

## NOTICE OF OPEN MEETING

Notice is given that a **Regular Meeting** before the Board of Directors of the Barton Springs/Edwards Aquifer Conservation District will be held at the District office, located at 1124 Regal Row, Austin Texas, on **Thursday, October 10, 2019**, commencing at **4:00 p.m.** for the following purposes, which may be taken in any order at the discretion of the Board.

Note: The Board of Directors of the Barton Springs/Edwards Aquifer Conservation District reserves the right to meet in Executive Session at any time during the course of this meeting to discuss any of the matters listed on this agenda, as authorized by the Texas Government Code Sections §551.071 (Consultation with Attorney), 551.072 (Deliberations about Real Property), 551.073 (Deliberations about Gifts and Donations), 551.074 (Personnel Matters), 551.076 (Deliberations about Security Devices), 551.087 (Economic Development), 418.183 (Homeland Security). No final action or decision will be made in Executive Session.

1. **Call to Order.**
2. **Citizen Communications (Public Comments of a General Nature).**
3. **Routine Business**
  - a. **Consent Agenda.** *(Note: These items may be considered and approved as one motion. Directors or citizens may request any consent item be removed from the consent agenda, for consideration and possible approval as a separate item of Regular Business on this agenda.)*
    1. Approval of Financial Reports under the Public Funds Investment Act, Directors' Compensation Claims, and Specified Expenditures greater than \$5,000. **Not for public review**
    2. Approval of minutes of the Board's August 22, 2019 Regular Meeting and Public Hearing and September 12, 2019 Regular Meeting. **Not for public review at this time**
    3. Approval of the First Amendment to the Interlocal Cooperation Contract with the State Office of Administrative Hearings in connection with the application of Electro Purification, LLC. **Pg. 17**
    4. Approval of issuing the earned Conservation Credits to permittees for FY 2019. **Pg. 20**
  - b. **General Manager's Report.** *(Note: Topics discussed in the General Manager's Report are intended for general administrative and operational information-transfer purposes. The Directors will not take any action unless the topic is specifically listed elsewhere in this agenda for consideration. A Director may request an individual topic that is presented only under this agenda item be placed on the posted agenda of some future meeting for Board discussion and possible action.)*

### Topics

1. Personnel matters.
2. Aquifer conditions and status of drought indicators.
3. Upcoming public events of possible interest.
4. Review of Status Report Update – at directors’ discretion. **Pg. 32**
5. Update on projects and activities of individual teams.
6. Update on roadway projects.
7. Update on development activities over aquifer recharge and contributing zones.
8. Update on GMA and regional water planning activities.
9. Update on the Budget.
10. Update on the HCP.
11. Update on the State Office of Administrative Hearings proceedings for the Electro Purification LLC permit application.
12. Update on Needmore Water LLC proceeding.

**4. Discussion and Possible Action.**

- a. Discussion and possible action of the Western Travis County Hydrogeologic Atlas – Results of the Travis County ILA Phase 1. **Pg. 69**
- b. Discussion and possible action on a Hays County/BSEACD ILA for monitoring wells at Jacob’s Well. **Pg. 81**
- c. Discussion and possible action on the Sustainable Yield Study of the Trinity Aquifer. **Pg. 89**
- d. Discussion and possible action on legal options for protection of water quality and endangered species vulnerable to or potentially adversely affected by the Permian Highway Pipeline. **Pg. 92**

**5. Directors’ Reports.**

Directors may report on their involvement in activities and dialogue that are of likely interest to the Board, in one or more of the following topical areas:

- Meetings and conferences attended or that will be attended;
- Board committee updates;
- Conversations with public officials, permittees, stakeholders, and other constituents;
- Commendations; and
- Issues or problems of concern.

## 6. **Adjournment.**

**Please note:** This agenda and available related documentation, if any, have been posted on the District website, [www.bseacd.org](http://www.bseacd.org). If you have a special interest in a particular item on this agenda and would like any additional documentation that may be developed for Board consideration, please let staff know at least 24 hours in advance of the Board Meeting so that we can have those copies made for you.

The Barton Springs/Edwards Aquifer Conservation District is committed to compliance with the Americans with Disabilities Act (ADA). Reasonable accommodations and equal opportunity for effective communications will be provided upon request. Please contact the District office at 512-282-8441 at least 24 hours in advance if accommodation is needed.

**Item 1**

**Call to Order**

## **Item 2**

### **Citizen Communications**

## **Item 3**

### **Routine Business**

#### **a. Consent Agenda**

*(Note: These items may be considered and approved as one motion. Directors or citizens may request any consent item be removed from the consent agenda, for consideration and possible approval as a separate item of Regular Business on this agenda.)*

- 1. Approval of Financial Reports under the Public Funds Investment Act, Directors' Compensation Claims, and Specified Expenditures greater than \$5,000.**
- 2. Approval of minutes of the Board's August 22, 2019 Regular Meeting and Public Hearing, and September 12, 2019 Regular Meeting.**
- 3. Approval of the First Amendment to the Interlocal Cooperation Contract with the State Office of Administrative Hearings in connection with the application of Electro Purification, LLC.**
- 4. Approval of issuing the earned Conservation Credits to permittees for FY 2019.**

**FIRST AMENDMENT TO  
INTERLOCAL COOPERATION CONTRACT  
BY AND BETWEEN  
THE BARTON SPRINGS EDWARDS AQUIFER CONSERVATION DISTRICT  
AND  
THE STATE OFFICE OF ADMINISTRATIVE HEARINGS**

This **FIRST AMENDMENT TO INTERLOCAL COOPERATION CONTRACT** (Amendment) by and between, the State Office of Administrative Hearings (SOAH) and the Barton Springs Edwards Aquifer Conservation District (BSEACD), hereinafter collectively referred to as the “Parties,” is entered into pursuant to the authority granted and in compliance with the provisions of Texas Government Code § 2003.021(b)(4) and Texas Water Code, Chapter 36, subchapter M.

**INDUCEMENTS**

**WHEREAS**, the Parties agreed to and executed an Interlocal Cooperation Contract (Contract) effective August 1, 2018 through August 31, 2019 relating to SOAH Docket No. 957-18-4985 in connection with the application of Electro Purification, LLC for a Production Permit; and

**WHEREAS**, the Parties intend to amend the Contract to extend the term of the Contract through August 31, 2021 and provide for payment of contract costs in amounts sufficient to comply with Texas Water Code, Section 36.416 and the General Appropriations Act, H.B. 1, 86th Legislature, R.S. 2019;

**NOW, THEREFORE**, in consideration of the inducements, mutual covenants and conditions herein, the Parties agree as follows:

**SECTION 1. AMENDMENTS.** The Parties understand and agree that the following amendments to the Contract as set forth herein shall be effective as of September 1, 2019:

**1. Section III, Basis for Calculating Reimbursable Costs**, is amended to read as follows:

As compensation for the services to be performed under this Contract by the Performing Entity, Receiving Entity agrees to reimburse Performing Entity as follows:

- a. For services performed during state fiscal years 2018-2019 (September 1, 2017 – August 31, 2019), Receiving Entity agrees to pay Performing Entity the fee of One Hundred Twenty-Eight Dollars (\$128.00) per hour for services rendered by an administrative law judge, plus Thirty-Two Dollars (\$32.00) per hour billed by an administrative law judge to be paid as reimbursement to the state General Revenue Fund for employee benefit costs and salaries (General Appropriations Act, S.B. 1, 85th Legislature, R.S. 2017, Article VIII, SOAH Riders 4 and 8.a);
- b. For services performed during state fiscal years 2020-2021 (September 1, 2019 – August 31, 2020), Receiving Entity agrees to pay Performing Entity the fee of One Hundred Fifty Dollars (\$150.00) per hour for services rendered by an administrative law judge,

plus Thirty-Seven Dollars and Fifty Cents (\$37.50) per hour billed by an administrative law judge to be paid as reimbursement to the state General Revenue Fund for employee benefit costs and salaries (General Appropriations Act, H.B. 1, 86th Legislature, R.S., 2019, Article VIII, SOAH Riders 3 and 7.a);

- c. The costs will be charged in 0.25-hour increments for each portion of an hour of services performed by Performing Entity.
- d. Costs incurred by Performing Entity include any travel time spent by SOAH administrative law judges required for attendance of meetings and hearings to the extent that such meetings or hearings occur at a location other than SOAH's offices in Austin, Texas.
- e. Receiving Entity shall be responsible for payment of the cost to rent a hearing facility for conducting the hearing, if necessary.
- f. The parties to the contested case proceeding shall be responsible for costs associated with any court reporter charges, if any.

2. **Section V, Payment for Services**, is amended to read as follows:

Receiving Entity shall pay for services received from appropriation items or accounts of Receiving Entity from which like expenditures would normally be paid.

Performing Entity shall bill Receiving Entity monthly for services rendered. All invoices from Performing Entity to Receiving Entity shall provide an itemization of the costs for all services provided and expenses incurred by Performing Entity during the billing period. Payment of each invoice is due no later than thirty (30) days after the date the Receiving Entity received the invoice.

Payments received by Performing Entity shall be credited to its current appropriation item(s) of account(s) from which the expenditures of that character were originally made.

3. **Section VI, Term of Contract**, is amended to read as follows:

This Contract is to begin February 1, 2017, and shall terminate August 31, 2021, or when the services under this Contract are completed, whichever is earlier. This Contract and each of its provisions shall be binding upon the Contracting Parties and may not be waived, modified, amended or altered except by in writing signed by the Contracting Parties. The term of this Contract may be extended if necessary to complete the contested case.



**SECTION 2. ENTIRE AGREEMENT**

The entire agreement between the Parties consists of the new amended and/or modified, altered, excised or added terms, conditions and/or mutual covenants of this FIRST AMENDMENT TO INTERLOCAL COOPERATION CONTRACT and the remaining unchanged provisions of the Contract. No prior agreement or understanding, oral or otherwise, of the Parties or their agents will be valid or enforceable unless embodied in this contract.

**SIGNATORIES. IN WITNESS WHEREOF**, the Parties have executed this Contract Amendment to be effective as of the date stated above.

**STATE OFFICE OF ADMINISTRATIVE HEARINGS**

**BARTON SPRINGS EDWARDS AQUIFER  
CONSERVATION DISTRICT**

\_\_\_\_\_  
Kristofer S. Monson  
Chief Administrative Law Judge

\_\_\_\_\_  
Blayne Stansberry  
Board President

\_\_\_\_\_  
Signature Date

\_\_\_\_\_  
Signature Date

ATTEST:

By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

APPROVED AS TO FORM:

\_\_\_\_\_  
William D. Dugat III  
Attorney for BSEACD

Date: \_\_\_\_\_

Permittee	FY19 Historical & Conditional Permitted Pumpage	FY19 Historical Permitted Pumpage	FY19 Actual Pumpage	FY18 Actual Pumpage	FY17 Actual Pumpage	Midland Entire Year	Reporting Violations	Payment Violations	Total Violations	Drought Violations	Aggregated Drought Curtailment Obtained	UDCP/ MUP Status	Calculated Credit/ Overpayment Fees Credit (Over)	Permittee Eligible for Credit	10% Administrative Fee	50% Earned Credit	Up to 40% Optional Credit	Conservation Credits Due or (Owe)
Galathea Special Utility District	350,000,000	350,000,000	219,791,000	217,009,000	142,008,000	Yes	0	0	0	0	N/A	OK	\$5,604.67	Yes	\$560.47	\$2,802.34		\$2,802.34
Creedmore-Maha Water Supply Corp.	235,065,500	213,696,000	147,580,160	152,854,720	163,740,200	Yes	0	0	0	0	N/A	OK	\$2,742.21	Yes	\$274.22	\$1,371.61		\$1,371.61
Central Materials, Inc.	214,291,000	214,291,000	92,674,300	106,640,800	105,807,500	Yes	0	0	0	0	N/A	OK	\$2,374.31	Yes	\$237.43	\$1,187.16		\$1,187.16
Chesman Park Water Company, Inc.	118,000,000	118,000,000	63,310,000	74,230,700	67,866,300	Yes	0	0	0	0	N/A	OK	\$960.90	Yes	\$96.09	\$480.45		\$480.45
Monarch Utilities, Inc.	324,400,000	224,400,000	139,816,000	145,386,000	136,411,000	Yes	1	0	1	0	N/A	OK	\$1,602.59	Yes	\$160.26	\$801.30		\$801.30
City of Hays Water Department - Elliot Ranch	54,450,000	90,000,000	35,020,000	40,823,000	44,447,000	Yes	0	0	0	0	N/A	OK	\$1,368.33	Yes	\$136.83	\$68.41		\$68.41
Arroyo Doble Water System	52,800,000	52,800,000	26,712,100	31,578,000	26,630,000	Yes	0	0	0	0	N/A	OK	\$827.20	Yes	\$82.72	\$41.36		\$41.36
Aqua Texas, Inc./Aurawoods	88,764,000	16,000,000	4,793,000	6,663,000	6,945,900	Yes	1	0	1	0	N/A	OK	\$745.58	Yes	\$74.56	\$37.28		\$37.28
St. Andrew's School	16,000,000	16,000,000	8,732,000	10,931,000	10,984,000	Yes	0	0	0	0	N/A	OK	\$373.83	Yes	\$37.38	\$186.92		\$186.92
Huntington Utility Co., L.L.C.	43,164,000	43,164,000	18,309,100	21,257,500	21,666,900	Yes	0	0	0	0	N/A	OK	\$570.83	Yes	\$57.08	\$28.54		\$28.54
City of Mountain City	30,000,000	30,000,000	19,070,100	18,365,500	16,371,100	Yes	1	0	1	0	N/A	OK	\$486.29	Yes	\$48.63	\$24.31		\$24.31
Hays C.I.S.D. (Hays High School)	30,000,000	30,000,000	18,412,000	21,043,300	16,595,000	Yes	1	0	1	0	N/A	OK	\$447.66	Yes	\$44.77	\$22.38		\$22.38
Village of San Leanna	31,651,200	29,013,600	10,480,900	13,069,200	11,184,600	Yes	0	0	0	0	N/A	OK	\$396.63	Yes	\$39.66	\$19.83		\$19.83
Ruby Ranch Water Supply Company (Edward)	32,000,000	24,200,000	21,666,900	30,525,200	26,647,700	Yes	0	0	0	0	N/A	OK	\$307.22	Yes	\$30.72	\$15.36		\$15.36
Marbridge Foundation	26,730,000	26,730,000	12,047,870	11,899,170	10,784,660	Yes	1	0	1	0	N/A	OK	\$301.24	Yes	\$30.12	\$15.06		\$15.06
Aqua Texas, Inc./Bloss Spillar (Trinity)	38,625,000	38,625,000	14,012,000	15,811,000	15,784,000	Yes	1	0	1	0	N/A	OK	\$227.06	Yes	\$22.71	\$11.35		\$11.35
Hays County Youth Athletic Assoc.	4,820,550	4,820,550	1,839,100	3,173,100	2,515,900	Yes	0	0	0	0	N/A	OK	\$180.40	Yes	\$18.04	\$9.02		\$9.02
Aqua Texas, Inc./Oman Creek Meadows	36,300,000	36,300,000	24,369,000	25,489,000	23,500,000	Yes	0	0	0	0	N/A	OK	\$140.59	Yes	\$14.06	\$7.03		\$7.03
Aqua Texas, Inc./Bear Creek Park	12,098,000	12,098,000	7,135,000	7,084,000	6,673,000	Yes	1	0	1	0	N/A	OK	\$106.29	Yes	\$10.63	\$5.31		\$5.31
Aqua Texas, Inc./Bloss Spillar (Edward)	12,875,000	12,875,000	10,504,000	11,331,000	11,000,000	Yes	0	0	0	0	N/A	OK	\$181.94	Yes	\$18.19	\$9.09		\$9.09
Cook-Walden Forest Oaks	5,000,000	6,000,000	600,500	1,239,500	1,235,500	Yes	0	0	0	0	N/A	OK	\$106.29	Yes	\$10.63	\$5.31		\$5.31
Aqua Texas, Inc./Moonland Water System	6,000,000	6,000,000	3,035,000	2,748,000	3,314,000	Yes	1	0	1	0	N/A	OK	\$47.43	No	\$4.74	\$2.37		\$2.37
Barton Properties	600,000	600,000	316,856	297,160	293,220	Yes	1	0	1	0	N/A	Update	\$8.08	No	\$0.81	\$0.40		\$0.40
Bear Creek Office Park	750,000	750,000	187,710	298,920	105,470	Yes	0	0	0	0	N/A	OK	\$18.91	No	\$1.89	\$0.94		\$0.94
Benjamin Rojas and Theresa Andrade	1,000,000	1,000,000	786,600	694,700	599,000	Yes	2	0	2	0	N/A	OK	\$20.08	No	\$2.01	\$1.00		\$1.00
Buck's Backyard	1,000,000	1,000,000	743,470	354,190	245,000	Yes	11	1	12	0	N/A	OK	\$18.96	No	\$1.89	\$0.94		\$0.94
Byron Bonnet and Company	2,000,000	2,000,000	1,390,500	3,093,000	2,269,800	Yes	6	1	7	0	N/A	OK	\$35.46	No	\$3.55	\$1.77		\$1.77
Chuck Nash	2,000,000	2,000,000	1,111,150	572,190	649,130	Yes	0	0	0	0	N/A	OK	\$91.46	No	\$9.15	\$4.57		\$4.57
Church of Christ at Budd/Kyle	200,118	200,118	53,320	102,390	95,820	Yes	4	0	4	0	N/A	OK	\$8.34	No	\$0.83	\$0.41		\$0.41
City of Buda	275,000,000	275,000,000	245,482,500	245,315,400	238,789,000	Yes	0	2	2	0	N/A	OK	\$5,017.96	No	\$501.79	\$250.89		\$250.89
City of Hays Water Department	15,400,000	14,000,000	5,519,100	6,100,400	5,804,900	Yes	0	0	0	0	N/A	OK	\$40.84	No	\$4.08	\$2.04		\$2.04
City of Kyle	350,000,000	165,000,000	238,026,062	60,425,513	235,979,212	Yes	0	1	1	0	N/A	OK	\$98.92	No	\$9.89	\$4.94		\$4.94
City of Sunset Valley	18,590,000	18,590,000	1,801,700	2,800	291,900	Yes	0	0	0	0	N/A	OK	\$0.00	No	\$0.00	\$0.00		\$0.00
Comal Tackle Company	843,750	843,750	799,876	758,040	829,280	Yes	1	0	1	0	N/A	OK	\$5.00	No	\$0.50	\$0.25		\$0.25
Comestone HTL	880,000	880,000	430,440	1,038,000	1,009,900	Yes	1	0	1	0	N/A	OK	\$10.99	No	\$1.10	\$0.55		\$0.55
DDC Creekside Villas, Ltd.	1,990,200	1,990,200	0	0	0	Yes	1	2	3	0	N/A	OK	\$0.00	No	\$0.00	\$0.00		\$0.00
Debbie Bates	150,000	150,000	59,100	28,200	24,900	Yes	2	0	2	0	N/A	OK	\$0.00	No	\$0.00	\$0.00		\$0.00
Dirtwood Deepak, LLC	900,000	900,000	42,700	8,750	19,000	Yes	2	0	2	0	N/A	OK	\$0.00	No	\$0.00	\$0.00		\$0.00
Dusan, Miss (Ha Schuknecht)	1,240,000	1,240,000	662,741	675,190	444,120	Yes	1	2	3	0	N/A	OK	\$0.00	No	\$0.00	\$0.00		\$0.00
Estay Place Ltd.	100,000	100,000	20,750	894,000	894,000	Yes	3	0	3	0	N/A	OK	\$0.00	No	\$0.00	\$0.00		\$0.00
Extra Space Properties Two LLC	1,200,000	1,200,000	20,750	46,410	71,790	Yes	1	0	1	0	N/A	Update	\$4.67	No	\$0.47	\$0.23		\$0.23
First Christian Church	1,200,000	1,200,000	166,300	281,400	236,400	Yes	6	0	6	0	N/A	OK	\$19.57	No	\$1.96	\$0.97		\$0.97
Forest Oaks MHC	1,649,250	1,649,250	1,032,182	1,236,395	1,118,754	Yes	0	0	0	0	N/A	OK	\$34.72	No	\$3.47	\$1.73		\$1.73
Frontier Communications	240,000	240,000	121,630	40,410	25,980	Yes	3	0	3	0	N/A	OK	\$0.00	No	\$0.00	\$0.00		\$0.00
Jonsson, Gilbert	9,500,000	5,500,000	7,226,400	7,324,800	8,048,300	Yes	2	1	3	0	N/A	OK	\$0.00	No	\$0.00	\$0.00		\$0.00
Hays City Holdings	490,000	490,000	18,928	24,300	21,500	Yes	6	1	7	0	N/A	OK	\$0.00	No	\$0.00	\$0.00		\$0.00
Hays Hills Baptist Church	600,000	600,000	404,240	433,020	345,580	Yes	0	0	0	0	N/A	OK	\$0.75	No	\$0.07	\$0.37		\$0.37
Home Tech Industries (Aly)	109,000	109,000	0	0	0	Yes	0	0	0	0	N/A	OK	\$0.00	No	\$0.00	\$0.00		\$0.00
Home Tech Industries	330,000	330,000	225,410	139,430	195,760	Yes	0	0	0	0	N/A	OK	\$0.00	No	\$0.00	\$0.00		\$0.00
Hunt, Ed (Hunt Enterprises)	600,000	600,000	331,800	331,800	282,600	Yes	4	0	4	0	N/A	OK	\$0.00	No	\$0.00	\$0.00		\$0.00
Independence Park Condominium Community, Ltd	3,700,000	3,700,000	166,600	331,800	282,600	Yes	1	0	1	0	N/A	OK	\$0.00	No	\$0.00	\$0.00		\$0.00
Industrial Asphalt	4,000,000	4,000,000	3,726,900	2,893,700	1,784,400	Yes	1	0	1	0	N/A	OK	\$46.43	No	\$4.64	\$2.32		\$2.32

