



February 12, 2018

Ms. Tanya Sommer  
United States Fish and Wildlife Services  
Austin Ecological Services Field Office  
107011 Burnet Road, Suite 200  
Austin, Texas 78758

**RE: Amendment to "Use of the SAWS ASR for Springflow Protection" Measure (EAHCP §5.5.1)**

On behalf of the City of New Braunfels (CoNB), the City of San Marcos (CoSM), Edwards Aquifer Authority (EAA), the San Antonio Water System (SAWS), and Texas State University (collectively the Permittees of the Incidental Take Permit #TE-63663A-1), I am providing an amendment to the Edwards Aquifer Habitat Conservation Plan (EAHCP) to revise the *Use of the SAWS ASR for Springflow Protection* Measure (EAHCP §5.5.1) in the EAHCP. This letter is submitted pursuant to Section 9.2.1 of the EAHCP.

The Edwards Aquifer Habitat Conservation Plan (EAHCP) currently includes a springflow protection program (ASR Program or Program) that utilizes the San Antonio Water System (SAWS) Aquifer Storage and Recovery Facility (ASR Facility) for storage and recovery of leased Edwards Aquifer water. Broadly, the current program is based on the acquisition by the Edwards Aquifer Authority (EAA) of 50,000 acre-feet per year of leases and lease options of Edwards Aquifer groundwater withdrawal permits to be utilized to fill, idle, and maintain in storage a portion of the capacity of the ASR Facility for subsequent use to protect springflows during identified drought-of-record conditions. When specific triggers (described in the EAHCP) are reached the EAA, when not utilizing leased water to fill the ASR Facility, is obligated to forbear pumping of the entirety of its leased or lease option water (50,000 acre-feet per year). This combination of SAWS and EAA forbearance contributes significantly to protecting flows at the Comal and San Marcos spring systems during the periods of drought conditions for which this program is triggered. The ASR Program has been in operation for over four years. During the course of implementation, firsthand experiences with implementation challenges and successes, as well as market responses to proposed leasing and lease-option products have contributed to the identification of opportunities to improve the operational and financial efficiencies of the EAA's water acquisition responsibilities under the ASR Program while providing the same or greater benefit to springflow protection.

This amendment does not modify in any way the Biological Goals or Objectives contained in the EAHCP, nor does it alter the requirements for SAWS. Rather, this amendment presents a preferred alternative to the process currently identified in the EAHCP by which those goals and objectives are achieved and implemented. Specifically, in order to optimize the Program's success, the EAA proposes to amend the leasing structure by (1) replace the current, three-tiered leasing/lease option structure with a *simplified two-tiered leasing/forbearance agreement structure* that coordinates existing long-term leases with new, *long-term forbearance agreements* (together providing control of the necessary 50,000 acre-feet per year of Edwards Aquifer groundwater); and (2) revise the Ten-Year Rolling Average of Estimated Recharge

threshold used for triggering forbearance for EAA-controlled groundwater withdrawal rights to 500,000 A/F. Language change to the current measure in the EAHCP is provided in Exhibit 1.

Throughout 2016 and early 2017, the EAA internally vetted the issues identified with the ASR Program, and initially identified two potential advantageous modifications to the design of the Program. It was generally assumed that the two modifications would (1) provide a more understandable and marketable product that will achieve long-term control of 50,000 A/F of Edwards Aquifer groundwater for forbearance by the EAA during the drought conditions that trigger the ASR Program; and (2) provide greater springflow during a repeat of such drought through the use of a more impactful, J-17 level-based forbearance trigger.

These proposed modifications were also presented to the SAWS ASR Regional Advisory Group at their February 14, 2017 and January 19, 2018 meetings, and were met with general support from the group. A Scientific Evaluation Report (SER) was produced and adopted by the Science Committee on January 31, 2018 to provide any necessary directive regarding the Adaptive Management Proposal (Exhibit 3) which was later supported by the Stakeholder Committee and adopted by the Implementing Committee on February 8, 2018. This process was in accordance with the Adaptive Management Process outlined in the Funding and Management Agreement (FMA) and results in this request to clarify and amend the EAHCP outlined in the final Nonroutine Adaptive Management Proposal and Stakeholder Report (Exhibit 2).

With that said, to further ensure transparency in the implementation of the EAHCP, the Implementing Committee provided the public the opportunity to comment on this amendment during its February 8, 2018 meeting. All meeting agendas and minutes from this process have been provided in Exhibit 4.

The Permittees seek your formal acceptance of this amendment to allow alterations to *Use of the SAWS ASR for Springflow Protection* Measure (EAHCP §5.5.1) Measure in the EAHCP. Your approval of this amendment will allow the Permittees to implement this critical aspect of the EAHCP. We look forward to your formal acceptance of the amendment and appreciate your consideration and response on this issue.

Respectfully,

A handwritten signature in black ink, appearing to read "Nathan E. Pence", with a long horizontal flourish extending to the right.

Nathan E. Pence  
Program Manager  
Edwards Aquifer Habitat Conservation Plan

## EXHIBIT 1

### 5.5.1 Use of the SAWS ASR for Springflow Protection

EAA will acquire through both lease and option forbearance agreements 50,000 ac-ft/yr of EAA-issued Final Initial Regular Permits. The EAA may use SAWS as its agent for this purpose. The leases and ~~options~~ forbearance agreements will be acquired by EAA to fill, idle, and maintain a portion of the capacity of the SAWS ASR Project for subsequent use, to protect springflows during identified drought-of-record conditions as described below.

The ~~lease/forbearance agreement~~ program is comprised of ~~three~~ two components. The first ~~one-third~~, a sliding scale approximating 10,000 to 16,667 ac-ft of permits, will be leased for immediate storage in the ASR. The remaining pumping rights will be placed under forbearance agreements ~~a lease option~~. ~~One third (16,667 ac-ft)~~ The second, a sliding scale approximating 33,333 to 40,000 ac-ft of the total, will be ~~options~~ forbearance agreements exercised in the year after the 10-year moving annual average of Edwards recharge falls below ~~572,000~~ 500,000 ac-ft/yr, as determined by the EAA (see Section 6.2.3), ~~and is likely to continue to decrease. The last one-third will be options exercised when the 10-year moving recharge average is less than 472,000 ac-ft/yr, as determined by the EAA (see Section 6.2.3).~~ When the leases are in place, this water will either be pumped to fill the SAWS ASR or not pumped for any reason. When the forbearance agreements are in place, this water will not be pumped for any reason when the identified drought conditions are triggered. When the ASR is in recovery mode (i.e., when water is being returned from the ASR), the leased water will not be pumped. The water to fill the SAWS ASR is generally provided by SAWS from ~~their~~ its existing Edwards supplies and the ~~first one-third of the regional leases~~ water (10,000 to 16,667 ac-ft) which will be maintained at all times throughout the HCP duration. SAWS will store its own unused Edwards permits in addition to the HCP leases ~~and lease options~~ in the ASR when possible. SAWS, with the assistance of the Regional Advisory Group will describe in the Annual Report the storage and recovery activities. Trigger levels for implementation of ASR management in accordance with the HCP will be 630 ft-MSL at the J-17 index well during an identified repeat of drought conditions similar to the drought of record as indicated by the ten-year rolling average of Edwards recharge of 500,000 ac-ft, as determined by the EAA. When triggered, the ASR or other supplies capable of utilizing shared infrastructure will be activated to deliver up to 60 million gallons per day to SAWS distribution system during a repeat of drought of record-like conditions. When the monthly average groundwater levels at J-17 are below 630 ft-MSL and the ten-year rolling average of Aquifer recharge is 500,000 ac-ft or less, pumping of selected wells on the northeast side of SAWS water distribution system will be reduced in an amount that on a monthly basis equals the amount of water returned from the ASR only to the extent of the 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 off-set SAWS' Edwards Aquifer demand.

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## **Overview**

This Report is issued in response to the Nonroutine AMP proposal submitted by the General Manager of the Edwards Aquifer Authority (EAA), dated January 22, 2018 (revised January 31, 2018), related to use of the San Antonio Water System (SAWS) Aquifer Storage and Recovery (ASR or ASR Facility) for Springflow Protection (“the Program or ASR Program”). According to the Funding and Management Agreement (FMA), the EAHCP Stakeholder Committee is responsible for reviewing and making recommendations to the Implementing Committee for proposals submitted through the Nonroutine Adaptive Management process. This Report presents the final recommendation of the EAHCP Stakeholder Committee concerning this Adaptive Management proposal.

## **Summary of the Nonroutine Adaptive Management Proposal**

The Edwards Aquifer Habitat Conservation Plan (“EAHCP”) currently utilizes the SAWS ASR Facility for storage and recovery of leased Edwards Aquifer water. Broadly, the current program is based on the acquisition by the EAA of 50,000 acre-feet per year of leases and lease options of Edwards Aquifer groundwater withdrawal permits to be utilized to fill, idle, and maintain in storage a portion of the capacity of the ASR Facility for subsequent use to protect springflows during identified drought-of-record conditions. When specific triggers (described in the EAHCP) are reached: (1) SAWS is obligated to forbear on its rights to make withdrawals at specific amounts from the Edwards Aquifer pursuant to its Edwards Aquifer groundwater withdrawal permits; (2) water stored in the ASR Facility is available to SAWS for recovery to offset its forbearance in order to meet customer demand; and (3) the EAA, when not utilizing leased water to fill the ASR Facility, is obligated to forbear pumping of the entirety of its leased or lease option water (50,000 acre-feet). This combination of SAWS and EAA forbearance contributes significantly to protecting flows at the Comal and San Marcos spring systems during the periods of drought conditions for which this program is triggered.

The ASR Program has been in operation for over four years. During the course of implementation, firsthand experiences with implementation challenges, as well as market responses to proposed leasing and lease-option products have contributed to the identification of opportunities to improve the operational and financial efficiencies of the EAA’s water acquisition responsibilities under the ASR Program while providing the same or greater benefit to springflow protection.

Specifically, the EAA proposes to amend the leasing structure of the ASR Program to:

1. Replace the current, three-tiered leasing/lease option structure with a two-tiered leasing/forbearance structure that coordinates existing long-term leases with new,



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long-term forbearance agreements, together providing control of the necessary 50,000 acre-feet per year of Edwards Aquifer groundwater required under the current ASR Program; and

2. Exercise (trigger) forbearance by the EAA in years following a recognition of the Ten-year Rolling Average of the Estimated Annual Recharge to the Aquifer declining to amounts at or below 500,000 acre-feet per annum.

