

Alamo, Austin, and Lone Star chapters of  
the Sierra Club  
Aquifer Guardians in Urban Areas  
Bexar Audubon Society  
Bexar Green Party  
Boerne Together  
Cibolo Nature Center  
Citizens Allied for Smart Expansion  
Citizens for the Protection of Cibolo Creek  
Environment Texas  
First Universalist Unitarian Church of  
San Antonio  
Friends of Canyon Lake  
Friends of Dry Comal Creek  
Friends of Government Canyon  
Fuerza Unida  
Green Party of Austin  
Headwaters at Incarnate Word  
Hays Community Action Network  
Helotes Heritage Association  
Helotes Nature Center  
Hill Country Planning Association  
Guadalupe River Road Alliance  
Guardians of Lick Creek  
Kendall County Well Owners Association  
Kinney County Ground Zero  
Leon Springs Business Association  
Medina County Environmental Action  
Association  
Native Plant Society of Texas – SA  
Northwest Interstate Coalition of  
Neighborhoods  
Preserve Castroville  
Preserve Lake Dunlop Association  
San Antonio Audubon Society  
San Antonio Conservation Society  
San Geronimo Nature Center  
San Geronimo Valley Alliance  
San Marcos Greenbelt Alliance  
San Marcos River Foundation  
Save Barton Creek Association  
Save Our Springs Alliance  
Scenic Loop/Boerne Stage Alliance  
Securing a Future Environment  
SEED Coalition  
Solar San Antonio  
Sisters of the Divine Providence  
Travis County Green Party  
West Texas Springs Alliance  
Water Aid – Texas State University  
Wildlife Rescue & Rehabilitation  
Wimberley Valley Watershed Association

April 27, 2016

Bridge Bohac  
Chief Clerk  
Texas Commission on Environmental Quality  
MC 105  
P.O. Box 13087, Austin, Texas 78711-3087

Re: Hearing Request Regarding Draft Permit No. WQ0015095001,  
Proposed for Issuance to 633-4S-Ranch, Ltd., and Stahl Lane, Ltd.

Ms. Bohac:

On behalf of the fifty-one member organizations and individual members of the Greater Edwards Aquifer Alliance (GEAA), I am submitting this request for a contested case hearing with regard to the above-referenced Application. Several comments were previously submitted with regard to the application, including comments submitted by GEAA on behalf of our members who live in this area. The Draft Permit issued by the Executive Director does not resolve of the concerns expressed in those comments. The Greater Edwards Aquifer Alliance may be contacted at 210-320-6294 or by fax 210-320-8518.

I. GEAA is an “Affected Person”

GEAA submits this request as representing our members in this area and all those who rely on groundwater from the Edwards and Trinity aquifer formations, is an “affected person”, as that term is defined in the TCEQ regulations. The Greater Edwards Aquifer Alliance is a non-profit organization dedicated to protecting and preserving the Edwards and Trinity aquifers, their springs and watersheds, and the Texas Hill Country. Our purpose includes protection of the health and safety of the residents and landowners in the greater Bulverde area, including residents and property owners in the Oak Village North and Twin Creeks subdivisions adjacent to the proposed wastewater treatment plant property. To this end, GEAA is dedicated to preservation of water quality of the Edwards and Trinity aquifers, and watershed contributing recharge to these highly vulnerable karst formations. In order to implement these goals, GEAA seeks to pursue these purposes through education and participation in administrative proceedings. Additionally, GEAA has individual members that would have standing as “affected persons” in their own right.

II. GEAA Seeks a Hearing on Several Issues Raised During the Comment Period

We believe the Application should be denied in light of several remaining deficiencies. The Executive Director’s Response to Comments did not

resolve the concerns of GEAA related to these issues. Accordingly, GEAA seeks a contested case hearing on the disputed issues identified in this section.

A. The Draft Permit Has Not Been Shown To Be Adequately Protective of Groundwater

GEAA is primarily concerned about the approval of this permit and related development because we believe it will have a negative impact on water quality; we request a contested case hearing with regard to whether the draft permit is sufficiently protective of groundwater. The wastewater project for which the applicant has been granted this permit is located too close to the Edwards Aquifer Recharge Zone (EARZ). It is located on the Edwards Aquifer Contributing Zone within the three miles of the Edwards Aquifer Contributing Zone contiguous to the Recharge Zone – within an area afforded protection equal to the EARZ by the Edwards Aquifer Authority in their regulations on Hazardous Materials. The Edwards Aquifer Authority recognizes that boundaries of the Recharge Zone are often arbitrary, and often do not reflect geology. Studies currently being conducted by Southwest Research Institute for the Edwards Aquifer Authority indicate that the Contributing Zone of the Edwards Aquifer, especially areas within the Glenrose formations of the Trinity Aquifer, may be far more significant in terms of recharge to the Edwards than was previously believed.