Permittee	FY19 Historical & Conditional Permitted Pumpage	FY19 Historical Permitted Pumpage	FY19 Actual Pumpage	FY18 Actual Pumpage	FY17 Actual Pumpage	Metered Entire Year	Reporting Violations	Payment Violations	Total Violations	Drought Violations	Aggregated Drought Curtailment Obtained	UDCP/UCP Status	Calculated Credit/Overpumpage Fee Credit (Doll)	Permittee Eligible for Credit <sup>1</sup>	10% Administrative Fee	50% Earned Credit	Up To 40% Optional Credit	Conservation Credits Due or (Owe)
Jump Creek LLC	1,000,000	1,000,000	41,300	298,100	151,000	Yes	4	0	4	0	N/A	OK	\$43.32	No			\$0.00	
Jumping Jack Dog Ranch	900,000	0	594,950	621,000	N/A	Yes	5	0	5	0	N/A	OK	\$0.00	No			\$0.00	
LEB Wildflower Center	6,700,000	6,700,000	3,704,740	4,567,690	3,710,620	Yes	2	0	2	0	N/A	OK	\$146.70	No			\$0.00	
Leighard Montessori School	150,000	0	23,360	20	2,600	Yes	6	0	6	0	N/A	OK	\$0.00	No			\$0.00	
Las Lunas HOA	100,000	100,000	35,450	239,890	106,650	Yes	1	2	3	0	N/A	OK	\$3.26	No			\$0.00	
Loy Cabin Plaza	2,000,000	2,000,000	120,027	120,027	99,621	Yes	4	2	6	0	N/A	OK	\$51.00	No			\$0.00	
Loughheed, Scott (Cresview R.V.)	2,000,000	2,000,000	969,900	931,400	1,299,900	Yes	1	0	1	0	N/A	OK	\$2.17	No			\$0.00	
Manchaca Baptist Church	600,000	600,000	196,065	230,775	237,438	Yes	5	0	5	0	N/A	OK	\$24.57	No			\$0.00	
Manchaca Bible Fellowship Baptist Church	100,000	100,000	3,350	16,090	7,590	Yes	2	0	2	0	N/A	OK	\$2.17	No			\$0.00	
Manchaca Optimist Sports Complex	4,232,000	4,232,000	1,478,600	2,591,700	2,683,200	Yes	5	2	7	0	N/A	OK	\$204.75	No			\$0.00	
McCoy Corporation	120,000	120,000	40,060	48,570	38,420	Yes	12	0	12	0	N/A	Update	\$1.31	No			\$0.00	
Mission Cristiana Maranatha	500,000	0	207,430	565,230	792,270	Yes	6	0	6	0	N/A	Update	\$0.00	No			\$0.00	
Mythic Oak Water Co-op	7,700,000	7,700,000	2,778,700	3,175,600	2,951,700	Yes	0	0	0	0	N/A	OK	\$07.30	No			\$0.00	
Needmore <sup>2</sup>	179,965,440	179,965,440	5,363,000	12,068,000	8,521,000	Yes	1	0	1	0	N/A	OK	\$35.82	No			\$0.00	
Neuro Institute of Austin, L.P	9,000,000	7,000,000	3,075,600	6,456,600	4,932,200	Yes	5	0	5	0	N/A	OK	\$374.77	No			\$0.00	
Oak Forest Water Supply Company (Eckwards)	18,500,000	18,500,000	5,306,120	4,077,097	6,601,358	Yes	0	2	2	0	N/A	OK	\$224.57	No			\$0.00	
Oak Forest Water Supply Company (Trinity)	47,583,250	47,583,250	44,899,000	44,899,000	47,558,000	Yes	3	0	3	0	N/A	OK	\$411.15	No			\$0.00	
Onion Creek Country Club (Edwards)	127,410,000	127,410,000	118,717,000	120,547,000	122,312,000	Yes	3	0	3	0	N/A	OK	\$611.15	No			\$0.00	
Onion Creek Kennels	850,000	466,000	180,760	233,530	428,510	Yes	8	0	8	0	N/A	Update	\$4.73	No			\$0.00	
Onion Creek Memorial Park, Inc.	590,625	590,625	0	0	0	Yes	0	0	0	0	N/A	OK	\$0.00	No			\$0.00	
Park Hills Baptist Church	420,000	420,000	0	0	0	Yes	0	0	0	0	N/A	OK	\$0.00	No			\$0.00	
Professional Contract Services, Inc.	1,331,000	0	311,800	288,700	252,500	Yes	0	0	0	0	N/A	Update	\$0.00	No			\$0.00	
Roundtop Austin Company	585,000	399,800	131,730	526,220	683,910	Yes	4	0	4	0	N/A	OK	\$3.36	No			\$0.00	
Rolling Oaks Club Inc.	180,000	180,000	65,130	275,710	322,460	Yes	1	0	1	0	N/A	OK	\$12.48	No			\$0.00	
Ruby Ranch Water Supply Company (Trinity)	20,300,000	20,300,000	2,275,300	2,249,100	2,367,300	Yes	0	0	0	0	N/A	Update	\$15.64	No			\$0.00	
Ruby's Country Store	1,875,000	1,875,000	165,500	144,700	179,600	Yes	1	0	1	0	N/A	OK	\$4.73	No			\$0.00	
Sheal Creek Properties	500,000	0	0	0	0	Yes	2	1	3	0	N/A	OK	\$0.00	No			\$0.00	
Slaughter Creek Acres Water Supply	14,000,000	10,580,725	6,283,300	6,801,500	6,522,100	Yes	0	0	0	0	N/A	Update	\$87.99	No			\$0.00	
Soldman Enterprises Inc.	517,500	517,500	131,730	526,220	683,910	Yes	4	0	4	0	N/A	OK	\$3.36	No			\$0.00	
Southern Hills Church of Christ	400,000	400,000	104,910	185,576	53,410	Yes	2	0	2	0	N/A	OK	\$8.55	No			\$0.00	
St. Albans Episcopal Church	582,500	582,500	232,050	510,280	430,220	Yes	5	0	5	0	N/A	Update	\$48.83	No			\$0.00	
St. John's Catholic Church	500,000	500,000	63,300	130,540	164,640	Yes	3	0	3	0	N/A	OK	\$17.23	No			\$0.00	
St. Stephen's Episcopal Church	750,000	750,000	288,800	295,100	640,250	Yes	2	0	2	0	N/A	OK	\$59.75	No			\$0.00	
7-Eleven	150,000	150,000	148,050	153,460	153,190	Yes	8	1	9	0	N/A	Update	\$0.16	No			\$0.00	
SWPTA Pentecostal Church of God	100,000	100,000	83,300	159,700	152,300	Yes	2	0	2	0	N/A	OK	\$2.12	No			\$0.00	
Texas - Lehigh Cement Co (New)	1,500,000	1,500,000	119,155	199,082	199,082	Yes	2	0	2	0	N/A	OK	\$2.30	No			\$0.00	
Texas - Lehigh Cement Co (Plant)	54,750,000	54,750,000	32,708,275	31,540,375	31,561,350	Yes	2	0	2	0	N/A	OK	\$834.06	No			\$0.00	
Texas - Lehigh Cement Co (Speculum)	825,000	825,000	164,636	136,186	90,635	Yes	2	0	2	0	N/A	OK	\$4.20	No			\$0.00	
Texas Old Town	10,000,000	10,000,000	6,272,050	5,791,487	2,578,100	Yes	3	0	3	0	N/A	OK	\$159.94	No			\$0.00	
Texas State University - Freeman Ranch	2,000,000	2,000,000	87,180	78,860	131,720	Yes	3	1	4	0	N/A	OK	\$5.87	No			\$0.00	
The Im Above Omen Creek	1,300,000	1,300,000	845,720	1,036,400	878,780	Yes	1	0	1	0	N/A	OK	\$32.42	No			\$0.00	
The Park at Kyle	1,005,000	1,005,000	59,200	84,400	78,000	Yes	3	0	3	0	N/A	OK	\$4.28	No			\$0.00	
The Postcard Company	500,000	500,000	87,390	61,830	101,390	Yes	1	0	1	0	N/A	OK	\$0.00	No			\$0.00	
Weatherford, Thomas	5,000,000	5,000,000	0	0	0	Yes	0	0	0	0	N/A	OK	\$0.00	No			\$0.00	
Travis County	1,500,000	600,000	0	0	8,210	Yes	1	0	1	0	N/A	Update	\$1.40	No			\$0.00	
Trinity Episcopal School	4,200,000	0	1,581,338	1,947,540	N/A	Yes	3	0	3	0	N/A	OK	\$0.00	No			\$0.00	
Twin Creek Park Water Supply	12,000,000	12,000,000	6,069,400	5,799,800	6,328,400	Yes	0	0	0	0	N/A	OK	\$44.03	No			\$0.00	
Twin Oaks Ranch/Church Camp	1,000,000	1,000,000	487,320	643,020	794,900	Yes	5	0	5	0	N/A	OK	\$52.29	No			\$0.00	
Uplifting Properties, LP	1,000,000	397,889	250,681	307,618	358,870	Yes	3	0	3	0	N/A	OK	\$18.40	No			\$0.00	
V.F.W. Post No. 3277	500,000	190,000	81,780	156,170	102,430	Yes	0	0	0	0	N/A	OK	\$12.99	No			\$0.00	
Whittington, Keith and Kelly	300,000	300,000	39,200	44,690	68,080	Yes	1	0	1	0	N/A	Update	\$4.91	No			\$0.00	
Wimberly Glassworks	1,000,000	1,000,000	82,210	65,550	49,890	Yes	9	0	9	0	N/A	Update	\$2.35	No			\$0.00	
St. John's Presbyterian Church	100,000	100,000	154,153	52,550	15,141	Yes	0	0	0	0	N/A	Update	(\$9,211) overpumped <sup>3</sup>	No			\$0.00	

Permittee	FY19 Historical & Conditional Permitted Pumpage	FY19 Historical Permitted Pumpage	FY19 Actual Pumpage	FY18 Actual Pumpage	FY17 Actual Pumpage	Metered Entire Year	Reporting Violations	Payments Violations	Total Violations	Drought Curtailment Obtained	UDCP/UCP Status	Total Calculated Overpumpage Fees Credit (Due)	Permittee Eligible for Credit	10% Administrative Fee	50% Eimed Credit	Up to 40% Optional Credit	Conservation Credits Due or (Due)
White Knight Pest Control	100,000	100,000	100,000	86,870	111,090	Yes	11	0	11	0	OK	(\$1,02)	overpumped <sup>1</sup>				\$0.00
Roy Sellers	436,117	436,117	515,730	492,970	610,950	Yes	6	0	6	0	OK	(\$13,53)	overpumped <sup>1</sup>				(\$13,53)
Hays City Store	800,000	800,000	926,639	676,810	656,420	Yes	6	0	6	0	OK	(\$21,53)	overpumped <sup>1</sup>				(\$21,53)
Cypress Forest Residential Community	1,000,000	1,000,000	1,159,200	N/A	N/A	Yes	2	1	3	0	OK	(\$27,06)	overpumped <sup>1</sup>				(\$27,06)
St. Mark's Episcopal Church	1,000,000	1,000,000	1,223,160	791,430	267,480	Yes	0	0	0	0	OK	(\$37,94)	overpumped <sup>1</sup>				(\$37,94)

<sup>1</sup>Eligibility requirements:

-Conservation Credit > \$100

-No more than one violation for late reporting and/or late payments

-Current UCP/UDCP on file and aggregated drought curtailment obtained

-Metered entire year

-No more than 3 months of drought management fees and if so, must meet the aggregated drought curtailment

<sup>2</sup>Based on formula of percentage increases for excess pumpage: (<500,001 gals @ \$ 17/1000g) + (<=25% permitted @ \$ 50/1000g) + (>25% to 100% permitted @ \$ 11/1000g) + (>100% permitted at \$2/1000g)

<sup>3</sup>Overpumpage fees less than \$10.00 are not charged

<sup>4</sup>Agriculture well calculated at \$1/acre foot (325.651)

**Total Conservation Credits \$11,967.54**  
**City of Austin Portion (60%) \$7,180.52**  
**Sub-total \$19,148.06**  
**Total Overpumpage Fees \$100.06**  
**Net Total \$19,048.00**



**Barton Springs  
Edwards Aquifer**  
CONSERVATION DISTRICT

October 13, 2019

Permittee Name  
1100 Street Name  
Austin, TX 78723

Dear Mr./Mrs. Permittee Name:

Your continuing commitment to reduce the use of water from the Edwards Aquifer is sincerely appreciated. Those efforts in the 2019 fiscal year have earned you a conservation credit in the amount **\$1,000**. Congratulations! Your leadership and example in water conservation demonstrate to other users the importance of finding ways to protect the Aquifer while it is utilized as a critically important water resource.

Want to put your conservation credits to work educating local area youth? You could choose to donate all or a portion of your conservation credits to the District's Scholarship program. Each year in collaboration with our participating permittees, we offer one \$2,500 college scholarship and several camp scholarships to the Edwards Aquifer Research and Data Center's Aquatic Sciences Adventure Camp in San Marcos. Both scholarships encourage students to expand their groundwater knowledge through research or through hands-on aquifer science and monitoring, aquatic biology, water chemistry and caving.

With help from permittee donations, last year we were able to award two \$2,500 college scholarships and send 20 elementary and middle school students to summer camp! Enclosed are essays and artwork from a few of the students. A \$349 donation will send one student to a 5-day camp or a \$749 donation will provide a week-long overnight camp opportunity for one student. More information can be found at <http://www.eardc.txstate.edu/education-center/camp.html>. Feel free to contact Robin Gary, Public Information and Education Coordinator, at the District with any questions.

If you would like to donate your conservation credit or a portion of your credit, simply fill out the enclosed authorization form and mail, email or fax it to the District office by October 31, 2019.

Otherwise your conservation credit will be reflected on your following water usage fee statement. If you have questions about your conservation credit, please contact Shannon DeLong at the District office. And if you have questions about the District and its programs, please see the wealth of information on our website at [www.bseacd.org](http://www.bseacd.org), or let me know.

Thanks for your conservation efforts in the past year and your commitment to continuing them in the upcoming year!

Sincerely,

Alicia Reinmund-Martinez  
General Manager

Enclosures

# 2019 Scholarship Winners

Thanks to donations from permittees and contributions from the District, we were able to send 20 students to Aquatic Science Adventure Camp in 2019. We hope you consider donating your conservation credits to support this wonderful program.

2019 winners were from a diverse set of schools in Austin, San Marcos, Buda, and Kyle.

We're proud to announce the 2019 camp scholarship winners:

- Chris Allred, Kyle Elementary
- Ivy Baker, O'Henry Middle School
- Mikayla Ann Berg, Buda Elementary
- Elena Castro, Fuentes Elementary
- Indie Cleveland, Tobias Elementary
- Leora Mae Creel, Homeschool
- Pablo Del Reigo, Mathews Elementary
- Juliet Fahnert, Austin Discovery School
- Davia-Astrid Henschel, O'Henry Middle School
- Keegan Holland, Barton Hills Elementary
- Jamie Jarratt, O'Henry Middle School
- Ayden Jenray, Carpenter Hill Elementary
- Penelope Johnson, Austin Discovery School
- Nadia Martinez, Carpenter Hill Elementary
- Viviana Martinez, Carpenter Hill Elementary
- Lily McGlothlin, Mendez Elementary
- Piper Norfolk, Austin Discovery School
- Sydney Piper, Lamar Middle School
- Emma Sanchez, San Marcos Academy
- Joseph Williams, Stephen F. Austin

The District would like to thank Centex Materials, City of Austin, Creedmoor-Maha WSC, Goforth SUD, Slaughter Creek Acres, and Texas Lehigh Cement Company for donating all or a portion of their 2018 Conservation Credits to the scholarship fund. The scholarship program would not be a success without these generous donations! Thank you!!!



# 2019 CONSERVATION CREDIT DONATION AUTHORIZATION FORM:

## **BSEACD SCHOLARSHIP PROGRAM**

YES, I would like to donate all or a portion of my conservation credit in the amount of \$ \_\_\_\_\_ to the District's scholarship



PERMITTEE NAME: \_\_\_\_\_

PRINT NAME: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_



**PLEASE SEND THIS FORM**

BY MAIL:  
SHANNON DELONG  
BSEACD  
1124 REGAL ROW  
AUSTIN, TX 78748

OR EMAIL:  
SHANNON@BSEACD.ORG

OR FAX:  
ATTN: SHANNON DELONG  
512-282-7016 FAX

Aquatic Science Adventure  
Camp

Real Science

Real Fun





Hi, My name is Ayden Jenray and I would like to be a part of the aquatic science adventure camp. When I grow up I would like to be the first human on Mars and study signs of life. I would like to join the aquatic camp because when I get on Mars and find an aquifer I will need to know about aquifers on Earth so I can do the same research on Mars. Starting research and learning early is an amazing way to remember hard things because my mind is open for more things.

For example, your water science program can teach me how to carefully examine and study different types of water and water minerals and other components for the water that I might find on Mars. Since water is biology and a big part of life it is very possible that there is life on Mars.

I will also be interested in learning about the different species living in the aquifer. The many plants, animals and fish that live in and around the water and how to save the endangered species. One of the coolest things about water is how animals can breath under water and that the moon can control the tides of water.

I love water and all the interesting things about it. My favorite things to do in the ocean at Port Aransas is to hand fish for the different kinds of crabs. Most of them are in the hermit crab family and they have really cool shells and different colors. We feed and study them overnight and release them the next morning. When we watch them, they just move all over, stepping on each other then burying into the sand. They love to climb up sticks and rocks. I wonder what animals live in the aquifer.

I hope you consider me for a scholarship for your camp this summer.