**Summary of February 8, 2018 Stakeholder Committee Discussion**

At the February 8, 2018 Stakeholder Committee meeting, Marc Friberg, EAA, provided a presentation – *Use of the SAWS ASR for Springflow Protection: Optimization through Proposed Adaptive Management* – to the Committee. This presentation covered the following: (1) the current program requirements; (2) past ASR lease options; (3) a bottom-up analyses results for ASR lease trigger scenarios; (4) proposed program amendments; and (5) and outreach efforts.

Following this presentation, the Stakeholder Committee had a short discussion on the merits of the proposal. This section provides a summary of the discussion. It also includes the final motions taken by the Committee.

*Determination of the Price Point and Marketing for this New ASR Program*

Mr. Con Mims first asked about the percentage of the total amount of agricultural water that will be targeted for this program. Mr. Friberg communicated the amount of available agricultural water, but that municipal and industrial water would also be targeted.

Mr. Roland Ruiz, EAA General Manager, mentioned there was an edit to the ASR AMP proposal which was presented to the Committee as an amendment to the ASR AMP proposal, clarifying the estimated price-point drafted in the proposal.

Mr. Darren Thompson asked if there has been any price point analysis done between municipal and industrial versus irrigation water. Mr. Friberg said that EAA is open to these conversations but at this point one price-point has been discussed.

Mr. Adam Yablonski asked what the process going forward in marketing this product will be. Mr. Freiberg commented that, assuming the AMP gets approved a conversation, internally and between staff and the EAA board, will begin the deliberation of what the proper price point for these agreements will be in order to fully enroll the program. He added that \$100/acre-feet has been thrown around as a price for this program. This has been in consideration to the mechanism of payment/triggering. Mr. Ruiz mentioned the price point in the proposal was provided to increase transparency to the committees, and

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not necessarily for USFWS. EAA's primary commitment is to fulfill the needed lease and forbearance amounts and stay within the EAHCP Table 7.1 budget.

*Final Overall Comments*

Mr. Ruiz thanked the committee members for their willingness to participate in the conversation. He stated it was very helpful for staff to have these conversations.

Mr. Myron Hess commented that what we are doing today (in regards to the current ASR program) is not working very well, and this change is an attempt to adapt to how this product is being received and increase the likelihood of EAA to reach enrollment obligations.

**Final Motions by the Committee**

Mr. Javier Hernandez made a motion to approve the Nonroutine ASR AMP proposal as amended to be submitted to the Implementing Committee. Carol Patterson seconded. There was no objection and the motion was approved by consensus. Mr. Nathan Pence EAHCP Program Manager, communicated that this motion recommends the ASR AMP Proposal to the Implementing Committee for their consideration.

**Nature of Stakeholder Committee Decision**

Twenty-three members of the Committee attended the February 8<sup>th</sup>, 2018 meeting in attainment of a quorum for the meeting. Votes for both Committee actions concerning the Nonroutine AMP proposal were by consensus; there were no competing options.

**Stakeholder Recommendation**

By consensus, the Stakeholder Committee recommends the Nonroutine AMP proposal to the Implementing Committee for approval and adoption.

**Attachments**

- Nonroutine Adaptive Management revised proposal dated January 31, 2018 as amended February 8, 2018.
- Nonroutine Adaptive Management Scientific Evaluation Report, EAHCP Science Committee, February 2, 2018.
- Minutes (unofficial) from the February 8, 2018 Stakeholder Committee Meeting



## Edwards Aquifer Habitat Conservation Plan Nonroutine Adaptive Management Proposal

**To:** EAHCP Implementing, Stakeholder, and Science Committees  
**From:** Roland Ruiz, General Manager, Edwards Aquifer Authority  
**Date:** January 22, 2018/**Revised January 31, 2018/Amended February 8, 2018**  
**Re:** Proposed Adaptive Modifications to “Use of the SAWS ASR for Springflow Protection” Measure (EAHCP §5.5.1)

### PREAMBLE

The Edwards Aquifer Habitat Conservation Plan (“EAHCP”) currently includes a springflow protection program (“ASR Program or “Program”) that utilizes the San Antonio Water System (“SAWS”) Aquifer Storage and Recovery Facility (“ASR Facility”) for storage and recovery of leased Edwards Aquifer water. Broadly, the current program is based on the acquisition by the Edwards Aquifer Authority (“EAA”) of 50,000 acre-feet (A/F) per year of leases and lease options of Edwards Aquifer groundwater withdrawal permits to be utilized to fill, idle, and maintain in storage a portion of the capacity of the ASR Facility for subsequent use to protect springflows during identified drought-of-record conditions. When specific triggers (described in the EAHCP) are reached: (1) SAWS is obligated to forbear on its rights to make withdrawals at specific amounts from the Edwards Aquifer pursuant to its Edwards Aquifer groundwater withdrawal permits; (2) water stored in the ASR Facility is available to SAWS for recovery to offset its forbearance in order to meet customer demand; and (3) the EAA, when not utilizing leased water to fill the ASR Facility, is obligated to forbear pumping of the entirety of its leased or lease option water (50,000 acre feet). This combination of SAWS and EAA forbearance contributes significantly to protecting flows at the Comal and San Marcos spring systems during the periods of drought conditions for which this program is triggered.

This document presents a formal proposal for a Nonroutine Adaptive Management action (“Nonroutine AMP”) involving administrative modifications to the ASR Program from its original design in the EAHCP. The proposal, if approved, does not modify in any way the Biological Goals or Objectives contained in the EAHCP. Rather, the proposal presents a preferred alternative to the process currently identified in the EAHCP by which those goals and objectives are achieved and implemented. Specifically, in order to optimize the Program's success, the EAA proposes to amend the leasing structure of the Program and implement the following:

1. Replace the current, three-tiered leasing/lease option structure with a simplified two-tiered leasing/forbearance agreement structure that coordinates existing long-term leases with new, long-term forbearance agreements (together providing control of the necessary 50,000 A/F per year of Edwards Aquifer groundwater); and
2. Revise the Ten-Year Rolling Average of Estimated Recharge threshold used for triggering forbearance for EAA-controlled groundwater withdrawal rights to 500,000 A/F.

## **BACKGROUND AND OVERVIEW**

The ASR Program has been in operation for over four years. During the course of implementation, firsthand experiences with implementation challenges, as well as market responses to proposed leasing and lease-option products have contributed to the identification of opportunities to improve the operational and financial efficiencies of the EAA's water acquisition responsibilities under the ASR Program while providing the same or greater benefit to springflow protection.

On January 12, 2017, the EAA General Manager submitted a memorandum entitled *An Opportunity for ASR Improvement* (Exhibit A) to both the Implementing and Stakeholder Committees of the EAHCP. The memo cited programmatic issues related to the implementation of the ASR Program that could serve as targets to be addressed through potential Nonroutine AMP. Of the issues and potential solutions identified in the memo, the following five are particularly relevant to this proposal:

1. *Only unrestricted water rights [irrigation, municipal, and industrial] are eligible for enrollment into ASR; agriculture permits tied to the land [restricted irrigation permits] could be used for forbearance in ASR, if appropriate modifications were made;*
2. *Triggers for Tier II and Tier III (10-year rolling average recharge) are unfamiliar to permit holders; the ASR program will be more successful if it uses a familiar and comfortable trigger (i.e. J-17);*
3. *The current tiered system is not fiscally efficient; lease rates, rather than forbearance agreement rates, are paid for water that will, in some cases, more than likely, never be injected;*
4. *The ASR is almost full; therefore, maintaining an account of 50,000 ac-ft. of unrestricted water rights, eligible for injection, is unnecessary and fiscally inefficient; and*
5. *The current ASR program anticipated continued filling/injecting during the early years of the DOR, which is likely to create conflict perception issues in the region (i.e. SAWS pumping from the aquifer at the request of the EAA while other permit holders are required to cut back withdrawals), and filling/injecting during this time runs counter to the overall objective of sustaining aquifer levels to ensure continuous minimum springflows. The same or, more likely, greater benefit could be achieved if the full amount required for storage was injected prior to the drought such that no injection had to occur after the onset of the DOR.*

Throughout 2016 and early 2017, the EAA internally vetted the issues identified with the ASR Program, and initially identified two potential advantageous modifications to the design of the Program. These proposed modifications were also presented to the SAWS ASR Regional Advisory Group at their February 14, 2017, meeting, and were met with general support from the group. The two potential advantageous modifications were:

- *To consolidate the current three-tiered leasing approach into a simplified two-pronged leasing/forbearance program; and*
- *To use J-17 levels as a more recognizable trigger for forbearance of EAA permits.*



It was generally assumed that the two modifications would achieve the following desired outcomes:

1. Provide a more understandable and marketable product that will achieve long-term control of 50,000 A/F of Edwards Aquifer groundwater for forbearance by the EAA during the drought conditions that trigger the ASR Program; and
2. Provide greater springflow during a repeat of such drought through the use of a more impactful, J-17 level-based forbearance trigger.

***Performance Comparison:***

A simulation using an updated version<sup>1</sup> of the Edwards Aquifer MODFLOW groundwater model was performed in order to compare the springflow results achieved with implementation of the ASR Program as described in the EAHCP to the springflow results achieved with implementation of the Program using the above-described modifications. The results of the exercise are summarized below in the following table Table 1.-

**TABLE 1: COMPARISON OF POTENTIAL FORBEARANCE TRIGGERS – COMAL SPRINGS**

POTENTIAL FORBEARANCE TRIGGERS	SPRINGFLOW ACHIEVED (CFS) AT COMAL SPRINGS
<b>Current</b> EAHCP triggers (three-tiered system): 10-year rolling recharge average of 572,000 A/F per year (Tier 2); and 10-year rolling recharge average of 472,000 A/F per year (Tier 3)	29.71
J-17 at 635 (msl) on Aug. 1	28.64
J-17 at 636 (msl) on Aug. 1	29.32
J-17 at 637 (msl) on Aug. 1	29.32
J-17 at 641 (msl) on Aug. 1	29.8

As demonstrated by the simulation results, impacts within the model were not as sensitive to a J-17 level-based trigger as presumed originally. While the modeled results showed desirable springflow impacts could be achieved with higher J-17 level-based triggers (e.g. 641(msl) and above), the resulting increased frequency of required forbearance is highly likely to significantly diminish the marketability of such a forbearance agreement option, and would thus render the program ineffective in achieving the desired goals and objectives of the EAHCP.

