,000 ac-ft goal expressed above would account for almost one third of the total permitted water within Hays, Comal, and Guadalupe counties (36,000 ac-ft).

### ~~Suspension~~ Forbearance Increment Two: triggers for minimum springflows

**Comment for Consideration:** For ~~Suspension~~ Forbearance Increment Two, consider adding triggers for minimum springflows of 30 cfs for Comal and/or 45 cfs for San Marcos, over a 30-day duration.

**Rationale and Challenges:** Adding triggers for minimum springflows at the Comal and San Marcos systems based on a 30-day average springflow would make the ~~suspension~~ forbearance of pumping more temporally sensitive to observed springflows, which may reduce the risk that springflows would remain below the minimum springflow objectives for extended periods of time. However, a lag time between the trigger for ~~suspending~~ forbearance of Edwards Aquifer Groundwater Withdrawal Rights and when the ~~suspension~~ forbearance takes effect is needed to allow groundwater permit holders time to mitigate the economic impacts resulting from the loss of the ability to access the ~~suspended~~ forborne groundwater. Presently, this lag time is at least 3 months (October 1 to January 1 the following year).

**Recommendation:** No change to conservation measures. Stage V Critical Period Management is already triggered by springflows and applies a 44 percent reduction in pumping to all EAHCP permit holders, except for persons authorized to withdraw equal to or less than three acre-feet per yearAF/year. A trigger for ~~suspending~~ forbearing 50,000 ac-ft of Edwards Aquifer Groundwater Withdrawal Rights based on a 30-day time period is not feasible given the necessary lag between trigger and implementation of groundwater right ~~suspensions~~forbearance.

## ~~Suspension~~ Forbearance Increment Two: more sensitive to triggering

**Comment for Consideration:** The ~~Suspension~~ Forbearance Increment Two forbearance trigger should be further evaluated and may need to be more "sensitive" to triggering. The trigger should be based on achieving the 11-month and 1-month minimum springflow objectives ~~minimum flows~~ for Comal and San Marcos as set forth in the Biological Objectives for the "Low-Flow~~low-end~~" MODFLOW projection model runs. Applicable trigger adjustments could be in the form of a lesser rolling average period (i.e. 5- or 7-year rolling recharge average), a higher recharge value (i.e. trigger when the 10-yr rolling average decreases below 550,000 or 600,000 ac-ft/yr) and/or a springflow trigger.

**Rationale and Challenges:** Changing the ~~Suspension~~ Forbearance Increment Two trigger by decreasing the rolling average time interval from 10 years to 5 or 7 years, or by increasing the recharge volume from 500,000 to 550,000 or 600,000 would mean that forbearing ~~suspending~~ 50,000 ac-ft of withdrawal rights would be more likely to occur throughout the permit term. Forbearing ~~Suspending~~ 50,000 ac-ft more often throughout the permit term would reduce the risk of springflows falling below levels set in the Biological Objectives. The springflow projection modeling under various climate scenarios included three occurrences (each attributed to one of three of the 17 climate scenarios) where the projected monthly average springflows were below the minimum springflow objectives. These occurrences were during years after 2050 and for a duration from 1 to 4 months (see Table 2-3 in Edwards Aquifer Authority 2024).

**Recommendation:** No change to conservation measures. The proposed trigger for "~~Suspension~~ Forbearance Increment Two" forbearance is designed to help meet low flow springflow thresholds during repeat of drought of record conditions. Current modeling of these conditions and implementation of the proposed measures shows that such a trigger is successful in accomplishing this result, as presented at the Implementing Committee meeting on September 19, 2024 (recording available here: 2024-09-19-eahcp-implementing-committee - Sep 25th, 2024). The three climate scenarios discussed in the rationale for the comment for consideration indicate the potential for springflows to fall below the minimum springflow objectives for 1-to-4-month durations occurring after 2050. However, no climate scenario predicted long-term drought conditions as severe as a repeat drought of record conditions. Designing conservation measures to protect springflows during shorter-term drought conditions than the drought of record could lead to situations where measures are implemented prematurely and adequate water is not available to protect springflows and the associated species habitat in more severe, persistent, drought conditions. The existing springflow protection measures are designed for springflow protection during the worst conditions foreseeable for Covered Species based upon best available science, which remains a long-term, severe drought with conditions similar to the drought of record.

**Commented [ICF22]:** Edit suggested by Darcy Frownfelter.

**Commented [ICF23]:** This comment will be considered during HCP chapter development.

ID # 026:

Although Stage V activation occurs quickly, it does not necessarily result in short-term relief because, although triggered based on springflow levels, compliance is assessed on an annual basis and may not result in near-term pumping reductions. However, it does seem true that a "higher" trigger for Forbearance Increment Two may create problems for responding to a recurrence of DOR-like conditions. Still, there would be great value in identifying an option for a more flexible, and responsive, response to short-term conditions worse than predicted by modeling. One such option would be to include, if acceptable to SAWS, a measure to provide compensation for SAWS to reduce its Edwards pumping, within specified levels and durations acceptable to SAWS, in response to springflows falling below the minimum springflow targets—perhaps by some specific level below the targets and/or a specific duration—when full ASR forbearance triggers have not been met.

It appears that SAWS now has more flexibility in its water supply portfolio than when the current EAHCP was developed. For example, such an approach would only be triggered under conditions when modeling predictions have proven to be incorrect: that is, when springflow levels fall below the lowest minimum predicted levels identified in modeling (e.g., fall below 24 cfs at Comal or below 27.6 cfs at San Marcos by some amount, such as 10%) or stay below the predicted levels for longer than predicted, regardless of whether the 10-year recharge trigger has been met. Such triggers would be set to respond to flow conditions worse than those predicted through modeling. To help keep SAWS whole, any such pumping reductions could be offset against the DOR-triggered ASR suspension obligation agreed to by SAWS. If there is a way to make it work for SAWS, that type of approach could add flexibility to springflow protection measures.

If the modeling is right, the short-term suspension component would never be triggered. If the modeling is wrong, we would have a measure available to respond. The volume available for responding to such a short-term drought would need to be limited to minimize disruptions both for SAWS and for the ability to respond to prolonged droughts that do closely match the DOR in the frightening event that both happen. If we encounter flows significantly below the predicted minimums and have not triggered the 10-year rolling recharge value—a not unreasonable scenario given the levels of uncertainty in modeling—an approach of this type, if it could be made to work for SAWS, would provide the potential to respond. The entire wild populations of these species is at risk, which counsels for extra precautions.

**Commented [ICF24]:** Text edits here are suggestions from Mark Enders. Mark also suggested moving this comment for consideration to the Adaptive Management and Monitoring Section, but text will remain here.

~~**Stage V cutbacks greater than 44 percent**~~

~~**Comment for Consideration:** In the current version of the EAHCP, Stage V cutbacks greater than 44 percent are discussed in the transition to Phase II. Something similar could be included for the renewed EAHCP through adaptive management evaluations.~~

~~**Rationale and Challenges:** The current EAHCP Stage V measure includes text noting flexibility of "greater than" than 44 percent cutbacks. However, the current EAHCP has not amended the 44 percent threshold, therefore the 44 percent remains as-is in the proposed Stage V.~~

~~**Recommendation:** No change. Amending the 44 percent cutback amount would involve major changes to existing and future contracts and interlocal agreements with all Edwards Aquifer Permittees.~~

**Commented [ICF25]:** This comment for consideration is now listed above to be considered in monitoring and adaptive management.

### ASR implementation agreements

**Comment for Consideration:** ASR implementation agreements between EAA and SAWS for the Renewed EAHCP are ongoing, therefore, the ASR program administrative structure described above is subject to change.

**Rationale and Challenges:** Proposed ASR text is subject to change as contracts and legal terms are negotiated for the Renewed EAHCP.

**Recommendation:** Update text in the proposed ASR measure, as appropriate, when implementation agreements are finalized prior to finalizing the Renewed EAHCP. Keep the ASR measure text appropriately general, consistent with ensuring adequate commitments to achieve springflow protections, to ~~not create~~avoid conflicts ~~with~~ between the measure and any future details to be determined in implementation agreements.

**Commented [ICF26]:** Edits suggested by Myron Hess.

**Commented [ICF27]:** Edits suggested by Daniel Large.

## 3.2 Comal Springs System

### Subcommittee Report Text with Recommended Edits

### Aquatic Recreation Management

Aquatic recreation can have ~~significant~~ negative impacts on Covered Species habitats by increasing disturbance and degrading habitat quality in both aquatic and riparian systems. The implementation of appropriate recreational management measures is necessary to mitigate these impacts and protect Covered Species and their habitats.

**Commented [ICF28]:** Subjective term with regulatory meaning in other contexts (e.g., NEPA) so removed here.

Recreation in the Comal River is primarily centered on tubing specifically, at a recreational entry point along a small section of the New Channel of the Comal River, just before it merges with the Old Channel. Schlitterbahn Waterpark & Resort operates a popular tube chute ride that flows into the Old Channel of the Comal River. ~~Future plans for Schlitterbahn rides and operations, as shared by Schlitterbahn management, do not include any activities in the Comal River.~~ Additionally, within Landa Park, water from Spring Run 2 feeds into a small wading pool, offering limited recreational opportunities for park visitors.

**Commented [ICF29]:** Per Amy Niles (CONB): Schlitterbahn plans to continue using the ride that flows into the Old Channel. They do not have any plans to expand that ride.

While the City of New Braunfels prohibits recreation in Landa Lake at Landa Park, the Comal County Water Recreation District No. 1 (CCWRD No. 1) oversees Spring Island, along with the smaller

islands, bridges, and riverbeds within its jurisdiction, including areas where recreation still occurs in the upper part of Landa Lake, upstream of Landa Park.

To minimize and mitigate the impacts of recreation, the City of New Braunfels will enforce City Ordinances and Policies in Chapter 86 – Parks and Recreation and Chapter 142 – Waterways. The City of New Braunfels will not reduce the levels of protections provided below, and will continue to manage recreational use of the Comal Springs system by conducting the following measures within City of New Braunfels limits:

a. Providing educational resources, including maps of the river with public access points and signage about park rules, the Covered Species, their Critical Habitat, and efforts to protect the Covered Species.

~~a.~~b. ~~Install and maintain~~Installing and maintaining signage ~~and protective barriers around sensitive habitats~~ within the Comal Springs system to restrict public access and minimize disturbances to aquatic flora and fauna.

~~b.~~c. Limiting recreation on Landa Lake in Landa Park to paddle boats.

~~c.~~d. Limiting recreational access to the Spring Runs in Landa Park solely to the Wading Pool in Spring Run 2.

~~d.~~e. Restricting access to the Old Channel; except for the continuation of current levels of Schlitterbahn operations within its present location.

~~e.~~f. Restricting access to the Mill Channel portion of the New Channel.

~~f.~~g. Prohibiting jumping or diving from bridges, trees, and elevated structures into the Comal River or other water bodies.

~~g.~~h. Prohibiting the use of disposable containers, including glass, Styrofoam, polystyrene, and other disposable materials, on the Comal River~~, and in adjacent park areas.~~

~~h.~~i. Prohibiting the use of cast nets and non-native live bait for fishing.

~~i.~~j. Prohibiting the release of non-native aquatic animals in waterways.

## Litter Management

Litter refers to any form of waste or discarded material that is improperly disposed of in the environment, particularly in public spaces such as parks and waterways. Litter has wide-ranging negative impacts on aquatic organisms and their habitat, including water pollution and habitat degradation and direct harm to the organism. Preventing litter and promoting sustainable waste management practices are essential for protecting the Covered Species.

The City of New Braunfels will be responsible for the collection and removal of litter throughout the Comal Springs system and surrounding park areas. Litter prevention efforts will include educating park and river users on the negative effects of litter on the environment, including the Covered Species, and may include broader education efforts aimed at minimizing litter in areas throughout the Comal River watershed.

The City of New Braunfels will continue to implement its prohibition of disposable ~~food and beverage~~ containers on the Comal River.

**Commented [ICF30]:** Items added to list below to include additional protective measures.

**Commented [ICF31]:** Edits suggested by ICF.

**Commented [ICF32]:** Myron Hess suggested tense change for consistency with other items in list.

**Commented [ICF33]:** Text deletion is a suggestion from Phillip Quast.

**Commented [ICF34]:** Text deletion is a suggestion from Phillip Quast.

## Aquatic Vegetation Management

Submerged aquatic vegetation is essential natural habitat for fountain darters, providing them with ecological resources and shelter necessary for healthy population resiliency. Aquatic recreation, exposure of wetted habitat during severe drought, competition from non-native aquatic vegetation, scouring from flood events, floating vegetation accumulations, and reduced diversity of native aquatic vegetation can negatively impact fountain darters and the submerged aquatic vegetation they utilize as habitat. The presence of diverse aquatic vegetation contributes to maintaining quality habitat crucial for the survival and resilience of the fountain darters and other aquatic organisms.

To mitigate the impacts of low-flow and recreation, the City of New Braunfels will implement aquatic vegetation management strategies within the Long-Term Biological Monitoring Reaches and Restoration Reaches of the Comal Springs system, shown in Figure 1 and to the extent possible, within other ~~high priority~~ areas of the Old and New Channels to be identified through the adaptive management process. Strategies include the monitoring, planting, and maintenance of native aquatic vegetation and removal of non-native aquatic vegetation in those reaches. Removal efforts will be accompanied by timely planting of native aquatic vegetation. Culling of submerged aquatic vegetation, undertaken with due care to minimize adverse impacts to Covered Species, may be implemented to aid in the reduction of floating vegetation.

**Commented [ICF35]:** Suggest deleting "high priority" to avoid subjective use of term and potential confusion. Text added to end of sentence means this qualifier is not needed.

Aquatic vegetation used for planting should be sourced and propagated within the Comal Springs system or, if necessary, may be obtained from sources that meet locality and disease-free criteria. Management and maintenance efforts will be designed and implemented to achieve areal coverage using simple (*Potamogeton*, *Sagittaria*, and *Vallisneria*) and complex (*Bryophyte*, *Cabomba*, and *Ludwigia*) aquatic vegetation as set forth in the fountain darter habitat Biological Objectives for the Comal Springs system.

With appropriate care to minimize adverse impacts to all Covered Species, aquatic vegetation that is removed in order to conduct Covered Activities such as pumping equipment maintenance, USGS gage measurement, or construction projects will be replanted at favorable locations within the Comal Springs system, as appropriate.

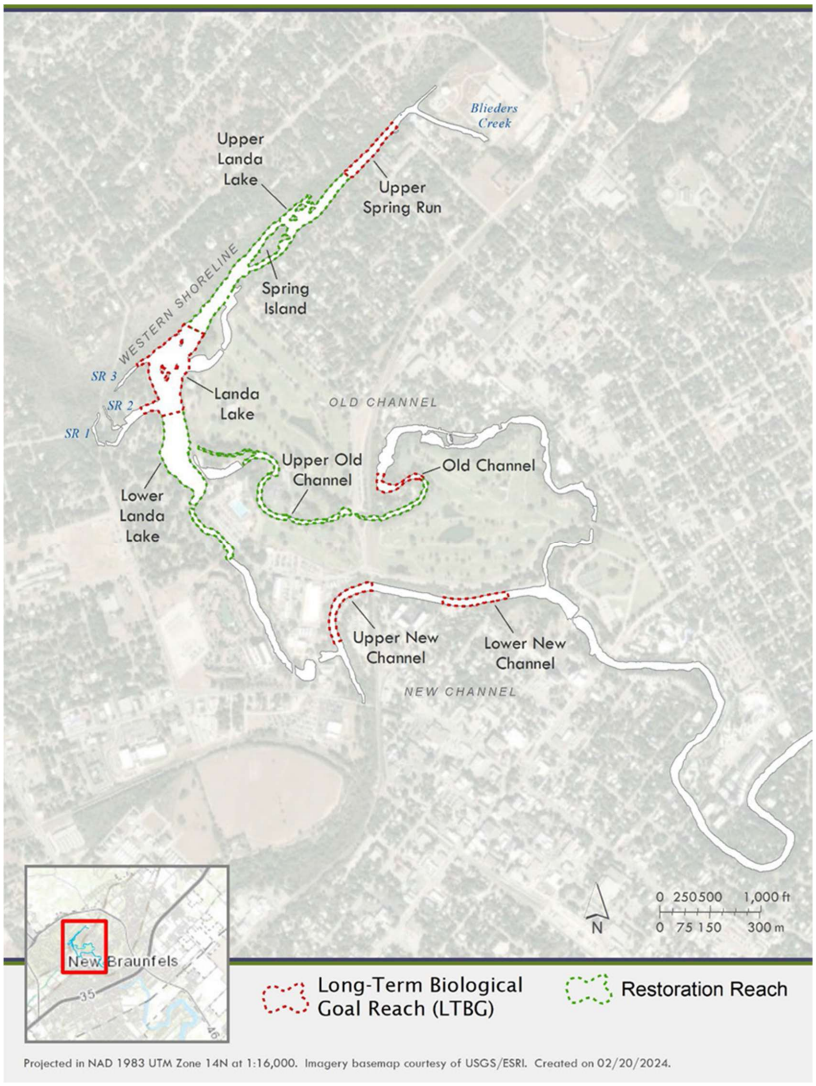


**Figure 1. Comal Springs System Long-term Biological Goal/Restoration Reaches**

## Floating Vegetation Management

Floating vegetation mats have been demonstrated to negatively impact submerged aquatic vegetation that serves as fountain darter habitat. The mats block sunlight, reduce water velocity, and

generally interfere with the health of aquatic vegetation. Reducing floating vegetation mats increases the resilience of submerged aquatic vegetation.