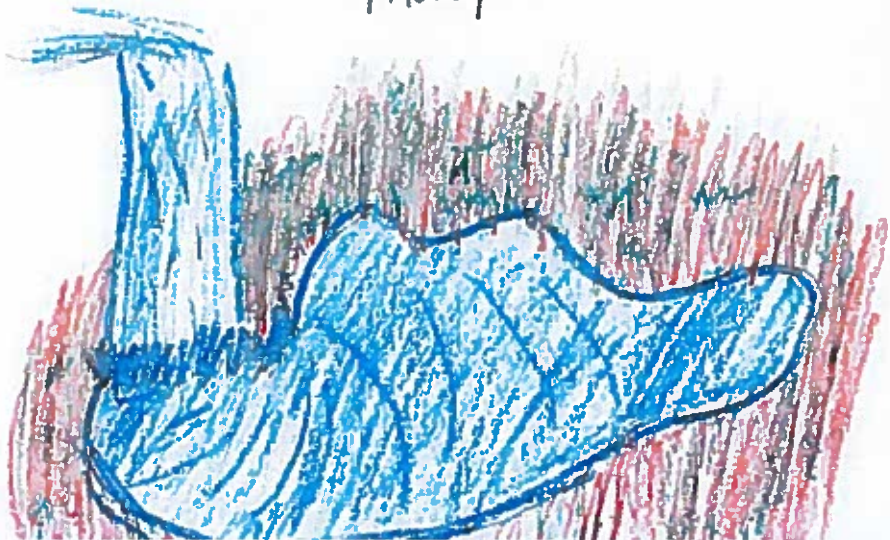
Thank you,

Ayden

Ayden Jenray

Jenray

Mars/future

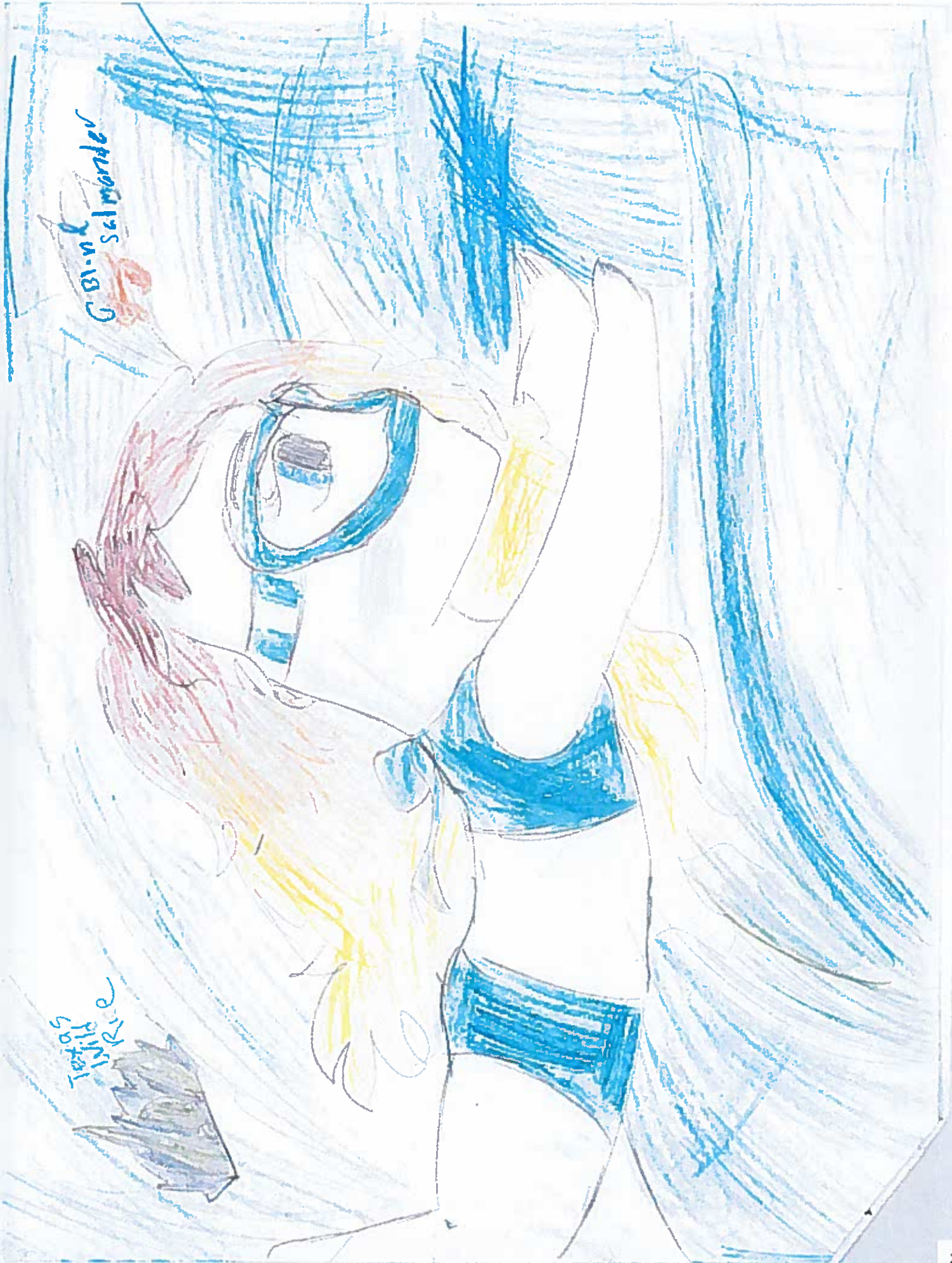


Hi my name is Elena, I want to attend the Aquatic Sciences Adventure camp because I love the outdoors. When I am camping and it is night I lay in my tent and listen to the water and the wind and all the sounds of nature. I love to explore any where; on rocks, in trees, on land or in water. I like learning new things like what animals eat, what they live in, what they breathe in, what they can adapt to. I like to learn about plants too, like plants in water or plants on land. I also love to go to any river. My family and I always go in the summer or when it is warm. We swim and tube but some time's when it is too cold we go to fish. My family and I grew up at the river and I have seen plastic in it. I want to make that stop, by helping clean the river and learning what the fish and plants need so they stay alive and keep the other living things. I also have Dyslexia which makes it hard for me to read and write but it has never stoped me from trying any thing like writting this essay.

Thank you Elena Castro

G Bird salmänder

Totus  
Wild  
Rie



Yay!!

3/18/19

Salamander!!

Jamie Jarratt



fun fact:  
Salamanders do not need eyes because they live in such a dark place if they had eyes they still wouldn't be able to see!!

Hi, my name is Jamie Jarratt, I would love to go to this camp because I will learn how to take care of the earth. I also want to attend this camp because it is super fun to do all the activities you'll have planned for us. My two favorites are scuba diving and the glass bottom boat. I love meeting new people and making new friends at camp. I hope to learn how to take care of the Edwards Aquifer and also learn more about it overall. I also hope to learn about a BUNCH of awesome animals and what they eat and where they live! and also to see them for myself!! I know that the Edwards Aquifer is so important to Texas because, well that's how we get our water after all. I LOVE science!!



Shrimp

fun fact:  
Shrimp have an exoskeleton which is a bone on the outside of their body!!

It's my favorite subject in school. I love to learn about how the earth works. You'll take science and make it SUPER fun! This camp brings out my creative thinking because of all the crafts and quizzes we do. That is why I hope that you will give me this scholarship so I can enjoy my time at camp!!!

## **Item 3**

### **Routine Business**

- b. General Manager's Report.** *(Note: Topics discussed in the General Manager's Report are intended for general administrative and operational information-transfer purposes. The Directors will not take any action unless the topic is specifically listed elsewhere in this agenda.)*

#### **Topics**

- 1. Personnel matters.**
- 2. Aquifer conditions and status of drought indicators.**
- 3. Upcoming public events of possible interest.**
- 4. Review of Status Report Update – at directors' discretion.**
- 5. Update on projects and activities of individual teams.**
- 6. Update on roadway projects.**
- 7. Update on development activities over aquifer recharge and contributing zones.**
- 8. Update on GMA and regional water planning activities.**
- 9. Update on the Budget.**
- 10. Update on the HCP.**
- 11. Update on the State Office of Administrative Hearings proceedings for the Electro Purification LLC permit application.**
- 12. Update on Needmore Water LLC proceeding.**

**STATUS REPORT UPDATE  
FOR THE OCTOBER 10, 2019 BOARD MEETING**

**Summary of Significant Activities - Prepared by District Team Leaders**

**GENERAL MANAGEMENT TEAM**

Staff: ARM  
October 4, 2019

**Meetings, Training, Presentations, and Conferences**

**Meetings:** One Board Meeting \* Attorneys for Electro Purification to discuss Special Provisions \* **Meetings with Officials:** Meeting with Hays County Commissioner Lon Shell \* **Meetings with Permittees:** Communication with Barton Properties \* **Presentations:** None \* **Conferences:** Attended one day of the U.S. Water Alliance "One Water Summit" \* **Teleconference calls:** Travis County on the draft BSEACD/Travis County ILA for FY2020

**Ongoing Special Projects, Committees, and Workgroups**

**Committees:** Attended GMA 10 Meeting \* Attended meetings with Hays County Task Force \* Attended Kent Butler Summit planning meeting with Hill Country Alliance \* Attended District's presentation on the SWTC Hydrogeologic Atlas to the Travis County Commissioners \* Attended Region K Quarterly Meeting \* **Special Projects:** Worked with Commissioners office in the development of ILA with Hays County \* Coordinating meeting with Texas Railroad Commission regarding pipeline safety oversight.

**Routine Activities and Day-to-Day Operations**

Provided general oversight of staff activities and oversight of day-to-day operations \* Approved administrative documents \* Conducted Performance Reviews \* Prepared agendas and backup for October 10 Board meeting \* Prepared GM report and assigned tasks \* Held one Planning team meetings \* Served as liaison between Board and staff \* Meetings and phone calls with Board President \* Consultation with Attorney on Electro Purification LLC, Needmore permit \* Notice of Intent \* and October 10 meeting agenda.

## REGULATORY COMPLIANCE TEAM

Staff: VE, KBE, and ES  
October 4, 2019

### **DFC Planning**

The RC team is actively collaborating in planning discussions with Alicia, the Aquifer Science Team, neighboring GCDs, GMA 10 representatives, and TWDB staff. We are working on preparing a timeline and planning strategy for our immediate and long-term goals related to DFC revisions and DFC monitoring compliance. Discussions will continue as we prepare to develop presentations, bring information to the Board and engage additional stakeholders.

### **Electro Purification Production Permit**

The SOAH hearing on the merits is set to convene April 2020.

### **Needmore Water LLC Conversion to a Regular Permit**

The District approved the permit as recommended on 7/29/19. Protestants filed a Motion for Rehearing which will take place in December 2019.

### **SH 45 SW/ Mopac Intersections Roadway Projects**

Staff is planning a SH 45 wrap up discussion meeting with CTRMA in October. Inspections of storm water controls at the Mopac Intersections are still being performed quarterly.

### **Database Development Intera Contract**

Intera will be providing an in-person progress update for staff on October 8th and will provide a presentation to the Board on November 14th.

### **Permitting**

Staff has been participating in pre-application meetings for applicants seeking Individual Production Permits. Use types range from commercial, irrigation, and public water supply.

### **Other Project Efforts/ Planning Discussions**

- Internal coordination on preparation and planning for Annual Reports including Management Plan Annual Report & USFWS HCP Annual Report. (General Management Team/ Regulatory Compliance Team)
- Staff had a meeting with Hay County staff to discuss incentivizing rainwater harvesting projects in Hays County. There was discussion related to the barriers for homeowners or developers as well as the benefits. There are also challenges related to solutions for back up supplies which may include hauling water or installing groundwater wells.

**Drought Compliance** – May 1<sup>st</sup> is the water conservation period where voluntary 10% curtailments are in effect.

## **AQUIFER SCIENCE TEAM**

Staff: BAS, BH, and JC  
October 3, 2019

### **Central Hays County Groundwater Evaluation - Well and Hydrogeology Characterization**

Aquifer Science staff are continuing to work on enhancing the monitor well networks in the EP and Needmore areas and are continuing to collect water-level and water-quality data from wells in these areas.

### **Sustainable Yield Evaluation of the Trinity Aquifers**

Aquifer Science staff continue to collect data on the geology and hydrogeology related to the Trinity. We are working with Hays County to install Trinity monitor wells in the Jacob's Well area. We are members of a technical committee to guide the development of a numerical groundwater model of the aquifers influenced by the Blanco River. A presentation about the study will be made to the Board at the October 10 meeting.

### **Alternative Water Supplies (ASR and Desalination)**

Ruby Ranch has completed Cycle 4 testing of injection of Edwards water into their Trinity well. The extraction phase of the test began on July 2 and about 4 million gallons of injected water have been pumped as of 10/3/19. Extraction testing will continue until the fall. Buda is expected to start drilling a Trinity well in the fall of 2019 for their ASR project.

### **Drought and Water-Level Monitoring**

With very little rainfall over the past four months, water levels and springflow are decreasing. On 10/3/19, the Lovelady well had a level of 527.8 ft msl which is about 6 ft lower than one month ago. Barton Springs is flowing at 88 cfs.

### **Presentations, Conferences, Reports, and Publications**

Aquifer Science staff have finished three manuscripts that have been published as chapters in a Geological Society of America (GSA) Memoir on the Edwards Aquifer. One chapter has been published online as an open document and copies have been given to the Board. Two abstracts have been submitted for the 16<sup>th</sup> Sinkhole Conference that will be held in San Juan, PR in April 2020.

### **Travis County ILA - Hydrogeologic Atlas of Western Travis County**

District staff have continued to collect hydrogeologic data in Western Travis County such as water levels and geophysical logging. A monthly status report was prepared in early October 2019. A draft report on the project now is being prepared. A second phase of work has begun following approval of an ILA between Travis County and BSEACD.



## EDUCATION TEAM

Staff: RHG and JV  
October 4, 2019

### **Boone Elementary Earth Camp Programming**

The District assisted City of Austin staff for Earth Camp programming for about 50 fifth grade students at Boone Elementary. During the Sept. 20th programming, students learned about their local watershed and threats to groundwater resources by drawing groundwater cycle diagrams, testing watershed runoff models, and observing an aquifer pollution model.

### **Teacher Wish List Program**

Outreach has been completed to local teachers and educational partners about the 2019 Teacher Wish List Program prior to the Oct. 1<sup>st</sup> application deadline. This is the second year of this program which equips educators within the District with free water science teaching materials to help augment their science curriculum. This year 29 applicants applied from schools and non-profits around the District, serving an estimated 6,000 students annually. We have enough funding and teaching supplies to select 12 winners this year which will be contacted and awarded free supplies in mid-October. The free supplies will help students to investigate groundwater resources, water quality, and conservation habits.

### **Geological Society of America Annual meeting**

Robin presented on Estimating the Number of Trinity Aquifer Exempt Wells in a Recently Annexed Groundwater Conservation District Territory at the GSA meeting in Phoenix. Brian Hunt and Lane Cockrell were coauthors on the abstract/presentation. There were about 70 people in the audience, and Joe Yelderman (Baylor), Ron Green (SWRI), and several professors and students came up and asked follow-up questions later in the session. Robin attended sessions on analytics/modelling, karst hydrogeology, and geoscience communication. The communication talks focused on tools and tips for scientists to communicate effectively to non-scientist audiences.

### **Travis County ILA - Hydrogeologic Atlas of Western Travis County**

Staff have drafted key elements of the of the Western Travis County Hydrogeologic Atlas and are sending off selected figures and write-ups to targeted reviewers. Staff presented to the Travis County Commissioners Court on Tuesday, Oct. 1<sup>st</sup>, and funding for Phase 2 of the project was approved unanimously. The final deliverable is modelled after the Hill Country Trinity Atlas and will summarize data collected and analyzed during the project.

### Other meetings and activities:

- **Kent Butler Summit Planning Meeting:** Kickoff planning meeting for the summit was held on Oct. 2<sup>nd</sup> with Hill Country Alliance staff in Dripping Springs.
- **Neighborhood Site Visits:** Planning and collaboration has begun for this year's Neighborhood Site Visit program. It will target well owners in three neighborhoods (Hilliard, Falconwood/Summer Mt. Ranch/Saddleridge) in south-central Hays County and be in collaboration with HTGCD in November.
- **Park(ing) Day:** The District loaned several VR headsets to support the Austin Water Wildlands booth for Park(ing) day in downtown Austin. Each year, agencies turn parking

spaces in downtown into mini parks to promote education about valuable outdoor opportunities. With the VR headsets, visitors could tour Wildflower and Millennium Cave virtually.

**Internet Traffic Report - Page views and visits to the District Website**

From August 1 to September 4, the District website had 2,629 total page views by 2,116 unique sessions. Top sites in order of number of views were the Home Page (582), Maps (105), Staff (95), Aquifer Data (92), and Drought Status (82). The District Facebook page now has 847 likes and 963 followers. The most popular FB posts were Teacher Wishlist Requests (300) and Barton Springs University (140) posts.

## **ADMINISTRATION TEAM**

Staff: SD, TR, and DW  
October 4, 2019

### **Accounts Receivable**

October monthly cycle billing was mailed out on September 16<sup>th</sup> (due on October 5 and late on October 16<sup>th</sup>) for \$29,147.

November monthly cycle billing will be mailed out on October 16<sup>th</sup> (due on November 5 and late on November 16) for \$29,147.

### **Annual Report – Management Plan Report– HCP USFWS Report**

Internal coordination on preparation and planning for Annual Reports including Management Plan Annual Report & USFWS HCP Annual Report. This process will be ongoing through February 2020, when it is due to Fish. (RegComp, GM, Admin, AqSci and EDU.)

### **Audit – Annual Financial**

Began on Monday, September 30, and is currently in process.

### **Conservation Credit, and Overpumpage Analysis – Annual Assessment**

Agenda item for October 10, 2019.

### **Financial Reporting – Website**

Transparency Star-related. Most current, available financial reports are to be posted. Balance Sheet, Profit and Loss Statements, and Check Registers (Operating and Payroll) through August 2019 have been posted on the District website.

### **Retirement Plan Research**

Currently in the process of looking at what type of fee structures are available to us (internally and not through a consultant at this time).

As of October 4, two (out of seven) ex-employees are in the process of removing their retirement accounts from the District fund.

### **Standard Annual Compliance Testing – for Retirement Plan / Trust Accounting**

Annual compliance process for The Standard - our third-party pension plan administrator. Required actions occur in August through September that include final payroll submission, and compliance testing data validation. This report is required by pension law, specifically Government Code 802, and is submitted annually to the State Pension Review Board.

### **Tax Reporting – Quarterly**

Filed quarterly unemployment taxes (C-3) with the Texas Workforce Commission, and quarterly payroll tax report (941) with the United States Treasury for 3rd quarter calendar year 2019 (Jul/Aug/Sep) on September 27, 2019.

### **TEXPERS Annual Membership Renewal (Texas Association of Public Employee Retirement Systems)**

Renewal amount is based on assets, specifically the total market value of our retirement funds which include three main categories (guaranteed contracts once known as short-term investments, mutual funds/equity, and mutual funds/fixed income) for a total investment amount/market value of \$2,757,176.

### **Windows 10 Migration (from Windows 7)**

Windows 7 will no longer be supported after January 2020 so this is a necessary upgrade to all District computers, including laptops. This process has been scheduled for October 16<sup>th</sup> and 17<sup>th</sup>.

*The Administration Team typically has repetitive monthly tasks e.g. monthly bank reconciliations, daily phone answering, monthly adjusting journal entries, contract/grant/and project tracking, monthly meter reading reporting; etc. These types of tasks are not listed here because they are so repetitive. Administration status reports are generally much smaller than the other teams as we list only the extraordinary tasks.*


## **Item 4**

### **Board Discussions and Possible Actions**

- a. Discussion and possible action of the Western Travis County Hydrogeologic Atlas – Results of the Travis County ILA Phase 1.**

**30** Barton Springs  
Edwards Aquifer  
CONSERVATION DISTRICT

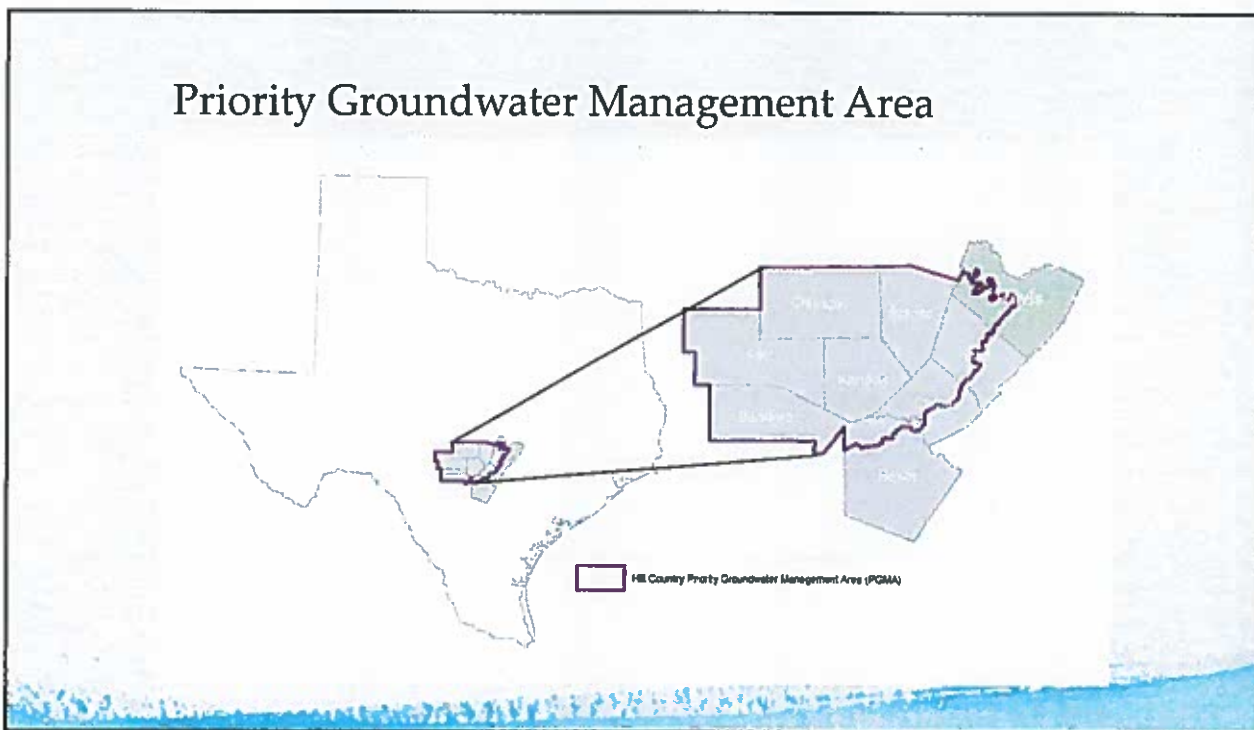
# Western Travis County Hydrogeologic Atlas



**BSEACD:** Brian Hunt, Lane Cockrell, Robin Gary, Jackie Vay,  
Brian Smith, and Justin Camp

**Travis County:** Vicky Kennedy

1



2

## Overview

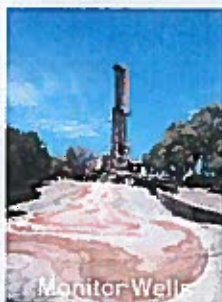
- A hydrogeologic study of western Travis County and surrounding areas
- Deliverables: Hydrogeologic Atlas and digital databases
  - Portions of the Atlas are currently under peer review.