Therefore, with long-term control of Edwards Aquifer groundwater still a critical need under the EAHCP, EAA staff reconsidered a revised 10-year-average rolling recharge trigger. Ultimately, a modeled analysis of a 10-year rolling recharge average of 500,000 A/F per annum for a forbearance trigger showed to provide similar springflow protection as the current ASR Program under a simplified forbearance approach using a recognizable and understandable forbearance trigger. The results of this secondary analysis are summarized below in the following table Table 2:-

<sup>1</sup> For more information regarding the EAA's updated Edwards Aquifer MODFLOW groundwater model, please see *Updates to the MODFLOW Groundwater Model of the San Antonio Segment of the Edwards Aquifer* available at: [http://www.edwardsaquifer.org/documents/2017\\_Liu-et al\\_UpdatestotheMODFLOWGroundwaterModeloftheSanAntonioSegmentoftheEdwardsAquifer.pdf.pdf](http://www.edwardsaquifer.org/documents/2017_Liu-et al_UpdatestotheMODFLOWGroundwaterModeloftheSanAntonioSegmentoftheEdwardsAquifer.pdf.pdf)

**TABLE 2: SECONDARY ANALYSIS OF POTENTIAL FORBEARANCE TRIGGER – ROLLING RECHARGE**

FORBEARANCE TRIGGERS	SPRINGFLOW ACHIEVED (CFS) AT COMAL SPRINGS
<b>Current</b> EAHCP triggers (three-tiered system): 10-year rolling recharge average of 572,000 A/F per year; and 10-year rolling recharge average of 472,000 A/F per year	29.71
<b>Proposed</b> 10-year rolling recharge average of 500,000 A/F per year (two-tiered system)	29.8

Put simply, the study determined that the ASR Program could be modified in a manner that provided both a simplified, two-tiered leasing/forbearance approach at an equivalent or stronger springflow benefit as the current ASR Program if a 10-year rolling recharge average of at or below 500,000 acre-feet per annum was used as a forbearance trigger. Therefore, this demonstration of equivalent program efficacy is consistent with the intent of the HCP and the Incidental Take Permit for the Program. A representative table of the modeling results is attached as Exhibit B.

In addition, considering the EAA has a sufficient amount of long-term lease commitments to ensure that the storage assumptions contained in the EAHCP and the Interlocal Agreement between SAWS and the EAA are satisfied, it would be more efficient to administer the two tiers of leases and forbearance agreements through a “sliding scale approach.” SAWS currently has approximately 80,000 A/F of EAHCP regionally-leased groundwater stored on behalf of the EAHCP in its ASR Facility. Assuming the EAA makes an average of 12,000 A/F of leased rights available to SAWS for injection into the ASR Project each year, full storage of 126,000 A/F of groundwater can be achieved by 2021. Therefore, a reasonable “sliding scale” for each tier (based on EAA’s long-term leases and their expiration dates) ~~would be as follows:~~ is represented in Table 3.

**TABLE 3: REPRESENTATIVE “SLIDING SCALE” OF LEASES AND FORBEARANCE AGREEMENTS (2018-2027)**

DATE	LEASE AGREEMENTS (A/F)	FORBEARANCE AGREEMENTS (A/F)	TOTAL LEASE/FORBEARANCE AGREEMENTS (A/F)
2018	40,594.303	0	40,594.303
2019	16,674.753	33,325.247	50,000.000
2020	15,924.077	34,075.923	50,000.000
2021	14,561.797	35,438.203	50,000.000
2022	12,837.627	37,162.373	50,000.000
2023	12,754.164	37,245.836	50,000.000
2024	12,753.164	37,246.836	50,000.000
2025	11,486.018	38,513.982	50,000.000
2026	10,864.898	39,135.102	50,000.000
2027	10,263.498	39,736.502	50,000.000

In summary, revisiting the five relevant goals listed above:

1. *Only unrestricted water rights are eligible for enrollment into ASR; agriculture permits tied to the land [restricted irrigation permits] could be used for forbearance in ASR, if appropriate modifications were made.*

Current legal limitations on restricted irrigation permits prohibit the use of the water for withdrawal and injection into the ASR Facility for municipal purposes. However, this proposed amendment would allow the EAA to enroll such permits into the Program because the forbearance agreement approach would not require the permitted water to be withdrawn; only forborne. Thus, this provides a larger pool of Edwards groundwater to be available to the ASR Program.

2. *Triggers for Tier II and Tier III (10-year rolling average recharge) are unfamiliar to permit holders; the ASR program will be more successful if it uses a familiar and comfortable trigger (i.e. J-17).*

Considering what was learned from the EAA's modeling exercises, permit holder familiarity with a J-17 trigger is outweighed by the marketability and springflow protection benefits associated with the revised 10-year rolling recharge average trigger of less than 500,000 acre-feet per year.

In addition, this trigger matches the recharge average trigger in the EAHCP that is currently associated with SAWS' obligation to forbear its Edwards Aquifer groundwater withdrawal permit. Therefore, as an added benefit, the proposed amendment would result in the EAHCP utilizing one common rolling recharge average trigger – which simplifies overall administration.

3. *The current tiered system is not fiscally efficient; lease rates, rather than forbearance agreement rates, are paid at a greater premium for water that will, in some cases, more than likely, never be injected.*

The proposed amendment would allow the EAA to set a rate for the forbearance agreements that is appropriate for the benefit received and is within the EAHCP's Table 7.1 estimated budget.

4. *The ASR is almost full; therefore, maintaining an account of 50,000 ac-ft. of unrestricted water rights, eligible for injection, is unnecessary and fiscally inefficient.*

The proposed amendment recognizes a key distinction in the EAA's two major obligations under the ASR Program – the duty to provide Edwards water to SAWS to fill the ASR Facility at the required levels, and the duty to forbear 50,000 AF/yr when the drought conditions triggering SAWS' forbearance obligations under the ASR Program are met. In light of the fact that the EAA's responsibilities to deliver Edwards water to SAWS for injection associated with the ASR Program are certain to be met by 2021, this amendment would enable the EAA to adjust its water acquisition initiatives accordingly, prioritizing efforts on long-term forbearance commitments.

5. *The current ASR program anticipated continued filling/injecting during the early years of the DOR, which is likely to create conflict perception issues in the region (i.e. SAWS pumping from the aquifer at the request of the EAA while other permit holders are required to cut back withdrawals), and filling/injecting*

*during this time runs counter to the overall objective of sustaining aquifer levels to ensure continuous minimum springflows. The same or, more likely, greater benefit could be achieved if the full amount required for storage was injected prior to the drought such that no injection had to occur after the onset of the DOR.*

Due to the fact that the injection responsibilities associated with the ASR Program are certain to be met by 2021, concerns related to this conflict perception are alleviated.

### **PROPOSED NONROUTINE ADAPTIVE MANAGEMENT ACTION**

Due to the firsthand experiences of program administrators described in this document, current results of the EAA leasing program, and the results of an internal EAA modeling exercise that represents the level of research and development underpinning this proposed Nonroutine AMP, the EAA respectfully requests that certain proposed amendments to the ASR Program be approved. The information used to develop the proposed amendment is an advancement over the scientific and commercial data available at the time of the writing of the EAHCP.

Specifically, the EAA proposes to amend the leasing structure of the ASR Program to:

1. Replace the current, three-tiered leasing/lease option structure with a two-tiered leasing/forbearance structure that coordinates existing long-term leases with new, long-term forbearance agreements (together providing control of the necessary 50,000 acre-feet per year of Edwards Aquifer groundwater required under the current ASR Program); and
2. Exercise (trigger) forbearance by the EAA in years following a recognition of the Ten-year Rolling Average of the Estimated Annual Recharge to the Aquifer declining to amounts at or below 500,000 acre-feet per annum.

A redlined version of Section 5.5.1 of the EAHCP, showing edits that would occur upon approval of this proposal, is attached for reference as Exhibit C.

### **BUDGETARY IMPLICATIONS AND FISCAL IMPACT**

All EAHCP programming, including the ASR Program, is subject to the funding limitations and funding processes described in EAHCP Table 7.1 and the Funding and Management Agreement. Given limited resources and responsibility for stewarding public funds, a budgetary exercise was conducted by EAA staff to determine the budgetary and fiscal impacts of the proposed ASR Program modifications.

#### ***Fiscal Impact:***

Adoption of this proposal will not result in any deviations from the funding allowances prescribed in Table 7.1 of the EAHCP. Furthermore, the proposed Nonroutine AMP action would remain consistent with the assumptions made in HDR's October 2011 *Evaluation of Water Management Programs and Alternatives for Springflow*

*Protection of Endangered Species at Comal and San Marcos Springs.*<sup>2</sup> Specifically the Program will remain within the budgetary confines of Table 7.1 of the EAHCP by utilizing a price point that falls below the average lease rate assumed in HDR's analysis of \$125 and above the ten-year standby rate for the Voluntary Irrigation Suspension Program Option (VISPO) of \$70.20.

***Budgetary Implications:***

The sole budgetary implication related to this proposal is that full funding for the acquisition of portions of the groundwater rights associated with the ASR Program (Tier 2 and Tier 3) will no longer be dependent upon Reserve Funds. All funding will be associated with long-term contractual commitments that are paid annually. Unlike VISPO, the "triggers" within the contracts are intended to only be associated with the act of forbearance. The price point associated with the agreements will remain the same, regardless of whether or not forbearance is exercised under the agreement.

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<sup>2</sup> HDR's October 2011 *Evaluation of Water Management Programs and Alternatives for Springflow Protection of Endangered Species at Comal and San Marcos Springs* may be found at: <http://www.eahcp.org/documents/Appendix%20K.pdf>



**GLOSSARY OF TERMS**

As used in this proposal for a Nonroutine Adaptive Management action and this Glossary, the following terms have the following meanings:

**“Forbearance”** means the complete curtailment of all or part of a right to make withdrawals under a specific Edwards Aquifer Authority Groundwater Withdrawal Permit.

**“Forbearance Agreement”** is a contractual agreement whereby a party agrees to terms whereby the complete curtailment of all or part of the party’s right to make withdrawals under a specific Edwards Aquifer Authority Groundwater Withdrawal Permit is required when certain conditions, commonly referred to as “triggers” are met.

**“Trigger”** means to cause an event or situation to happen or exist. In the case of a Forbearance Agreement, a trigger would be a condition that causes or requires the curtailment of all or part of the right to make withdrawals under a specific Edwards Aquifer Authority Groundwater Withdrawal Permit.

**“Curtail” or “Curtailment”** means the act of reducing or restricting something. In the case of a Forbearance Agreement, the right to withdrawal under an Edwards Aquifer Authority Groundwater Withdrawal Permit would be reduced or restricted.

**“Edwards Aquifer Authority Groundwater Withdrawal Permit”** means an Initial Regular Permit or Regular Permit issued by the Edwards Aquifer Authority.

**“Initial Regular Permit”** means an Edwards Aquifer Authority Groundwater Withdrawal Permit issued by the Edwards Aquifer Authority under Subsection 1.16(d) of the Edwards Aquifer Authority Act.

**“Edwards Aquifer Authority Act”** means the Act of May 30, 1993, 73<sup>rd</sup> Leg., R.S., ch. 626, 1993 Tex. Gen. Laws 2350, as amended.