The City of New Braunfels will manage floating vegetation by dislodging accumulations of floating vegetation utilizing methods that result in only minimal disturbances to the Covered Species and their habitat throughout Landa Lake and the Old Channel of the Comal River. Litter and aquatic organisms will be removed from floating vegetation prior to dislodging it.

### Non-Native Animal Species Management

Non-native species are organisms that do not naturally occur in a particular area and are often introduced by human activities. Non-native animal species can pose ~~serious~~ threats to the Covered Species through competition, predation, disease transmission, habitat alteration, and ecosystem disruption. Effective management strategies, such as prevention, eradication, and control of problematic non-native species, are essential for minimizing negative impacts to Covered Species.

**Commented [ICF36]:** Removing subjective language.

Management of non-native animal species will include the removal of non-native armored catfish, sailfin catfish, tilapia, nutria, and other species that are deemed a threat, from the Comal Springs system. Parasite monitoring will occur under the EAHCP Biological Monitoring Program. The City of New Braunfels will be responsible for managing the removal of potentially harmful non-native animals through the use of spearfishing, spear guns, or other approved methods designed to facilitate efficient removal of target non-native animals while minimizing adverse impacts to Covered Species and the ecosystem. Non-native species introduction will be reduced by the City of New Braunfels through maintaining and enforcing its prohibitions on aquarium dumping, the release of non-native aquatic animals in waterways, and the use of non-native live bait species for fishing. The City of New Braunfels will provide and maintain educational resources and signage about the importance of preventing the introduction of non-native animals and controlling them where they have been introduced. In addition, if monitoring indicates problematic levels of parasites, the City of New Braunfels, in collaboration with EAA staff, will develop and implement responsive measures.

### Riparian Zone Management

Vegetated riparian zones are essential for maintaining good water quality in the Comal Springs system because they stabilize the banks, prevent erosion, and filter runoff before it enters the aquatic system. Additionally, managing and maintaining vegetated riparian zones provides essential habitat and food sources for the Comal Springs riffle beetle and the Comal Springs dryopid beetle.

The City of New Braunfels will implement riparian restoration and maintenance strategies to increase the extent and health of the riparian zone within the Comal Springs system. Restoration efforts will include the removal of non-native riparian vegetation and the timely planting of native riparian vegetation. Deer-resistant and drought-tolerant native riparian vegetation will be prioritized for planting within the riparian habitat zones. Plantings will also consider use of native species that discourage potentially harmful public access, or fences may be used for that purpose. Restoration efforts may also include more intensive bank stabilization and erosion control projects to reduce riparian degradation where necessary, but use of hardened structures will be minimized.

## Sediment Accumulation Management

Managing accumulations of excessive sediment is important to maintaining the health and functionality of aquatic ecosystems. Detrimental effects of excessive sediment accumulation for the Covered Species include increased turbidity, reduced water quality, Comal Springs riffle beetle habitat degradation, and reduced flow from spring orifices.

In addition to efforts designed to minimize sediment inputs (see Riparian Zone Management), measures such as dredging, suction, or fanning of sediment will be implemented to mitigate the impacts of sedimentation, as needed, and in a manner designed to minimize direct adverse impacts on the Covered Species.

## Flow-Split Management in the Old and New Channel

Flow-split management involves manually partitioning springflow from Landa Lake into the Old and New Channels of the Comal River. Flow-split management is intended to protect habitat for fountain darters in the Old Channel by reducing disturbance from elevated base flows and high-flow scouring events and by helping to ensure adequate flows during drought conditions. Flow-split management also contributes to maintaining water temperatures in the Old Channel necessary for the fountain darter life cycle. Finally, flow-split management at low-flows prioritizes flow in the Old Channel while also allowing a portion of the available water to either stay in Landa Lake maintain water levels near Spring Island associated with wetted surface habitat for Comal invertebrate covered species, or naturally flow in the New Channel.

**Commented [ICF37]:** Added to clarify an oft-forgotten purpose of flow-split management. Revised between draft and revised draft memos.

The City of New Braunfels will adjust the amount of flow entering the Old Channel during low, average, and high flow conditions by adjusting the gates that control flow from Landa Lake into the Old Channel. In order to maintain the potential for proper flow-split management operations, the City will also ensure maintenance and repair of: a) the gates and culverts connecting Landa Lake and the Old Channel, and b) the dam on Landa Lake. In addition, the City will periodically assess and, as necessary, maintain a flow path adequate to convey water from Landa Lake to the Old Channel during low flow conditions.

The flow-split strategy will be based on USGS real-time flow gages in the Comal River (gage #08169000), Old Channel (gage #08168913), and New Channel (gage #08168932) as illustrated in Table 1. When total Comal springflow ~~is less than~~ ~~reaches~~ is at or below 50 cubic feet per second (cfs) at gage #08169000, priority in managing the flow-split will be placed on maintaining suitable conditions in the Old Channel.

**Commented [ICF38]:** Rephrasing suggested by Myron Hess.

**Table 1. Flow-split management for Old and New Channels of the Comal River**

| **FLOW-SPLIT MANAGEMENT FOR OLD AND NEW CHANNELS** | | | | |
|---|---|---|---|---|
| Total Comal Springflow (cfs) Gage #08169000 | Old Channel (cfs) Gage #08168913 | | New Channel (cfs) Gage #08168932 | |
| | Fall, Winter | Spring, Summer | Fall, Winter | Spring, Summer |
| 350+ | 65 | 60 | 280+ | 290+ |

| | | | | |
|---|---|---|---|---|
| 300 | 65 | 60 | 235 | 240 |
| 250 | 60 | 55 | 190 | 195 |
| 200 | 60 | 55 | 140 | 145 |
| 150 | 55 | | 95 | |
| 100 | 50 | | 50 | |
| 80 | 45 | | 35 | |
| 70 | 40 | | 30 | |
| 60 | 35 | | 25 | |
| 50 and less | ~~35~~Maximum possible~~35~~ | | -Remaining flow as available | |
| ~~40~~40 | ~~30~~30 | | - Remaining flow as available | |
| ~~30~~30 | ~~20~~20 | | - Remaining flow as available | |

**Commented [ICF39]:** Edits to this row and rows below to reflect what is stated in text above this table.

### Surface Water Diversions ~~and Golf Course Management~~

The diversion of surface water from the Old Channel of the Comal River is diverted to irrigate the Landa Park Golf Course. Pursuant to Texas Commission on Environmental Quality (TCEQ) Certificates of Adjudication Nos. 18-3824, 18-3824A, 18-3824B, 18-3824C, and 18-3826, and 18-3826A, the City of New Braunfels is authorized to divert a combined total of 300 ac-ft/yr of water for irrigation use within a diversion segment along the Old Channel of the Comal River. The combined total instantaneous diversion rate authorized is 3 cfs.

**Commented [ICF40]:** This comment will be considered during HCP chapter development.

ID # 064:

Irrigation during critical low flows is not the highest and best use of the river water, and we'd like to see the City of New Braunfels agree to cease all use of surface water out of the old channel if springflow is less than 30 cfs.

Currently, two pumps capable of diverting at a combined rate of 1.32 cfs, are used for irrigation diversions. Historically, the City of New Braunfels has not utilized its full permitted surface water rights for irrigation. In accordance with surface water right authorizations, the City will use intake pumps equipped with a mesh screen of 0.25 inches or less and a maximum flow-through velocity of 0.5 cfs to minimize potential entrainment and impingement of aquatic organisms by surface water diversions from the Old Channel. The City of New Braunfels also will limit its combined diversion rate for those irrigation diversions to no greater than 1.32 cfs. Pursuant to the EAHCP, the City of New Braunfels has installed piping to facilitate use of reclaimed water for irrigation of the golf course as a mechanism for reducing diversions from the Old Channel.

## Evaluation of Comments for Consideration

### Comments for Consideration That Do Not Address Conservation Measures

The following comments for consideration included in the Subcommittee report do not recommend changes to conservation measures but were considered as additional context when evaluating recommended changes to conservation measures for the Comal Springs system.

- The City of New Braunfels already implements recreation management by restricting public access to Landa Lake through Landa Park, the Old Channel, and portions of the New Channel of the Comal River so that recreation occurs outside of the habitat conservation efforts.
- The City of New Braunfels disposable container ordinance includes prohibitions for the Comal and Guadalupe rivers within the city limits.

## Comments for Consideration That Will Be Considered for Monitoring and Adaptive Management

The following comments for consideration included in the Subcommittee report do not directly address changes to conservation measures, but the monitoring and adaptive management of conservation measures throughout implementation of the EAHCP. These comments for consideration will be addressed in a forthcoming memo that addresses monitoring and adaptive management in the EAHCP renewal and are not addressed herein further.

- Removal and planting methodologies of aquatic vegetation will be reevaluated when Comal springflow decreases below 130 cfs.

### Consideration of Recreational Limitations During Low Flow ~~Times~~Conditions

**Comment for Consideration:** There was discussion of the potential value of additional limitation on recreational access to portions of the New Channel during periods of extreme low flows. However, in the absence of specific information about the nature of the potential adverse impacts from recreation in those areas (e.g., water depth, co-occurrence of recreation and Covered Species, and likely recreational impact on aquatic vegetation) during extreme low flows, no recommendations were developed for additional recreational limitations in the New Channel.

**Rationale and Challenges:** Limiting recreational access to portions of the New Channel during extreme low flows could protect habitats for fountain darters and other Covered Species by reducing physical disturbances to aquatic vegetation, which aligns with Biological Objectives for habitat conservation and take minimization. However, the lack of specific data on recreational impacts during these conditions creates uncertainty about the effectiveness of such measures. Implementing additional restrictions without clear evidence may lead to unnecessary public access limitations and enforcement challenges.

**Recommendation:** Integrate the need for further monitoring and data collection on recreational impacts during low-flow conditions into the Renewed EAHCP's adaptive management framework. Use findings from this monitoring to inform any future decisions about access restrictions.

### Clarification of Ownership and Control for Vegetation Management

**Comment for Consideration:** The questions about ownership and/or control of portions of lake bottom, river bottom, and frontage, particularly related to vegetation management, seem to require further consideration and, ideally, clarification through contractual arrangements.

**Rationale and Challenges:** The Permittees must have direct control of Covered Activities, including conservation measures, so that they can be implemented according to the commitments set forth in the EAHCP. Resolving ownership and control issues will ensure that necessary contractual arrangements are in place to avoid legal conflict or ambiguity when it comes to implementing

conservation measures. This measure enhances coordination among stakeholders and strengthens the enforceability of conservation actions.

**Recommendation:** Because the Permittees must be able to demonstrate necessary legal control to implement the EAHCP, the questions about ownership and/or control of portions of the Comal Springs system should be answered during the permit renewal process such that the implementation chapter of the Renewed EAHCP can clearly explain the necessary contractual arrangements that need to be made to implement conservation measures.

### Aquatic Vegetation Management Downstream of Channel Confluence

**Comment for Consideration:** Aquatic vegetation management should be considered for implementation downstream of the Old and New Channel confluence of the Comal River. Although this area is recognized as fountain darter habitat, previous efforts to implement aquatic vegetation strategies have been unsuccessful due to challenges such as sediment composition, limited public access to the Comal River, water depth, changes in velocities, and the impact of recreational activities. Conservation efforts may include small-scale aquatic vegetation management activities such as the removal of non-native vegetation to improve fountain darter habitat. Planting may also occur in this area if a large scouring event results in substantial denuding of vegetation.

**Rationale and Challenges:** Implementing aquatic vegetation management downstream of the Old and New Channel confluence could enhance habitat conditions for the fountain darter, especially in areas impacted by scouring events or non-native vegetation. However, the challenges of sediment composition, vulnerability to scouring events, access limitations, and recreational impacts highlight logistical and feasibility concerns that create uncertainty in how effective restorations efforts would be.

**Recommendation:** No change to conservation measures. Given the feasibility issues and uncertainty as to how ~~successful~~ effective restoration efforts would be downstream of the Old and New Channel confluence of the Comal River, this area should not be identified for restoration unless it is deemed necessary to achieve the biological goals and objectives and/or the permittees determine that restoring these areas is the best use of funds available to implement the plan~~by USFWS to meet permit issuance criteria~~. Note that the *Aquatic Vegetation Management* conservation measures notes that areas outside of Long-term Biological Goal and Restoration reaches will be evaluated for restoration through the adaptive management process.

**Commented [ICF41]:** Edit made per comment from Daniel Large.

### Expanding Aquatic Vegetation Management Beyond Biological Objective Reaches

**Comment for Consideration:** Aquatic vegetation management should be extended to portions of the Old and New Channels outside of the Long-term Biological Goal and Restoration reaches to the extent reasonably practicable. These areas provide important habitat for the fountain darter. The current EAHCP anticipates additional habitat being protected through aquatic vegetation management outside of those specific reaches, particularly downstream of the confluence of the Old and New Channels. That work has not occurred and areas upstream of the confluence may present greater opportunity to improve habitat conditions.

**Rationale and Challenges:** Expanding aquatic vegetation management to additional areas could provide supplementary habitat for the fountain darter and increase ecosystem resilience. This aligns with the recommended Biological Goals and Objectives for the permit renewal (BIO-WEST and ICF 2024) of conserving habitat and resilient fountain darter populations. However, extending

conservation measures beyond Long-term Biological Goal and Restoration reaches would require additional costs to implement the Renewed EAHCP. The existing *Aquatic Vegetation Management* conservation measure notes that to the extent possible, areas outside of the Long-term Biological Goal and Restoration reaches will be identified for restoration through the adaptive management process. ~~The current EAHCP states that "the focus of native vegetation restoration will be on Landa Lake downstream of Spring Run 3 but above the New Channel USGS weir and on the portions of the Old Channel bordered on both sides by City of New Braunfels' property, including the Old Channel ERPA. Restoration efforts will also include establishing additional Cabomba along the eastern shoreline of Landa Lake and along the New Braunfels' golf course property to create valuable fountain darter habitat."~~

**Recommendation:** No change to conservation measures. Given the additional costs to restore and monitor aquatic vegetation, additional areas outside of Long-term Biological Goal and Restoration reaches should not be identified for restoration unless it is deemed necessary to achieve the biological goals and objectives and/or the permittees determine that restoring these areas is the best use of funds available to implement the plan~~by USFWS to meet permit issuance criteria~~.

### Consideration of Impacts from Low-Flow Removal Activities

**Comment for Consideration:** Removal and dislodgement efforts during low flow conditions could potentially be harmful instead of beneficial due to fountain darter habitat impacts (i.e. disturbance of substrate and rooted aquatic vegetation) that can occur as a result of operating canoes, kayaks, barges or other vessels in relatively shallow water.

**Rationale and Challenges:** Efforts to dislodge floating vegetation can result in temporary disturbance to fountain darters. Floating vegetation that is not dislodged or removed shades submerged aquatic vegetation and, if left long enough, can result in submerged aquatic vegetation dying and degradation and loss of fountain darter habitat. However, there are limited options available to dislodge or remove floating vegetation during low flow conditions due to the shallow depths and inability to get equipment in the water to target the floating vegetation.

**Recommendation:** No change to conservation measure. This comment was intended to explain that while it is important to address floating vegetation during low flow conditions (EAHCP § 5.2.4), dislodgement and removal methods are limited due to the shallow depth. Presently available methods include dragging kayaks, canoes, or other equipment loaded with vegetation through sensitive habitat. The current text allows for flexibility of implementation during a range of flow conditions.

### Referencing City Ordinances on Non-native Species Control

**Comment for Consideration:** Consider citing the following City of New Braunfels Code of Ordinances: Sec. 142-6- Control of Non-native Organism Introduction into Waterways and Sec. 142-4 – Methods of Fishing.