Sample collection



Aquifer Tests



Monitor Wells



Water Levels



Geophysical Logs

3

## Table of Contents

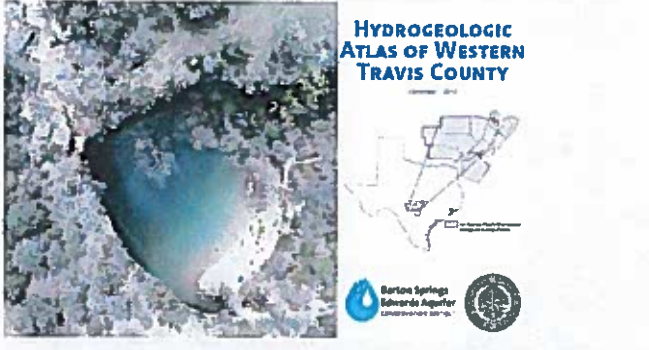


1. Overview
2. Tectonic and Paleogeographic Maps
3. Stratigraphy
4. Type Logs
5. Geologic Base map
6. Geologic and Hydrogeologic Investigations
7. Cross Sections
8. Structure Contour and Isopach Maps
9. Multiport well hydrogeology
10. Wells and Springs Inventory
11. Groundwater Flow
12. Hydrographs
13. Surface water and groundwater interaction
14. Water Quality
15. Aquifer Properties and Groundwater Availability
16. Summary

4

# Hydrogeologic Atlas

(peer review in progress)



**HYDROGEOLOGIC ATLAS OF WESTERN TRAVIS COUNTY**


October 2019

Barton Springs Edwards Aquifer Conservation Group


Study Area Stratigraphy

Regional Geology


Section 3.0 STRATIGRAPHY



Section 2.0 TECTONIC AND PALEOGEOGRAPHIC MAPS



Section 1.0 STUDY AREA



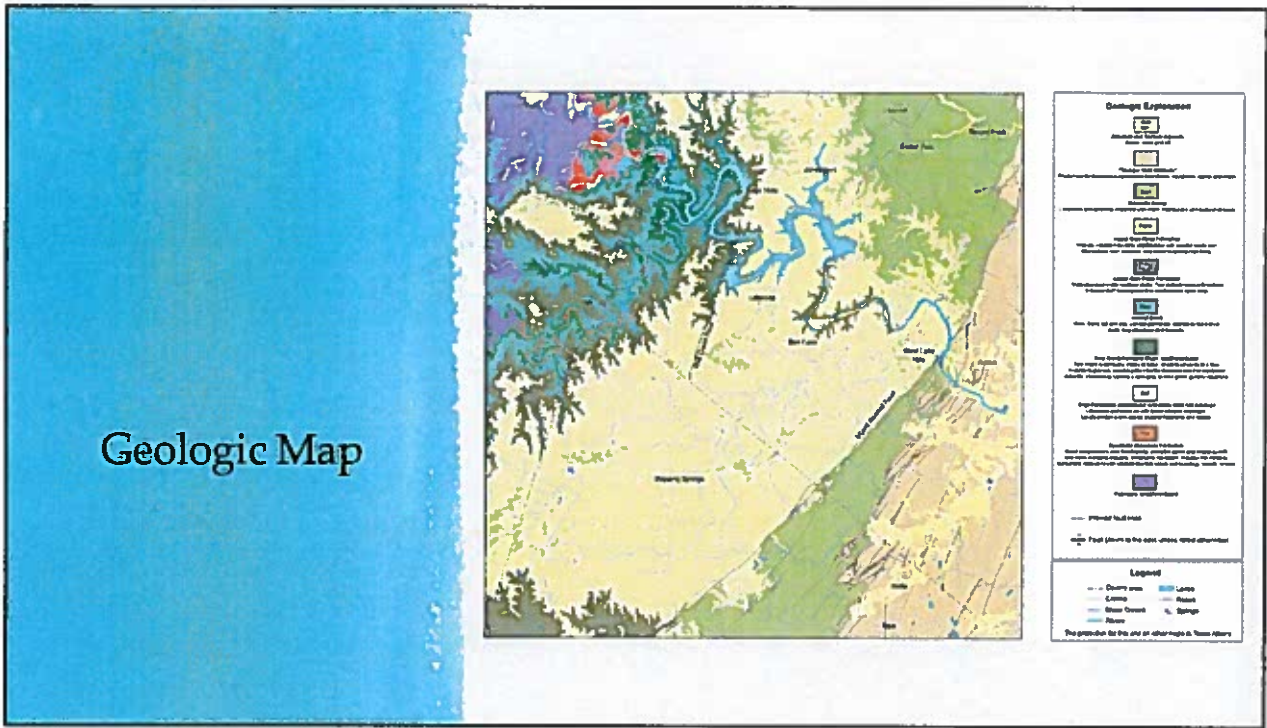
5

# Hydrogeologic Column

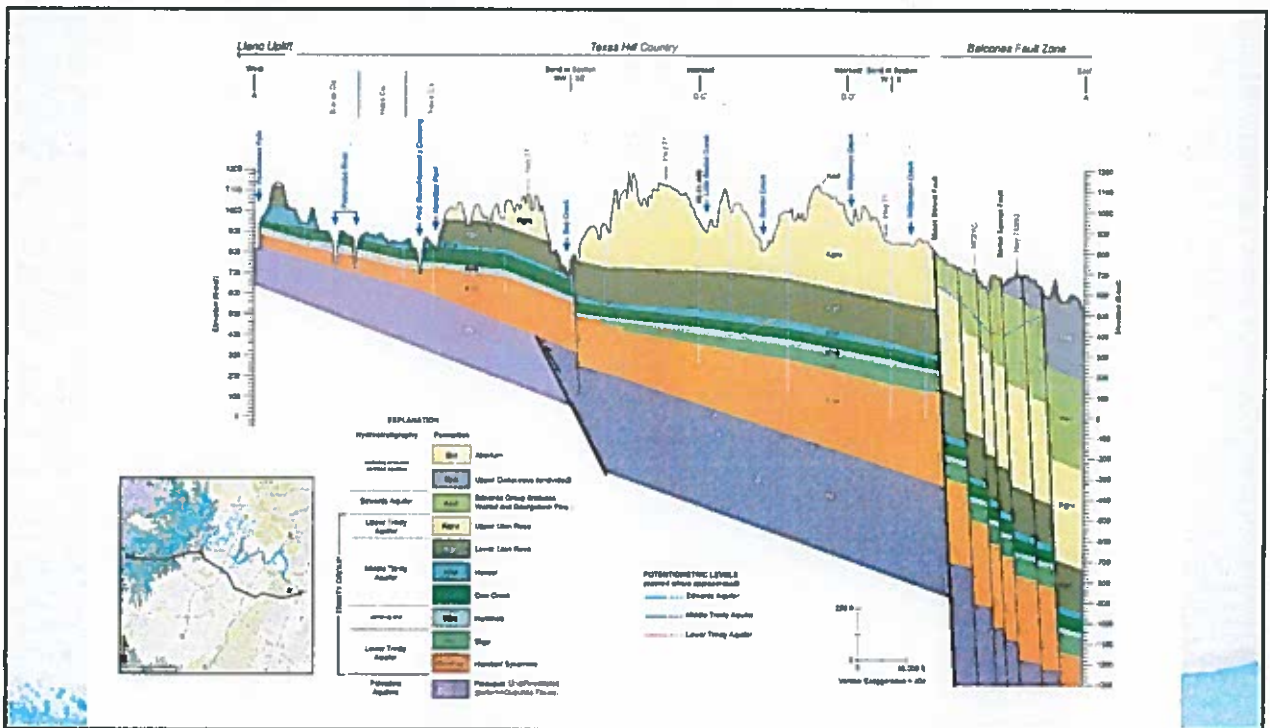
		Stratigraphy	
		Litho	Hydro
Trinity Group	Upper Glen Rose		Upper Trinity
	Lower Glen Rose		Middle Trinity
	Hensel		
	Cow Creek		
	Hammitt		Outlying
	Sligo		
	Hosston		Lower Trinity

6



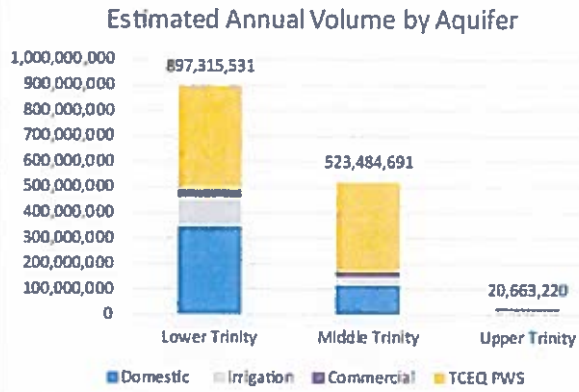


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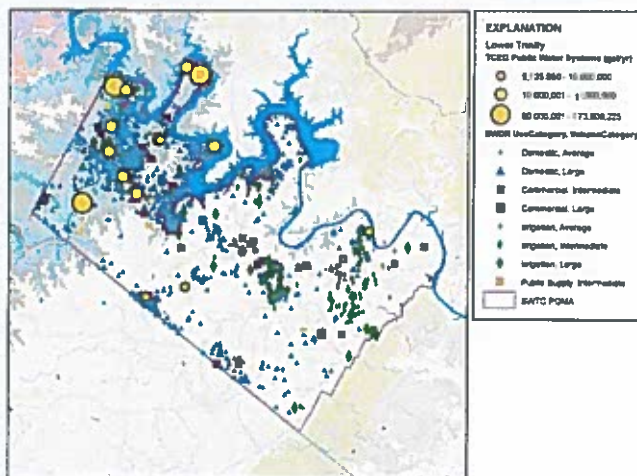
8

# Annual Pumping Volume by Aquifer

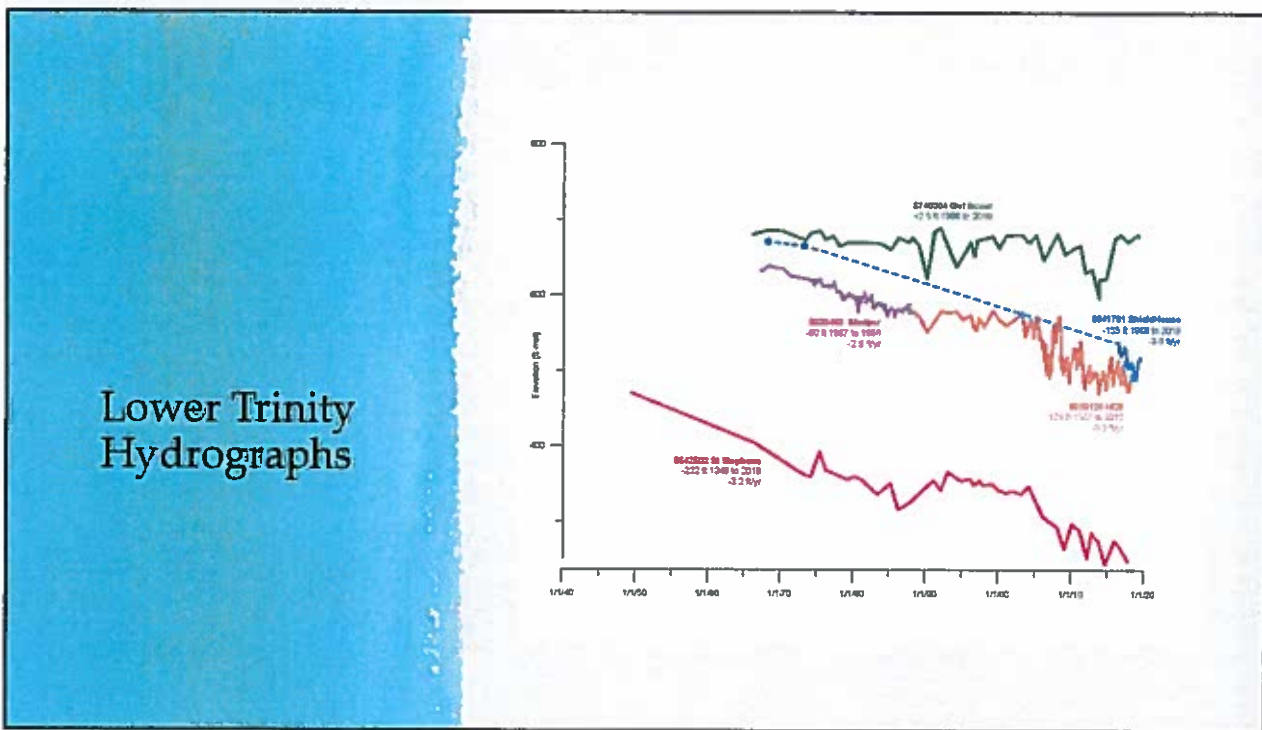


9

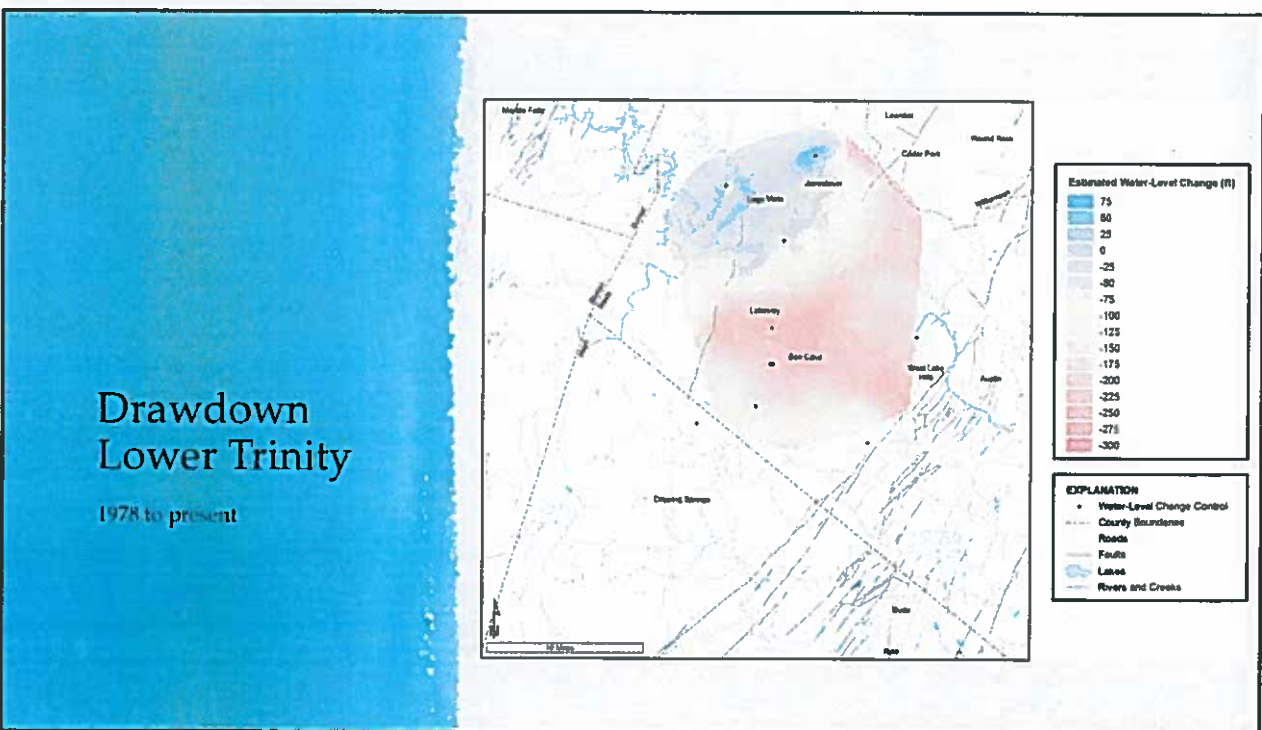
# Pumping Lower Trinity



10



11



12

## Summary Map

Fault-bounded areas



13

## Summary Map

Fault-bounded areas

### Area 1

- Recharge zone
- Generally fresh water
- Surface-groundwater interaction
- Locally decreasing groundwater trend



14

## Summary Map

- Yield and quality are lower in the PGMA than in Hays County.
- PGMA designation was valid given the groundwater depletion observed.
- Study has identified two distinct areas in the PGMA.



15

## Summary Map

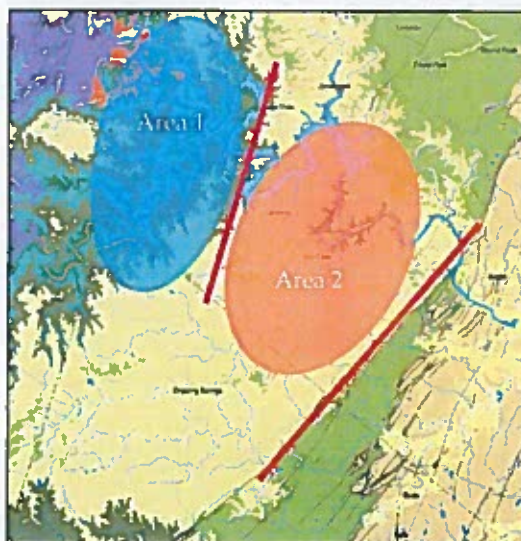
### Fault-bounded areas

#### Area 1

- Recharge zone
- Generally fresh water
- Surface-groundwater interaction
- Locally decreasing groundwater trend

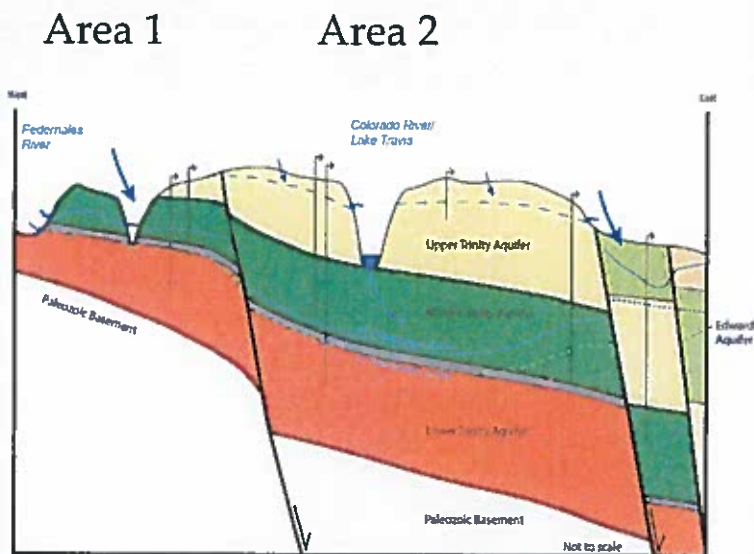
#### Area 2

- Confined
- Generally brackish water
- Localized (river) surface-groundwater interaction
- Groundwater Mining



16

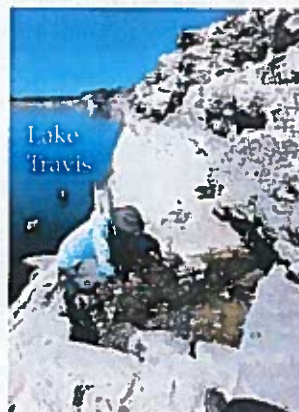
Schematic  
Summary Cross  
Section



17

Phase II

1. Expand the study area to encompass more areas of Travis County north of the Colorado River,
2. Investigate the hydraulic relationships of the Colorado River/Highlands Lakes and the Trinity Aquifer.