**“Regular Permit”** means an Edwards Aquifer Authority Groundwater Withdrawal Permit issued by the Edwards Aquifer Authority after August 12, 2008, resulting from the sale or amendment of an Initial Regular Permit or the consolidation of two or more such permits.

**“Withdrawal”** means an act that results in taking groundwater from the Edwards Aquifer by or through man-made facilities, including pumping.

**“Lease Option”** means a type of contractual agreement whereby a party has the option to lease property when certain conditions are met. In the context of the Edwards Aquifer Habitat Conservation Plan, the Edwards Aquifer Authority is charged with entering into such contracts with the option to lease an Edwards Aquifer Authority Groundwater Withdrawal Permit becoming actionable upon the existence of a specific ten-year rolling recharge average. The difference between a Lease Option and a Forbearance Agreement is that a Lease Option is a

contractual agreement to lease property rights under certain conditions and a Forbearance Agreement is an contractual agreement to curtail withdrawal of an Edwards Aquifer Authority Groundwater Withdrawal Permit under certain conditions.

**“Ten-year Rolling Average” or “10-year Rolling Average”** means the unweighted arithmetic mean of the ten (10) most recent consecutive years at any given time.

**“Estimated Annual Recharge”** Annual recharge is estimated by the United States Geological Survey using a water-balance method that: (1) relies on precipitation and streamflow measurements in the nine (9) drainage basins indicated in "Method of Estimating Natural Recharge to the Edwards Aquifer in the San Antonio Area, Texas," 1978, USGS WRI-7810, by Celso Puente; (2) considers only precipitation and stream flow that originates over the Contributing Zone and Recharge Zone of the Edwards Aquifer; and (3) excludes interformational flows from adjacent aquifers.

**“Ten-year Rolling Average Recharge” or “10-year Rolling Average Recharge”** means the unweighted arithmetic mean of annual recharge to the Edwards Aquifer over the ten (10) most recent consecutive years at any given time.

**Science Committee of the  
Edwards Aquifer Habitat Conservation Plan**



*Scientific Evaluation Report:*

*Nonroutine Adaptive Management Proposal for the Proposed Adaptive Modifications to the Use of the San Antonio Water System Aquifer Storage and Recovery for Springflow Protection*

February 2, 2018

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## **Introduction**

According to the Funding and Management Agreement, the Adaptive Management Science Committee ("Science Committee") is tasked with evaluating all Nonroutine Adaptive Management ("AMP") proposals. These evaluations result in a "Scientific Evaluation Report" for presentation to the Stakeholder Committee. The Stakeholder Committee considers this report in their decision whether to recommend the Nonroutine AMP proposal to the Implementing Committee for final approval.

This Scientific Evaluation Report is issued in response to the Nonroutine AMP proposal submitted by Roland Ruiz, General Manager of the Edwards Aquifer Authority (EAA), dated January 22, 2018, related to use of the San Antonio Water System (SAWS) Aquifer Storage and Recovery (ASR or ASR Facility) for Springflow Protection ("the Program or ASR Program"). The following sections in this report summarize the Science Committee's evaluation of this AMP proposal.

Once approved by the Chair and Vice-Chair of the Science Committee, and following the January 31, 2018, Science Committee meeting, this Scientific Evaluation Report will be presented to the Stakeholder Committee at its meeting on February 8, 2018.

## **Overview**

The Edwards Aquifer Habitat Conservation Plan ("EAHCP") currently utilizes the SAWS ASR Facility for storage and recovery of leased Edwards Aquifer water. Broadly, the current program is based on the acquisition by the EAA of 50,000 acre-feet per year of leases and lease options of Edwards Aquifer groundwater withdrawal permits to be utilized to fill, idle, and maintain in storage a portion of the capacity of the ASR Facility for subsequent use to protect springflows during identified drought-of-record conditions. When specific triggers (described in the EAHCP) are reached: (1) SAWS is obligated to forbear on its rights to make withdrawals at specific amounts from the Edwards Aquifer pursuant to its Edwards Aquifer groundwater withdrawal permits; (2) water stored in the ASR Facility is available to SAWS for recovery to offset its forbearance in order to meet customer demand; and (3) the EAA, when not utilizing leased water to fill the ASR Facility, is obligated to forbear pumping of the entirety of its leased or lease option water (50,000 acre-feet). This combination of SAWS and EAA forbearance contributes significantly to

*Scientific Evaluation Report: Nonroutine AMP Proposal - Use of SAWS ASR for Springflow Protection*

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protecting flows at the Comal and San Marcos spring systems during the periods of drought conditions for which this program is triggered.

The ASR Program has been in operation for over four years. During the course of implementation, firsthand experiences with implementation challenges, as well as market responses to proposed leasing and lease-option products have contributed to the identification of opportunities to improve the operational and financial efficiencies of the EAA's water acquisition responsibilities under the ASR Program while providing the same or greater benefit to springflow protection.

## **Proposal**

Specifically, the EAA proposes to amend the leasing structure of the ASR Program to:

1. Replace the current, three-tiered leasing/lease option structure with a two-tiered leasing/forbearance structure that coordinates existing long-term leases with new, long-term forbearance agreements (together providing control of the necessary 50,000 acre-feet per year of Edwards Aquifer groundwater required under the current ASR Program); and
2. Exercise (trigger) forbearance by the EAA in years following a recognition of the Ten-year Rolling Average of the Estimated Annual Recharge to the Aquifer declining to amounts at or below 500,000 acre-feet per annum.

## **Scientific Evaluation**

This AMP proposes no changes to the springflow protection goals and objectives of the EAHCP. The proposal is strictly related to policy and administrative amendments to the Program. However, the basis for some of the amendments is grounded in the use of the updated Edwards Aquifer MODFLOW groundwater model. A simulation was performed in order to compare the springflow results achieved with implementation of the Program as described in the EAHCP to the springflow results achieved with implementation of the Program using several potential modifications. The results of the exercise are summarized in Table 1.

*Scientific Evaluation Report: Nonroutine AMP Proposal - Use of SAWS ASR for Springflow Protection*

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**Table 1: Comparison of Potential Forbearance Triggers – Comal Springs**

POTENTIAL FORBEARANCE TRIGGERS	SPRINGFLOW ACHIEVED (CFS) AT COMAL SPRINGS
<b>Current</b> EAHCP triggers (three-tiered system): 10-year rolling recharge average of 572,000 A/F per year (Tier 2); and 10-year rolling recharge average of 472,000 A/F per year (Tier 3)	29.71
J-17 at 635 (msl) on Aug. 1	28.64
J-17 at 636 (msl) on Aug. 1	29.32
J-17 at 637 (msl) on Aug. 1	29.32
J-17 at 641 (msl) on Aug. 1	29.8

As indicated by the simulation results, impacts within the model were not very sensitive to a J-17 Index Well level-based trigger. While the modeled results showed desirable springflow impacts could be achieved with higher J-17 Index Well level-based triggers (e.g. 641(msl) and above), the resulting increased frequency of required forbearance is highly likely to significantly diminish the marketability of such a forbearance agreement option, and would thus render the program ineffective in achieving the desired goals and objectives of the EAHCP.

Therefore, with long-term control of Edwards Aquifer groundwater still a critical need under the EAHCP, EAA staff reconsidered a revised 10-year-average rolling recharge trigger. Ultimately, a modeled analysis of a 10-year rolling recharge average of 500,000 acre-feet per annum for a forbearance trigger should provide similar springflow protection as the current ASR Program under a simplified forbearance approach using a recognizable and understandable forbearance trigger. The results of this secondary analysis are summarized in Table 2.



**Table 2: Secondary Analysis of Potential Forbearance Trigger – Rolling Recharge**

FORBEARANCE TRIGGERS	SPRINGFLOW ACHIEVED (CFS) AT COMAL SPRINGS
<b>Current</b> EAHCP triggers (three-tiered system): 10-year rolling recharge average of 572,000 acre-feet per year; and 10-year rolling recharge average of 472,000 acre-feet per year	29.71
<b>Proposed</b> 10-year rolling recharge average of 500,000 acre-feet per year (two-tiered system)	29.8

Put simply, the study indicated that the ASR Program could be modified in a manner that provided both a simplified, two-tiered leasing/forbearance approach at an equivalent or stronger springflow benefit as the current ASR Program if a 10-year rolling recharge average of at or below 500,000 acre-feet per annum was used as a forbearance trigger. Therefore, this indication of equivalent program efficacy is consistent with the intent of the HCP and the Incidental Take Permit for the Program.

### **Evaluation of Information Provided**

Because of the policy and administrative nature of this Nonroutine AMP proposal, the role of the Science Committee is largely limited to an analysis of whether or not the proposal is based on a decision-making process that uses the best scientific information available – in this case, the updated Edwards Aquifer MODFLOW groundwater model. Also, the Science Committee acknowledges that this Nonroutine AMP proposal does not change the springflow protection goal, but only changes the current three-tier leasing structure to achieve expeditiously EAA's long-term commitment in the ASR Program.

### **Conclusion**

The Science Committee concludes that the ASR AMP proposal is based on a decision-making process that uses the best scientific information available, and the proposed amendment provides the same or greater springflow protection as afforded by the current Program.

## References

Liu, Troshanov, Winterle, Zhang and Eason, 2017, "Updates to the MODFLOW Groundwater Model of the San Antonio Segment of the Edwards Aquifer", Edwards Aquifer Authority, San Antonio, TX. [http://www.edwardsaquifer.org/documents/2017\\_Liu-et-al\\_UpdatestotheMODFLOWGroundwaterModeloftheSanAntonioSegmentoftheEdwardsAquifer.pdf.pdf](http://www.edwardsaquifer.org/documents/2017_Liu-et-al_UpdatestotheMODFLOWGroundwaterModeloftheSanAntonioSegmentoftheEdwardsAquifer.pdf.pdf)

## Summary of Science Committee Discussion of the Proposal

### Overview

At the January 31, 2018 meeting of the Science Committee, Marc Friberg, EAA Executive Director of Intergovernmental Relations provided a presentation on the ASR Nonroutine Adaptive Management (AMP) proposal to modify the use of the SAWS ASR for Springflow protection measure. This presentation covered a summary of the (1) the current ASR program including the long-term goals and three-tiered system (2) the marketability problems of the current tier system, (3), and finally the elements of the Nonroutine AMP proposal itself that would address these problems.

The following sections provide a lightly-edited summary of the Science Committee's discussion of the Nonroutine AMP proposal, organized according to the main themes that emerged over the course of the discussion. This section concludes with the final motions (including associated final recommendations) made by the Science Committee concerning the Nonroutine AMP proposal and this Scientific Evaluation Report.