**Rationale and Challenges:** Citing local ordinances on non-native species control strengthens the HCP by directly referencing enforceable legal measures already in place. These ordinances align with HCP goals by addressing the introduction and management of non-native organisms, which pose threats to native habitats and Covered Species. Referencing these ordinances enhances the clarity and enforceability of the HCP while promoting community compliance through established

local rules. However, reliance on these ordinances alone may not fully address all non-native species risks, necessitating broader strategies and coordination beyond the scope of city jurisdiction.

**Recommendation:** No change to conservation measures. Both the Recreation Management (items i and j) and the Non-Native Animal Species Management measures currently contain text related to the prohibition of non-native species introduction. The HCP should clearly state conservation measures as stand-alone commitments that will appear in the incidental take permit. Therefore, it should not reference local ordinances as conservation measures, because these ordinances could change apart from any action taken under the HCP.

### Limitations of Flow-Split Management under Low Flow Conditions

**Comment for Consideration:** Due to infrastructure on the New Channel, the flow-split management plan cannot reliably achieve flows that equal the previously specified combined values of the Old and New Channel at total flows less than 50 cfs.

**Rationale and Challenges:** The existing EAHCP specifies in Table 5-3 flow-split management for the Old and New Channels when total Comal Springs flow is at 40 cfs and 30 cfs. These targets are not achievable, given infrastructure limitations.

**Recommendation:** Table 1 in this memo has been modified to reflect what can be achieved for flow-split management.

### Reducing Old Channel Surface Water Diversions with Alternate Supply Development

**Comment for Consideration:** The City's water rights already mandate that intake screens have a mesh size of 0.25 inches or less and a maximum flow-through velocity of 0.5 cfs to minimize impingement and entrainment of aquatic organisms. Additional commitments under consideration by the City include developing an alternate water supply, likely reclaimed water, that would allow for the ~~suspension~~ forbearance of diversions when flows in the Old Channel are at or below 30 cfs, consistent with an unrealized commitment in the current HCP. These additional commitments would represent specific minimization and mitigation measures designed to address incidental take associated with irrigation surface water diversions.

**Rationale and Challenges:** Reducing or stopping surface water diversions from the Old Channel based on Comal Springs discharge volume (e.g., forbearing~~suspending~~ diversions when flows are below 30 cfs) would minimize impacts on Covered Species habitat during low springflow conditions. Spring water diverted from the Old Channel is currently used to irrigate the Golf Course adjacent to the Old Channel. The City of New Braunfels ~~has considered using treated gray water via~~installed purple pipes to offset and reduce the amount of surface spring water diverted for irrigation~~.~~; however, there are currently no available sources of reclaimed or recycled water to use for irrigation with the purple pipes ~~are currently not connected or in use~~.

**Recommendation:** Consider including clear commitments for the City of New Braunfels on reducing and/or stopping covered surface water diversions during low springflow conditions as a conservation measure. A curtailment approach similar to that which applies to the City of San Marcos' covered surface water diversions could be considered.

**Commented [ICF42]:** Edits made based on clarifying discussion w/ CONB.

## 3.3 San Marcos Springs System

### Subcommittee Report Text with Recommended Edits

**Aquatic Recreation Management**

Aquatic recreation can have ~~significant~~ negative impacts on the Covered Species, especially Texas wild-rice, fountain darter, and San Marcos salamanders, by increasing disturbance and degrading habitat quality. The implementation of appropriate recreational management measures is a critical component of minimizing adverse impacts to Covered Species and their habitats.

In 2012, the Texas Parks and Wildlife Commission designated the San Marcos River between Spring Lake Dam and the San Marcos Wastewater Treatment Plant as the San Marcos River State Scientific Area ~~(31 TAC § 57.910)~~. The San Marcos River State Scientific Area designation prohibits the uprooting or disturbance of Texas wild-rice and authorizes restrictions on access to areas of the river clearly marked by signage, booms, ropes, and buoys installed to protect flora and fauna. Texas Game Wardens are responsible for enforcing state regulations on public waters, including Spring Lake and the San Marcos River. Collaborative enforcement efforts, involving the Texas Parks and Wildlife Department, the City of San Marcos, and Texas State University, will be pursued, particularly during future low-flow periods, to implement and enforce the protections afforded through the state scientific area designation.

Texas State University owns and manages the property surrounding Spring Lake and the San Marcos River downstream through Sewell Park. Access to the public waters of Spring Lake is restricted to university-approved activities ~~(COSM § 58.067)~~. The Meadows Center for Water and the Environment is an affiliated institute of Texas State University that, among other duties, manages access within and around Spring Lake for research and recreational activities. University-approved activities and the process for requesting access to Spring Lake are defined in the Spring Lake Management Plan. ~~Sewell Park is owned by Texas State University and is managed by its Department of Campus Recreation.~~

The City of San Marcos owns and manages parkland immediately adjacent to the San Marcos River from the downstream end of Sewell Park to downstream of Interstate Highway (IH)-35 at Stokes Park. City police, marshals, and park rangers are responsible for monitoring and enforcing city ordinances in the riverfront parks.

The City of San Marcos and Texas State University will implement, ~~at a minimum,~~ the following measures in city and university parks adjacent to the San Marcos Springs system~~, at a minimum,~~ t~~T~~o minimize and mitigate the impacts of recreation to Covered Species~~, the City of San Marcos will enforce City Ordinances and Policies in Chapter 58 – Parks and Recreation in City parks and Texas State University will enforce University Policies and Procedures (UPPS) in university parks. COSM and Texas State University will coordinate with staff, park rangers, city and university police, EAHCP contractors, and Texas Game Wardens to minimize the impacts from recreational use of Spring Lake and the San Marcos River and will~~:

a. Provide educational resources, maps with Texas State University and City of San Marcos river access points, and ~~and~~ signage ~~about~~ that provides park rules, ~~including maps with Texas State University and City of San Marcos river access points and~~ information about the Covered Species, their Critical Habitat, and efforts to protect them.

**Commented [ICF43]:** Edits in this section made to streamline text for brevity and to clarify that the COSM and TXST are committing to the measures listed, at a minimum, not to enforcing whatever the City ordinances may be, which could change. Also, references to city and university policies are not necessary.

**Commented [ICF44]:** Mark Enders suggested deleting "significant."

**Commented [ICF45]:** Mark Enders suggested deleting this statement.

**Commented [ICF46]:** Myron Hess comment to move here.

b. Install and maintain signage and protective barriers around sensitive habitat within the river and around adjacent riparian areas to restrict public access and minimize disturbance of aquatic flora and fauna in the San Marcos River within the San Marcos River State Scientific Area ~~(31 TAC § 57.910)~~. Those efforts will include evaluating effectiveness of existing protective barriers and need for additional barriers to be installed in sensitive habitat areas based on varied low-flow conditions and recreational use patterns.

c. Install and maintain riparian fencing within pertinent areas of City- and University-owned riverfront parks and properties to prevent riparian and aquatic habitat degradation and to direct river users ~~access~~ to stabilized river access points.

d. Maintain designated river recreation access points within Texas State University and City of San Marcos parks to minimize habitat degradation in areas not immediately adjacent to the designated access points.

e. Restrict access to the public waters of Spring Lake to Texas State University approved activities in accordance with the Spring Lake Management Plan ~~.(COSM § 58.067 and the Spring Lake Management Plan).~~

f. ~~Permanently r~~Restrict access to the Eastern spillway through signage and/or protective barriers at all times, regardless of springflow conditions.

g. Prohibit activities that harm or disturb habitat, including the unauthorized removal of artifacts, plants, and animals; unauthorized introduction or, release of plants and animals; fishing in restricted areas; and the unauthorized use of spears, spearguns, or other similar equipment.

h. Control visitor access to pertinent riverfront parks, and river access through riverfront parks, during periods of extreme low flow (<60 cfs) and when degraded habitat conditions exist using methods such as gated fencing, paid parking, or access fees, with implementation evaluated at flows less than 67 cfs.

~~Prohibit activities that harm or disturb habitat, including the unauthorized removal of artifacts, plants, and animals; unauthorized introduction or , release of plants and animals; fishing in restricted areas; and the unauthorized use of glass or disposable beverage containers, large coolers, shade structures, tents, tables, barbeque pits, and jumping or diving from bridges.~~

~~e.~~ Control visitor access to pertinent riverfront parks, and river access through riverfront parks, during periods of extreme low flow (<60 cfs), when degraded habitat conditions exist, or during high-use events using methods such as gated fencing, paid parking, or access fees, with implementation evaluated at flows less than ~~near 65~~67 cfs~~Prohibit the removal, destruction, or disturbance of artifacts or cultural features without authorization from the Texas Historical Commission (COSM § 58.030 and Antiquities Code of Texas §§ 191.092-0.93, 191.171)~~.

~~f. Prohibit the release or introduction of any fish, plant, or aquatic organisms without authorization from the City of San Marcos and Texas Parks and Wildlife Department (COSM § 58.037 and TPWC § 66.015).~~

~~g. Prohibit the removal or harm of plants and animals without authorization from the City of San Marcos and Texas Parks and Wildlife Department (COSM § 58.030, § 58.037, TXST UPPS No. 08.01.07, and 31 TAC Ch.57L).~~

**Commented [ICF47]:** Edits to text here are suggestions from Mark Enders.

**Commented [ICF48]:** Edits to text here are suggestions from Mark Enders.

**Commented [ICF49]:** Revised to have a clearer threshold as to when this would occur.

**Commented [ICF50]:** Note these items reflect Mark Enders' edits where Mark Enders' edits and Melani Howard's edits conflict. See comment ID #: 045, 094, 095.

**Commented [ICF51]:** Mark Enders suggests removing "or during high use events"

**Commented [ICF52]:** Revised to have a clearer threshold as to when this would occur.

h. Prohibit the possession or shooting of spears or spearguns on City-owned property without prior authorization from the City of San Marcos (COSM § 58.068, TPWC § 66.115)

i. Prohibit fishing in areas where fishing is prohibited by signage (COSM § 58.037 and UPPS No. 08.01.07).

j. Prohibit the use of smoking or vapor devices, alcohol, glass, Styrofoam, disposable beverage containers, and coolers larger than 30 quarts in park areas adjacent to the river (COSM § 58.026, § 58.034, § 58.042; UPPS No. 04.05.02, No. 08.01.07).

k. Prohibit the usage of tents, tarps, shade structures, umbrellas, portable tables and barbeque pits in park areas immediately adjacent to the river and within the river (COSM § 58.039 & UPPS No. 08.01.07).

l. Prohibit jumping or diving from bridges crossing the San Marcos River (COSM § 58.069, UPPS No. 08.01.07).

i. Control and reduce visitor access to pertinent riverfront parks, and river access through riverfront parks, during periods of extreme low flow (< 60 cfs) and/or when habitat has been demonstrated to be significantly degraded (i.e. significantly reduced aquatic vegetation coverage) and/or when a high density of river users is expected for given dates or events. Access control methods may include a combination of measures: gated fencing, paid parking, riverfront park access fees, etc. Implementation of the selected measures will be evaluated when flows approach 65 cfs.

The City of San Marcos will implement these measures through enforcement of City Ordinances and Policies in Chapter 58 – Parks and Recreation. Texas State University will implement these measures through enforcement of University Policies and Procedures in university parks. The City of San Marcos and Texas State University will coordinate with staff, park rangers, city and university law enforcement, EAHCP contractors, and Texas Game Wardens to implement these measures, as appropriate.

**Commented [ICF53]:** Insertion suggested by Kimberly Meitzen.

## Litter Management

Litter refers to any form of waste or trash that is improperly disposed of, particularly in public spaces such as parks and waterways. Litter has wide-ranging negative impacts on aquatic organisms and their habitat, including disease and death from consumption, water pollution, and habitat reduction. Minimizing litter by promoting sustainable waste management practices and providing accessible recycling and waste receptacles in parks is essential for protecting the Covered Species and their habitat.

City of San Marcos regulations prohibit littering and common sources of recreation-related litter including smoking, vaping, glass, Styrofoam, alcoholic beverages and single-use disposable beverage containers in select zones within parks adjacent to the San Marcos River (COSM § 58.033 & COSM § 58.039). Texas State University prohibits glass, Styrofoam, smoking, vaping and display and consumption of alcoholic beverages in Sewell Park (UPPS 08.01.07).

The City of San Marcos and Texas State University will be responsible for the routine control and removal of litter in Spring Lake, the river from Spring Lake Dam to the San Marcos Wastewater Treatment Plant, park areas adjacent to Spring Lake and the San Marcos River, and tributaries of the San Marcos River. The City of San Marcos and Texas State University will enforce policies and

ordinances related to littering. Prevention efforts undertaken by the City of San Marcos and Texas State University will include providing means for proper disposal of litter in all such areas and educating the community on park rules, proper disposal of litter, and the negative effects of litter on aquatic organisms and their environment.

### Aquatic Vegetation Management

Submerged aquatic vegetation is essential habitat for fountain darters, providing them with ecological resources and shelter necessary for healthy population resiliency. Aquatic recreation, exposure of wetted habitat during severe drought, competition from non-native aquatic vegetation, scouring from flood events, floating vegetation accumulations, and reduced diversity of native aquatic vegetation can negatively impact fountain darter populations and submerged aquatic vegetation they utilize as habitat. The presence of diverse aquatic vegetation contributes to maintaining quality habitat crucial for the survival and resilience of the fountain darters and other aquatic organisms.

To minimize the impacts of low-flow and recreation, Texas State University and the City of San Marcos will implement aquatic vegetation maintenance strategies in Spring Lake and the San Marcos River. Strategies include the monitoring and maintenance of aquatic vegetation, removal of non-native and/or aggressive, non-preferred native aquatic vegetation, as needed, and planting of native aquatic vegetation. Culling of aquatic vegetation in Spring Lake, undertaken with due care to minimize adverse impacts to Covered Species, may be implemented to aid in the reduction ~~of~~ floating vegetation and to prevent shading and other negative impacts to underlying aquatic vegetation.

Aquatic vegetation used for planting should be sourced from Spring Lake or the Upper San Marcos River, or, as necessary, may be obtained from sources that meet locality and disease-free criteria. Aquatic vegetation propagation may occur in raceways sourced with Edwards Aquifer water from artesian wells at Freeman Aquatic Biology Building, managed by Texas State University, or at the San Marcos Aquatic Resources Center, managed by USFWS.

San Marcos salamanders occupy limited habitat areas within Spring Lake and the Spring Lake Dam reach and prefer silt-free rocky substrate that is free of rooted aquatic vegetation. Habitat maintenance for the San Marcos salamander involves the routine removal of aquatic vegetation in occupied habitat designated as quality habitat in Biological Objective 4.1 to support the San Marcos salamander habitat objective.

Outside of areas managed for salamander habitat, aquatic vegetation management and maintenance efforts will be designed and implemented to achieve areal coverages for Texas wild-rice consistent with relevant objectives (Objectives 5.1 and 5.2) and areal coverages for complex (*Cabomba, Heteranthera, Hydrocotyle, Ludwigia, and Myriophyllum*) and simple (*Potamogeton, Sagittaria*, and *Zizania*) aquatic vegetation as defined in the San Marcos fountain darter habitat objective (Objective 6.6). The locations of the Long-term Biological Goal and Restoration reaches referenced in those objectives are shown in Figure 2. Aquatic vegetation management may also occur in Spring Lake and in portions of the river outside of the Long-term Biological Goal and Restoration reaches, as needed, to control non-native vegetation and increase the coverage of aquatic vegetation and quality fountain darter habitat. The native aquatic vegetation species listed for planting and referenced above may be amended through the EAHCP Adaptive Management Process and upon USFWS approval to include additional native vegetation types.

**Commented [ICF54]:** Addition suggested by Mark Enders.

With appropriate care to minimize adverse impacts to all Covered Species, aquatic vegetation that is removed in order to conduct Covered Activities such as pumping equipment maintenance, USGS gage measurement, or construction projects will be replanted at favorable locations within the Upper San Marcos River, if appropriate.