Middle  
Trinity Spring

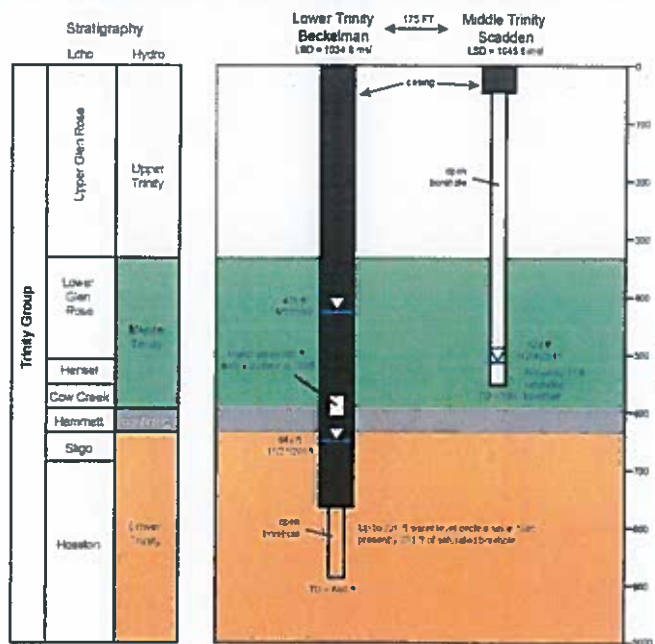
18

## Acknowledgements

- Travis County Commissioners
- BSEACD Board of Directors
- Travis County Departments and staff
- Travis County Parks (Westbay multiport well)
- City of Austin Watershed Protection (David Johns)
- City of Austin Parks
- City of Austin Wildlands (Nico Hauwert)
- City of Austin Water (Kevin Thuesen)
- Shield Ranch (Bob Ayers, Blake Murdock, Christi Muse)
- UT Austin (Dr. Michael Adams)
- Joe Vickers, Well spec
- Al Broun, HTGCD
- Nature Conservancy (Ryan Smith, Brandon Crawford)
- TWDB (Janie Hopkins, Chris Muller)
- SWTCGCD Board
- Landowners (Rick Scadden and other Site Visit participants)
- Peer Reviewers (Al Broun, Doug Wierman, Juli Hennings, Kirk Holland, and others)

19

## Groundwater Mining



20

## **Item 4**

### **Board Discussions and Possible Actions**

- b. Discussion and possible action on a Hays County/BSEACD ILA for monitoring wells at Jacob's Well.**



**INTERLOCAL FUNDING AGREEMENT  
AND MEMORANDUM OF UNDERSTANDING**

This Interlocal Funding Agreement and Memorandum of Understanding (the "Agreement") is hereby executed this the \_\_\_ day of \_\_\_\_\_, 2019 by and between the Barton Springs Edwards Aquifer Conservation District, a special district created under Chapter 8802 of the Texas Special District and Local Laws Code and having authority under Chapter 36 of the Texas Water Code ("BSEACD"), and Hays County, a political subdivision of the State of Texas ("the County") (collectively, the "Parties"), related to study of the Trinity Aquifers in Hays County and the region.

**RECITALS**

**WHEREAS**, the County and BSEACD have a history of collaborating to study and better understand the availability of groundwater within Hays County and the region; and

**WHEREAS**, Hays County and BSEACD executed Memorandums of Understanding in 2008 and 2016 to collaboratively review Groundwater Availability Studies in an effort to have a better understanding of the availability of groundwater and to characterize the Trinity Aquifers in central Hays County; and

**WHEREAS**, BSEACD believes that the installation of a multiport monitor well and a standard monitor well upgradient of Jacob's Well will significantly increase our understanding of groundwater flow to Jacob's Well and the impacts to flow from Jacob's Well by pumping; and

**WHEREAS**, the Parties agree that the best way to promote their mutual desire to have a better understanding of groundwater availability upgradient and downgradient of Jacob's Well is to collaboratively fund BSEACD's continued study of groundwater within central Hays County;

**NOW, THEREFORE**, in consideration of the foregoing and the mutual terms and conditions of the Parties in this Agreement, the County and BSEACD agree as follows:

**ARTICLE 1  
PURPOSE**

**1.1** The purpose of this Agreement is to provide BSEACD with sufficient funding to enhance subsurface characterization in the vicinity of Jacob's Well with the installation of a multiport monitor well within Hays County ("Jacob's Well Multiport Monitor Well"), installation of a standard monitor well, dye tracing, stream-flow measurements, and other activities that will provide data that could support numerical groundwater models (TWDB Hill Country GAM, Blanco River surface-groundwater model (BRATWURST), and a MODFLOW model by BSEACD) and to provide data for management of the groundwater resources of Hays County.

**ARTICLE 2  
OBLIGATIONS AND RIGHTS OF BSEACD**

2.1 BSEACD hereby agrees to perform all tasks associated with the "Aquifer Studies of the Jacob's Well Area," which is attached hereto as Exhibit "A" and incorporated herein for all purposes (the "Project").

2.2 BSEACD agrees to perform the Project in general accordance with the task descriptions provided in Exhibit "A" (incorporated herein), delivering a preliminary report on the Monitor Wells by December of 2020 and continuing to perform support tasks, such as, Potentiometric Measuring, Analysis of Stream Gain/Loss, and Dye Tracing, through the end of calendar year 2020.

**ARTICLE 3  
OBLIGATIONS OF THE COUNTY**

3.1 Hays County agrees to provide funding to BSEACD for its Project activities within Hays County as follows: Within thirty (30) days of the Effective Date, the County shall pay BSEACD an amount not to exceed fifty-eight thousand dollars (\$58,000.00 USD) for the installation of a multiport monitor well, a standard monitor well, and the performance of supporting activities, as highlighted in Exhibit "A".

3.2 If BSEACD is unable to or does not otherwise perform the tasks cited in Exhibit "A" by August 31, 2021, then BSEACD shall return the monies paid by Hays County within thirty (30) days of August 31, 2021 calendar year. If BSEACD performs only a portion of the tasks cited in Exhibit "A" by August 31, 2021, then it shall return an appropriate portion of the monies paid by Hays County, as agreed by the Parties.

**ARTICLE 4  
TERM AND TIME OF PERFORMANCE**

4.1 The effective date of this Agreement shall be the date last executed by the Parties, below (the "Effective Date"). The term of the Agreement shall continue from the Effective Date until August 31, 2021, or until the Parties have fulfilled all obligations under this Agreement.

**ARTICLE 5  
NOTICE**

5.1 Except as may be otherwise specifically provided in this Agreement, all notices, demands, requests, or communications related to non-compliance issues required or permitted hereunder shall be in writing and shall either be (i) personally delivered against a written receipt, or (ii) sent by registered or certified mail, return receipt requested, postage prepaid and addressed to the parties at the addresses set forth below, or at such other addresses as may have been theretofore specified by written notice delivered in accordance herewith:

If to the County:

Hays County  
Attn: Ruben Becerra  
County Judge  
111 E. San Antonio, Suite 300  
San Marcos, Texas 78666  
(512) 393-2205

With Copy to:

General Counsel  
111 E. San Antonio St., Suite 202  
San Marcos, TX 78666  
Email: mark.kennedy@co.hays.tx.us

If to the BSEACD:

Barton Springs/Edwards  
Aquifer Conservation District  
Attn: Alicia Reinmund-Martinez  
General Manager  
1124 Regal Row  
Austin, Texas 78748  
(512) 282-8441  
(f): (512) 282-7016  
Email: areinmund@bseacd.org

**ARTICLE 6  
DISPUTE RESOLUTION**

**6.1 Negotiation.** The Parties will attempt in good faith to resolve promptly through negotiation any claim or controversy arising out of or relating to this Agreement. If a controversy or claim should arise, the Parties agree to each select a Representative and to have those Representatives meet at least once to attempt in good faith to resolve the dispute. For such purpose, any Party may request the others to meet within ten (10) days, at a mutually-agreed-upon time and place. The Parties shall, within ten (10) days after the Effective Date of this Agreement, each designate to the other their respective Representatives, who shall be an executive-level individual with authority to settle disputes subject to approval of the part's governing body. Each of the Parties may change the designation of its Representative, but shall maintain at all times during the term of this Agreement a designated Representative and shall ensure that the other Parties are notified of any change in the designation of its Representative.

**6.2 Mediation.** If the dispute has not been resolved within sixty (60) days after the first meeting of the designated Representatives (or such longer period of time as may be mutually agreed upon), any of the parties may refer the claim or controversy to non-binding mediation conducted by a mutually-agreed-upon party qualified to perform mediation of disputes related to the subject matter of this Agreement (herein referred to as the "Mediator") by sending a written mediation request to the other party. In the event that such a request is made, the Parties agree to participate in the mediation process. The Parties and the Mediator may join in the mediation any other party necessary for a mutually acceptable resolution of the dispute. Should the Mediator ever be unable or unwilling to continue to serve, the parties shall select a successor Mediator. The mediation procedure shall be determined by the Mediator in consultation with the parties. The fees and expenses of the Mediator shall be borne equally by the parties.

**6.3 Litigation.** If the dispute is not resolved within thirty (30) days after the commencement of mediation, or if no mediation has been commenced within ninety (90) days after the first meeting between Representatives (or such longer period of time as may be mutually agreed upon), any of the Parties may commence litigation to resolve the dispute in any Texas state court of competent

jurisdiction, or in the United States District Court for the Western District of Texas to the extent said Court shall have jurisdiction over the matter.

## ARTICLE 7 MISCELLANEOUS

**7.1 Not-to-Exceed; Budget Out.** Under no circumstances shall BSEACD's obligation exceed the scope of work cited in Section 2.1, above, unless otherwise agreed in writing by the Parties. Notwithstanding any other provision of this Agreement, if the BSEACD or the Hays County Commissioners Court fails to appropriate or budget funds to meet the terms and conditions cited herein, then the non-appropriating entity shall not be obligated to fulfill the its obligations under this Agreement.

**7.2 Entire Agreement.** This Agreement represents the entire and integrated agreement between the County and BSEACD and supersedes all prior negotiations, representations or arguments either written or oral.

**7.3 Lawful Authority.** The execution and performance of this Agreement by the County and BSEACD have been duly authorized by all necessary laws, resolutions or corporate action, and this Agreement constitutes the valid and enforceable obligations of the County and BSEACD in accordance with its terms.

**7.4 Amendments.** No amendment, modification or alteration of the terms hereof shall be binding unless the same shall be in writing and dated subsequent to the date hereof and duly executed by the parties hereto.

**7.5 Independent Parties.** It is understood and agreed between the Parties that the County and BSEACD, in executing this Agreement, and in performing their respective obligations, are acting independently, and not in any form of partnership or joint venture.

**7.6 Construction.** The captions and headings contained in this Agreement are solely for convenient reference and will not be deemed to affect the meaning or interpretation of any provision or paragraph hereof. All references in this Agreement to any particular gender are for convenience only and will be construed and interpreted to be of the appropriate gender. For the purposes of this Agreement, the term "will" is mandatory. Should any provision in this Agreement be found or deemed to be invalid, this Agreement will be construed as not containing such provision, and all other provisions which are otherwise lawful will remain in full force and effect, and to this end the provisions of this Agreement are declared to be severable.

**7.7 Conflict with Applicable Law.** Nothing in this Agreement shall be construed so as to require the commission of any act contrary to law, ordinance or administrative executive or judicial regulation, order or decree, or amendment thereof, contrary to which the parties have not legal right to contract, the latter shall prevail, but in such event the affected provision or provisions of this Agreement shall be modified only to the extent necessary to bring them within the legal requirements and only during the time such conflict exists.

**7.8 No Waiver.** No waiver by a Party of any breach of any provision of this Agreement shall be deemed to be a waiver of any preceding or succeeding breach of the same or any other provision

hereof.

**7.9 Public Information Act.** BSEACD and County are governed by the Texas Public Information Act, Chapter 552 of the Texas Government Code. This Agreement and all written information generated under this Agreement may be subject to release under this Act.

**7.10 Additional Documents.** The BSEACD and the County covenant and agree that they will execute such other and further instruments and documents as are or may become necessary or convenient to effectuate and carry out the terms of this Agreement.

**7.11 Compliance with Laws.** In performing this Agreement, BSEACD will comply with all local, state and federal laws.

**7.12 Counterparts.** This Agreement has been executed by the parties in multiple originals or counterparts each having full force and effect.

[SIGNATURES ON NEXT PAGE]

This Interlocal Funding Agreement and Memorandum of Understanding is hereby EXECUTED on this \_\_\_\_ day of \_\_\_\_\_, 2019.

County of Hays:

By: \_\_\_\_\_  
Judge Ruben Becerra  
Hays County Judge

ATTEST:

\_\_\_\_\_  
Elaine Cardenas, Hays County Clerk

Barton Springs Edwards Aquifer Conservation District:

By: \_\_\_\_\_  
Blayne Stansberry  
Board President

Attest:

Approved as to Form:

\_\_\_\_\_  
Blake Dorsett  
Board Secretary

\_\_\_\_\_  
Date

\_\_\_\_\_  
William D. Dugat, III  
Counsel

\_\_\_\_\_  
Date

\_\_\_\_\_  
Mark D. Kennedy  
General Counsel – Hays County

\_\_\_\_\_  
Date

## EXHIBIT A

### Aquifer Studies of the Jacob's Well Area, Central Hays County

The Barton Springs/Edwards Aquifer Conservation District (BSEACD) is planning studies of the Trinity Aquifers associated with Jacob's Well in central Hays County to gain a better understanding of recharge to the Middle Trinity Aquifer, how groundwater might move vertically between the aquifers, discharge from Jacob's Well, and the potential for groundwater flow further downgradient of Jacob's Well. Results of these studies will be used to determine sustainable yield of the aquifers, develop numerical models, and inform groundwater districts (BSEACD and HTGCD) and Hays County of appropriate groundwater management policies. These numerical models will serve as tools for assessing impacts to Jacob's Well from pumping of the Middle Trinity Aquifer in the vicinity of, and downgradient, of Jacob's Well.

The installation of two monitor wells upgradient of Jacob's Well are proposed as part of these studies. One well will be a multiport monitor well similar to the one in the Rolling Oaks subdivision that was funded in part by Hays County. This multiport well will be installed to monitor five or six unique hydrologic zones. Each of these zones can be tested for hydraulic conductivity, water levels, and water quality. Monitoring and testing of these zones will allow for a detailed analysis of how water moves vertically and horizontally through the aquifers. The second monitor well will be done with a standard completion in which the borehole will be left open for testing and monitoring. Each of these wells will be installed into the Cow Creek Formation to depths of about 250 feet below ground surface. Groundwater samples will be collected from each monitor zone of these wells and analyzed for basic water-quality parameters.

Once these monitor wells are completed, additional dye trace studies will be conducted upgradient of Jacob's Well. These monitor wells could be used for monitoring of the dyes moving through the aquifer or used as injection points for dye. Two to three dyes will be injected into caves, recharge features, or wells. Monitoring of dye movement will be done in Jacob's Well and water-supply wells downgradient of the dye injection points. Periodic water-level measurements will be made in these new monitor wells, and in additional wells in the area to understand how the aquifers respond to drought and pumping. One, or both, of the proposed monitor wells could be used as index wells for determination of drought and excessive pumping.

Estimates of costs for these studies are provided below along with potential contributions from BSEACD and Hays County.

Task	Cost	
	\$K	BSEACD    Hays Co.
Multiport monitor well		
Drilling	20	20
Installation	13	13
Material	17	17
Standard monitor well	15	15
Dye tracing	8	3    5
Water chemistry	7	2    5
Total	80	22    58

## **Item 4**

### **Board Discussions and Possible Actions**

**c. Discussion and possible action on the Sustainable Yield Study of the Trinity Aquifer.**



## EVALUATION OF SUSTAINABLE YIELD OF THE TRINITY AQUIFERS

In 2004, a study was concluded by District staff that was conducted to determine the sustainable yield of the Edwards Aquifer. This study led to the promulgation of rules to protect springflow and water levels from excessive lowering during periods of severe drought. A key aspect of the new rules was cessation of issuance of new historical permits and the allowance for permits for conditional use of Edwards groundwater. A similar effort is now being conducted for the Trinity Aquifers of the District. District staff have been studying the Trinity Aquifers for many years, but the efforts were increased in 2003 when we installed monitor wells to investigate the relationships between the Edwards and Trinity Aquifers.

The current Trinity study focusses on the potential for unreasonable impacts from pumping from wells or well fields. A definition for unreasonable impacts is given in District rules. These rules came about following passage of House Bill 3405 in 2015 which brought about annexation of portions of Hays County into the District. The key objectives of this study are to 1) determine potential for unreasonable impacts from localized and regional pumping on water levels, wells, and springflow, 2) evaluate the combined effects of pumping and extreme drought on water levels, wells, and springflow, and 3) provide a scientific basis for any rules that would need to be promulgated following the study.

The concepts specified in the District's rules for unreasonable impacts can be summarized as:

- Impacts from specific permit requests
- Impacts from severe drought
- Impacts from increased pumping over a broad area

Some of the hydrogeologic concepts to be evaluated are:

- Hydraulic relationships between Trinity hydrogeologic units, horizontally and vertically
- Influence of faults and other structures on groundwater flow
- Impacts of drought on water levels, spring flow, and stream flow
- Variations in transmissivity and water quality
- Surface and groundwater interactions
- Sources and magnitude of recharge

Much of the work to be conducted can be addressed by the following tasks:

- Water-level monitoring- synoptic measurements over a broad area and continuous water levels in key wells
- Adding more monitor wells to existing network
- Preparation of hydrographs and maps showing history of water-level measurements
- Analytical modeling for localized impacts from pumping

- Numerical modeling
  - TWDB GAM
  - Blanco River model
  - District's Trinity model
- Assessment of exempt and permitted pumping
- Water-quality sampling and analysis
- Rainfall, stream-flow/loss measurements
- Dye-trace studies
- Field mapping
- Geophysical logging

Some of the questions to be considered by the study are:

- Do we need to end historical permitting of the Trinity?
- Do we need a non-Edwards drought trigger for the Trinity?
- Should we set a 50% pumpage reduction for extreme drought?
- Can Jacob's Well and Pleasant Valley Springs be impacted by Trinity pumping in the District?
- Are the current Desired Future Conditions (DFCs) adequately protective of the aquifers?
- NEW ITEM 7-9-19 Should we consider a separate management zone for those areas that could impact Jacob's Well? Pleasant Valley Springs?

Current partners in Trinity studies:

- Hays Trinity Groundwater Conservation District
- Edwards Aquifer Authority
- Texas State University- Meadows Center
- University of Texas at Austin
- Blanco Pedernales Groundwater Conservation District
- City of Austin

Other organizations involved in certain aspects of the study:

- Hays and Travis Counties
- TWDB

Approximate timeline:

- Draft report by March 2021 (dependent on completion of District's Trinity model)
- Review of draft report by technical advisory committee (2 months)
- Drafting of rules by District staff (2 months)
- Review of proposed rule changes by policy advisory committee (3 months)

## **Item 4**

### **Board Discussions and Possible Actions**

**d. Discussion and possible action on legal options for protection of water quality and endangered species vulnerable to or potentially adversely affected by the Permian Highway Pipeline.**



## MEMORANDUM

**TO:** Mayor and Council

**FROM:** Christopher Herrington, P.E., Environmental Officer  
Watershed Protection Department *CH*

**DATE:** August 28, 2019

**SUBJECT:** **Response to Council Resolution 20190619-183 regarding Kinder Morgan Pipeline**

The purpose of this memo is to provide a summary of potential water quality impacts that the proposed Kinder Morgan Permian Highway Pipeline may have on the Trinity and Edwards aquifers in response to Council Resolution [20190619-183](#). Attached please find a staff report for your consideration.

If you have any questions about environmental concerns regarding the proposed pipeline, please contact me at 512-974-2840 or [chris.herrington@austintexas.gov](mailto:chris.herrington@austintexas.gov).

cc: Spencer Cronk, City Manager  
Rey Arellano, Assistant City Manager  
Jose M. Guerrero, P.E., Interim Director, Watershed Protection Department

Attachment



## **Potential Water Quality Impacts of the Proposed Kinder Morgan Permian Highway Pipeline**

SR-19-10; August 2019

City of Austin Watershed Protection Department  
505 Barton Springs Road, 11<sup>th</sup> floor  
Austin, Texas 78704

### **Introduction**

At the June 19, 2019 meeting, the Austin City Council adopted Resolution [20190619-183](#) which directed the City Manager to “study the potential water quality impacts a pipeline transporting hydrocarbons would have on the Trinity and Edwards aquifers.” The focus of the Resolution is the proposed Permian Highway Pipeline. This report focuses on the potential water quality impacts of the proposed PHP. This analysis is limited due to the fact there is little publicly-available information about the PHP.