### Analysis of Triggers

Mr. Friberg provided the Committee a summary of the comparison of the current trigger system using the 10-year rolling recharge average and potential J-17 Index Well level forbearance triggers. Dr. Conrad Lamon asked why there was no difference in the results for the Comal springflow when a J-17 Index Well trigger level of 636 ft and 637 ft was modeled. Both Mr. Friberg and Mr. Jim Winterle stated that the model is not sensitive to this one-foot difference. Mr. Winterle added that the modeled springflow at Comal Springs does not respond positively until a J-17 Index Well trigger level of 641 ft.

### Use of the 10-year Rolling Recharge Average

Dr. Lamon asked about whether the 10-year rolling recharge average was protective enough of springflow. He also asked for an explanation of the calculation of the 10-year rolling average. Mr. Friberg stated that the EARIP stakeholders agreed to using the 10-year rolling average in the EAHCP. Nathan Pence, EAHCP Program Manager, that during the EARIP process, the Science subcommittee looked at all types of triggers and learned that using a J-17 Index Well trigger level did not provide the same long-term protection as using the 10-year rolling recharge average.

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Dr. Jacquelyn Duke asked for a further explanation as to not using a J-17 Index Well trigger level. Mr. Friberg said that springflow is volatile and that the ASR program is intended to provide protection to springflow during the long-term drought of record conditions – explaining the use of the 10-year rolling recharge average.

#### Benefit of the Proposed Changes

Dr. Tom Arsuffi asked that the proposal should identify more clearly the benefits of the proposed changes. He had thought the goal was to achieve the 30 cfs in the Comal Springs, but now understands that the goal of this proposal is to change how the 50,000 acre-feet per year requirement is achieved. Mr. Pence stated that the 30 cfs goal will be addressed in the second phase of the EAHCP.

Dr. Charlie Kreidler and Dr. Robert Mace both discussed with the Committee their understanding of the benefit of the proposed changes per their one on one meeting with Mr. Pence. They said that after this meeting, they had a better understanding of forbearance of all springflow protection measures such as the VISPO and Critical Period Management programs. Mr. Friberg further added, that 2014 was similar to drought of record conditions. Mr. Pence responded that a new drought of record conditions will be addressed in the roll-over of the Incidental Take Permit.

Mr. Friberg also told the Committee that another benefit of the program is that it would be attractive to many of the permit holders that have participated in the one-year ASR lease agreements. He also stated that under EAA's rules, restricted irrigated water permit-holders are not eligible to participate in the ASR program. However, with these proposed changes – to add a forbearance tier- the restricted irrigated water would be able to participate.

#### Critique of the Proposal

Dr. Butch Weckerly and Dr. Arsuffi stated that proposal was confusing to those that are not familiar with the ASR program and the terminology. Dr. Arsuffi requested EAA include a glossary of key terms – such as forbearance in the proposal. He also stated that the tables in the proposal need to include titles and references in the text of the proposal. Mr. Friberg responded with a definition of forbearance and stated that a glossary of key terms can be included and modifications to the tables can be made.

#### Motion and Recommendation

Mr. Pence reminded the Committee their role in the Nonroutine AMP proposal process and the options they have in making their recommendations to the Stakeholder Committee. With that stated, Dr. Mace made the motion that the Science Committee recommend the Nonroutine AMP proposal to the Stakeholder Committee, but to add to the proposal a glossary of key terms and ensure that every table in the proposal includes a title and reference. Dr. Janis Bush seconded the motion. There was unanimous support of the motion.

## Attachments

Attachment 1: Minutes from the January 31, 2018, Science Committee Meeting – Unofficial



### NOTICE OF OPEN MEETING

Available at [eahcp.org](http://eahcp.org)

#### 1. Call to order.

*Chair, Dr. Weckerly called the meeting to order at 9:05 a.m. Members present include: Janis Bush, Jacquelyn Duke, Conrad Lamon, Glenn Longley, Robert Mace, Doyle Mosier, Chad Norris, Floyd Weckerly, Tom Arsuffi, and Charles Kreitler; Jackie Poole was unable to attend.*

#### 2. Public comment.

*No comments from the public.*

#### 3. Approval of the Science Committee meeting minutes (Attachment 1).

*Dr. Mace motioned to approve the minutes as written; Dr. Longley seconded. No opposition.*

#### 4. Receive report from the Program Manager.

- Spring systems and index well update
- The National Academy of Sciences EAHCP Science Review Panel's *Report 3*, meeting 2 overview
- Contractor selection for the Sessom Creek 2018 Applied Research project
- 2017 Incidental take assessment (Attachment 2)

*Dr. Kreitler inquired why the Comal Spring riffle beetle had the greatest percent take compared to the other species. Mr. Pence and Mr. Oborny explained that in 2014 the Comal system reached a low flow of 65 cfs, exposing CSRB habitat.*

#### 5. Presentation, discussion, and possible recommendation of the Nonroutine Adaptive Management proposal related to the Aquifer Storage and Recovery program (Attachments 3 and 4).

*Dr. Lamon asked why there was no difference between the J-17 index well trigger level of 636 ft and the 637 ft scenarios. Mr. Friberg replied that during the drought of record scenario runs, modeled conditions did not stay below 641 ft long enough to trigger the ASR forbearance package.*

## Scientific Evaluation Report: Nonroutine AMP Proposal - Use of SAWS ASR for Springflow Protection

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*Dr. Lamon asked about whether the 10-year rolling recharge average was protective enough of springflow. He also asked for an explanation of the calculation of the 10-year rolling average. Mr. Friberg stated that the EARIP stakeholders agreed to using the 10-year rolling average in the EAHCP. Mr. Pence, EAHCP Program Manager, that during the EARIP process, the Science subcommittee looked at all types of triggers and learned that using a J-17 index well trigger level did not provide the same long-term protection as using the 10-year rolling recharge average.*

*Dr. Duke asked for a further explanation as to not using a J-17 index well trigger level. Mr. Friberg said that springflow is volatile and that the ASR program is intended to provide protection to springflow during the long-term drought of record conditions – explaining the use of the 10-year rolling recharge average.*

*Dr. Arsuffi asked that the proposal should identify more clearly the benefits of the proposed changes. He had thought the goal was to achieve the 30 cfs in the Comal Springs, but now understands that the goal of this proposal is to change how the 50,000 AF/year requirement is achieved. Mr. Pence stated that the 30 cfs goal will be addressed in the second phase of the EAHCP.*

*Dr. Kreidler and Dr. Mace both discussed with the Committee their understanding of the benefit of the proposed changes per their one on one meeting with Mr. Pence. They said that after this meeting, they had a better understanding of forbearance of all springflow protection measures such as the VISPO and Critical Period Management programs. Mr. Friberg further added, that 2014 was similar to drought of record conditions. Mr. Pence responded that a new drought of record conditions will be addressed in the roll-over of the Incidental Take Permit.*

*Mr. Friberg also told the Committee that another benefit of the program is that it would be attractive to many of the permit holders that have omitted to the one-year ASR lease agreements. He also stated that under EAA's rules, restricted irrigated water permit-holders are not eligible to participate in the ASR program. However, with these proposed changes – to add a forbearance tier- the restricted irrigated water would be able to participate*

*Dr Weckerly and Dr. Arsuffi recommended that the ASR AMP proposal include a glossary of terms as well as a description for each of the tables.*

*Dr. Mace motioned to endorse the Nonroutine Adaptive Management proposal with the added glossary of terms and table legends; Dr. Bush seconded. No opposition.*

**6. Presentation and possible endorsement of an expedited process to prepare and to submit the Nonroutine Adaptive Management Scientific Evaluation Report to the Stakeholder Committee.**

*Dr. Arsuffi motioned to endorse the expedited process to prepare the Scientific Evaluation Report to the Stakeholder Committee; Dr. Longley seconded. No opposition.*



**Scientific Evaluation Report: Nonroutine AMP Proposal - Use of SAWS ASR for Springflow Protection**

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**7. Presentation of the 2017 Biological Monitoring Reports (Attachments 5 and 6).**

*Mr. Oborny presented a comprehensive overview of the 2017 biological monitoring results for each of the EAHCP biological monitoring datasets.*

*2017 was the first year of the rapid bioassessment which adhered to standard rapid bioassessment practices. Dr. Arsuffi proposed that someone analyze the RBP and IBI to see how the two indices line-up. Mr. Norris noted that at least 3 years of this dataset are needed to analyze the existing conditions which will help assess conditions for the invertebrate species.*

*In regard to the fountain darter dropnet data, Mr. Lamon emphasized that the biological goals are based on the median and not the average, therefore, the data could be improved by taking the log of the data and untransforming it back into the median. The confidence level will not be symmetric, but it would be a better indicator to compare with the EAHCP fountain darter goals. Mr. Oborny agreed and will incorporate it into their analysis.*

*Mr. Oborny then presented the findings of the first year of the fish tissue sampling which use samples from the headwaters and the lower reaches of the river. Dr. Mace asked if the emerging contaminants found within the fish tissue have also been found within the artesian springs or wells. Mr. Pence replied that yes, sampling has found that the contaminants are not just from runoff, but also found within wells in the artesian zone of the aquifer. Other members agreed that studies conducted throughout the US are finding these contaminants within other aquifers; they are everywhere.*

*Dr. Weckerly requested that the annual Biomonitoring report include descriptions about the sampling methodologies employed. Dr. Furl replied that there is a standard operating procedures document for the biomonitoring program that can be attached to the report.*

**8. Presentation and discussion of the proposed 2018 Work Plan Amendments for the Refugia, Biomonitoring, and the Applied Research Programs (Attachments 7, 8 and 9).**

*Dr. Furl presented the proposed amendments to the 2018 Work Plans for the Refugia, Biological Monitoring, and Applied Research Programs.*

*Dr. Kreidler requested the number for the Sessom Creek Proposal that was selected. EAHCP Staff will follow-up and provide.*

*Mr. Mosier motioned to approve the 2018 Work Plan Amendments; Dr. Duke seconded. No opposition.*

**9. Presentation and discussion of the formation and goals of the Research Work Group to discuss the Comal Springs riffle beetle biomonitoring program.**

**Scientific Evaluation Report: Nonroutine AMP Proposal - Use of SAWS ASR for Springflow Protection**

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*Dr. Furl facilitated the discussion of the formation and need for a Comal Springs riffle beetle biomonitoring work group. Based input from the Science Committee, National Academy of Sciences, and the 2017 CSRB biomonitoring findings, the EAHCP goals for the CSRB are not being met. 2017 biomonitoring data have shown a decline in CSRB which may be attributed to many factors such as, but not limited to, over-sampling, ineffective cotton lures, or movement into unsampled reaches. If additional reaches are added to the CSRB sampling, it may result in cutting funds for sampling of other biomonitoring datasets.*

*Dr. Lamon requested that the CSRB data be analyzed before additional CSRB reaches are added at the cost of ending another biomonitoring dataset.*

*Dr. Weckerly suggested a 2-4 year study to compare our existing information and practices to other studies on similar species. He emphasized the need for a controlled study of the cotton lure within a laboratory setting, but also countered that the conditions would not resemble that of the wild so it may need to be more of an in-situ study. There are many unknowns about the cotton lure that need to be analyzed.*

*All members agree that a CSRB biomonitoring Work Group is needed. Dr. Furl will put together a charge for the group that will define its goals related to the Refugia and Biological Monitoring programs.*

**10. Consider future meetings, dates, locations, and agendas.**

*Science Committee Meeting, Thursday, March 8<sup>th</sup> at 9 a.m. at the San Marcos Activity Center (Multipurpose Room).*

**11. Questions and comments from the public.**

**12. Adjourn: 12:02 pm**

*Scientific Evaluation Report: Nonroutine AMP Proposal - Use of SAWS ASR for Springflow Protection*

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## Attachment 2 – Glossary of Terms

As used in the Nonroutine AMP proposal and this Glossary, the following terms have the following meanings:

**“Forbearance”** means the complete curtailment of all or part of a right to make withdrawals under a specific Edwards Aquifer Authority Groundwater Withdrawal Permit.