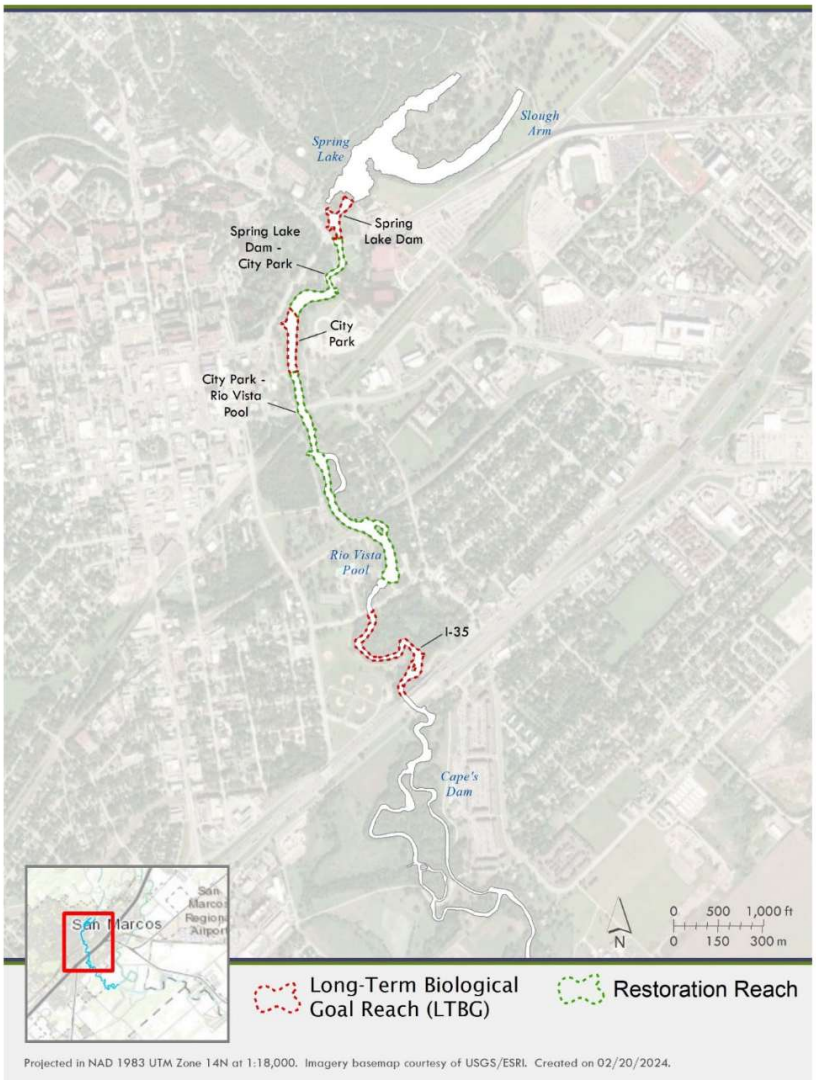


**Figure 2. San Marcos Springs System Long-term Biological Goal/Restoration Reaches**

## Floating Vegetation Management

Floating vegetation mats have been demonstrated to negatively impact Texas wild-rice and fountain darter habitat. The mats block sunlight, reduce water velocity, and can spread invasive vegetation. Additionally, floating vegetation mats that accumulate on emergent Texas wild-rice and aquatic vegetation may lead to their uprooting. As floating vegetation decays and decomposes, it consumes oxygen reducing the amount of dissolved oxygen in the water. Management, via reduction, of floating vegetation accumulations increases the health and resilience of submerged aquatic vegetation in Spring Lake and the Upper San Marcos River.

The City of San Marcos and Texas State University will manage floating vegetation mats by reducing/preventing source propagule inputs and dislodging and/or removing accumulations of floating vegetation in Spring Lake and the San Marcos River upstream of IH-35. Litter and aquatic organisms will be removed from floating vegetation during removal from Spring Lake and the river and native organisms will be returned to the water.

**Commented [ICF55]:** Note to Reviewers: This section from the Conservation Measures Subcommittee Report was unintentionally omitted from the draft memo.

## Non-Nnative Animal Species Management

Non-native species are organisms that do not naturally occur in a particular area and are often introduced by human activities. Non-native species can pose ~~serious~~ threats to all Covered Species and their habitats through competition, predation, disease transmission, habitat alteration, and ecosystem disruption. Effective management strategies, such as prevention and removal of problematic non-native species, are essential for minimizing these impacts and conserving native biodiversity.

**Commented [ICF56]:** Removing subjective language.

Management of non-native animal species includes the removal of non-native armored catfish, sailfin catfish, tilapia, nutria, and other species that may negatively impact Covered Species and the San Marcos Springs ecosystem. Contractors and program participants authorized by the City of San Marcos will remove non-native animals with the use of pole spears, spear guns, or other methods chosen to remove large quantities of such animal species with minimal impact to the habitat and ~~or~~ to non-target species.

**Commented [ICF57]:** Text edit suggested by Mark Enders.

Non-native species introduction will be reduced by the prohibition of the release of any fish, plant, or other aquatic organisms in public parks and waterways ~~(COSM § 58.037 & UPPS 08.01.07)~~. The City of San Marcos will offer a donation program to receive unwanted aquatic animals and will provide and maintain signage educating park visitors about park rules related to non-native species and negative impacts to the ecosystem.

## Riparian Zone Management

Healthy riparian zones are essential for maintaining good water quality in the San Marcos Springs system by stabilizing riverbanks, preventing erosion, storing alluvial water, providing shade for temperature moderation, and filtering runoff before it enters the aquatic system. Managing and maintaining healthy riparian zones is essential for maintaining the quality of habitat for the protection of fountain darter, Texas wild-rice, San Marcos salamander, and Comal Springs riffle beetle.

The City of San Marcos and Texas State University previously installed ~~fences~~ fencing within portions of riverfront parks to prevent disturbance and degradation of the riparian zone and adjacent aquatic vegetation. Existing riparian fencing in parks adjacent to the river will remain in place and be maintained to protect the riparian corridor. Existing fence segments may be adjusted

**Commented [ICF58]:** Text edit suggested by Mark Enders.

as long as the net area of protected riparian zone does not substantially decrease. Additional fencing may be put in place to protect riparian areas being degraded through overuse.

The City of San Marcos and Texas State University will continue to implement riparian zone restoration and maintenance strategies to protect, enhance, and widen the riparian zone along Spring Lake, the San Marcos River, and major tributaries within city limits. Riparian management and maintenance strategies include ~~routine monitoring,~~ removal of non-native vegetation and the planting of diverse native riparian vegetation. Deer-resistant and drought-tolerant native vegetation will be prioritized for planting in the riparian zones. Riparian management and maintenance strategies may also include bank stabilization, installation of additional fencing, and erosion control projects to minimize degradation of the riparian zone and adjacent aquatic vegetation.

**Commented [ICF59]:** Text edited to remove "routine monitoring" because monitoring for the HCP will be addressed separately.

## Sediment Accumulation Management

Managing excessive sediment accumulation is important to maintaining the health and functionality of aquatic ecosystems. Detrimental effects of sediment accumulation include increased turbidity, pollutant retention, reduced habitat, and reduced outflow from spring orifices. Deposition and accumulation of sediment can smother and displace stands of Texas wild-rice, reduce or alter fountain darter habitat, fill in open spaces between larger substrate components that are utilized by San Marcos salamander, and cover spring orifices utilized by Comal Springs riffle beetle.

In addition to Riparian Zone Management efforts designed to limit sediment inputs, to mitigate these impacts, active and passive sediment removal techniques will be implemented as needed, and in a manner designed to minimize direct adverse impacts on Covered Species, in Spring Lake and the San Marcos River. Any sediment management activities to be undertaken must first be demonstrated to provide a significant benefit to Texas wild-rice and/or other Covered Species habitat and outweigh any anticipated negative impacts that might be caused by these activities.

## Flow-Split Management at Spring Lake

The Spring Lake Dam bifurcates flow from Spring Lake into two channels: the Western and Eastern spillways. Both spillways represent important habitat for the San Marcos salamander and the fountain darter. The Western Spillway generally receives more water than the Eastern Spillway and, as a result, habitat in the Eastern Spillway can become shallow and more susceptible to dewatering during low springflow conditions. Flow-split management is intended to better protect wetted habitat for San Marcos salamanders and fountain darters in the Eastern Spillway.

Texas State University will use boards, barriers, or new infrastructure to adjust the amount of water that flows over the Western Spillway during low flow periods as needed to protect wetted habitat in the Eastern Spillway, while also maintaining flow and wetted habitat in the Western Spillway. Due to the lack of flow and bathymetry data for the spillways, and the lack of infrastructure to precisely control flow over the Western Spillway, no specific flow allocations currently are defined for implementation. Additional flow and bathymetry data are needed for both spillways, in conjunction with biological sampling, to evaluate habitat conditions of the Western and Eastern Spillways and develop, in coordination with the Science Committee, recommended flow-split allocations across the range of flow conditions for use in implementing flow-split management at Spring Lake Dam. This work will continue be undertaken by Texas State University, the City of San Marcos, and the EAA, in coordination with the Science Committee and Texas Parks and Wildlife Department.

**Commented [ICF60]:** Impacts happen to the Eastern Spillway during both low and high flow conditions, so language added to clarify this management should not only address low flow conditions.

## Surface Water Diversions

Under TCEQ Certificates of Adjudication Nos. 18-3865 and 18-3866, Texas State University's surface water appropriation from the upper San Marcos River, designated as consumptive use, is 200 ac-ft/yr. A full description of the surface water rights is included in the Covered Activities chapter of the EAHCP.

Certificate No. 18-3865 authorizes Texas State University to divert and use 100 ac-ft/yr from Spring Lake for the purpose of irrigation. The existing diversion point is located along the Slough Arm of Spring Lake near the intersection of San Marcos Springs Drive and Aquarena Springs Drive. The certificate authorizes a maximum instantaneous diversion rate from Spring Lake of 1.33 cfs (600 gpm).

Certificate No. 18-3866 authorizes Texas State University to divert and use 100 ac-ft/yr from the San Marcos River for the purpose of irrigation (40 ac-ft/yr) and biological/educational purposes (60 ac-ft/yr). The 40 ac-ft authorized for irrigation purposes is currently used to irrigate Sewell Park and is only available to be diverted when the streamflow of the San Marcos River at the diversion point is equal to or greater than 128 cfs. The maximum instantaneous diversion rate for this portion of the certificate is 1.00 cfs (450 gpm). The 60 ac-ft authorized for biological/educational purposes is currently used to fill and maintain the level of seven off-channel reservoirs ("Old Fish Hatchery Ponds") located approximately between the Texas State University JC Kellam Administration Building and University Drive. The existing diversion point is located immediately upstream of City Park. The maximum instantaneous diversion rate for this portion of the certificate is 2.22 cfs (1,000 gpm).

To minimize the impacts of these diversions, Texas State University will limit surface water diversions from Spring Lake to a rate not to exceed 0.75 cfs (340 gpm) and cease diversions from the San Marcos River when San Marcos River streamflow, as measured at USGS gage #08170500, declines below 60 cfs. When San Marcos River streamflow declines below 50 cfs, Texas State University will continue cease the San Marcos River surface water diversions and reduce surface water diversions from Spring Lake to a rate not to exceed 0.50 cfs (225 gpm). When San Marcos River streamflow decreases below 45 cfs, Texas State University will ~~suspend~~ forebear all surface water diversions.

**Commented [ICF61]:** This comment will be considered during HCP chapter development.

ID # 073:

Irrigation during critical low flows is not the highest and best use of the river water, and we'd like to see Texas State commit to the following: a) limit surface water diversions from Spring Lake to a rate not to exceed 0.75 cfs (340 gpm) and cease diversion from the San Marcos River when San Marcos River streamflow, as measured at USGS gage #08170500, declines below 80 cfs. b) when the San Marcos River streamflow declines below 60 cfs they will reduce surface water diversions to a rate not to exceed 0.50 cfs (225 gpm) from Spring Lake. c) When flows to the San Marcos River fall below 50 cfs Texas State will cease all surface water diversions.

The reductions in Texas State University's total diversion rate for consumptive use is summarized in Table 2 below.

**Table 2. Texas State University curtailment of surface water diversions by San Marcos River streamflow levels.**

| San Marcos River Streamflow as measured at USGS gage #08170500 (cfs) | Spring Lake Diversion: Cert. No. 18-3865 | San Marcos River Diversion: Cert. No. 18-3866 | Maximum Allowable Diversion Rate |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 128+ | 1.33 cfs (600 gpm) | 3.22 (1,450 gpm) | 4.55 cfs (2,050 gpm) |
| 127 - 60 | 1.33 cfs (600 gpm) | 2.22 cfs (1,000 gpm) | 3.55 cfs (1,600 gpm) |
| 59 - 50 | 0.75 cfs (340 gpm) | 0 | 0.75 cfs (340 gpm) |
| 49 - 45 | 0.50 cfs (225 gpm) | 0 | 0.50 cfs (225 gpm) |
| <45 | 0 | 0 | 0 |

Texas State University uses, and will maintain, a 0.25-inch mesh screen to cover the intake for surface water diversions. These screens are routinely inspected and cleaned. Fountain darters have not been observed when the screen is cleaned; however, there is a possibility for capture of adults against the screen, but not pulled into the pipeline. To avoid or minimize the impacts of the surface water diversions, Texas State University will routinely monitor the screens to determine if any impingement occurs and will make any necessary modifications to the screens to minimize incidental take from the operation of the diversions.

## Evaluation of Comments for Consideration

The following sections evaluate comments for consideration raised by the Subcommittee for the San Marcos Springs system.

### Comments for Consideration That ~~Do Not Address Conservation Measures~~Will Be Considered for Monitoring and Adaptive Management

The following comments for consideration included in the Subcommittee report do not directly address changes to conservation measures, but the monitoring and adaptive management of conservation measures throughout implementation of the EAHCP. These comments for consideration will be addressed in a forthcoming memo that addresses monitoring and adaptive management in the EAHCP renewal and are not addressed herein further.

- Assessment of recreational impacts is required by the ITP for annual take assessments. Members have requested that routine assessments of available recreation management enforcement strategies are also considered by EAHCP administration.
- Additional information is needed to assess flow characteristics between the Western and Eastern spillways. Future coordination between university facilities staff (install boards), Spring Lake Manager, San Marcos HCP Manager, EAHCP and EAA staff, EAHCP Biological Monitoring contractor, and USFWS Refugia staff is needed for collecting flow data and assessing biological data (salamander counts and collection trends), at various flows, before and after board placement.
- Aquatic vegetation r~~R~~emoval and planting methodologies ~~of aquatic vegetation~~ will be reevaluated when San Marcos springflow decreases below 90 cfs.
- Prioritize the evaluation of potential control methods and triggers (listed above in item n under *Aquatic Recreation Management*) for reducing public access and the feasibility of

**Commented [ICF62]:** Text edit suggestion from Mark Enders.

locations or access points that would be restricted. If access were restricted, members discussed potential triggers that would either be flow-related (<60 cfs) and/or based on biological monitoring data such as reduced coverage of aquatic vegetation. To ensure availability of actionable monitoring data on a timely basis, the need for regular full system vegetation mapping beginning when flows drop to 65 cfs was noted. Members discussed that as flows decrease below 60 cfs, the potential for exceeding take thresholds increases and recommended that the City of San Marcos and Texas State University develop procedures for further controlling recreation access under those conditions.

- In helping to inform development of control methods listed above in item n (page 32 of the Conservation Measures Subcommittee Report), the City of San Marcos and Texas State University should consider analyzing a "carrying capacity" of river recreation that considers varying low-flow conditions, peak recreation periods (i.e. summer holidays) and habitat impacts. Include a further evaluation of number of visitors in City/Texas State University parks and within the river during peak recreational periods.

## Clarification of Enforcement Structure in San Marcos River

**Comment for Consideration:** Issues related to enforcement of city ordinances and university policies within the San Marcos River remain unresolved and need clarification. Evaluate potential enforcement structure and methodologies. Staff and members will assess the current enforcement options and the feasibility of an interlocal agreement between Texas Parks and Wildlife Department, the City of San Marcos, and Texas State University to ensure reasonable enforcement levels, with a particular emphasis on periods of high recreational use and low flows.

**Rationale and Challenges:** A clear and enforceable framework would directly support the implementation of HCP measures by reducing recreational disturbances to sensitive habitats. This clarification would ensure consistency in protecting Covered Species, especially during critical low-flow conditions when habitats are particularly vulnerable. Collaborative agreements between Texas Parks and Wildlife Department, the City of San Marcos, and Texas State University would enhance coordination and accountability in enforcement efforts, reducing habitat degradation and the risk of exceeding take thresholds. However, the topic of the agreements needed to improve the enforcement of City ordinances and University policies is best left to be addressed in the EAHCP's chapter on implementation.

**Recommendation:** No changes to conservation measures. Consider including language in the implementation chapter of the EAHCP specifying that Texas Parks and Wildlife Department, the City of San Marcos, and Texas State University will collaborate to develop and formalize enforcement structures during implementation. This will ensure enhanced enforcement efforts are feasible and enforceable.

~~**Recreation Access Control during Low Flow Conditions**~~

~~**Comment for Consideration:** Prioritize the evaluation of potential control methods and triggers (listed above in item n under *Aquatic Recreation Management*) for reducing public access and the feasibility of locations or access points that would be restricted. If access were restricted, members discussed potential triggers that would either be flow-related (<60 cfs) and/or based on biological monitoring data such as reduced coverage of aquatic vegetation. To ensure availability of actionable monitoring data on a timely basis, the need for regular full system vegetation mapping beginning when flows drop to 65 cfs was noted. Members discussed that as flows decrease below 60 cfs, the~~

**Commented [ICF63]:** This comment for consideration is now listed above to be considered in monitoring and adaptive management.