### **Pipeline Overview**

Kinder Morgan Texas Pipeline (KMTP) and EagleClaw Midstream Ventures propose constructing a 42-inch, 430-mile long steel natural gas pipeline, through the Central Texas Hill Country. The pipeline is proposed to travel through Gillespie, Blanco, and Hays counties, where it will cross through the Edwards Aquifer Recharge and Contributing Zones (Figure 1). The exact alignment of the pipeline is not publicly known and may ultimately be dependent on right-of-way acquisitions. The proposed PHP will carry approximately 2.1 billion cubic feet per day of natural gas from the Permian Basin in West Texas to existing pipelines northeast of Houston for transport to export facilities on the Texas coast. KMTP has stated that nearly all of the natural gas will be for export and not for domestic use.

KMTP is currently in the process of acquiring right-of-way through eminent domain and condemnation. KMTP has stated its intent to acquire a 125-foot wide temporary construction easement and a 50-foot wide permanent easement for the pipeline. Pipeline construction is currently proposed to start in Fall 2019. Pipe is currently being stockpiled along the route. KMTP has stated they intend to have the pipeline operational in late 2020.

KMTP has publicly stated that it has done an alternative route analysis and has conducted analyses of environmental risks and impacts. However, they have not shared this information with the public.

There is a significant lack of pipeline capacity to transport gas from the Permian Basin in west Texas to export facilities on the Gulf Coast. As a result, a large amount of natural gas, a byproduct of crude production, is being flared off contributing substantial amounts of greenhouse gas to the atmosphere. Limits on flaring of gas by the Texas Railroad Commission (TRRC) is limiting the expansion of oil production in the Permian Basin. This is driving the need for more gas pipeline capacity. It is anticipated that additional pipelines may be proposed in the near future. The proposed PHP route across the Edwards Aquifer is the shortest straight line distance from the Permian Basin to the Houston area. Successful completion of the PHP may attract other pipelines to this area.

### **Existing Pipelines in Austin**

There are four active natural gas and hazardous liquid transmission pipelines located over the Barton Springs Segment of the Edwards Aquifer. These existing pipelines are all substantially smaller in diameter than the proposed 42-inch PHP. There have not been any new hazardous liquid or natural gas pipelines built over the Barton Springs Segment of the Edwards Aquifer in many decades. Although the All-American Pipeline was proposed, it was not built due to environmental concerns. The most recent significant project was the Longhorn Pipeline conversion from crude oil to refined projects in the early 2000s. For the Longhorn Pipeline, following a lawsuit, the federal government required major changes to the existing pipeline to mitigate environmental risks in order to approve the conversion. Longhorn Pipeline has since been reconverted to crude oil transport; however, the mitigation requirements remain in place. Kinder Morgan to date has not publicly committed to the same type of mitigation measures in use for the Longhorn Pipeline.

### **Regulatory Status**

The PHP is classified as an intrastate pipeline. Thus, the PHP is not subject to federal siting regulations. Intrastate pipelines in Texas are regulated by the Texas Railroad Commission (TRRC), which does not provide opportunities for public review and input from the public. There is minimal regulatory oversight for siting new pipelines in Texas.

The PHP is subject to some environmental regulation through the TRRC, although not through the Texas Commission on Environmental Quality. Pipelines are specifically exempted from having to comply with the Texas Edwards Aquifer protection rules. As such, KMTP will not have to provide void mitigation during construction or other protections for the aquifer.

## Potential Environmental Impacts

This report focuses primarily on impacts to environmental resources and species of concern in the vicinity of Austin. These resources and species include the contributing and recharge zones of the Barton Springs Segment of the Edwards Aquifer (the “Barton Springs Zone”), the Trinity Aquifer, area creeks, area springs, the Barton Springs salamander (*Eurycea sosorum*), the Austin Blind salamander (*Eurycea waterlooensis*), and the Golden-cheeked warbler (*Setophaga chrysoparia*).

### Risks to Environmental Resources

Natural gas is a gas at ambient temperature and pressure and is lighter than air. These characteristics reduce the potential impacts of a pipeline gas release to groundwater and surface water. Natural gas is primarily methane, which is one of the most potent greenhouse gases. The PHP will capture gas currently being released to the atmosphere in west Texas. A gas release from the PHP would contribute to local air pollution.

The proposed route for the PHP is along the Edwards Aquifer groundwater divide between Barton Springs and the San Marcos springs. Depending on groundwater conditions, groundwater flow can vary between these two locations and so the operation of the pipeline presents a potential risk to both of these significant, highly sensitive environmental resources.

### Potential Risks during Construction

Environmental risks of the PHP vary by project phase. Construction phase risks are primarily from sediment discharge from disturbed soils, spills of fuel and lubricant from construction equipment, and direct impacts to karst features (e.g., voids) encountered during trench excavation (Figure 2). Inadequate erosion and sedimentation controls and poor revegetation practices could occur. Inadequate revegetation of the pipeline right-of-way can create longer term water quality impacts from erosion of soil, decreased infiltration of rainfall, and decreased filtration of stormwater runoff, in addition to habitat degradation.

Construction of pipelines in karst terrain is known to be challenging. The Mariner East pipeline in Pennsylvania was recently shut down by regulators due to multiple sinkholes occurring along the right-of-way after construction which generated concerns about structural stability of the pipeline. Given the proposed location of the PHP, it is highly likely the trench will intersect fissures and voids, potentially altering flow pathways within the aquifers and creating pathways for contaminants to spread along underground conduits. The Barton Springs Edwards Aquifer Conservation District (BSEACD) has identified several known and suspected karst features over the Edwards Aquifer along the proposed pipeline route.

The PHP is exempt from the Texas Commission on Environmental Quality’s Edwards Aquifer protection rules, which are intended to minimize impacts of subsurface utilities. For example, TCEQ has void mitigation requirements to address karst features found during trenching for utilities. Although KMTP states that they are aware of issues related to karst geology, it is unknown what measures KMTP will take to address the unique challenges of construction in a karst terrain.

There are multiple protected species that could be impacted by pipeline construction. The golden-cheeked warbler, which is a protected songbird, has significant habitat along and in the vicinity of the proposed PHP pathway. Golden-cheeked warbler habitat is characterized by contiguous areas of mature oak-juniper woodlands. The proposed 125-foot wide construction easement is likely to be completely clear cut of these woodlands for construction of the pipeline. While much of this temporary easement would be allowed to revegetate, it will likely be decades before impacted areas would be restored to potential golden-cheeked warbler habitat. Furthermore, it is a common practice for pipeline owners to keep a 50-foot permanent easement clear of all trees making potential habitat fragmentation permanent in some areas.

#### Potential Risks during Operation

During operation of the PHP, the most significant threat to groundwater and surface water is from a release of liquids from the pipeline, which would contribute to degradation of water quality and negatively impact aquatic habitat. Additionally, if the PHP right-of-way is inadequately revegetated, the construction will likely create longer term water quality impacts from erosion of soil, decreased infiltration of rainfall, and decreased filtration of stormwater runoff.

Natural gas is typically dehydrated prior to entering a transmission pipeline. However, liquid may be still present in a gas pipeline and may accumulate in the pipeline from a variety of sources, including condensation. Federal regulations (though not applicable to the PHP) require natural gas transmission pipelines to provide facilities for draining accumulated liquids (49 CFR 192.476), further demonstrating the probable presence of these liquids in the PHP. While KMTP disputes that liquid of any quantity will occur in the pipeline, pipeline engineers contacted by staff confirmed that liquid does occur in gas transmission pipelines, and could occur in the thousands of gallons where there are long segments between valves and/or drains.

These accumulated liquids are likely to contain hydrocarbons in high concentrations. Concentrations of hydrocarbon liquids in condensate may be high as there would be minimal dilution, although the accumulated volume of those liquids is unknown. A pipeline break or faulty operation could release these liquid hydrocarbons, presenting a risk to nearby groundwater, springs, and surface water. Tanks that store these liquids could also present a potential source of hydrocarbon release to groundwater and surface water.

Populations of the federally protected Barton Springs salamander and Austin blind salamander occur in the Barton Springs Complex within Zilker Park. Recent studies have identified populations of Barton Springs salamanders at other spring locations outside of Austin and down gradient of the proposed PHP. The fully aquatic salamanders are highly sensitive to contaminants in water, including hydrocarbons.

Although the exact flow pathways are not definitively known, dye tracing completed by the City of Austin and regional partners has demonstrated that water in the Blanco River Basin and in the vicinity of the proposed PHP pathway could migrate to Barton Springs under low groundwater flow conditions which occur approximately 20% of the time with a travel time of several months. Thus, a release of liquid hydrocarbons from the PHP could adversely impact the Barton Springs



Complex and habitat for federally protected salamanders in Zilker Park, and these impacts could occur at a time when habitat conditions are sub-optimal due to reduced spring flows and salamanders are already under stress. The potential impacts to salamanders in San Marcos Springs would likely be similar to those in Barton Springs. Other known Barton Springs salamander populations outside of Zilker Park are most likely outside of potential groundwater flow paths within the aquifer.

Staff have been unable to obtain data on the possible volume of liquid or chemical composition of liquid contaminants that may be present in the PHP. Although a groundwater connection between the proposed PHP route and the Barton Springs Complex exists, and salamanders would be sensitive to hydrocarbon contaminants in groundwater, staff are unable to quantify the risks to Barton Springs because insufficient information exists about the volume of hydrocarbon condensate in the pipeline, the chemical constituents, and their concentrations, to enable a quantitative fate analysis.

#### Impacts to Water Quality Protection Lands

The proposed PHP route is near City of Austin Water Quality Protection Lands. Several water wells are on Water Quality Protection Lands between FM 150 and FM 967 that could be impacted if contaminants enter the aquifer and migrate northward. The City of Austin may have very limited options to prevent pipelines from being routed through these sensitive properties.

#### Future Change in Pipeline Contents

Transmission pipelines can be converted to carry different products as market conditions change. A local example of this is Longhorn Pipeline which was converted from crude oil service to refined products in the early 2000s, and converted back to crude oil service roughly 10 years later. Although hazardous liquids pipelines the size of the proposed PHP are rare, it is possible that the PHP could be converted to hazardous liquids service in the future. Kinder Morgan has stated publicly they intend to limit the easements they are acquiring to natural gas pipelines. New or modified easements may be necessary to convert the PHP to hazardous liquids in the future. Hazardous liquids, such as crude oil, would present a substantially greater threat to groundwater and surface water.

### **Conclusions**

After reviewing the limited available information about the pipeline project, staff concludes that:

- The proposed PHP route occurs in an area that contributes flow to Barton Springs under low flow conditions that occur approximately 20% of the time.
- Applicable regulations are not sufficient to ensure that no adverse environmental consequences will occur as a result of the construction and operation of the PHP.
- Surface water and groundwater quality may be adversely impacted by sediment and contaminant discharge during construction.

- Recharge patterns and flow pathways within the aquifer may be impacted if voids are intercepted during construction and not properly mitigated.
- Gas transmission pipelines can contain liquid contaminants. Accidental release of the hydrocarbon liquids to surface water or groundwater could occur. The chemical constituents, concentrations, and volumes of potential liquids within the PHP are not known. Thus, a quantitative analysis of the risk of hydrocarbon contamination of the Edwards Aquifer cannot be completed at this time.
- If contaminants from a pipeline release were to reach the Barton Springs Complex at a sufficient concentration, it is possible that it would negatively impact federally protected species. The extent of that impact cannot be predicted given the lack of information on volume and characteristics of a release from the pipeline.

### **Potential Actions by the City**

Based on these conclusions in combination with the lack of information about alternative routes and impacts to sensitive environmental resources, staff suggest the following possible actions for consideration:

1. Sharing these concerns with the Texas Railroad Commission, Texas Commission on Environmental Quality, U.S. Fish and Wildlife Service, and the U.S. Corps of Engineers, seeking additional information and asking that they seek the additional information from Kinder Morgan necessary to facilitate a more comprehensive analysis.
2. Coordinating technical information sharing and collaborating with other potentially concerned entities, including the Barton Springs/Edwards Aquifer District, Hays Trinity Groundwater Conservation District, Edwards Aquifer Authority, City of San Marcos, City of Kyle, the Wimberley Valley Watershed Association, other groundwater conservation districts, and potentially impacted property owners.
3. Supporting state legislative initiatives to provide greater protection for owners of conservation lands or easements.
4. Supporting state legislative initiatives to require pipeline projects to undergo a public review and comment process that includes environmental impact and route alternatives analyses.

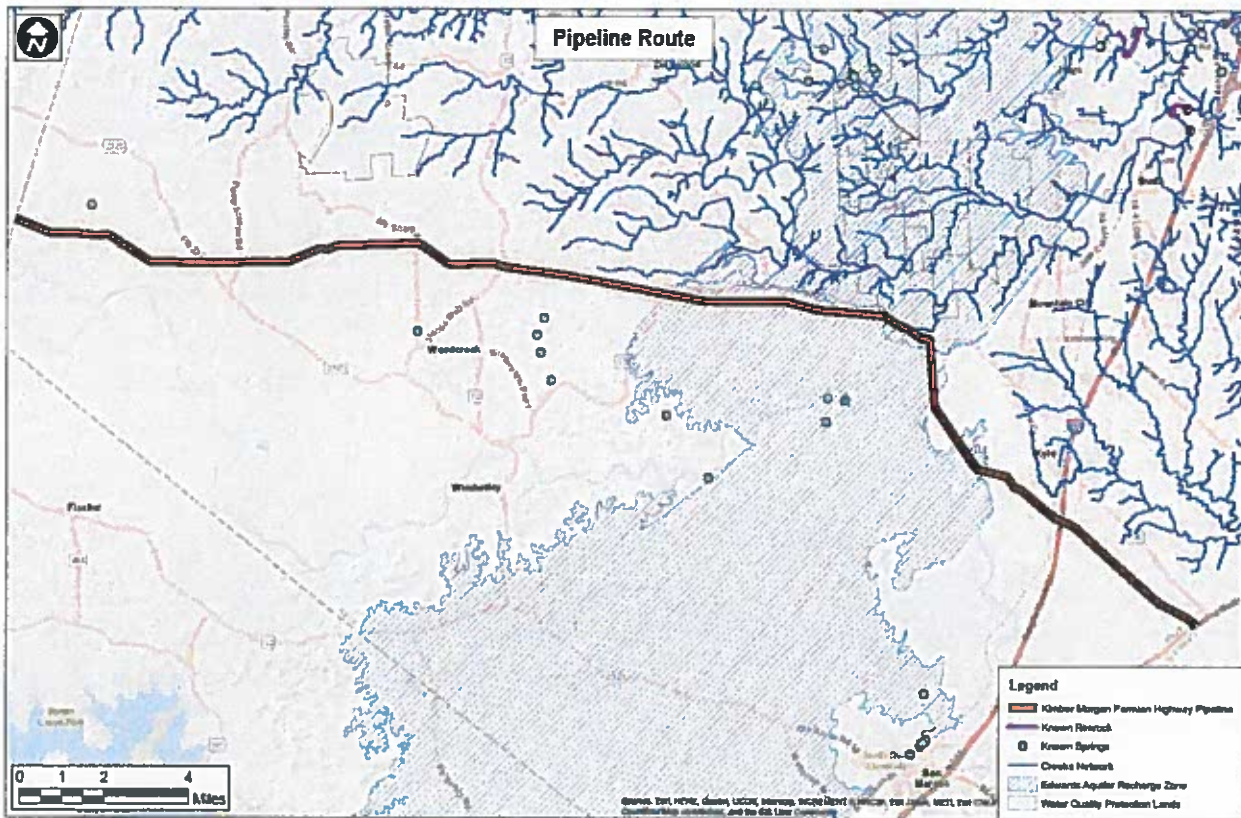


Figure 1. Potential pathway of the proposed Permian Highway Pipeline across the Edwards Aquifer in Hays County.



Figure 2: Photo of construction of a representative 42-inch pipeline in a 125-foot wide easement.

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## POTENTIAL IMPACTS TO GROUNDWATER AND SPECIES FROM A PROPOSED PIPELINE IN HAYS COUNTY, TEXAS



The Texas Blind salamander (*Eurycea rathbuni*) photographed by Jean Krejca.

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30 August 2019

## Introduction

A proposed Kinder Morgan pipeline would pass through two sensitive karst areas in Hays County. Pipelines carrying petroleum products pose risks to public water supplies that utilize wells and to groundwater species. We examined these issues in central Texas and in similar settings in other parts of the country. North and west of Wimberley, caves and karst features convey water to both Jacob's Well and another spring providing flow to the Blanco River, via the Trinity aquifer. Farther east near Kyle, the Edwards aquifer, San Marcos Springs, and Barton Springs would be at risk in the event of a spill of liquid petroleum products, with accompanying impacts to federally endangered salamander species.

## Methods

Available reports were reviewed on groundwater flow paths and dye study results in the Edwards and Trinity aquifers in Hays County. Historical records were accessed on pipeline failures and spills in karst areas. Data were obtained from the Texas Speleological Survey in order to evaluate the presence of caves and karst features near the propose pipeline route.

Federally listed endangered and threatened species in Hays County were identified through the US Fish and Wildlife Service (USFWS). Federally listed endangered and threatened salamander ranges and detection within aquifers were reviewed for the general pipeline area. Occurrences of federally listed species from the Texas Parks and Wildlife Department (TPWD) that occurred within 10 km from the proposed pipeline were also reviewed.

## Results

### *Groundwater and Local Karst Hydrology - Wimberley Area*

The Lower Glen Rose formation in western Hays County has a high density of caves and sinkholes. These provide recharge to two major springs, Jacob's Well and Pleasant Valley Spring. Water discharging from Jacob's Well comes from the longest cave in Hays County at 1619 meters length. In addition to its hydrological significance, Jacob's Well is of high cultural importance to the citizens of Wimberley and Hays County. Cypress Creek, which normally has its headwaters at Jacob's Well, forms a critical piece of the local tourism economy where it flows through Wimberley. Hays County government has made it a preservation priority through the Jacob's Well Natural Area.

The primary passage in Jacob's Well Cave has been explored by cave divers for 1090 meters to the northwest. At that point some collapsed boulders prevent further exploration. From the spring pool at the entrance, the submerged cave passage descends to a depth of 26 meters at the collapse blockage. The land surface in the area over the blockage is at a higher elevation than the spring orifice and is about 55 meters above the blocked stream conduit. There are 18 cave entrances and sinkholes in the immediate area above the blockage at the northwest end of Jacob's Well Cave, within a 500 meter radius (TSS 2019). This area likely provides significant

localized subterranean drainage to Jacob's Well, and is a high priority for land conservation efforts. The most significant among these 18 features is Wimberley Bat Cave. This cave is 62 meters long and 30 meters deep. At its deepest point it reaches a pool of water of undetermined depth. The surface of this pool is at more or less the same elevation as the spring pool at Jacob's Well. This cluster of features will be referred to here as the Wimberley Bat Cave Karst Area (WBCKA) (Figure 1).

Another significant cave in the WBCKA is Raccoon Cave. This cave receives drainage from several acres of land. An entrance in a sinkhole leads into a chamber largely filled with boulders. Volunteer digging efforts by cavers over the past few years have cleared rocks and fill out to a depth of 10 meters. Floodwaters entering this cave (Figure 2) do not back up into the sinkhole. That, along with alignment with the trend of Jacob's Well Cave 238 meters to the southeast, suggests that recharge at Raccoon Cave may exit Jacob's Well. Local groundwater districts conducted a dye trace at Raccoon Cave in March 2018 (BSEACD 2018). Weak detections of dye were made in Cypress Creek downstream of Jacob's Well and in two residential water wells. A follow-up trace with a larger amount of dye was recommended in order to better establish a connection between Raccoon Cave and Jacob's Well. Two water wells located about 1500 meters west of Jacob's Well and Raccoon Cave, respectively, were shown to have a direct connection to Jacob's Well, which exhibited reduced flow during drawdown tests (Gary 2019).

While the strong northwesterly trend of Jacob's Well Cave indicates that the cave is likely hydraulically connected to the WBCKA, it is unlikely that WBCKA contributes the majority of the water that exits the spring. The cave conduit shows no sign of ascending toward the surface within the cluster, suggesting that the conduit will continue past the WBCKA cluster. The WBCKA does not appear to have nearly enough flow to account for the spring flow, since water only occasionally enters the sinkholes after moderate to large rain events, while flow out of the spring is nearly perpetual. A more likely source for the majority flow in Jacob's Well is the dry course of Cypress Creek to the northwest of WBCKA.

Projecting the trend of Jacob's Well Cave upstream from the spring intersects the dry bed of Cypress Creek at a distance of about 3 kilometers from the spring, just past WBCKA. After 3 kilometers, the creek bed changes from a northwesterly trend to westerly. Cypress Creek normally starts flowing at Jacob's Well spring, and is typically dry upstream from there, even though it is a major surface drainage. It likely remains dry due to aquifer recharge occurring within the creek bed. Creek bed cave openings (swallets) are not known from this 3-kilometer stretch; however, streamflow was observed to cease at a pool along this stretch in June 2015 (TSS 2019), suggesting that recharge was occurring in that stretch of the creek. Some recharge streams in Hays and Travis counties have obvious swallets that provide significant recharge, such as those in Onion Creek (Smith 2012).