**“Forbearance Agreement”** is a contractual agreement whereby a party agrees to terms whereby the complete curtailment of all or part of the party’s right to make withdrawals under a specific Edwards Aquifer Authority Groundwater Withdrawal Permit is required when certain conditions, commonly referred to as “triggers” are met.

**“Trigger”** means to cause an event or situation to happen or exist. In the case of a Forbearance Agreement, a trigger would be a condition that causes or requires the curtailment of all or part of the right to make withdrawals under a specific Edwards Aquifer Authority Groundwater Withdrawal Permit.

**“Curtail” or “Curtailment”** means the act of reducing or restricting something. In the case of a Forbearance Agreement, the right to withdrawal under an Edwards Aquifer Authority Groundwater Withdrawal Permit would be reduced or restricted.

**“Edwards Aquifer Authority Groundwater Withdrawal Permit”** means an Initial Regular Permit or Regular Permit issued by the Edwards Aquifer Authority.

**“Initial Regular Permit”** means an Edwards Aquifer Authority Groundwater Withdrawal Permit issued by the Edwards Aquifer Authority under Subsection 1.16(d) of the Edwards Aquifer Authority Act.

**“Edwards Aquifer Authority Act”** means the Act of May 30, 1993, 73<sup>rd</sup> Leg., R.S., ch. 626, 1993 Tex. Gen. Laws 2350, as amended.

**“Regular Permit”** means an Edwards Aquifer Authority Groundwater Withdrawal Permit issued by the Edwards Aquifer Authority after August 12, 2008, resulting from the sale or amendment of an Initial Regular Permit or the consolidation of two or more such permits.

**“Withdrawal”** means an act that results in taking groundwater from the Edwards Aquifer by or through man-made facilities, including pumping.

**“Lease Option”** means a type of contractual agreement whereby a party has the option to lease property when certain conditions are met. In the context of the Edwards Aquifer Habitat Conservation Plan, the Edwards Aquifer Authority is charged with entering into such contracts with the option to lease an Edwards Aquifer Authority Groundwater

*Scientific Evaluation Report: Nonroutine AMP Proposal - Use of SAWS ASR for Springflow Protection*

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Withdrawal Permit becoming actionable upon the existence of a specific ten-year rolling recharge average. The difference between a Lease Option and a Forbearance Agreement is that a Lease Option is a contractual agreement to lease property rights under certain conditions and a Forbearance Agreement is an contractual agreement to curtail withdrawal of an Edwards Aquifer Authority Groundwater Withdrawal Permit under certain conditions.

**“Ten-year Rolling Average” or “10-year Rolling Average”** means the unweighted arithmetic mean of the ten (10) most recent consecutive years at any given time.

**“Estimated Annual Recharge”** Annual recharge is estimated by the United States Geological Survey using a water-balance method that: (1) relies on precipitation and streamflow measurements in the nine (9) drainage basins indicated in "Method of Estimating Natural Recharge to the Edwards Aquifer in the San Antonio Area, Texas," 1978, USGS WRI-7810, by Celso Puente; (2) considers only precipitation and stream flow that originates over the Contributing Zone and Recharge Zone of the Edwards Aquifer; and (3) excludes interformational flows from adjacent aquifers.

**“Ten-year Rolling Average Recharge” or “10-year Rolling Average Recharge”** means the unweighted arithmetic mean of annual recharge to the Edwards Aquifer over the ten (10) most recent consecutive years at any given time.



## NOTICE OF OPEN MEETING

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As required by Section 7.9.3 of the Funding and Management Agreement (FMA), an interlocal agreement made pursuant to Texas Government Code Chapter 791 by and among the Edwards Aquifer Authority (EAA), the City of New Braunfels (New Braunfels), the City of San Marcos (San Marcos), the City of San Antonio acting by and through its San Antonio Water System (SAWS), Texas State University, and the Guadalupe-Blanco River Authority (GBRA), a meeting of the **Science Committee** for the Edwards Aquifer Habitat Conservation Plan is scheduled for **Wednesday January 31, 2018 at 9 a.m. at the San Marcos Activity Center (Multipurpose Room), 501 E. Hopkins, San Marcos, Texas, 78666**. Lunch will be provided. All attendees are encouraged to please RSVP to [ktolman@edwardsaquifer.org](mailto:ktolman@edwardsaquifer.org) by Monday, January 29, 2018.

Members of this committee include: Tom Arsuffi, Janis Bush, Jacquelyn Duke, Charles Kreidler, Conrad Lamon, Glenn Longley, Robert Mace, Doyle Mosier, Chad Norris, Jackie Poole, and Floyd Weckerly.

At this meeting, the following business may be considered and recommended for committee action:

1. Call to order.
2. Public comment.
3. Approval of the Science Committee meeting minutes (Attachment 1).
4. Receive report from the Program Manager.
  - Spring systems and index well update
  - The National Academy of Sciences EAHCP Science Review Panel's *Report 3*, meeting 2 overview
  - Contractor selection for the Sessom Creek 2018 Applied Research project
  - 2017 Incidental take assessment (Attachment 2)
5. Presentation, discussion, and possible recommendation of the Nonroutine Adaptive Management proposal related to the Aquifer Storage and Recovery program (Attachments 3 and 4).



*Purpose:* To provide the opportunity for the Science Committee to discuss and possibly recommend the Nonroutine Adaptive Management proposal related to the Aquifer Storage and Recovery program to the Stakeholder Committee.

*Action:* To possibly recommend the Nonroutine Adaptive Management proposal to the Stakeholder Committee.

6. Presentation and possible endorsement of an expedited process to prepare and to submit the Nonroutine Adaptive Management Scientific Evaluation Report to the Stakeholder Committee.

*Purpose:* To provide the opportunity for the Science Committee to discuss and possibly endorse a process to prepare and to submit the Nonroutine Adaptive Management Scientific Evaluation Report to the Stakeholder Committee.

*Action:* To possibly endorse the expedited process for preparing the Nonroutine Adaptive Management Scientific Evaluation Report and for submitting it to the Stakeholder Committee.

7. Presentation of the 2017 Biological Monitoring Reports (Attachments 5 and 6).

*Purpose:* To inform the Science Committee of the 2017 Biological Monitoring Reports.

*Action:* No action required.

8. Presentation and discussion of the proposed 2018 Work Plan Amendments for the Refugia, Biological Monitoring, and the Applied Research Programs (Attachments 7, 8 and 9).

*Purpose:* To provide the Science Committee the opportunity to review and comment on the science-related aspects of the proposed 2018 Work Plan Amendments for the Refugia, Biological Monitoring, and the Applied Research Programs.

*Action:* To possibly endorse the proposed 2018 Work Plan Amendments for the Refugia, Biological Monitoring, and the Applied Research Programs.

9. Presentation and discussion of the formation and goals of the Research Work Group to discuss the Comal Springs riffle beetle biomonitoring program.

*Purpose:* To provide the opportunity for the Science Committee to comment on the formation and goals of the Research Work Group related to the Comal Springs riffle beetle biomonitoring program.

*Action:* No action required.

10. Consider future meetings, dates, locations, and agendas.

- Science Committee Meeting, Thursday, March 8<sup>th</sup> at 9 a.m. at the San Marcos Activity Center (Multipurpose Room).

11. Questions and comments from the public.

12. Adjourn.



## 01-31-2018 Meeting Minutes

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### 1. Call to order.

*Chair, Dr. Weckerly called the meeting to order at 9:05 a.m. Members present include: Janis Bush, Jacquelyn Duke, Conrad Lamon, Glenn Longley, Robert Mace, Doyle Mosier, Chad Norris, Floyd Weckerly, Tom Arsuffi, and Charles Kreitler; Jackie Poole was unable to attend.*

### 2. Public comment.

*No comments from the public.*

### 3. Approval of the Science Committee meeting minutes (Attachment 1).

*Dr. Mace motioned to approve the minutes as written; Dr. Longley seconded. No opposition.*

### 4. Receive report from the Program Manager.

- Spring systems and index well update
- The National Academy of Sciences EAHCP Science Review Panel's *Report 3*, meeting 2 overview
- Contractor selection for the Sessom Creek 2018 Applied Research project
- 2017 Incidental take assessment (Attachment 2)

*Dr. Kreitler inquired why the Comal Spring riffle beetle had the greatest percent take compared to the other species. Mr. Pence and Mr. Oborny explained that in 2014 the Comal system reached a low flow of 65 cfs, exposing CSRB habitat.*

### 5. Presentation, discussion, and possible recommendation of the Nonroutine Adaptive Management proposal related to the Aquifer Storage and Recovery program (Attachments 3 and 4).