~~potential for exceeding take thresholds increases and recommended that the City of San Marcos and Texas State University develop procedures for further controlling recreation access under those conditions.~~

~~**Rationale:** Implementing recreation access controls during low flow conditions directly avoids and minimizes impacts to sensitive aquatic habitats. Limiting public access when springflow drops below specified thresholds would reduce disturbance to Covered Species and aquatic vegetation, helping achieve Biological Objectives. Regular vegetation mapping would provide actionable data to inform these controls and support adaptive management. However, specific data on the impacts of recreational activities at low flow levels are limited, making it challenging to define precise access triggers or locations. Implementing restrictions may face public opposition and require additional enforcement capacity. Without sufficient data, this measure could be difficult to justify or implement effectively.~~

~~**Recommendation:** No change to conservation measure. Given the unknowns in how and under what conditions additional recreational access controls would be implemented, consider including evaluating recreation access controls in the EAHCP's adaptive management program to facilitate evidence-based improvements.~~

~~**Determination of River Recreation Carrying Capacity**~~

**Commented [ICF64]:** This comment for consideration is now listed above to be considered in monitoring and adaptive management.

~~**Comment for Consideration:** In helping to inform development of control methods listed above in item n (page 32 of the Conservation Measures Subcommittee Report), the City of San Marcos and Texas State University should consider analyzing a "carrying capacity" of river recreation that considers varying low-flow conditions, peak recreation periods (i.e. summer holidays) and habitat impacts. Include a further evaluation of number of visitors in City/Texas State University parks and within the river during peak recreational periods.~~

~~**Rationale:** A carrying capacity analysis could provide a data-driven basis for balancing recreational use with minimizing impacts to Covered Species. Understanding visitor impacts during peak periods would inform future management decisions and align with Biological Objectives. However, conducting such an analysis could require extensive resources and a prolonged planning and analysis timeline, while the complexity of quantifying recreational impacts under varying conditions may limit the feasibility of implementing specific carrying capacity thresholds in the short term.~~

~~**Recommendation:** No change to conservation measure. Consider including as a component of the EAHCP's adaptive management program a carrying capacity analysis. Use the findings to inform future recreation management strategies.~~

### Evaluation of Texas Parks and Wildlife Department Rules of Texas Wild-Rice Management

**Comment for Consideration:** Evaluate Texas Parks and Wildlife Department rules related to the introduction and removal of fish, plants, aquatic organisms (Chapter 57, Subchapter C) and identify the process for permitting the potential removal of Texas wild-rice.

**Rationale and Challenges:** Clarifying regulatory requirements ensures that EAHCP conservation measures comply with state rules and avoid unnecessary delays in implementing HCP measures. Better understanding the permitting process for removing Texas wild-rice would allow the Permittees to consider the feasibility of increasing management actions for the species that could allow the program more options for meeting Biological Goals and Objectives.

**Recommendation:** No change to conservation measures**.** Include a process for coordination with Texas Parks and Wildlife Department in the EAHCP's implementation chapter to facilitate continued discussions around permitting requirements for Texas wild-rice removal.

### Clarification of University Policies for Riverbank Recreation Conduct

**Comment for Consideration:** University policies related to recreational conduct are listed in the Sewell Park rules, that do not specifically include the riverbank areas between Aquarena Springs bridge and the Spring Lake Dam, and the area around Spring Lake. Clarification of policies and coordination between university entities is needed to improve management of aquatic recreation.

**Rationale and Challenges:** Filling existing policy gaps and clarifying university policies addressing recreational conduct in areas coinciding with Covered Species habitat helps to minimize the impacts to Covered Species from recreational activities.

**Recommendation:** No change to conservation measures. Consider i~~I~~nclud~~inge~~ in the EAHCP implementation chapter a requirement for Texas State University to review its recreation policies to ensure alignment with the conservation strategy of the EAHCP.

### Update of the Spring Lake Management Plan

**Comment for Consideration:** The current Spring Lake Management Plan was last amended in 2012, and revisions are needed to reflect current practices and recommended protocols in Spring Lake. Staff and members will work with the Meadows Center for Water and the Environment to revise and update the Spring Lake Management Plan. Once a revised plan is developed, it should be explicitly referenced in order to establish a baseline level of protection to be maintained in Spring Lake.

**Rationale and Challenges:** Updating the Spring Lake Management Plan would align~~s current conservation~~ management practices with the ~~biological needs of the Covered Species~~EAHCP and ensure~~s~~ that management strategies are based on the best available science. Explicitly referencing the updated plan in the HCP establishes a baseline for enforceable protections, ensuring consistent implementation. The update would also integrate stakeholder input, enhancing collaborative conservation efforts. As a feasible and enforceable action, this measure provides a structured framework for maintaining and improving habitat quality in Spring Lake.

**Recommendation:** No change to conservation measures. Texas State University should consider updating the Spring Lake Management Plan concurrently with the EAHCP renewal process to ensure that the plan is fully aligned with the EAHCP's conservation strategy and references appropriately in the EAHCP. The Spring Lake Management Plan could be updated after the administrative draft EAHCP is complete while the USFWS conducts its review under the National Environmental Policy Act. Then, any changes to the EAHCP needed from updates to the Spring Lake Management Plan could be done after the public review period for the Renewed EAHCP before it is finalized.

### Restriction of Motorized Watercraft in Protected Areas

**Comment for Consideration:** The use of motorized watercraft, except for motorized watercraft listed in the proposed Covered Activities, should be prohibited in Spring Lake and the San Marcos River.

**Rationale and Challenges:** Prohibiting motorized watercraft minimizes disturbances to sensitive aquatic habitats and reduces risks to Covered Species from noise, pollution, and direct physical impacts. This measure aligns with Biological Objectives by addressing anthropogenic stressors and enhancing habitat quality. However, resistance from recreational users and enforcement challenges could hinder practical implementation, requiring additional coordination and enforcement to address conflicts and ensure compliance.

**Commented [ICF65]:** Addition suggested by Daniel Large.

**Recommendation:** No change to conservation measures. Evaluate the use of motorized watercraft in Spring Lake during the update of the Spring Lake Management Plan (see above *Update of the Spring Lake Management Plan*). Consider restrictions on use of motorized watercraft in San Marcos River weighing the degree to which this is a threat to covered species and the feasibility of enforcing restrictions.

### Prohibition of Tree Climbing and Jumping in Riparian Zones

**Comment for Consideration:** Climbing and jumping from riparian trees could reduce the strength of the tree and its ability to stabilize the riverbank. Sewell Park Rules (UPPS No. 08.01.07) prohibit hanging from trees but do not specify climbing or jumping from trees. Climbing and jumping from riparian trees should be prohibited by university policies and city park rules.

**Rationale and Challenges:** Prohibiting climbing and jumping from riparian trees helps protect these trees' structural integrity, ensuring they continue to stabilize riverbanks that helps to maintain Covered Species habitat. However, expanding rules may require additional resources for enforcement and public education, and resistance from recreational users could complicate compliance efforts.

**Recommendation:** No change to conservation measures. Collapsing trees and eroding banks resulting from human climbing is not a predominant threat but could impact Covered Species habitat. Texas State University and the City of San Marcos could consider refining policies, ordinances, and implementation strategies (e.g. riparian fencing) related to riparian protection.

### Permanent Access Restriction to Eastern Spillway for Habitat Protection

**Comment for Consideration:** Recreation access to the Eastern Spillway is currently restricted to protect flora and fauna, including San Marcos salamander habitat, at flows of 120 cfs or less, consistent with the State Scientific Area designation (31 TAC § 57.910). In recognition of sensitivity to disturbance even during periods of higher flow, prioritization should be given to considering permanently restricting access to the Eastern Spillway, regardless of springflow.

**Rationale and Challenges:** Permanent access restrictions would provide consistent year-round protection for Covered Species, including the San Marcos salamander. The *Recommended Biological Goals and Objectives for the Permit Renewal* (BIO-WEST and ICF 2024) include maintaining quality habitat for the San Marcos salamander at Spring Lake Dam (Objective 4.1) and note that active management at the Eastern Spillway will be necessary as a conservation measure to achieve this Biological Objective.

**Recommendation:** Addressed with revised item f under Aquatic Recreation Management. The new item f restricts access to the Eastern Spillway regardless of springflow conditions. ~~Revised text~~This restriction improves habitat protection and increases the likelihood of meeting the Biological Objectives for the San Marcos salamander.

**Commented [ICF66]:** Edit suggested by Daniel Large.

### Understanding Habitat Needs Balance for Covered Species in the Spring Lake Dam Reach

**Comment for Consideration**: The Spring Lake Dam reach is habitat for the San Marcos salamander, fountain darter, and Texas wild-rice. Members noted a need to better understand the balance between removal of aquatic vegetation for San Marcos salamander in the Eastern Spillway, the expansion of Texas wild-rice, and maintaining diverse aquatic vegetation habitat for fountain darter.

**Rationale and Challenges:** The EAHCP needs to consider how to manage this reach given that the optimum habitat conditions for Covered Species come into conflict here.

**Recommendation:** Reconsider Biological Objectives for the Spring Lake Dam reach to ensure they reflect Covered Species management priorities given the conflicting needs of Covered Species for habitat conditions.

### University Policies on Litter and Prohibited Items in River Adjacent Lands

**Comment for Consideration:** Clarification and potential changes may be needed for university policies related to littering and prohibited items in Sewell Park and other Texas State University lands adjacent to the river such as Upper Sewell Park and Spring Lake.

**Rationale and Challenges:** Updated policies targeting litter and prohibited items may reduce pollution and limit impacts to Covered Species habitat, aligning with Biological Goals by mitigating anthropogenic stressors. However, the comment for consideration does not identify any specific type of litter constituting a particular risk to Covered Species to warrant any revisions at this time to what is already included in the conservation measures for litter management.

**Recommendation:** No change to conservation measures. Texas State University and the City of San Marcos should continue to evaluate and potentially align policies, ordinances, and implementation strategies for improving litter management, and could consider addressing this issue in the implementation chapter~~ed~~ of the renewed EAHCP.

### Establishment of Fountain Darter Habitat Objective in Spring Lake

**Comment for Consideration:** The proposed Biological Objective that addresses aquatic vegetation coverage in Spring Lake only covers the removal of vegetation for San Marcos salamander habitat. A Biological Objective for fountain darter habitat in Spring Lake is needed.

**Rationale and Challenges:** Fountain darters occur in Spring Lake, along with Covered Activities, and therefore the Biological Goals and objectives for fountain darter should include Spring Lake.

**Recommendation:** Consider developing a Biological Objective~~s~~ for fountain darter habitat in ~~specific for~~ Spring Lake ~~associated aquatic vegetation management activities as actions to be taken to achieve Biological Objectives~~.

### Ensuring Protection of Fenced Riparian Zones during Park Projects

**Comment for Consideration:** Members noted that future park improvement projects may modify the existing fence line, thus reducing riparian establishment in areas currently protected with fencing. The members want to ensure that future projects have flexibility, but also maintain protections for areas previously restored.

**Rationale and Challenges:** Preserving fenced riparian zones ensures habitat stability for riparian-dependent species. However, balancing conservation needs with park improvement flexibility may create conflicts.

**Recommendation:** The *Riparian Zone Management* conservation measure states that "Existing riparian fencing in parks adjacent to the river will remain in place and be maintained to protect the riparian corridor." This language could suggest that existing fence lines cannot be adjusted. In order to allow for flexibility for future park projects, the following language was added: "Existing fence segments may be adjusted as long as the net area of protected riparian zone does not substantially decrease."

### Consideration of New Flow-Split Infrastructure for Spring Lake Dam

**Comment for Consideration:** Future modifications or repairs to the Spring Lake Dam should consider potential installation of new infrastructure to enhance control and refinement of the flow-split management of the Eastern and Western spillways.

**Rationale and Challenges:** This is ~~more~~ effectively a recommendation for Texas State University to consider including evaluation of flow-split infrastructure when assessing options for repairing or retrofitting Spring Lake Dam. Improved flow-split infrastructure enhances precision in water distribution, benefiting habitat conditions for Covered Species. However, infrastructure upgrades would require additional funding and possibly permitting efforts.

**Commented [ICF67]:** Edit suggested by Daniel Large.

**Recommendation:** No change to conservation measure. The Flow-Split Management at Spring Lake conservation measure states that "Texas State University will use boards, barriers, or new infrastructure to adjust the amount of water that flows over the Western Spillway during low flow periods as needed…" and goes on to describe monitoring and evaluation efforts, in coordination with the Science Committee, to determine flow-split allocations between the Western and Eastern Spillways. Should the outcome of this process indicate that additional infrastructure is needed to achieve desired flow-split allocations, the conservation measure as presently written would allow for this, but it does not commit the Permittees to installing new infrastructure if it is not needed.

## 3.4 Measures that Contribute to Recovery

### Subcommittee Report Text with Recommended Edits

Measures that Contribute to Recovery go beyond the requirement of minimizing and mitigating impacts from Covered Activities to the maximum extent practicable and include ~~avoidance~~ measures that contribute to the likelihood of downlisting and delisting of listed Covered Species. Recovery of a listed species is a regulatory determination by USFWS that a ~~threatened~~ listed species is recovered and can survive long-term in the wild without protections afforded by the Endangered Species Act (ESA). USFWS creates Recovery Plans for all listed species to define criteria for downlisting and delisting listed species and recovery actions to achieve those criteria. All listed Covered Species are endangered, except for the San Marcos salamander that is listed as threatened.

**Commented [ICF68]:** Edits to this sentence to clarify:
1)These measures go beyond what is required under Sec 10 for the ITP– this is an important point for being able to access Sec 6 nontraditional land acquisition grants to support land conservation CM.
2)These go beyond avoidance measures as defined in section 2 of this memo.

USFWS cannot require that HCPs meet the recovery criteria of listed Covered Species, but applicants are encouraged to develop HCPs that provide a net benefit to the listed species while minimizing and mitigating Covered Activities (USFWS, 2016). Consistency with Recovery Plans is often considered by USFWS when determining issuance of an ITP, and in order to issue an ITP, USFWS

must find that issuance of the permit will not preclude the recovery of any listed species. The EAHCP was established pursuant to the Edwards Aquifer Recovery Implementation Program (EARIP). As directed by the Texas Legislature, the EARIP Permittees committed to implement strategies specifically intended to aid in the recovery of the Covered Species, exceeding the minimum requirements for obtaining an ITP. Recovery actions and criteria for EAHCP listed species are described in the updated *Draft Recovery Plan for the Southern Edwards Aquifer Springs and Associated Aquatic Ecosystems*, hereafter referred to as the Draft Recovery Plan, released by USFWS on September 10, 2024, for public review and comment (USFWS, 2024).

Strategies within the proposed measures included in this section align with USFWS's recommended recovery actions of the Draft Recovery Plan and ~~the proposed~~the Renewed EAHCP's Biological Goal 7, which ~~Goal 7 of the *Recommended Biological Goals and Objectives Memorandum* (BIO-WEST and ICF, 2024). Goal 7 is a goal proposed by the EAHCP Biological Goals Subcommittee and~~ seeks to "promote community engagement and awareness of the EAHCP, support land and water conservation, and mitigate anthropogenic stressors and natural disturbances within the Plan Area that will benefit the Covered Species." ~~Proposed Measures that Contribute to Recovery that address Goal 7 and support recovery actions include: Education and Outreach, Water Quality Protection, Water Conservation, and Land Conservation.~~

~~The proposed Measures that Contribute to Recovery address the current Measures that Specifically Contribute to Recovery (EAHCP § 5.7), support proposed recovery actions in the Draft Recovery Plan (USFWS, 2024), and address topics listed in the proposed Goal 7 (BIO-WEST and ICF, 2024).~~ Measures may be implemented through available and appropriate mechanisms including existing programs and may be funded through partnerships, other external funding, grant funding, in-kind contributions, or negotiation of requisite interlocal and other agreements.

**Commented [ICF69]:** Edits to make text more similar to what it will be in the Renewed EAHCP

**Commented [ICF70]:** There are more than what is included in this list, and the listing of all of them here is not needed for brevity's sake.

**Commented [ICF71]:** This information is already stated above.

## Education and Outreach

To increase public support for the EAHCP and associated conservation measures, it is crucial to enhance the public's understanding of the Covered Species, their habitat, threats they face, and the protection efforts in place. Additional outreach ~~topics~~ efforts may include increasing the public's support and/or knowledge of water conservation, negative impacts of non-native species ~~control~~, and rules regarding recreational use of the spring systems. The Permittees will implement outreach and education initiatives beyond those directly associated with ~~the~~ other conservation measures implemented under the EAHCP~~individual spring and river systems addressed in other specific conservation measures~~. These initiatives will include but may not be limited to a combination of signage, brochures, events, workshops, promotional items, educational programs, newsletters, and social media postings.