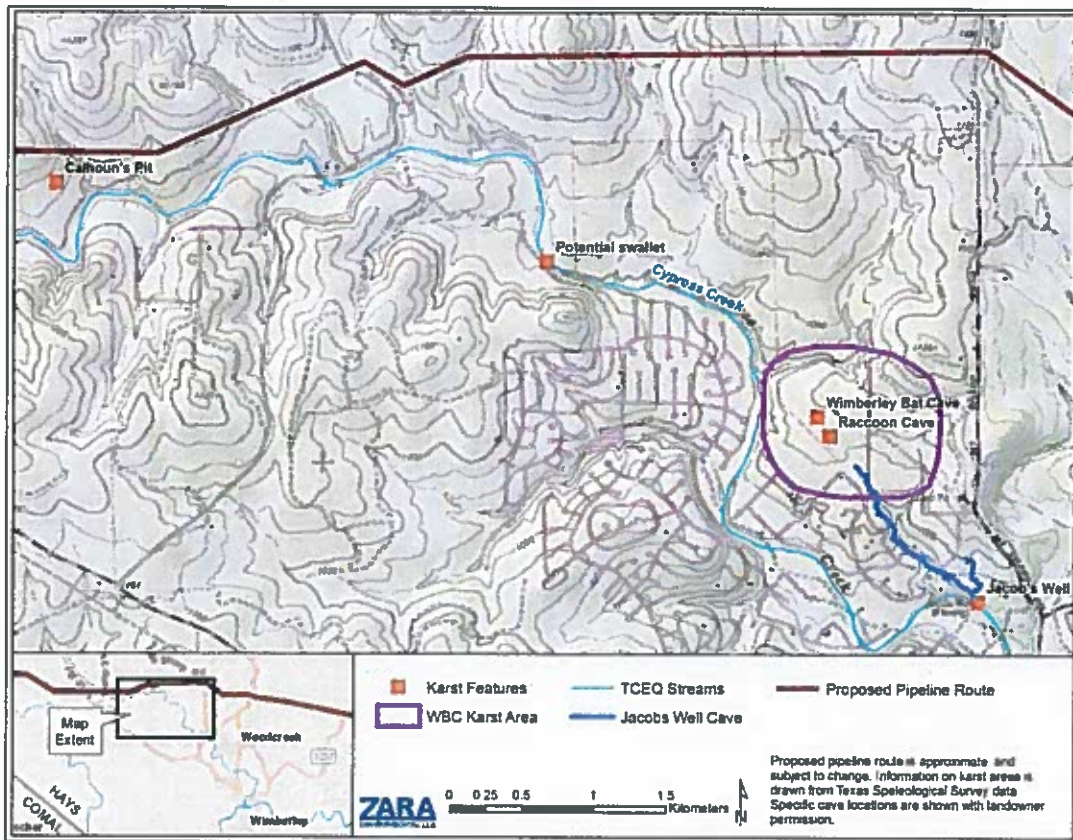


Figure 1. Recharge features in Cypress Creek, the Wimberley Bat Cave Karst Area, and Jacob's Well Cave.





Figure 2. Floodwaters entering Raccoon Cave.

However, more often than not, recharge in streams like Slaughter, Williamson, and Purgatory creeks have occult sink points similar to the one observed in 2015 on Cypress Creek. Nevertheless, recharge is still taking place, as the flow in those creeks can be observed to disappear just as quickly as in Onion Creek. A significant trough in the potentiometric surface of groundwater in this stretch of Cypress Creek also supports the thesis that rapid groundwater recharge and subsequent discharge via Jacob's Well are occurring (Gary 2019).

As the course of Cypress Creek continues west, most of it up to its origin west of Mt. Sharp is in the Lower Glen Rose, and as such there is high potential all along it for recharge. There are two deep caves in or adjacent to the creek bed, Sites' Pit and Calhoun's Pit. Both of these extend 25-30 meters below the level of Cypress Creek. Calhoun's Pit contains a flowing stream. Both caves should be considered high priorities as future dye injection sites, given their depth. They have potential to drain to Jacob's Well, Pleasant Valley Spring, or both. Calhoun's Pit is approximately 125 m from the proposed Kinder Morgan pipeline route.

Pleasant Valley Spring discharges in the Blanco River. It is not as well-known as Jacob's Well, due to its location underwater in the river. North and west of this spring there is a high density of caves and sinkholes over an area of about 4 km<sup>2</sup>. This area will be referred to here as the Burnett Ranch Karst Area (BRKA), which contains 19 caves and sinkholes (TSS 2019) (Figure 3).

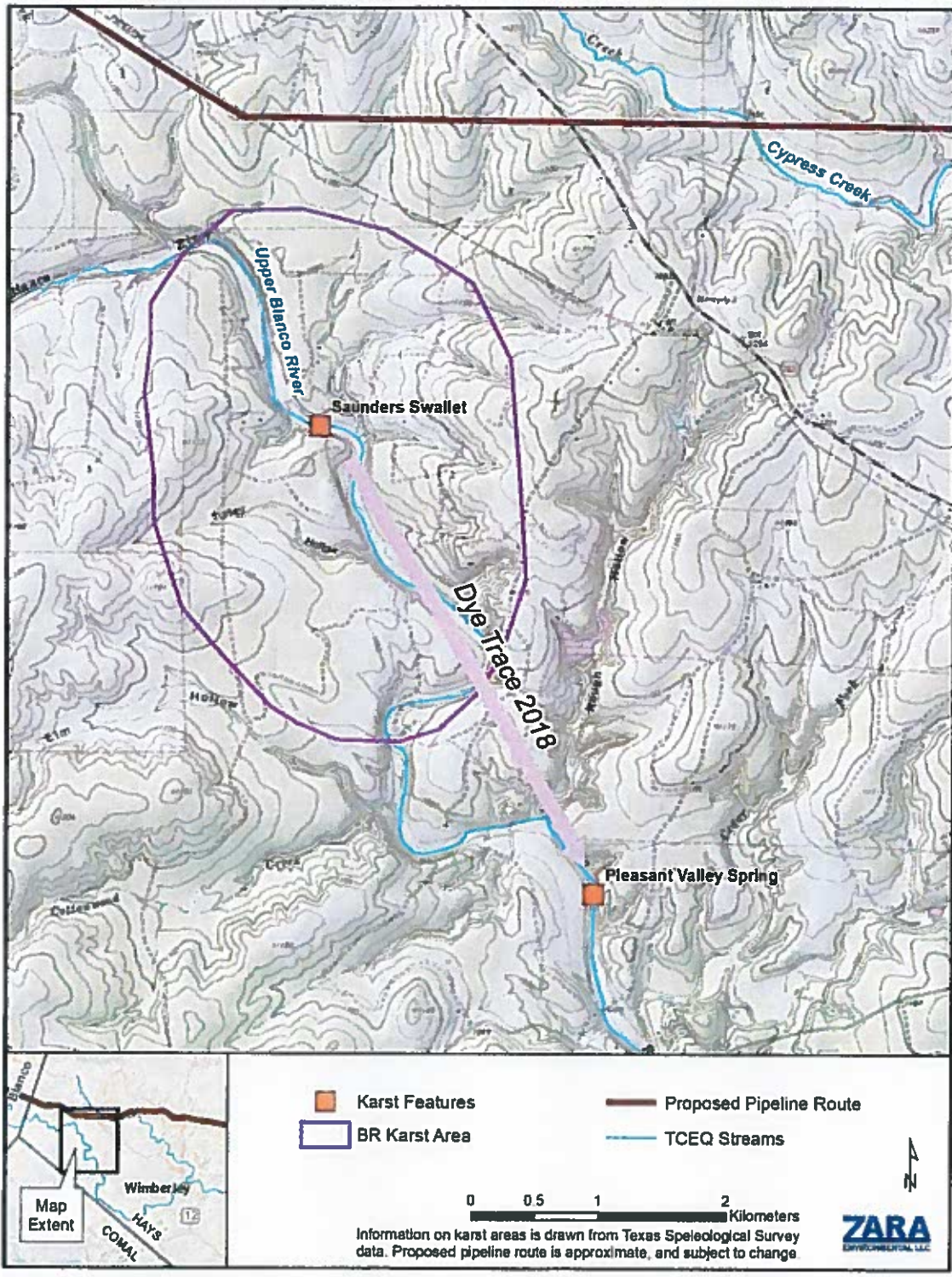


Figure 3. Burnett Ranch Karst Area and dye trace to Pleasant Valley Spring.

Like Jacob's Well, Pleasant Valley Spring occurs within an outcrop of the Lower Glen Rose formation, along with the BRKA. A narrow band of the non-karstic Upper Glen Rose formation outcrops on a ridge near Ranch Road 2325 between these two karst areas. However, the Lower Glen Rose occurs below that outcrop, so there may be no geologic barrier to groundwater flow. A dye trace conducted in 2018 (Texas Geosciences 2018) showed that water sinking at Saunders Swallet in the bed of the Blanco River re-emerges at Pleasant Valley Spring. No dyes have been injected in upland caves or karst features in the BRKA, which may also provide drainage to Pleasant Valley Spring. The springsheds for both of these springs remain poorly defined (Gary 2019), and more dye tracing is needed to delineate their drainage basins. A possible groundwater divide between Jacob's Well and Pleasant Valley Spring has been suggested by a potentiometric ridge at 925 foot elevation located generally underneath Ranch Road 2325 (Gary 2019). Even if confirmed by further studies, the location of this divide at the phreatic level would not necessarily control which way liquids from a pipeline spill would go. Karst conduits in the vadose zone can transmit flow horizontally in unpredictable directions.

In dry conditions, the Blanco River is dry upstream of Pleasant Valley Spring, which then provides all river flow downstream to Wimberley, where it is joined by flow from Jacob's Well. Picking up additional flow from Fern Bank Springs along the way, the Blanco River then sinks again at Johnson Swallet west of Kyle.

#### *Groundwater and Local Karst Hydrology - Kyle Area*

The proposed pipeline route runs west to east along the south side of RM 150 to the west of Kyle, then turns southeast along the north bank of the Blanco River to IH 35. This area contains numerous caves, sinkholes, swallets, and springs. Water recharging in this area has been traced to both San Marcos Springs and Barton Springs (Smith 2012). The Barton Springs segment of the Edwards aquifer is one of the most well studied aquifers in Texas. It supplies water to between 50,000 and 60,000 persons, provides habitat for two endangered salamander species, and discharges at the iconic Barton Springs (Barton Springs/Edwards Aquifer Conservation District (2019). South of Williamson Creek, the Barton Springs segment of the Edwards aquifer is designated as a sole-source aquifer, and several cities depend on it for their water (Federal Register 1988).

Tracer studies have shown that a dynamic groundwater divide exists along FM 150 between Onion Creek and the Blanco River. In wet conditions, abundant swallets in Onion Creek cause a potentiometric mound, moving the groundwater divide north to Onion Creek. Under these conditions, groundwater in the Onion Creek area may flow north to Barton Springs or south to San Marcos Springs from the divide. When dry conditions prevail this mound dissipates, moving the groundwater divide south to the Blanco River. Johnson Swallet in the Blanco River then provides most or all of the flow at Barton Springs, while some of that recharging water has been traced to San Marcos Springs (Smith 2012). For the purposes of this report, the area discussed in this paragraph will be referred to as the Blanco River Hydrologic Zone (BRHZ) (Figure 4).

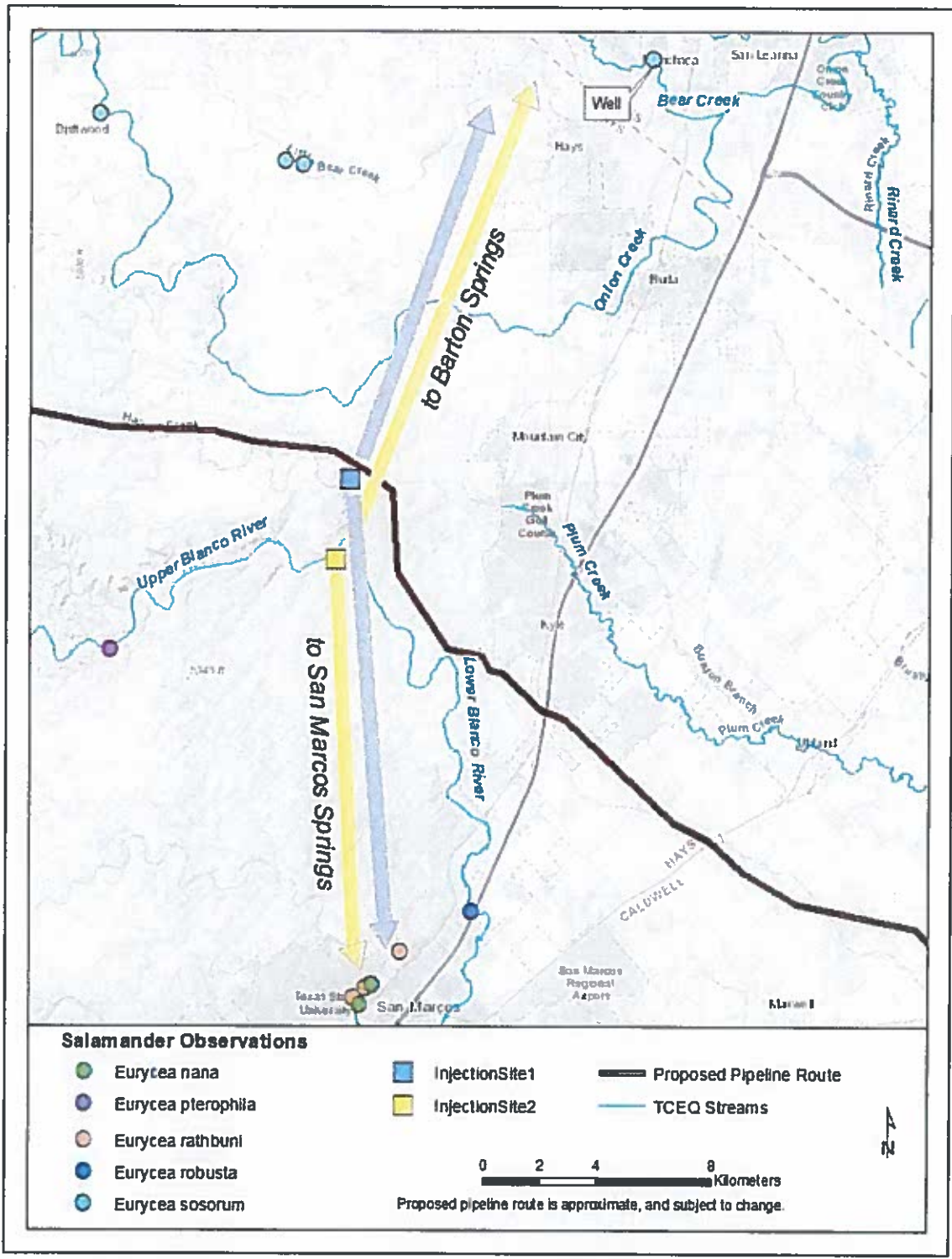


Figure 4. Blanco River Hydrologic Zone, showing known *Eurycea* salamander locations and traced groundwater flow paths (Devitt and Nissen 2018).

### Federally Listed Species

A list of species potentially occurring in Hays County with federal status (USFWS 2019, TPWD 2019) is presented in Table 1. The Texas Natural Diversity Database (TXNDD) was reviewed on July 25, 2019 (date on which data were provided by TPWD) to assess the potential for candidate, threatened, or endangered species to occur within 10 km of the proposed pipeline in Hays County. Utilizing the TXNDD data and published locations of federally listed species, seven of those species occur within 10 km of the proposed pipeline in Hays County (Table 1, Figure 5).

Table 1. Federally listed species in Hays County, Texas defined as LE (Listed Endangered), LT (Listed Threatened), or C (Candidate for Federal Listing). \*Species located within 10 km of the proposed pipeline in Hays County, Texas.

Common Name	Scientific Name	Federal Status
Barton Springs salamander*	<i>Eurycea sosorum</i>	LE
San Marcos salamander*	<i>Eurycea nana</i>	LT
Texas Blind salamander *	<i>Eurycea rathbuni</i>	LE
Blanco Blind salamander*	<i>Eurycea robusta</i>	C
Fountain Darter	<i>Etheostoma fonticola</i>	LE
San Marcos Gambusia	<i>Gambusia georgei</i>	LE
Comal Springs Dryopid beetle*	<i>Stygoparnus comalensis</i>	LE
Comal Springs riffle beetle*	<i>Heterelmis comalensis</i>	LE
Golden-cheeked Warbler*	<i>Setophaga chrysoparia</i>	LE
Least Tern	<i>Sterna antillarum</i>	LE
Piping Plover	<i>Charadrius melodus</i>	LT
Red Knot	<i>Calidris canutus rufa</i>	LT
Whooping Crane	<i>Grus americana</i>	LE

Common Name	Scientific Name	Federal Status
Texas Fatmucket*	<i>Lampsilis bracteata</i>	C
Texas Fawnsfoot	<i>Truncilla macrodon</i>	C
Texas Pimpleback	<i>Cyclonaias [=Quadrula] petrina</i>	C
Bracted Twistflower*	<i>Streptanthus bracteatus</i>	C
Texas Wild-rice*	<i>Zizinia texana</i>	LE

Of the five federally listed bird species potentially occurring in Hays County, only the Golden Cheek Warbler (*Setophaga chrysoparia*) has a TXNDD observation within 10 kilometers of the proposed pipeline in Hays County, with the closest observation of only 0.85 km from the proposed pipeline (TPWD 2019). The Texas fatmucket (*Lampsilis bracteata*), a historic population known from the Blanco River, and the Bracted twistflower (*Streptanthus bracteatus*) have been observed within 10 kilometers of the proposed pipeline (TPWD 2019). Although the Comal Springs Dryopid beetle (*Stygoparnis comalensis*) occurs within 10 kilometers of the pipeline at Fern Bank Springs, the pipeline is unlikely to affect groundwater at those springs, whose recharge zone is likely only on the south side of the Blanco River.

There are five subterranean *Eurycea* salamander species associated with the BRHZ. Three of these are federally endangered [Barton Springs salamander (*E. sosorum*), Austin Blind salamander (*E. waterlooensis*), Texas Blind salamander (*E. rathbuni*)], the San Marcos salamander (*E. nana*) is federally threatened, and the Blanco Blind salamander (*E. robusta*) is being considered for listing by the USFWS under the Endangered Species Act. An additional salamander with no federal status, the Fern Bank salamander (*E. pterophila*), occurs just southwest of the BRHZ at Fern Bank Springs. Variation in the flow direction from the Kyle groundwater divide is reflected in mitochondrial DNA similarity between some individuals of *E. nana* from San Marcos Springs and *E. sosorum* from populations in the southern extent of their known range (Devitt 2019a).

Four of these *Eurycea* species have known localities within 5 to 10 kilometers of the proposed pipeline. The fifth, *E. waterlooensis*, is only known from Barton Springs. Although Barton Springs lies 30 kilometers from the pipeline route, proven groundwater flowpaths cross under the pipeline. For four of these species those closest localities are springs, and in the case of *E. robusta*, an enlarged fracture in the bed of the Blanco River. All of these sites represent surface locations where detection was feasible, however these species likely all live within the Edwards aquifer. The majority of sites where *Eurycea* species are recorded from in Texas are springs, followed by caves and wells. Springs are relatively easy places to detect *Eurycea*, while detection in the aquifer is difficult due to lack of access. With most *Eurycea* studies having focused on

spring sites, USFWS has designated critical habitat only in small areas around springs (USFWS 2013b). While the full ranges of *Eurycea* species in aquifers are not known, their presence there has been demonstrated by detections in wells and caves that reach the aquifer.

Sites where *Eurycea* are known from phreatic (below water table) habitat inform our understanding of their presence within aquifers. While some caves such as Water Tank Cave in Williamson County have extensive occupied vadose (above water table) stream habitat for salamanders, phreatic caves such as Ezell's in Hays County show that *Eurycea* inhabit aquifers. Detection in wells further confirms their presence in aquifers. *Eurycea* are recorded from six drilled wells in Texas, as distinguished from natural cracks enlarged for use as a well. In one of these wells in Travis County, *E. sosorum* was caught in a trap set at a water depth of 38 meters (McDermid 2015). Another well in Hays County provided a video record of *E. sosorum* at a water depth of 52 meters (Devitt 2019b).