*Dr. Lamon asked why there was no difference between the J-17 index well trigger level of 636 ft and the 637 ft scenarios. Mr. Friberg replied that during the drought of record scenario runs, modeled conditions did not stay below 641 ft long enough to trigger the ASR forbearance package.*

*Dr. Lamon asked about whether the 10-year rolling recharge average was protective enough of springflow. He also asked for an explanation of the calculation of the 10-year rolling average. Mr. Friberg stated that the EARIP stakeholders agreed to using the 10-year*

*rolling average in the EAHCP. Mr. Pence, EAHCP Program Manager, that during the EARIP process, the Science subcommittee looked at all types of triggers and learned that using a J-17 index well trigger level did not provide the same long-term protection as using the 10-year rolling recharge average.*

*Dr. Duke asked for a further explanation as to not using a J-17 index well trigger level. Mr. Friberg said that springflow is volatile and that the ASR program is intended to provide protection to springflow during the long-term drought of record conditions – explaining the use of the 10-year rolling recharge average.*

*Dr. Arsuffi asked that the proposal should identify more clearly the benefits of the proposed changes. He had thought the goal was to achieve the 30 cfs in the Comal Springs, but now understands that the goal of this proposal is to change how the 50,000 AF/year requirement is achieved. Mr. Pence stated that the 30 cfs goal will be addressed in the second phase of the EAHCP.*

*Dr. Kreidler and Dr. Mace both discussed with the Committee their understanding of the benefit of the proposed changes per their one on one meeting with Mr. Pence. They said that after this meeting, they had a better understanding of forbearance of all springflow protection measures such as the VISPO and Critical Period Management programs. Mr. Friberg further added, that 2014 was similar to drought of record conditions. Mr. Pence responded that a new drought of record conditions will be addressed in the roll-over of the Incidental Take Permit.*

*Mr. Friberg also told the Committee that another benefit of the program is that it would be attractive to many of the permit holders that have omitted to the one-year ASR lease agreements. He also stated that under EAA's rules, restricted irrigated water permit-holders are not eligible to participate in the ASR program. However, with these proposed changes – to add a forbearance tier- the restricted irrigated water would be able to participate*

*Dr. Weckerly and Dr. Arsuffi recommended that the ASR AMP proposal include a glossary of terms as well as a description for each of the tables.*

*Dr. Mace motioned to endorse the Nonroutine Adaptive Management proposal with the added glossary of terms and table legends; Dr. Bush seconded. No opposition.*

**6. Presentation and possible endorsement of an expedited process to prepare and to submit the Nonroutine Adaptive Management Scientific Evaluation Report to the Stakeholder Committee.**

*Dr. Arsuffi motioned to endorse the expedited process to prepare and submit the Scientific Evaluation Report to the Stakeholder Committee; Dr. Longley seconded. No opposition.*

**7. Presentation of the 2017 Biological Monitoring Reports (Attachments 5 and 6).**

*Mr. Oborny presented a comprehensive overview of the 2017 biological monitoring results for each of the EAHCP biological monitoring datasets.*

*2017 was the first year of the rapid bioassessment which adhered to standard rapid bioassessment practices. Dr. Arsuffi proposed that someone analyze the RBP and IBI to see how the two indices line-up. Mr. Norris noted that at least 3 years of this dataset are needed to analyze the existing conditions which will help assess conditions for the invertebrate species.*

*In regard to the fountain darter dropnet data, Mr. Lamon emphasized that the biological goals are based on the median and not the average, therefore, the data could be improved by taking the log of the data and untransforming it back into the median. The confidence level will not be symmetric, but it would be a better indicator to compare with the EAHCP fountain darter goals. Mr. Oborny agreed and will incorporate it into their analysis.*

*Mr. Oborny then presented the findings of the first year of the fish tissue sampling which use samples from the headwaters and the lower reaches of the river. Dr. Mace asked if the emerging contaminants found within the fish tissue have also been found within the artesian springs or wells. Mr. Pence replied that yes, sampling has found that the contaminants are not just from runoff, but also found within wells in the artesian zone of the aquifer. Other members agreed that studies conducted throughout the US are finding these contaminants within other aquifers; they are everywhere.*

*Dr. Weckerly requested that the annual Biomonitoring report include descriptions about the sampling methodologies employed. Dr. Furl replied that there is a standard operating procedures document for the biomonitoring program that can be attached to the report.*

- 8. Presentation and discussion of the proposed 2018 Work Plan Amendments for the Refugia, Biomonitoring, and the Applied Research Programs (Attachments 7, 8 and 9).**  
*Dr. Furl presented the proposed amendments to the 2018 Work Plans for the Refugia, Biological Monitoring, and Applied Research Programs.*

*Dr. Kreidler requested the number for the Sessom Creek Proposal that was selected. EAHCP Staff will follow-up and provide.*

*Mr. Mosier motioned to approve the 2018 Work Plan Amendments; Dr. Duke seconded. No opposition.*

- 9. Presentation and discussion of the formation and goals of the Research Work Group to discuss the Comal Springs riffle beetle biomonitoring program.**  
*Dr. Furl facilitated the discussion of the formation and need for a Comal Springs riffle beetle Biomonitoring Work Group. Based on input from the Science Committee, National Academy of Sciences, and the 2017 CSRB biomonitoring findings, the EAHCP goals for the CSRB are not being met. 2017 biomonitoring data have shown a decline in CSRB which may be attributed to many factors such as, but not limited to, over-sampling, ineffective cotton lures, or*

*movement into unsampled reaches. If additional reaches are added to the CSRB sampling, it may result in cutting funds for sampling of other biomonitoring datasets.*

*Dr. Lamon requested that the CSRB data be analyzed before additional CSRB reaches are added at the cost of ending another biomonitoring dataset.*

*Dr. Weckerly suggested a 2-4 year study to compare our existing information and practices to other studies on similar species. He emphasized the need for a controlled study of the cotton lure within a laboratory setting, but also countered that the conditions would not resemble that of the wild so it may need to be more of an in-situ study. There are many unknowns about the cotton lure that need to be analyzed.*

*All members agree that a CSRB biomonitoring Work Group is needed. Dr. Furl will put together a charge for the group that will define its goals related to the Refugia and Biological Monitoring programs.*

**10. Consider future meetings, dates, locations, and agendas.**

*Science Committee Meeting, Thursday, March 8<sup>th</sup> at 9 a.m. at the San Marcos Activity Center (Multipurpose Room).*

**11. Questions and comments from the public.**

**12. Adjourn: 12:02 pm**



**NOTICE OF OPEN MEETING**  
**Available at [eahcp.org](http://eahcp.org)**

As required by Section 7.8.4 of the Funding and Management Agreement (FMA), an interlocal agreement made pursuant to Texas Government Code Chapter 791 by and among the Edwards Aquifer Authority (EAA), the City of New Braunfels (New Braunfels), the City of San Marcos (San Marcos), the City of San Antonio acting by and through its San Antonio Water System (SAWS), Texas State University, and the Guadalupe-Blanco River Authority (GBRA), a meeting of the **Stakeholder Committee of the Edwards Aquifer Habitat Conservation Plan Program** is scheduled for **9:00 am on Thursday, February 8th, 2018 at the City of San Marcos Activity Center (Room 3), 501 E. Hopkins, San Marcos, TX, 78666**. Lunch will be provided for committee members at 12:00 p.m.

1. Call to order--Establish that all Committee members are present or represented- 9:00 a.m.
2. Public Comment.
3. Approval of minutes from the September 21<sup>st</sup> Stakeholder Committee meeting and December 14<sup>th</sup> Joint Committee meeting (Attachment 1 & 2).
4. Receive report from the Program Manager on general updates about the Habitat Conservation Plan.
  - Springflow and Index Well levels
  - The National Academy of Sciences EAHCP Science Review Panel's *Report 3*, meeting 2 overview.
  - EAHCP 2017 Annual Report Update
  - Contractor Selection for the Sessoms Creek 2018 Applied Research Project
  - Comal Springs Riffle Beetle Work Group update
5. Presentation of the 2017 Net Disturbance and Incidental Take Assessment (Attachment 3)  
Purpose: To provide the Stakeholder Committee a summary of the 2017 Net Disturbance and Incidental Take Assessment report.  
Action: No action required.
6. Discussion and possible recommendation on the Aquifer Storage and Recovery (ASR) Nonroutine Adaptive Management (AMP) Proposal (Attachments 4, 5 & 6).  
Purpose: To provide an opportunity for the Stakeholder Committee to discuss a recommendation on the ASR Nonroutine AMP Proposal.

Action: To make a recommendation on the ASR Nonroutine AMP Proposal to the Implementing Committee.

7. Discussion and decision regarding expedited process to develop and approve submission of the Nonroutine AMP Stakeholder Report to the Implementing Committee.

Purpose: To present a potential expedited process to develop and submit the written report reflecting the Stakeholder Recommendation on the ASR Nonroutine AMP Proposal.

Action: To approve a process to develop, approve, and submit the Stakeholder Report to the Implementing Committee.

8. Consider future meetings, dates, locations, and agendas.

- Next meeting will be held on June 21, 2018 at the City of New Braunfels City Hall.

9. Questions from the public.

10. Adjourn



**Stakeholder Committee  
Meeting Minutes  
February 8, 2018  
(unofficial)**

**1. Call to order -- 9:00 a.m.**

Myron Hess called order; a quorum was present.

**2. Public Comment.**

No comments.

**3. Approval of minutes from the September 21<sup>st</sup> Stakeholder Committee meeting and December 14<sup>th</sup> Joint Committee meeting.**

Con Mims made a motion to approve meeting minutes; the motion was seconded. There were no objections.

**4. Report from the Program Manager on general updates about the Habitat Conservation Plan.**

- **Springflow and Index Well levels**

Dr. Chad Furl provided a brief hydrologic update on the springflows and index well levels. Diane Wassenich asked when the data for the historical averages began. Dr. Furl answered that the historical averages contains data prior to the 1950's.

- **The National Academy of Sciences EAHCP Science Review Panel's *Report 3*, meeting 2 overview.**

Dr. Chad Furl updated the committee on the third and final National Academy of Sciences (NAS) EAHCP report. *Report 3* will be a holistic review of the HCP as well as an analysis on the relationships between the conservation measures, biological objectives and biological goals. During the January visit, the NAS committee had the opportunity to tour the Comal System restoration sites and SMARC refugia complex. *Report 3* is expected to be completed by Fall 2018.

Glenn Lord asked if it was the same NAS committee that has reviewed the HCP over the course of the program. Nathan Pence answered that it has been the same NAS committee, apart from a few committee member changes, over the past 5 years to review the HCP.



- **EAHCP 2017 Annual Report Update**

Shaun Payne provided the committee a timeline of the 2017 EAHCP Annual Report. A second opportunity to review and provide comments on the draft Annual Report will begin February 9<sup>th</sup>. The final Annual Report will be submitted March 26<sup>th</sup> and a hard copy will be made available at the next Implementing Committee meeting. Nathan Pence mentioned plans to produce a high level executive summary of the Annual Report that would be appropriate for stakeholder groups, city council members and interested individuals.

- **Contractor Selection for the Sessom Creek 2018 Applied Research Project**

Dr. Chad Furl provided updates on the Sessom Creek Project. Texas State University and Texas A&M University AgriLife have been selected as the contractors for this project. The Scope of Work will include data collection on sediment loading, calculating sediment/constituent loading curves and data analysis on contributing factors to sediment exports.