**Commented [ICF72]:** Revised to convey the actions could be taken.

## Water Quality Protection

The Edwards Aquifer is a karst aquifer characterized by an abundance of fractures, caves, and recharge features that enhance the rate of recharge but also increase the exposure of the aquifer to stormwater-borne pollutants or chemical spills. The City of New Braunfels, City of San Marcos, and Texas State University are highly urbanized areas with significant amounts of impervious cover near the habitat of the Covered Species, thus increasing the likelihood of nonpoint source pollutants within stormwater runoff directly affecting that habitat. A base level of the programs described below is currently required by municipal, state, or federal law to provide water quality protection

and are either implemented by or in collaboration with the Permittees within their jurisdictional boundaries.

The Edwards Aquifer Protection Program (EAPP), administered by TCEQ, regulates activities that have the potential to contaminate the Edwards Aquifer, such as construction and aboveground or underground storage tank facilities. EAPP plans submitted to TCEQ for review and approval must include a water pollution abatement component.

Urbanized areas with populations greater than 50,000, and universities located within these areas, are required to obtain coverage under TCEQ's Municipal Separate Storm Sewer System (MS4) permitting program. They must develop and implement a Storm Water Management Plan aimed at reducing the introduction of nonpoint source pollutants to surface waters. Storm Water Management Plans associated with MS4 programs focus on reducing stormwater pollution through the implementation of the following measures:

- Public Education, Outreach, and Involvement
- Illicit Discharge Detection and Elimination
- Construction Site Stormwater Runoff Control
- Post-Construction Stormwater Management in Areas of New Development or Redevelopment
- Pollution Prevention and Good Housekeeping for Municipal Operations
- Industrial Stormwater Sources (cities with populations greater than 100,000)

The City of San Marcos Land Development Code (LDC) includes environmental regulations and development criteria that are specific to providing enhanced protection for the San Marcos River. The development standards set forth in Chapter 6 of the LDC include more robust protection standards for development within the Edwards Aquifer Recharge Zone, San Marcos River Protection Zone and San Marcos River Corridor inside the San Marcos city limits. These standards include impervious cover limitations, stormwater quality treatment requirements and stream buffer requirements. These requirements will remain in effect to help protect water quality of the San Marcos River.

The Permittees will continue to implement programs, projects, and strategies that build on the requirements of their respective MS4 programs and collaborate with TCEQ's EAPP to protect Edwards Aquifer groundwater and the water quality of the Comal Springs and San Marcos Springs ecosystems.

Permittees will consider opportunities for water quality protection within the Plan Area. In particular, the City of New Braunfels, the City of San Marcos, and Texas State University will periodically evaluate water quality and runoff patterns from developed areas in close proximity to, and directly affecting, the Comal and San Marcos springs systems. Based on these evaluations, Permittees will prioritize sources of runoff that could pose significant threats to Covered Species habitat within those systems for corrective action to reduce pollution~~, to habitat for any Covered Species within those systems for corrective action~~ and pollutant load reduction opportunities~~.~~ ~~and planning efforts related to proposed public development~~.

**Commented [ICF73]:** New phrasing suggested by Myron Hess.

**Commented [ICF74]:** Deleted text with unclear meaning.

**Commented [ICF75]:** Text edits are suggestions from Mark Enders.

## Hazardous Materials Management

Improper disposal, handling, treatment, and transportation of hazardous materials increases the likelihood of contamination and spread of hazardous chemicals that may be fatal to the Covered Species. Due to the limited geographic distribution of the Covered Species, they are particularly vulnerable to spills and contamination across the Edwards Aquifer, and, particularly, the Comal and San Marcos watersheds and their tributaries. To reduce the likelihood of improper disposal of hazardous materials, the Cities of ~~San Antonio,~~ New Braunfels, and San Marcos will maintain their respective household hazardous waste (HHW) collection programs.

The City of New Braunfels and City of San Marcos, with support from Texas State University, will coordinate with the Texas Department of Transportation (TxDOT) regarding the transportation of hazardous materials on routes crossing the Comal and San Marcos springs systems and their major tributaries. Implementation efforts to reduce risk from the transportation of hazardous materials may include coordination with city council, TxDOT review and approval, installation of signage, etc. If a spill or contamination does occur, there are currently few options available to mitigate and remove hazardous chemicals. Collectively, Permittees will evaluate and refine the methods and technologies to improve hazardous response readiness. Water quality data collected through the EAHCP monitoring program will be evaluated to assess potential water quality degradation and inform specific responses.

## Septic System Permitting Program

Septic systems are underground wastewater treatment structures that collect, treat, and disperse wastewater collected from plumbing generated by a home or business plumbing systems (e.g., bathrooms, showers, kitchen drains, and laundry). The wastewater is treated on-site rather than collected and transported to a wastewater treatment plant. Septic systems can contaminate groundwater and/or surface water due to improper installation, lack of maintenance, location, or faulty operation. The City of New Braunfels and City of San Marcos will maintain an aerobic and anaerobic septic system registration and permitting program to authorize, inspect and track the construction and locations of new septic systems within their respective jurisdictions. The City of New Braunfels and City of San Marcos will respond to complaints regarding faulty systems and identify systems that have significant potential to contribute subsurface pollutant loadings likely to affect the relevant spring system. Based on that information, both cities will prioritize efforts to minimize those loadings, including through efforts to arrange for connection of those septic systems to the municipal wastewater treatment system.

## Integrated Pest Management

To minimize impacts of the use of fertilizers, herbicides, and pesticides used to maintain the Landa Park Golf Course and other open spaces and parklands, the City of New Braunfels, City of San Marcos, and Texas State University will continue to implement, and periodically refine, the Integrated Pest Management Plan (IPMP) for the Landa Park Golf Course and other IPMPs applicable to parkland in both communities immediately adjacent to the Comal and San Marcos springs systems. The IPMPs will continue to incorporate environmentally sensitive techniques to minimize chemical applications, avoid the introduction of chemicals into the Comal and San Marcos springs systems, and minimize the potential for negative effects to the Covered Species. Any chemicals used will be applied by an applicator licensed by the Texas Department of Agriculture in a manner consistent with the label directions and adhere to U.S. Environmental Protection Agency standards.

**Commented [ICF76]:** Note: D. Frownfelter proposed edit to "Recharge Zone of the Edwards Aquifer" rejected.

**Commented [ICF77]:** Clarification: "City of San Antonio's Household Hazardous Waste Program" is not part of the EAHCP.

**Commented [ICF78]:** Edit suggested by Myron Hess.

**Commented [ICF79]:** Edit suggested by Myron Hess.

**Commented [ICF80]:** Added language to clarify the type of waste treated by septic systems base on description by EPA: https://www.epa.gov/septic/about-septic-systems

**Commented [ICF81]:** IPMP implementation on the golf course and parkland is not a covered activity, so this text should not imply that take is occurring from these activities.

## Land Conservation

Although the Covered Species are primarily aquatic and reside mainly within the Comal Springs and San Marcos springs systems, the land affecting the quality and quantity of springflows spans several counties and parts of counties in South-Central Texas. This region is among the fastest-growing areas in the country, with changes in land use and cover impacting the quantity and quality of the underlying groundwater and spring systems. Implementing conservation strategies to protect land immediately adjacent to the Comal and San Marcos springs systems, within the Edwards Aquifer Recharge and Contributing zones, and other land with recharge features or otherwise deemed ecologically valuable by the Permittees, could help maintain the groundwater and surface water quality and quantity essential for the Comal Springs and San Marcos springs ecosystems. The Permittees will periodically assess opportunities for land conservation based on potential benefits for the quality and quantity of Comal and San Marcos springflows and will advocate for and support land conservation measures consistent with those assessments.

## Water Conservation

This measure provides for additional non-regulatory efforts to reduce per capita pumping and enhance recharge. Pursuant to this measure, Permittees will assess, on an ongoing basis, the availability and feasibility of additional non-regulatory water conservation strategies to increase recharge to and reductions in withdrawals of Edwards Aquifer groundwater. Strategies assessed ~~should~~ will include:

- implementing specific land and vegetation management activities to increase Edwards Aquifer recharge;
- reducing per capita surface water use and/or altering surface water management in order to increase Edwards Aquifer recharge;
- encouraging responsible water usage and conservation practices for aquifers that contribute significant recharge to the Edwards Aquifer; and
- assisting users of Edwards Aquifer water, including exempt users, in reducing water use, particularly during drought periods.

To the extent reasonably practicable, Permittees will promote water conservation and ~~implement~~ other strategies identified as having significant potential benefits.

## EAA's Cibolo Creek Transfer Prohibition

EAA Rule § 711.329 prohibits transferring the points of withdrawals for Edwards groundwater withdrawal permits located west of Cibolo Creek to east of Cibolo Creek, without approval from the EAA Board of Directors and EAA General Manager. This rule benefits Comal and San Marcos springflows by limiting the amount of ~~available~~ Edwards permitted groundwater available for withdrawal east of Cibolo Creek. Prior to the rulemaking, transfers from west of Cibolo Creek to east of Cibolo Creek were generally made in small amounts, but concern over future cumulative impacts on both Comal and San Marcos Springs led to the implementation of a prohibition of such transfers. The EAA will maintain in effect EAA Rule § 711.329 prohibiting transferring points of withdrawals for Edwards groundwater withdrawal permits located west of Cibolo Creek to east of Cibolo Creek.

**Commented [ICF82]:** Edit suggested by Darcy Frownfelter.

**Commented [ICF83]:** Adjusting verbiage to be more clearly state what the Permittees will do.

**Commented [ICF84]:** Edit suggested by Darcy Frownfelter.

**Commented [ICF85]:** Edits suggested by Darcy Frownfelter.

**Refugia**

The EAA will support two off-site refugia for EAHCP Covered Species. The limited geographic distribution of these species leaves their populations vulnerable to extirpation throughout all or a significant part of their range. A series of two refugia will house and maintain adequate populations of Covered Species to support re-establishment in the wild if the wild populations are lost due to catastrophic events such as the cessation of springflow or an unexpected chemical spill. Additionally, the refugia operations will include appropriate research activities focused on the Covered Species. Refugia activities will be limited to those directly related to conserving species covered by the EAHCP through ~~These activities are restricted to species included in this HCP and are designed to~~ informing efforts to maintain viable~~healthy~~ populations, ~~through~~ maintaining and propagating Covered Species in refugia ~~populations~~, assessing Covered Species genetic diversity~~propagation and assessment of genetic diversity~~, and supporting ~~that also supports~~ management ~~measures~~ activities for wild populations of these species.

**Commented [ICF86]:** Note: This section as been moved to nest under "Measures that Contribute to Recovery" for the revised draft memo.

**Commented [ICF87]:** Addition suggested by Darcy Frownfelter.

**Commented [ICF88]:** Addition suggested by Darcy Frownfelter.

**Commented [ICF89]:** Changed "healthy" to "viable" per Daniel Large's suggestion.

**Commented [ICF90]:** ICF suggested edits for clarity and tone, small language edits suggested by Myron Hess.

## Evaluation of Comments for Consideration

### Enhancing Outreach in Habitat Protection Measures

**Comment for Consideration:** Outreach is a component of the original Habitat Protection Measures listed above and is included in various proposed Habitat Protection Measures.

**Rationale and Challenges:** Public outreach is a critical element of the EAHCP's conservation strategy, as indicated by the proposed Biological Goal 7 for the Renewed EAHCP: "Promote community engagement and awareness of the EAHCP…" (BIO-WEST and ICF 2024). However, quantifying the direct benefits to Covered Species from outreach efforts is fraught with challenges, so outreach efforts are not suitable as required mitigation measures to offset impacts from Covered Activities.

**Recommendation:** Retain education and outreach as described under *Measures that Contribute to Recovery* such that it can be viewed as an emphasized but voluntary component of the EAHCP used to support multiple components of the conservation strategy as deemed appropriate by the Permittees.

### Encouraging Green Infrastructure and Nature-Based Solutions

**Comment for Consideration:** Include language to encourage pursuing best management practices to benefit water quality, such as implementing more green infrastructure and nature-based solutions to reduce non-point source pollutants and enhance recharge. While implementation at the watershed scale would be beneficial, this scope may beis too large for the EAHCP. Therefore, the focus here should be more on sensitive areas, like a buffer zone proximal to urban drainages and the river corridor. This could also involve re-evaluating existing infrastructure or recommending improvements for new infrastructure to enhance stormwater detention capacity, bio-infiltration, and replacing impervious cover with pervious cover. Funding for these efforts would not~~could~~ include ~~minor~~ contributions from HCP funds but would encompass ~~and~~ cost-sharing with municipalities, Texas State University, and pursuing other funding ~~using HCP costs as matching funds.~~

**Commented [ICF91]:** Edit suggested by Darcy Frownfelter.

**Commented [ICF92]:** Edits suggested by Darcy Frownfelter.

**Rationale and Challenges:** Implementing best management practices such as green infrastructure reduces non-point source pollution and may enhance aquifer recharge, which aligns with proposed

Renewed EAHCP Goal 1 to conserve the quality and quantity of springflow. The current conservation measures as proposed include *Water Quality Protection* that specifies that City of New Braunfels, City of San Marcos, and Texas State University will "continue to implement programs, projects, and strategies that build on the requirements of their respective MS4 programs." A component of these MS4 programs is "Post-Construction Stormwater Management in Areas of New Development or Redevelopment" which includes requiring developers to incorporate best management practices for stormwater management such as rain gardens, infiltration trenches, bioswales, permeable pavements, and vegetated swales (Environmental Protection Agency 2021).

**Recommendation:** No change to measures that contribute to recovery. The *Water Quality Protection* measure as proposed already addresses pursuing best management practices to address water quality.

### Household Hazardous Waste (HHW) Collection Programs

**Comments for Consideration:**

- The City of San Antonio, City of New Braunfels, City of San Marcos are required to offer HHW collection programs as part of their MS4 programs.
- This measure is intended to support efforts that exceed minimum levels requirement pursuant to other regulatory programs.

**Rationale and Challenges:** ~~HHW~~ Household hazardous waste (HHW) programs mitigate the risk of hazardous material contamination in the aquifer and springs systems. These programs are integral to reducing the potential environmental impact of improperly disposed materials. When the existing EAHCP was developed, Permittees did not have ~~hazardous household waste~~HHW collection programs, which are now required as part of their MS4 programs under their MS4 programs. The *Draft Recovery Plan for the Southern Edwards Aquifer Springs and Associated Aquatic Ecosystems, Second Revision* (U.S. Fish and Wildlife Service 2024) does not specify that water quality protection programs that exceed the regulatory requirements of state permitting requirements are needed for species recovery.

**Recommendation:** No change to measures that contribute to recovery. The *Hazardous Materials Management* measure as proposed already notes that the Permittees will maintain their respective ~~household hazardous waste~~HHW collection programs. The Permittees should not be required to adopt additional ~~requirements on~~ water quality protection measures unless ~~those~~ they are identified as necessary by the USFWS ~~in order for the agency~~for the renewal to meet ~~its~~ ITP issuance criteria, which is not anticipated.

**Commented [ICF93]:** Edits suggested by Daniel Large.

### Septic System Regulation by Hays and Comal Counites

**Comments for Consideration:** The *Septic System Permitting Program* measure could include the actions Hays and Comal counties are taking to regulate septic systems.

**Rationale and Challenges:** Including a description of the actions that Hays and Comal counties are taking to regulate septic systems would provide more information about how other jurisdictions within the Plan Area are contributing to water quality protection efforts. However, Hays and Comal counties are not Permittees under the EAHCP.

**Recommendation:** No change to Measures that Contribute to Recovery. The conservation measures described in the EAHCP should be specific to those actions performed by the Permittees.

### Utilizing an Existing Septic System Database

**Comment for Consideration:** The *Septic System Permitting Program* measure could reference an existing septic system database for the Plan Area, if available.

**Rationale and Challenges:** An existing septic system database, if it exists, could allow for efficient tracking and prioritization of septic systems that may pose a pollution risk to the aquifer and springs.

**Recommendation:** No change to *Septic System Permitting Program* measure. The measure does not need to reference an existing septic system database, as it clearly states what the Permittees will do: "The City of New Braunfels and City of San Marcos will maintain an aerobic and anaerobic septic system registration and permitting program to authorize, inspect and track the construction and locations of new septic systems within their respective jurisdictions."

### Land Management Plans for Former Texas State University Golf Course

**Comment for Consideration:** The Texas State University Golf Course adjacent to Spring Lake has been closed for years and is no longer maintained as a Golf Course. EAHCP staff will coordinate with the San Marcos HCP Manager to inquire about current Texas State University and City of San Marcos IPMPs for maintaining parkland immediately adjacent to the San Marcos Springs system.