San Marcos Springs, in addition to the two *Eurycea* species, has four additional federally protected species in the adjacent headwaters stretch of the San Marcos River. These are the Comal Springs riffle beetle (*Heterelmis comalensis*), Fountain Darter (*Etheostoma fonticola*), San Marcos gambusia (*Gambusia georgei*), and Texas wild rice (*Zizania texana*).

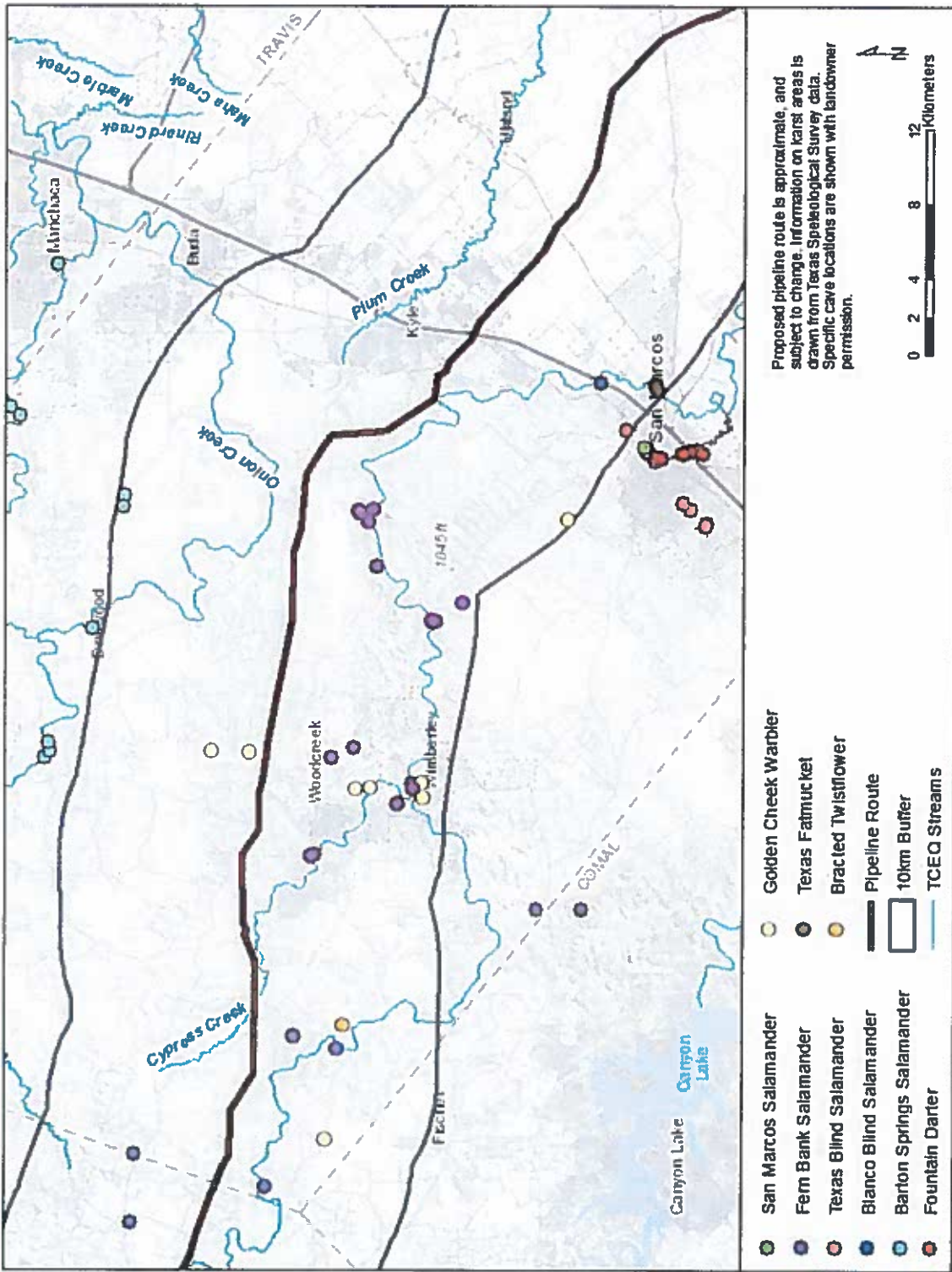


Figure 5. Known fauna species locations (Devitt and Nissen 2018) and reported TxNDD locations (TPWD 2019) near the proposed pipeline route.



### *Pipeline failures*

Pipelines carrying liquid hydrocarbons can have significant impacts to caves, groundwater, and subterranean fauna when they are breached. While natural gas liquids are separated from natural gas and transported in dedicated pipelines, “dry” natural gas pipelines may still contain some liquids subject to spillage. Pipelines constructed for transport of natural gas may be repurposed at a future date to carry liquid hydrocarbons. While the pipeline that Kinder Morgan has proposed for Hays County is being characterized as being for natural gas transmission, it could be repurposed to carry liquid petroleum products in the future. This has happened with other natural gas pipelines. Potential risks to groundwater increase with liquid pipelines, as opposed to natural gas pipelines. This is due to the likely greater volumes of liquids released, and to the chemical constituents of petroleum and gasoline, versus the liquids which can be present in natural gas pipelines.

### *Natural gas pipeline failures*

On 19 August 2000, a 30 inch diameter natural gas pipeline operated by El Paso Natural Gas Company exploded, killing 12 people camped by the Pecos River in Carlsbad, New Mexico. Like Hays County, this is a karst area with rare groundwater species (Suárez-Morales 2013). The company’s program to control corrosion inside the pipeline failed to prevent, detect, or control that corrosion (NTSB 2003). The pipeline rupture and gas ignition created a crater 113 feet long and 51 feet wide, and a 49 foot length of pipe was ejected from it. Pieces of this pipe were found to have significant pitting and thinning on the inside, but not on the outside. The damage was on the lower part of the inside surface of the pipe where liquids and solids collect within the pipe, comprised of chlorides, oxygen, carbon dioxide, hydrogen sulfide, and water. A “drip” structure upstream of the rupture site, designed to decant pipeline liquids into an external tank for removal, had become 70% clogged, allowing some liquids to bypass it and collect in a low point of the pipe (NTSB 2003). The catastrophic failure of this pipeline due to the high pressure (675 psig) inside of it presumably indicates that liquids were not escaping the pipe for extensive periods before the explosion. Upon explosion, regional pressure monitoring in the pipeline system detected the loss in pressure, causing safety valves to engage which presumably stopped liquid flows that could reach groundwater. However, the portions of the drip system that are outside the pipe are not under high pressure, so liquid leaks may not be detected in those facilities. Federal regulations for gas pipelines do not put an emphasis on inspection of these drip systems.

### *Petroleum pipeline failures*

An analysis of six petroleum pipelines crossing the Edwards Plateau to the Balcones escarpment showed 33 spills in the period 1971-1985, with a mean spill size of 2,741 barrels (Rose 1986). A 1978 spill from a corroded Texas/New Mexico pipeline in Hays County totaled 3,220 barrels of oil.

On 27 May 1986 the 24-inch Shell Pipeline Company's Rancho Pipeline in Travis County was ruptured during the construction of Slaughter Lane (Russell 1987). About 2,300 barrels of crude oil were released and ran downhill almost to Slaughter Creek, where the oil was contained by a dirt dike. On 11 June 1986 two persons entered Grassy Cove Cave, about 760 m east of the spill, in order to try and collect water samples following reports of an odor like "lighter fluid". These individuals began to feel ill while in the cave and were assisted out by emergency medical services. Other caves in south Austin were subsequently investigated and hydrocarbon fumes were detected in Get Down Cave (2 km away) and District Park Cave (2.7 km).

A spill from a presumed petroleum pipeline in Real County, Texas in the 1950's entered a sinkhole and subsequently contaminated Perry Water Cave, 9 km away (Elliott 1994). Oil was seen discharging from the spring entrance to the cave for many years afterwards. During a major flood event in July 2002, large amounts of water flowed from the cave entrance, and the odor of petroleum could be detected on the other side of the valley from the entrance (TSS 2019). Oil deposits can still be observed on the walls of the cave (Figure 7), and globs of oil in mud sediments at the bottom of cave pools rise when disturbed (Figure 8). One pool of petroleum product has been reported in the cave. These observations show that hydrocarbon spills can contaminate cave streams for at least 60 years, and at a considerable distance from the spill site.

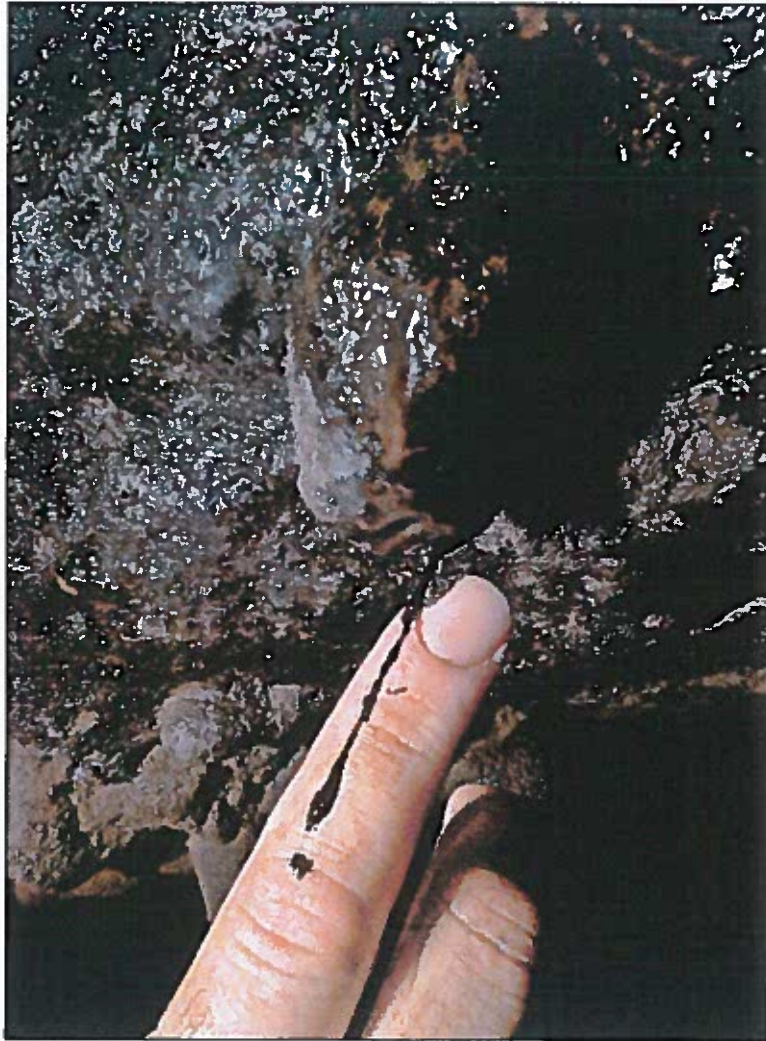


Figure 7. Petroleum deposits on cave wall in Real County, Texas.



Figure 8. Petroleum oozing from mud in pool in a cave in Real County, Texas.

Hazardous materials spills are a concern for groundwater quality at Barton Springs and within the contributing and recharge zones of the aquifer. In listing the Barton Springs and Austin blind salamanders as endangered and at risk of extinction, USFWS cited very limited range, impacted habitat, and future increase in threats, such as decreased water quality, as reasons for the listings (USFWS 1997, 2013a). Turner and O'Donnell (2004) examined the risks to salamanders at Barton Springs from potential spills in order to develop an emergency rescue response plan for the City of Austin. This was in response to the conversion of the Longhorn Pipeline from petroleum to gasoline in the early 2000's. Because of this conversion, and because gasoline contains more aromatic hydrocarbons than petroleum making it more of a risk, they considered gasoline spill scenarios. They determined that a gasoline spill affecting Barton Springs from a distance of three miles away could have catastrophic effects on salamander populations if it exceeded 1,650 gallons under normal flow conditions (50 cfs Barton Springs flow), or 360 gallons under low flow conditions (10 cfs Barton Springs flow). Due to the Permian Basin oil boom, the Longhorn Pipeline reverted to carrying petroleum around 2010. On July 13 2017, there was an

87,000 gallon spill from this pipeline in Bastrop County when it was accidentally breached by excavation equipment (Schwartz 2017).

#### *Trenching activities*

Trenching for pipeline construction in karst areas has the potential to breach caves and karst conduits, creating new paths for contaminants to reach groundwater. It also creates permanent increased permeability of bedrock in the trench by increasing the karst bedrock area subject to potential contamination. If a trench is 5 feet wide and 10 feet deep in bedrock, the effective karst surface goes from being 5 feet wide to 25 feet wide. Compounding this, we now have a trench to focus recharge around the pipe. Trenches are backfilled with permeable materials such as sand, gravel, and the rock cuttings or soil that were removed during trenching. The now-filled trench will concentrate recharge to the enhanced surface area of karst. Construction projects carried out in the Edwards aquifer recharge zone typically have to evaluate karst voids that are encountered, and submit a void closure plan to the Texas Commission on Environmental Quality (TCEQ). These voids would then be sealed with grout to keep contaminants from having a direct path to the aquifer. However, pipelines are specifically exempted from TCEQ aquifer protection rules.

#### *Longhorn Pipeline*

When the Longhorn Pipeline in south Austin was converted from carrying crude oil to carrying refined petroleum products in 2002, a lawsuit and federal involvement resulted in extra measures being taken in crossing the recharge zone. The pipe itself was replaced, and the trench was lined with gunite, a mixture of cement, sand, and water applied through a pressure hose (Figure 9). This helped to seal karst voids that were encountered in this trench (Figure 10). Stronger, heavier-walled pipe was used over the recharge zone, and a protective concrete cap was used. A leak detection system was installed using a hydrocarbon-sensing cable. Additional check valves were installed to limit the amount of potential fluid leaks, and emergency response plans were enhanced. Longhorn also purchased a \$15 million legal liability insurance policy to cover claims arising from spills (EPA 2000).



Figure 9. Longhorn Pipeline with gunite lining of trench. Photo courtesy of Barton Springs/Edwards Aquifer Conservation District.



Figure 10. Karst voids in the trench of the Longhorn Pipeline. Photo courtesy of Barton Springs/Edwards Aquifer Conservation District.

Introduction of contaminants to groundwater via trenches can occur due to sediments and fluid leaks and spills from construction equipment. After construction is complete, the backfilled trench permanently acts as an enhanced catchment area that can focus recharge from any future spill event. One risk would be in areas where the pipeline parallels a roadway, as would be the case with Kinder Morgan's pipeline at coordinates 30.0331690 -97.9362201 along RM 150 in Hays County, or in areas where the pipeline is downslope from commercial facilities. Another risk to groundwater would be if herbicides are applied within the pipeline right of way on a regular basis.

In an October 2017 Biological Opinion on the Atlantic Coast Pipeline in Virginia, the US Fish and Wildlife Service examined potential impacts to the Madison cave isopod (*Antrolana lira*), a groundwater species. They determined that trenching activities from pipeline construction were likely to adversely affect the isopod due to flow disruption and sedimentation in groundwater. Direct take of isopods due to sedimentation smothering could occur up to 0.5 miles from the pipeline (USFWS 2017).

#### Discussion

Liquid hydrocarbons from pipeline spills in karst areas can contaminate caves and groundwater, with effects that can persist for decades. Resulting polycyclic aromatic hydrocarbons (PAHs) can inhibit growth, development, and reproduction in amphibians, and increase the occurrence of tumors and cancer (USFWS 2013c). PAHs can also affect aquatic macroinvertebrates, which are the food supply for *Eurycea* salamanders, by causing reduced survival, altered physiological function, inhibited reproduction, and mortality (USFWS 2013c). Streams with an increasing concentration of PAHs as they progress downstream have been shown to have a corresponding decrease in macroinvertebrate densities (Scoggins 2017).

Water, along with any contaminants carried by it, that disappears into karst conduits in Hays County forms the aquifer and spring habitat occupied by multiple species of threatened and endangered *Eurycea* salamanders. The USFWS (2013) has determined that degraded water quality and changes in water chemistry are two of the principal threats to *Eurycea* salamanders in central Texas. Groundwater contamination and increase in sedimentation can also negatively affect their invertebrate prey base (USFWS 2013). Populations of *Eurycea tonkawae* salamanders were found to be lower in streamways with higher concentrations of chloride, magnesium, nitrate-nitrogen, potassium, sodium and sulfate versus those with lower concentrations (Bowles 2006).

Natural gas pipelines typically operate under high pressure, increasing the likelihood of leaks which may go undetected for extended periods. Baseline water sampling beginning before pipeline construction is essential to monitoring the impacts from pipeline construction and operation. Water sampling should be conducted during high and low flow conditions, as groundwater flow paths can change during these periods. Pipelines in Virginia have been required to conduct well water monitoring within 150 feet of pipelines. However, in Virginia

karst areas, contaminants may flow up to five miles through groundwater conduits (Clingerman 2018).

The two karst systems discussed in this report are connected by the Blanco River. During dry periods, most of the flow of the Blanco River comes from Pleasant Valley Spring west of Wimberley (Texas Geosciences 2018). This spring is likely fed by the Burnett Ranch Karst Area, which lies just south of the proposed pipeline route. All of the water flow from Pleasant Valley Spring and Jacob's Well Spring travels down the Blanco River to Johnson Swallet west of Kyle. In drier periods all of the flow of the Blanco River enters this swallet, and dye tracing studies show that this water then provides all of the flow emerging from Barton Springs and some of the flow emerging from San Marcos springs (Smith 2012).

Any liquid hydrocarbon spills in either of these two karst systems has the potential to negatively impact Pleasant Valley Spring, Jacob's Well Spring, San Marcos Springs, and/or Barton Springs, along with eight federally protected species. Species at highest risk are the four listed *Eurycea* species which may exist in the aquifer directly under the pipeline. Downstream listed species at San Marcos Springs and the San Marcos River could also be at risk from a spill. The proposed pipeline route is of particular concern west of the City of Kyle, because a pipeline spill in this area has the potential to effect federally protected species at both San Marcos and Barton Springs.

Potential direct effects to listed aquatic species, particularly salamanders, may occur due to subsurface disturbances to the aquifer. These aquifer impacts may result from a wide variety of construction activities that involve removal or alteration of subsurface bedrock that intersects groundwater which may result in the partial or complete removal of covered species habitat.

Potential indirect effects to federally listed salamanders, fish, and aquatic invertebrates and plants may occur during construction of the pipeline. Stormwater runoff could discharge to surface drainages or aquifer recharge pathways leading to springs off-site, causing short-term water quality impacts as soils in active construction areas are exposed and susceptible to erosion and off-site sedimentation. Construction runoff could also be polluted from the introduction of materials such as petroleum products or solid wastes. Indirect effects due to future degradation of groundwater quality from leaks in the pipeline may also impact listed species and their habitat as described throughout this document.

Based on the likely negative effects to federally listed aquifer dwelling species that may be directly beneath the pipeline, and possible negative effects to spring dwelling species at San Marcos Springs, National Environmental Policy Act (NEPA) documentation should be conducted for this pipeline project. This would include an effects analysis on the aquatic species discussed in this report and other federally listed species in the area. Effects to the federally protected species may occur due to subsurface habitat disturbance, groundwater degradation from construction activities, or future degradation of groundwater from pipeline leaks. The NEPA process would identify regulatory requirements and conservation measures that can be applied



to this project to reduce the likelihood of negatively affecting federally listed species and their habitats.

The route chosen for this pipeline across the Edwards aquifer recharge zone has the potential to impact eight federally protected aquatic species, and designated critical habitat for six of these. This project's exemption from the TCEQ's Edwards Aquifer Protection Program means that it should be subject to NEPA documentation and consultation with USFWS in order to determine potential impacts for federally listed species. Mitigation measures, such as embedding the pipe in concrete or voluntarily complying with the TCEQ's Edwards Aquifer Protection Program, should be considered where the pipeline crosses sensitive aquifers. If a NEPA document is produced, such as an Environmental Impact Statement, or a Biological Opinion by the USFWS, those are the best place to enshrine mitigation commitments to be followed by the project. For those mitigation measures to be successfully carried out, the services of an independent environmental compliance monitor should be employed. The environmental compliance monitor would be on site at all times to inspect for karst voids and conduct quality assurance.

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## **Item 5**

### **Director's Reports**

#### **Directors' Reports.**

Directors may report on their involvement in activities and dialogue that are of likely interest to the Board, in one or more of the following topical areas:

- **Meetings and conferences attended or that will be attended;**
- **Committee formation and updates;**
- **Conversations with public officials, permittees, stakeholders, and other constituents;**
- **Commendations; and**
- **Issues or problems of concern.**

**Item 6**  
**Adjournment**