- **Comal Springs Riffle Beetle (CSRB) Work Group update**

Dr. Chad Furl presented recent updates to the CSRB 2018 Work Group initiative. Suggestions made by the Science Committee and Texas Parks and Wildlife Department include additional monitoring through the Biomonitoring program, a CSRB distribution and abundance study and additional sampling locations. However, many overarching questions concerning riffle beetle sampling remain. Proposed next steps of the CSRB Work Group intend to address many of those concerns and discuss development of the data driven Work Group.

Carol Patterson asked if there were any plans to sample for the CSRB in the center of Landa Lake. Dr. Furl answered that sampling in the center of the lake was not considered a priority because riffle beetles are not typically found more 50 meters away from a spring orifice. Nathan Pence noted the heavy amount of sampling that already occurs in the spring system by various groups aside from the HCP. The CSRB work group intends to provide recommendations on monitoring and sampling frequency.

5. **Presentation of the 2017 Net Disturbance and Incidental Take Assessment.**

Nathan Pence presented the Incidental Take Permit (ITP) 2017 Report, the significance of the ITP and its relation to the HCP. The 2017 Report concluded that EAHCP activities did not exceed the 10% habitat disturbance rule, the fountain darter experienced less take in 2017 than in 2016 and that the EAHCP is in good standing relative to the ITP.

Jim Bower asked about the relationship between the take of a covered species and the take of habitat. Mr. Pence answered that the ratio and formula for take of the species and habitat is different for each covered species. Kimberly Meitzen added that attachment 3 of the stakeholder committee packet illustrates the total habitat relative to take. Tom Taggart recommended using a chart to clarify the descriptions of take and habitat. Con Mims asked

how many years were left on the ITP and if drought was taken into consideration when determining the take of species. Mr. Pence answered that the permit expires in 2020 and that the USFWS accommodated estimates of take based on historical drought data.

**6. Discussion and possible recommendation on the Aquifer Storage and Recovery (ASR) Nonroutine Adaptive Management (AMP) Proposal.**

Myron Hess introduced the ASR AMP proposal to the committee.

Marc Friberg provided a presentation on the current ASR program requirements, past ASR leasing options, analysis on ASR lease trigger scenarios, proposed program amendments from a three-tiered approach to a two tiered system and a budget analysis. The proposed amendment intends to facilitate long term commitment and spring flow protection during drought while maintaining a budget within Table 7.1 estimates.

Con Mims asked about the percentage of the total amount of agricultural water that will be targeted for the ASR program. Mr. Friberg communicated the amount of available agricultural water, but that municipal and industrial water would also be targeted. Myron Hess asked to clarify the locational aspect of the ASR. Mr. Friberg provided an example that permit holders that pump near springs, such as the New Braunfels Utilities (NBU), have a significant impact on ASR during forbearance.

Darren Thompson asked if price points were determined on the type of water usage. Mr. Friberg answered that the EAA is open to these conversations but at this moment one-price point has been discussed.

Adam Yablonski asked about the process moving forward to adjust to the market. Mr. Friberg answered that public outreach, communication with the EAA Board of Directors and market analysis will be deliberated moving forward with the ASR. Price points will be considered as part of the discussion to pursue long term lease commitments and maintaining the EAA's obligations. Nathan Pence clarified that the goal is to fulfill the program's responsibilities and develop a model that can be applied to future use. Myron Hess asked to clarify the estimated budget. Mr. Friberg answered that ASR budget will not exceed the 2018 estimates determined in Table 7.1.

Roland Ruiz noted that meeting with individuals, committee members and small groups has been very helpful and thanked the committee on their continued efforts to improve the program.

Javier Hernandez made a motion to approve the ASR AMP as amended. Carol Patterson seconded the motion. There were no objections.

**7. Discussion and decision regarding expedited process to develop and approve submission of the Nonroutine AMP Stakeholder Report to the Implementing Committee.**

Alicia Reinmund-Martinez presented the purpose of the expedited process to develop and approve submission of the Nonroutine AMP Stakeholder Report to the Implementing Committee

Patrick Shriver made a motion to approve the expedited process. Cindy Loeffler seconded the motion. There were no objections.

**8. Consider future meetings, dates, locations, and agendas.**

The next meeting will be held on June 21, 2018 at the City of New Braunfels City Hall. Nathan Pence noted that the next meeting will provide committee members a presentation on the bottom up package of all HCP programs. Additionally, members of all HCP committees are invited to attend a tour of the Comal Springs during the next Science Committee meeting. Carol Patterson asked when the next Science Committee meeting will be held. Dr. Chad Furl answered the next meeting will be on May 9<sup>th</sup>.

**9. Questions from the public.**

Roland Ruiz informed the committee on a lawsuit that has recently been filed by the Uvalde County Underground Water Conservation District against the EAA over recent changes to the Base Irrigation Rules. Mr. Ruiz assured the committee that the lawsuit will not affect the activities and operations of the HCP.

**10. Adjourn: 10:40am**

**NOTICE OF OPEN MEETING****Available at [eahcp.org](http://eahcp.org)**

As required by Section 7.7.4 of the Funding and Management Agreement (FMA), an interlocal agreement made pursuant to Texas Government Code Chapter 791 by and among the Edwards Aquifer Authority (EAA), the City of New Braunfels (New Braunfels), the City of San Marcos (San Marcos), the City of San Antonio acting by and through its San Antonio Water System (SAWS), Texas State University, and the Guadalupe-Blanco River Authority (GBRA), a meeting of the **Implementing Committee** of the **Edwards Aquifer Habitat Conservation Plan Program** is scheduled for **9:00am on Thursday, February 8<sup>th</sup>, 2018** at the **San Marcos Activity Center, 501 E. Hopkins, San Marcos, TX**. Lunch will be provided for committee members at 12:00 p.m.

Members of this committee include: Tom Taggart (San Marcos), Roland Ruiz (EAA), Greg Malatek (New Braunfels), Darren Thompson (SAWS), Andrew Sansom (Texas State University), and Jonathan Stinson (GBRA). At this meeting, the following business may be considered and recommended for committee action:

1. Call to order--Establish that all Committee members are present or represented following the EAHCP Stakeholder Committee meeting.
2. Public Comment.
3. Approval of minutes from the October 19<sup>th</sup> Implementing Committee meeting (Attachment 1).
4. Discussion and possible approval of the Aquifer Storage and Recovery (ASR) Nonroutine Adaptive Management (AMP) Proposal. (Attachments 2, 3, 4, and 5).  
Purpose: To discuss and possibly approve the Stakeholder Committee recommendation.  
Action: To approve the Stakeholder Committee recommendation for the ASR Nonroutine AMP Proposal.
5. Discussion and possible approval to direct the Program Manager to submit the necessary documentation to USFWS based on the approved AMP Proposal on behalf of the Implementing Committee (Attachment 6).  
Purpose: To provide an opportunity for the Implementing Committee to discuss and possibly approve the submission of a formal EAHCP Amendment to USFWS regarding the Nonroutine AMP Proposal.  
Action: To direct the Program Manager to submit the necessary documentation to USFWS based on the approved AMP Proposal.
6. Presentation and possible action to approve the amended 2018 Refugia, Biomonitoring, and Applied Research Program Work Plans (Attachments 7, 8 and 9).  
Purpose: To provide an opportunity for the Implementing Committee to review the proposed 2018 Work Plan Amendments for the Refugia, Biomonitoring, and Applied Research Programs.

Action: To approve the proposed 2018 Work Plan Amendments for the Refugia, Biomonitoring, and Applied Research Programs.

7. Presentation and possible action to approve the amended 2018 EAA Funding Application (Attachments 10 and 11).

Purpose: To provide the Implementing Committee the opportunity to review and discuss the amended 2018 EAA Funding Application.

Action: To consider possible approval to submit the amended 2018 EAA Funding Application.

8. Consider future meetings, dates, locations, and agendas.

- Next Implementing Committee meeting is scheduled for March 22<sup>nd</sup> at GBRA in Seguin, Tx

9. Questions from the public.

10. Adjourn.



**Implementing Committee Meeting Minutes  
February 8, 2018  
(unofficial)**

Members of this committee include: Tom Taggart (San Marcos), Roland Ruiz (EAA), Greg Malatek (New Braunfels), Darren Thompson (SAWS), Kimberly Meitzen for Andrew Sansom (Texas State University), and Jonathan Stinson (GBRA).

**1. Call to order – 11:00am**

Darren Thompson called roll for the Committee; a quorum was present.

**2. Public Comment.**

No Comment.

**3. Approval of minutes from the October 19<sup>th</sup> Implementing Committee meeting.**

Tom Taggart made a motion to approve the meeting minutes. Roland Ruiz seconded the motion. There were no objections.

**4. Discussion and possible approval of the Aquifer Storage and Recovery (ASR) Nonroutine Adaptive Management (AMP) Proposal.**

Tom Taggart commented on the ASR. There is concern regarding triggering based on a rolling recharge, while the most uncertain aspect of our program is calculating recharge. Saying this, he wanted to be sure that a better solution does not necessarily mean it is the perfect conclusion. Darren Thompson mentioned that it is important to consider the price point in order to not skew the market. Nathan Pence provided a brief description of the attachments presented in the Implementing Committee meeting packet and the report submitted by the Stakeholder Committee. Roland Ruiz addressed the typo that was corrected in the ASR proposal.

Roland Ruiz made a motion to approve the ASR AMP as amended. Tom Taggart seconded the motion. There were no objections.

**5. Discussion and possible approval to direct the Program Manager to submit the necessary documentation to USFWS based on the approved AMP Proposal on behalf of the Implementing Committee.**

Tom Taggart motioned to approve the Program Manager to submit the necessary documentation to the USFWS regarding the ASR AMP Proposal. Roland Ruiz seconded. There were no objections.

Nathan Pence provided a brief timeline of submitting documentation to the USFWS stating the actions made by the Committee and the intent to move forward with the ASR program. Roland Ruiz noted that there is not a hard deadline for termination and transition of the current short-term leases in the ASR program, but that they hope to conclude those leases before July.

6. **Presentation and possible action to approve the amended 2018 Refugia, Biomonitoring, and Applied Research Program Work Plans.**

Chad Furl presented the amendments made to the 2018 Refugia, Biomonitoring and Applied Research Program work plans.

Gregg Malatek made a motion to approve the 2018 work plan amendments. Roland Ruiz seconded the motion. There were no objections.

7. **Presentation and possible action to approve the amended 2018 EAA Funding Application.**

Alicia Reinmund-Martinez presented the request to amend the 2018 EAA Funding Application Refugia budget.

Gregg Malatek made a motion to approve the amended funding application. Tom Taggart seconded the motion. There were no objections.

8. **Consider future meetings, dates, locations, and agendas.**

The next Implementing Committee meeting is scheduled for March 22<sup>nd</sup> at GBRA in Seguin, TX

9. **Questions from the public.**

No Comment.

10. **Adjourn: 11:15am**