**Rationale and Challenges:** The existing EAHCP includes as a conservation measure for the City of San Marcos "Management of Golf Course and Grounds" that entails documenting in an IPMP golf course management practices. The parkland is no longer maintained as a golf course, but an IPMP may still be appropriate, given the proximity of the parkland to Spring Lake.

**Recommendation:** ~~Include in~~ The *Integrated Pest Management* measure includes ~~the intended action to establish and~~ implementing an IPMP at the parkland adjacent to Spring Lake.

### Evaluating and Expanding Water Conservation Strategies

**Comment for Consideration:** While modeling, including climate modeling, made available to date appears generally consistent with a determination that implementation of the Springflow Protection Measures likely would be sufficient for maintaining identified minimum levels of Comal and San Marcos springflow, there is significant uncertainty and this measure calls for Permittees to keep evaluating and, to the extent reasonably practicable, implement additional water conservation strategies.

**Rationale and Challenges:** Ongoing evaluation of water conservation strategies and implementation of practical strategies with significant potential benefits mitigates the risk that future climate conditions and water demand will lead to springflow discharge levels below what is predicted by modeling (Edwards Aquifer Authority 2024).

**Recommendation:** No change to the *Water Conservation* measure. The measure currently addresses this comment for consideration. Evaluating and expanding water conservation strategies will also be considered in the monitoring and adaptive management plan of the Renewed EAHCP.

# 4. References


BIO-WEST and ICF. 2024. Kunkel, C., Sullivan, K., Oborny, E., Littrell, B., Williams, C., Pintar, M., Bare, L. *Revised Recommended Biological Goals and Objectives for the Permit Renewal*. Memorandum prepared for EAHCP Incidental Take Permit Renewal. https://www.eahcprenewal.org/

EAHCP Conservation Measures Subcommittee. 2024. *EAHCP Conservation Measures Subcommittee Report – 2024*. Available: https://www.eahcprenewal.org/wp-content/uploads/2024/10/EAHCP-Conservation-Measures-Subcommittee-Report.pdf

Edwards Aquifer Authority. 2024. *Estimated Edwards Aquifer Recharge and Spring Flows Under Future Climate Conditions*. September. San Antonio, TX. Prepared with assistance from ICF, Austin TX. Available: https://www.eahcprenewal.org/wp-content/uploads/2024/09/Report-3-Estimated-Edwards-Aquifer-Recharge-and-Spring-Flows-Under-Future-Climate-Conditions.pdf

Environmental Protection Agency. 2021. "Stormwater Best Management Practice Post-Construction Plan Review." Available: https://www.epa.gov/system/files/documents/2021-11/bmp-post-construction-plan-review.pdf.

HDR. 2011. Evaluation of water management programs and alternatives for springflow protection of endangered species at Comal and San Marcos Springs. Prepared for the Edwards Aquifer Recovery Implementation Program (EARIP). Available: http://earip.org/Reports/EARIP--tech%20Evaluations%20Report_Oct%2010%20%202011.pdf

U.S. Fish and Wildlife Service. 2024. Draft Recovery Plan for the Southern Edwards Aquifer Springs and Associated Aquatic Ecosystems, Second Revision. Draft Recovery Plan released by USFWS on September 10, 2024 for public review and comment until December 12, 2024, content is subject to change based on comments and edits received by December 12, 2024. Prepared by USFWS Ausin Ecological Services Field Office. Available: https://ecos.fws.gov/docs/recovery_plan/RecoveryPlanSection08.15.2024_1.pdf

# Appendix 1: Comment Matrix, Conservation Measures Memo Draft

| ID | Page | Line | Comment | Commentor | Status / Response |
|---|---|---|---|---|---|
| 001 | 10 | 1-3 | No discussion of substantive rationale. | GBRA | No edit needed (per discussion with EAHCP team). |
| 002 | 16 | Table 1 | What exactly is the “max possible?” Can this be numerical to be more clear and consistent with table? | GBRA | Edit made. See most recent edits to table 1. |
| 003 | 19 | 20 | Less subjective. | GBRA | Edit made. |
| 004 | 20 | 36-38 | May be beneficial to add the point about conservation measures needing to be clear and definite commitments, and not tied to policies and ordinances that might change. | GBRA | Edit made. |
| 005 | 22 | 21-22 | Would be beneficial for the record and to avoid confusion to include an explanation of why all of these were removed in full instead of being restated as minimum measures the City was willing to implement. | GBRA | Comment bubble at the beginning of section provides this explanation. Text was streamlined to not re-state local ordinance but to maintain what is being committed to while streamlining text. |
| 006 | 22 | 4-6 | Is a clearer delineation of which groups each entity will coordinate with possible or beneficial? Leaving this fuzzy seems likely to create confusion. | GBRA | Will consider in more detail as appropriate in implementation chapter. |
| 007 | 31 | 2-11 | Should this comment for consideration be moved to the AM section at the beginning for consistency? You recommend it be considered for AM, so it seems to fit there. | GBRA | Edit made, and other comments for consideration that fit in the Adaptive Management section were also moved. |
| 008 | 29 | 16-20 | Seems like “Rationale” here and throughout contains a combination of elements blurring commenters’ rationale, and the rationale underlying the report author’s recommendation. Perhaps “Rationale and Challenges” or “Rationale and Technical Considerations” throughout might make the intent and scope of the discussion that appears under this header clearer. | GBRA | Globally edited. |
| 009 | 31 | 26-30 | Should this comment for consideration be moved to the AM section at the beginning for consistency? You recommend it be considered for AM, so it seems to fit there. | GBRA | Edit made. |
| 010 | 29 | 27 | Include reference to page in Subcommittee report on which item n appears. Same comment as previous about better fit in AM section in beginning as well. | GBRA | Edit made. |
| 011 | 32 | 21 | “Consider” including? Seems like flexibility might be beneficial since implementation issues have not yet being worked through in earnest. | GBRA | Edit made. |
| 012 | 30 | 32 | Would BOs be the more appropriate term to use here? | GBRA | Edut made. Removed "biological needs" but did not replace with "biological objectives." |
| 013 | 33 | 1-2 | Revision would be beneficial here. The meaning of this sentence is unclear. | GBRA | Sentence edited. |
| 014 | 34 | 4-7 | The original sentence seems clearer because it included a logical relationship between the different activities, rather than simply listing them out indiscriminately. | GBRA | Thank you for the comment. Per discussion with EAHCP team, no edit made. |
| 015 | 34 | 5 | Would “viable” be a more clear and less subjective term? | GBRA | Edit made. |
| 016 | 34 | 5 | ? | GBRA | Rejected proposed edit of "in captivity." |
| 017 | 36 | 17 | Makes sense to me, but the FMA identifies the Permittee as “The City of San Antonio, acting by and through its San Antonio Water System Board of Trustees.” Perhaps it would be beneficial for the comment here to explain why only SAWS should be the focus. | GBRA | Explanation of edit revised. Confirmed that SAWS does not have a HHW program and the City of San Antonio's is not under the purview of the EAHCP. |
| 018 | 40 | 15 | Too noncommittal? | GBRA | Edit made. |

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| 019 | 40 | 18-23 | Seems like this should go in an AM, not evaluated for CMs list at the beginning of the Recovery Comments for Consideration, as was done for the other sections. | GBRA | The existing Water Conservation measure that contributes to recovery aligns with the comment; no change needed. |
| 020 | 7 | 10-11 | Please clarify what is meant by 'new term'. Is this following/after a triggering episode? | TXST | Edit made. |
| 021 | 36 | 17 | From current HCP website with list of Permittees "The City of San Antonio acting by and through it's San Antonio Water System Board of Trustees" | TXST | Expalantion of edit revised. Confirmed that SAWS does not have a HHW program and the City of San Antonio's is not under the purview of the EAHCP. |
| 022 | 4 | 22-24 | Suggest " These programs will be implemented in addition to, and are designed to build on, the continued implementation by the Edwards Aquifer Authority of Critical Period Management Plan Stages I-IV," acknowledging and clarifying that these measures were evaluated and designed as additions to the basic CPM program. | Texas Living Waters | Edit made. |
| 023 | 5 | 35 | Suggest "at any time" for consistency with the Uvalde pool reference in the following sentence. | Texas Living Waters | Edit made. |
| 024 | 6 | 12-15 | Use of may suggests there is no actual commitment. | Texas Living Waters | This comment will be considered during HCP chapter development. |
| 025 | 6 | 24-25 | Suggest "obtained for this purpose from," Intended to clarify that quantity reference for pumping reduction offset here is referring solely to non-Edwards supplies used for offset. | Texas Living Waters | Paragraph was clarified with edits made by Darcy Frownfelter (EAA), so this edit was not made. |
| 026 | 9 | 3-5 | Although Stage V activation occurs quickly, it does not necessarily result in short-term relief because, although triggered based on springflow levels, compliance is assessed on an annual basis and may not result in near-term pumping reductions. However, it does seem true that a "higher" trigger for Forbearance Increment Two may create problems for responding to a recurrence of DOR-like conditions. Still, there would be great value in identifying an option for a more flexible, and responsive, response to short-term conditions worse than predicted by modeling. One such option would be to include, if acceptable to SAWS, a measure to provide compensation for SAWS to reduce its Edwards pumping, within specified levels and durations acceptable to SAWS, in response to springflows falling below the minimum springflow targets—perhaps by some specific level below the targets and/or a specific duration—when full ASR forbearance triggers have not been met.<br>It appears that SAWS now has more flexibility in its water supply portfolio than when the current EAHCP was developed. For example, such an approach would only be triggered under conditions when modeling predictions have proven to be incorrect: that is, when springflow levels fall below the lowest minimum predicted levels identified in modeling (e.g., fall below 24 cfs at Comal or below 27.6 cfs at San Marcos by some amount, such as 10%) or stay below the predicted levels for longer than predicted, regardless of whether the 10-year recharge trigger has been met. Such triggers would be set to respond to flow conditions worse than those predicted through modeling. To help keep SAWS whole, any such pumping reductions could be offset against the DOR-triggered ASR suspension obligation agreed to by SAWS. If there is a way to make it work for SAWS, that type of approach could add flexibility to springflow protection measures.<br>If the modeling is right, the short-term suspension component would never be triggered. If the modeling is wrong, we would have a measure available to respond. The volume available for responding to such a short-term drought would need to be limited to minimize disruptions both for SAWS and for the ability to respond to prolonged droughts that do closely match the DOR in the frightening event that both happen. If we encounter flows significantly below the predicted minimums and have not triggered the 10-year rolling recharge value—a not unreasonable scenario given the levels of uncertainty in modeling—an approach of this type, if it could be made to work for SAWS, would provide the potential to respond. The entire wild populations of these species is at risk, which counsels for extra precautions. | Texas Living Waters | This comment will be considered during HCP chapter development. |
| 027 | 10 | 4 | This rationale is hard to follow. It is not obvious how the challenge would be any greater than it would have been under the current HCP. It is unclear what "existing and future contracts and interlocal agreements" with EAA Permittees are being referenced here or, whatever they are, how they would be different in nature from those in existence during the term of the current HCP that did contemplate such a measure. At minimum, further clarification for this rationale should be provided. An alternate potential approach for responding to extreme conditions is presented in the comment on the previous page. | Texas Living Waters | Text deleted. This comment for consideration was moved to be considered in the monitoring and adaptive management memo. |
| 028 | 11 | 6-16 | Suggest "installing and maintaining," for consistency with other items listed here. No substantive change. Same for f. and g. below. | Texas Living Waters | Edit made. |

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| 029 | 15 | 16-17 | “Like” indication here was inadvertent. Actually, I am puzzled by this statement. I am not understanding how flow-split management is expected to affect water levels near Spring Island. If it does, I am unclear on how, or if, that consideration affected, or should affect, the allocations used for flow-split management, which I understood to have been driven by habitat conditions in the Old Channel. | Texas Living Waters | Text edited for clarification. At higher discharge conditions, gates regulating flow through the Old Channel lead to the maintenance of typical water elevation levles in Landa Lake and the Spring Island area. At lower discharge conditions, maintaining prescribed flows through the Old Channel requires opening the culverts more from Landa Lake, resulting in the level of water in Landa Lake to be lower and drying around Spring Island. |
| 030 | 15 | 27 | Suggest rephrasing to minimize ambiguity—”reaches 50 cfs” could refer to declining or increasing flow—by substituting “is at or below” in place of “is less than” or “reaches.” | Texas Living Waters | Edit made. |
| 031 | 16 | Table 1 | Do we necessarily want to specify “maximum possible”? If total flow is 50, would we necessarily want to shunt 50 to Old Channel, assuming that were possible? Narrative language about prioritizing suitable conditions in Old Channel was intended to acknowledge potential value of flexibility to maintain some flow in New Channel if suitable conditions in Old Channel could be maintained. Perhaps a better option would be to insert “Lesser of maximum possible or the amount needed to maintain good conditions” in Old Channel column for “50 and less” row. | Texas Living Waters | Text in table edited. |
| 032 | 16 | 2 | It appears that the Golf Course Mgmt component of this measure is missing. Current HCP (5.2.11) provides for development and implementation of IPM approach on golf course. Given the extent of the Old Channel that borders the golf course property, that seems like an important measure for helping to minimize take. | Texas Living Waters | Edit made. Removed "and Golf Course Management" from section title. |
| 033 | 18 | 15 | Based on language of Section 5.2.2.2 of current EAHCP, no change from current commitments would involve continuing vegetation management downstream of the confluence. As discussed further below, it may make sense to reallocate this effort to additional upstream areas, but basis for removing it entirely is unclear. | Texas Living Waters | The rationale for not identifying the area downstream of the confluence for restoration is provided in the text and includes "the challenges of sediment composition, vulnerability to scouring events, access limitations, and recreational impacts highlight logistical and feasibility concerns that create uncertainty in how effective restorations efforts would be." |
| 034 | 18 | 32-37 | This is an incomplete reference to the language of the current EAHCP. Section 5.2.2.2 provides in pertinent part: “Upon final determination of locations suitable fountain darter habitat for restoration in the Comal River proper (below the USGS gauging weir, aka Stinky Falls), the City of New Braunfels will conduct native vegetation restoration and yearly maintenance to establish additional fountain darter habitat. Areas for targeted restoration preferred by the City of New Braunfels include the portion of the Comal River between Last Tubers Exit and the confluence of the Guadalupe River and portions of the Comal River that allow for protection on one side of the river and safe passage of recreators on the other side of the river.” The current proposed language appears to represent a reduction in the level of commitment from the current HCP. Although it may make sense to transfer the effort to additional areas of the Old Channel outside of the LTBG and Restoration reaches, the justification for reducing the overall commitment from that in current HCP is missing. In addition, the NB golf course property extends far downstream of the LTBG and Restoration reaches, which, compared to the quoted language cited in the rationale, again seems to indicate a reduction in vegetation mgmt commitments from current HCP. Certainly understand budget is limited, but, over time, effort level to maintain aquatic vegetation on routine basis should decrease, leaving room to at least maintain commitment levels in current HCP. | Texas Living Waters | Edited text. |
| 035 | 20 | 20 | Some approach for further reducing diversions and minimizing take during very dry periods is important. Another option, if the purple pipe is not connected to reclaimed water when needed, would be for any diversions to be moved to downstream of the confluence or at least to the downstream end of the currently authorized diversion segment. Depending on location, perhaps the purple pipe could be used for delivering the water from downstream diversion points. | Texas Living Waters | Thank you for the comment. Per discussion with EAHCP team, no edit made. |

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| 036 | 21 | 11 | It is a bit unclear what “at a minimum” is referring to. Is it referring to the city and university parks adjacent to the San Marcos Springs system? As in, for at least those areas? Or, is it intended to refer to at least those measures? From discussion above, it appears to be the latter. Accordingly, suggest moving “at a minimum” to immediately after “implement.” It will also be important to clarify what the scope is of “the San Marcos Springs system.” | Texas Living Waters | Edit made to clarify "at a minimum." Will consider clear explanation of the spatial applicability of this conservation measure in the HCP. |
| 037 | 26 | 26-27 | Likely need to incorporate consideration of impact on access to areas where sensitive aquatic vegetation/habitat is found. “Substantially” decrease? Too subjective? Seems similar to language proposed for deletion elsewhere for this reason. Perhaps rephrase as: Existing fence segments may be adjusted provided that both net area of protected riparian zone and net ecological value for Covered Species from restrictions on access to aquatic habitat are maintained or, if reduced, any such cumulative reductions are ecologically insignificant. | Texas Living Waters | No edit. Existing text left unchanged for implementation practicality considerations. |
| 038 | 35 | 4-8 | Suggesting tweaks to further clarify that both propagation and maintenance of refugia populations are needed. | Texas Living Waters | Edit made. |
| 039 | 37 | 18-19 | “corrective action pollutant load reduction opportunities” also is unclear. Suggest substituting “corrective action to reduce pollution.” Pollutant is a narrower term than pollution, which seems like the appropriate term here. | Texas Living Waters | Edit made. |
| 040 | 4 | 17 | I have concern that the proposed springflow protection measures will not be able to meet all the proposed springflow objectives. The modeling shows that the minimums of 30 cfs and 45cfs at Comal and SM would mostly be achieved but no analysis on how often or not be able to achieve the 11-month minimums and 3yr rolling averages. I’d like to ensure that the springflow protection measures are adequate to most often meet all springflow objectives and not just the minimums of 30cfs and 45cfs for Comal and SM. As such, I’d like to ensure that we include in the Adaptive Mgmt section routine evaluation of whether we are achieving all flow objectives and, if not, a process for adjusting the springflow protection. | CoSM / TXST | This comment will be considered during HCP chapter development. |
| 041 | 6 | 14-17 | Can more specificity be provided here regarding the dual trigger of J-17 level and rolling recharge? If following the same trigger protocol for Suspension Increment 2, which specifies announcement of annual and 10-yr rolling recharge by end of May, would the j-17 level also be assessed at end of May to determine if less than 630? Would the j-17 trigger be an instantaneous reading at end of May when rolling recharge <500k ac-ft announced? | CoSM / TXST | This comment will be considered during HCP chapter development. |
| 042 | 9 | 8-41 | I recommend moving this Comment for Consideration under the “Comments for Consideration for Adaptive Management and Monitoring” section above. | CoSM / TXST | This issue is already included in comments for consideratoin to be considered for adaptive management and monitoring. |
| 043 | 20 | 25 | Consider removing "significant" per ICF’s comment in the Comal System Rec Mgmt section. | CoSM / TXST | Edit made. |
| 044 | 21 | 4-5 | Recommend removing this statement, as it is stated previously that TXST owns Sewell Park and may not need to specify individual TXST departments. Alternatively, if the specificity is needed, we can consider adding a line stating that TXST Facilities Department manages the area immediately around Spring Lake Dam down through Aquarena Springs Dr. | CoSM / TXST | Edit made. |
| 045 | 21-22 | 42-3 | Suggesting removal of "Additionally, restrict certain recreational activities in park areas and/ or adjacent river zones, such as smoking, alcohol consumption, use of glass or disposable beverage containers, large coolers, shade structures, tents, tables, barbeque pits, and jumping or diving from bridges." or more consideration. While most of these activities are currently, and likely to remain, prohibited by City code or TXST policy, there is concern that this is overly prescriptive. For example, TXST or City may allow some of these activities, such as the use of tables, tents and BBQ pits, in riverfront parks as part of managed event functions. | CoSM / TXST | Edit made. |
| 046 | global | | Various small edits directly in document text. | CoSM / TXST | Edit made. |
| 047 | 11 | 4-5 | CoNB would prefer to remove this phrase since city ordinance provides restrictions and recreation barriers to sensitive habitats in Landa Lake without the need of physical barriers. | CoNB | Edit made. |
| 048 | 11 | 15 | Remove to conform to current city ordinance | CoNB | Edit made. |
| 049 | 4 | 17-18 | The CoNB wants to emphasize the importance of the adaptive management procedures to allow for assessment and reevaluation of the springflow protection measures in the event that springflow protections are not met in consecutive years. The CoNB is unsure if the proposed Springflow protection measures will meet the proposed objectives, and wants springflow protection to extend past only meeting the minimum requirements when the 3-year averages are also important to the species viability. | CoNB | This comment will be considered during HCP chapter development. |
| 050 | 4 | 12 | SMRF is concerned that the Springflow Protection as proposed is not sufficient to meet springflow BGO based on what we are seeing today, specifically the 3 year rolling average and possibly the 11 month goals for both the Comal and San Marcos Rivers. | SMRF | This comment will be considered during HCP chapter development. |
| 051 | 5 | 14-20 | SMRF is concerned that the rolling recharge triggersare not sensitive enough based on what is happening this year, so we'd like to see the trigger number raised to 550,000 or 600,00 acre feet of recharge. | SMRF | This comment will be considered during HCP chapter development. |
| 052 | 6 | 14-20 | SMRF is concerned that the rolling recharge triggersare not sensitive enough based on what is happening this year, so we'd like to see the trigger number raised to 550,000 or 600,00 acre feet of recharge. | SMRF | This comment will be considered during HCP chapter development. |

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| 053 | 7 | 24-28 | SMRF Agrees, and the dynamic of the trinity is not included as a factor, so as there is more data surrounding baseflow and interformational flows there needs to be flexibility to incorporate the data. This needs to be more of a priority. | SMRF | Will consider comment in Monitoring and Adaptive Management Memo. |
| 054 | 7 | 29-35 | SMRF agrees. The Climate models need to be revisited regularly as time and technology progresses due to the length of time that this ITP will be in effect. We'd like to see the predictions reviewed at least every 10 years plus if we fail to meet the minimum springflows for a certain amount of time. | SMRF | Will consider comment in Monitoring and Adaptive Management Memo. |
| 055 | 7 | 36-38 | There is so much uncertainty with the climate models, temperatures could be higher, the climate could be dryer, there could be more flash flooding and less recharge, so adaptive management will be critical to the success of this plan, especially with regards to properly addressing springflow and model projections. | SMRF | Will consider comment in Monitoring and Adaptive Management Memo. |
| 056 | 8 | 3 | SMRF agrees, and if the model is less conservative, this needs to be addressed in adaptive management. | SMRF | Will consider comment in Monitoring and Adaptive Management Memo. |
| 057 | 8 | 30 | SMRF agrees! If we don't meet the biological goals and objectiveswe need to have sufficient adaptive management to better achieve the goals a certain percentage of the time. We're going to need some specificity around that point. | SMRF | Will consider comment in Monitoring and Adaptive Management Memo. |
| 058 | 7 | 39-42 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 059 | 8 | 1-2 | Yes! SMRF agrees. | SMRF | Noted. |
| 060 | 9 | 6 | SMRF agrees! We need springflow protections to meet the BGOs. | SMRF | Will consider comment in Monitoring and Adaptive Management Memo. |
| 061 | 9 | 14-23 | Increasing the recharge volume from 500,000 to 550,000 or 600,000 would have been helpful this year when we had the 2nd lowest aquifer reading on record. Due to the timing of the trigger ASR will not be implimented in 2025, and it's possible that we'll see the lowest aquifer measurement on record as the year progresses. | SMRF | The springflow protection measures are designed to maintain springflow discharges to meeting the minimums as prescribed in the existing EAHCP. |
| 062 | 9 | 24-39 | Adaptive management should address climate modeling and analyze how often we're meeting or missing the springflow projections. When we're not meeting the minnimums or 3 year rolling averages, we need to be able to adjust springflow protection measures. | SMRF | Will consider comment in Monitoring and Adaptive Management Memo. |
| 063 | 9 | 41-43 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 064 | 16 | 2-7 | Irrigation during critical low flows is not the highest and best use of the river water, and we'd like to see the City of New Braunfels agree to cease all use of surface water out of the old channel if springflow is less than 30 cfs. | SMRF | This comment will be considered during HCP chapter development. |
| 065 | 17 | 24-26 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 066 | 18 | 20-26 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 067 | 20 | 1 | For aquatic vegetation management, SMRF would like to see the maps expand or allow work outside of the BGO reaches and restoration reaches | SMRF | Will consider comment in Monitoring and Adaptive Management Memo. |
| 068 | 20 | 25-28 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 069 | 22 | 1 | please add the word styrofoam to the list of restrictions | SMRF | The current text lists disposable containers, which would include styrofoam. |
| 070 | 23 | 21 | For aquatic vegetation management, SMRF would like to see the maps expand or allow work outside of the BGO reaches and restoration reaches | SMRF | Will consider comment in Monitoring and Adaptive Management Memo. |
| 071 | 24 | 17-22 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 072 | 26 | 27 | please remove the word "substantially" | SMRF | Edit made. |
| 073 | 28 | 6-13 | Irrigation during critical low flows is not the highest and best use of the river water, and we'd like to see Texas State commit to the following: a) limit surface water diversions from Spring Lake to a rate not to exceed 0.75 cfs (340 gpm) and cease diversion from the San Marcos River when San Marcos River streamflow, as measured at USGS gage #08170500, declines below 80 cfs. b) when the San Marcos River streamflow declines below 60 cfs they will reduce surface water diversions to a rate not to exceed 0.50 cfs (225 gpm) from Spring Lake. c) When flows to the San Marcos River fall below 50 cfs Texas State will cease all surface water diversions. | SMRF | This comment will be considered during HCP chapter development. |
| 074 | 29 | 10-12 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 075 | 29 | 22-27 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 076 | 30 | 2-11 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 077 | 30 | 26-30 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 078 | 31 | 14-17 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 079 | 31 | 25-30 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 080 | 32 | 6-8 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |

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| 081 | 32 | 22-25 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 082 | 32 | 35-39 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 083 | 33 | 12-15 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 084 | 33 | 22-24 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 085 | 33 | 35-37 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 086 | 34 | 4-7 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 087 | 34 | 18-20 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 088 | 34 | 37-39 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 089 | 35 | 1-9 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 090 | 38 | 19-31 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 091 | 39 | 29-39 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 092 | 40 | 35-36 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 093 | 41 | 25-30 | Yes! SMRF agrees. | SMRF | Thank you for the comment. |
| 094 | 22 | 1 | remove "beverage" . All disposable items need to restricted. The HCP needs to be the springboard for this goal | TPWD | See comment ID # 045. The phrasing that included "beverage" was removed because it was redundant with existing TXST or city policy. |
| 095 | 22 | 1 | remove "large" . All disposable coolers should be restricted. | TPWD | See comment ID # 045. The phrasing that included "large coolers" was removed because it was redundant with existing TXST or city policy. |
| 096 | 4 | 14 | strike "Forbearance and" | EAA | Edit made. |
| 097 | 4 | 20 | strike "primarily" | EAA | Edit made. |
| 098 | 4 | 21 | strike "suspending, or" | EAA | Edit made. |
| 099 | 4 | 21 | strike "," after "forbearing" | EAA | Edit made. |
| 100 | 4 | 21 | insert after "forbearing" the following: "or interrupting" | EAA | Edit made. |
| 101 | 4 | 21 | insert "the various" after "during" | EAA | Edit made. |
| 102 | 4 | 22 | insert after "conditions" the following: "asociated with each particular control program" | EAA | Edit made. |
| 103 | 4 | 24 | strike "forbearance and" | EAA | Edit made. |
| 104 | 4 | 26 | insert after "for" the following: "voluntary" | EAA | Edit made. |
| 105 | 4 | 26 | insert after "in" the following: "the" | EAA | Edit made. |
| 106 | 4 | 27 | strike "and/or" | EAA | Edit made. |
| 107 | 4 | 28 | strike "lease agreements" | EAA | Edit made. |
| 108 | 4 | 29 | strike "suspension" and replace with "forbearance" | EAA | Edit made. |
| 109 | 4 | 32 | strike "forbearance and control" and replace with "withdrawal reduction" | EAA | Edit made. |
| 110 | 4 | 32 | insert after"triggers" the following: "for each control program" | EAA | Edit made. |
| 111 | 4 | 34 | strike "long-term" | EAA | Edit made. |
| 112 | 4 | 34 | capitalize the "L" in "leases": | EAA | Edit made. |
| 113 | 4 | 34 | insert after "of" the following: "Edwards" | EAA | Edit made. |
| 114 | 4 | 35 | insert after "of" the following: "Edwards" | EAA | Edit made. |
| 115 | 4 | 35 | insert after "rights" the following: "and the forbearance of such rights" | EAA | Edit made. |
| 116 | 5 | 1 | insert after "of" the following: "Edwards" | EAA | Edit made. |
| 117 | 5 | 2 | insert after "of" the following: "Edwards" | EAA | Edit made. |
| 118 | 5 | 2 | insert after "Trust" the following: "and the forbearance of such rights" | EAA | Edit made. |
| 119 | 5 | 3 | insert after "of" the following: "Edwards" | EAA | Edit made. |
| 120 | 5 | 3 | insert after "easement" the following: "and the forbearance of such rights" | EAA | Edit made. |
| 121 | 5 | 4 | strike "Suspension/" | EAA | Edit made. |
| 122 | 5 | 5 | strike "suspension" and replace with "Forbearance" | EAA | Edit made. |
| 123 | 5 | 6 | strike "Suspension" and replace with "Forbearance" | EAA | Edit made. |
| 124 | 5 | 10 | strike "suspended" and replace with "forborne Edwards" | EAA | Edit made. |

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| 125 | 5 | 10 | strike "Announcing impliementation of" and replace with "The EAA General Manager's issuance of a notice of commencement of a forbearance year for this" | EAA | Edit made. |
| 126 | 5 | 11 | strike "the" | EAA | Edit made. |
| 127 | 5 | 11 | strike "suspension" and replace with "forbearance" | EAA | Edit made. |
| 128 | 5 | 13 | strike "Suspension" and replace with "Forbearance" | EAA | Edit made. |
| 129 | 5 | 14 | strike "Suspension" and replace with "Forbearance" | EAA | Edit made. |
| 130 | 5 | 19 | strike "a" and replace with "the" | EAA | Edit made. |
| 131 | 5 | 19 | strike "suspension" and replace with "forbearance" | EAA | Edit made. |
| 132 | 5 | 21 | strike "Suspension" and replace with "Forbearance" | EAA | Edit made. |
| 133 | 5 | 22 | strike "Suspension" and replace with "Forbearance" | EAA | Edit made. |
| 134 | 5 | 22 | strike "the" and replace with "an" | EAA | Edit made. |
| 135 | 5 | 23 | strike "Suspension" and replace with "Forbearance" -- two times | EAA | Edit made. |
| 136 | 5 | 25 | strike "90,000" and replace with "100,000" | EAA | Edit made. |
| 137 | 5 | 25 | insert after "of" the following: "Edwards" | EAA | Edit made. |
| 138 | 5 | 27 | insert after "of" the following: "obtaining the forbearance of Edwards groundwater rights through the use of" | EAA | Edit made. |
| 139 | 5 | 31 | insert before "Critical" the following: "interruptions under" | EAA | Edit made. |
| 140 | 5 | 32 | insert after "implement" the following:  "the interruption of groundwater withdrawal amounts for initial regular permits through" | EAA | Edit made. |
| 141 | 5 | 32 | insert after "V" the following: "permitted withdrawal" | EAA | Edit made. |
| 142 | 5 | 32 | insert after "authorized" the following: "permitted" | EAA | Edit made. |
| 143 | 5 | 33 | strike "levels" and replace with "groundwater withdrawal amounts" | EAA | Edit made. |
| 144 | 5 | 38 | strike "It is possible that some of the smaller municipal" | EAA | Edit made. |
| 145 | 5 | 39 | strike entire line | EAA | Edit made. |
| 146 | 6 | 1 | strike entire line | EAA | Edit made. |
| 147 | 6 | 2 | strike entire line | EAA | Edit made. |
| 148 | 6 | 3 | strike entire line | EAA | Edit made. |
| 149 | 6 | 4 | strike entire line | EAA | Edit made. |
| 150 | 6 | 5 | strike entire line | EAA | Edit made. |
| 151 | 26 | 32 | Riparian management and maintenance strategies include ~~routine monitoring,~~ removal of non-native vegetation and the planting of diverse native riparian vegetation. | ICF | Text edited to remove "routine monitoring" because monitoring for the HCP will be addressed separately. |
| 152 | 7 | 35 | [Insertion]: "or Equivalent Water Forebearance" after subsection title Aquifer Storage and Recovery | TXST | This comment will be considered during HCP chapter development. |
| 153 | 7 | 35 | [Insertion]: An example of the ASR or equivalent water forbearance could be managed by creating create two triggers under Suspension Increment Two  where there is a trigger at an 8-year moving average (recharge below 500,000 acre feet and J-17 below 230ft) for 20,000 acre feet forbearance and a second trigger at 10-years for additional 30,000 (if recharge remains below 500,000 acre feet and J-17 is below 230ft). Hypothetically - with the 126,000 available through ASR (or other SAWS water sources) this could result in multiple years of spring flow protections by providing buffer to extremely low flows that may occur between the previous trigger of 10-years and flow protection implementation. | TXST | This comment will be considered during HCP chapter development. |
| 154 | 6 | 29 | Insert "otherwise offssetting pumping from the Edwards Aquifer." | Texas Living Waters | Sentence was clarified with edits made by Darcy Frownfelter (EAA), so this edit was not made. |