Our understanding is that recharge features are to be found within the area impacted by the permit. According to a study performed by the Texas Speleological Society for the City of Bulverde (Attachment 1) several caves, some containing endangered species, could potentially be impacted by direct discharge of sewage effluent into Lewis Creek. The applicant should be required to hire a consultant to conduct a professional survey for cave or recharge features on the proposed site and the results reported to TCEQ. The wastewater permit writers at TCEQ should subsequently evaluate the results of such a study and evaluate the propriety of siting a wastewater plant and route for the direct discharge of effluent at this location.

We are concerned not only about the treated wastewater discharged from the plant, but also with regard to the untreated or partially treated wastewater stored within the wastewater treatment plant units. During the Labor Day flood of 2015, we witnessed overflow of a similar plant located at the Johnson Ranch subdivision. Furthermore, the facility and the proposed discharge have the potential to adversely impact the Trinity Aquifer in addition to the Edwards Aquifer. These impacts are particularly troubling given the reliance of nearby communities upon groundwater wells as their source of water for drinking water purposes, and other domestic purposes.

B. The Draft Permit Has Not Been Shown to be Adequately Protective of Surface Water

GEAA also seeks a hearing with regard to whether the draft permit is adequately protective of surface water. The draft permit will result in the discharge of contaminants including, without limitation, bacteria, nutrients, emerging (anthropogenic) contaminants, and oxygen-demanding constituents. The immediate receiving water is particularly sensitive to eutrophication as a result of the added nutrients, and Upper Cibolo Creek is impaired for bacteria and chlorides. Among other concerns, it has not been demonstrated that the immediate receiving waters will not be impaired for nutrients and dissolved oxygen as a result of the discharge. Furthermore, it has not been demonstrated that the discharge will not contribute to the impairment of Upper Cibolo Creek for bacteria.

This is particularly of concern given other existing discharges in the area, which should have been considered in a proper Tier 2 anti-degradation analysis. Cumulative impacts to Cibolo Creek, which is a significant Edwards Aquifer Recharge feature, should be considered when permitting discharge of effluent into tributaries of Cibolo Creek. According to our research (Attachment 2), existing Waste Water Discharge permits indicate that 1,530,000 gallons per day are discharged into Cibolo Creek where it passes through Comal County. Additional permits, including that of 4S Ranch and Meyers Ranch, will further increase the amount of effluent that is not treated to drinking water standards flowing into Cibolo Creek and entering the Edwards Aquifer through the extremely porous limestone creek bed.

C. The Draft Permit Has Not Been Shown to Ensure Compliance With the Location Restrictions Set Forth in Subchapter B of Chapter 309 of the TCEQ Rules.

GEAA further seeks a hearing with regard to whether the draft permit ensures compliance with the requirements of the Location Standards set forth in the TCEQ regulations. The location of the plant fails to minimize the possible contamination of surface water and groundwater.

According to our review of the Lewis Creek Drainage Study<sup>1</sup> and comparison with reports from rain events during 2015, we surmise that, as the amount of impervious cover within the study area increases, floodplain maps rapidly become inaccurate and outdated. Many residences within the study area that are not located in the floodplain are repeatedly being flooded. We do not believe that the wastewater treatment plant is sufficiently outside the floodplain and protected from flooding.

Additionally, the plant is located over the recharge area of a major aquifer without the necessary showing of a sufficient containment structure design. Moreover, the plant has not been shown to be adequately protective with regard to the production and spread of nuisance odors.

D. The Design of the Wastewater Treatment Plant Has Not Been Shown to be Sufficient.

GEAA seeks a hearing with regard to whether the design of the facility meets all applicable requirements. Particularly in light of the sensitive nature of the area where the facility will be located, sufficient measures have not been included to prevent and address the potential for the release of untreated wastewater, or partially treated wastewater. Furthermore, the conditions of the permit do not ensure use of the proper technology in light of the technology available, the quality of the receiving waters, and the sensitivity of the area.

The TCEQ has designated the Edwards Aquifer as the major aquifer in the state most vulnerable to pollution since the surface and subsurface environments are highly interconnected in karst areas and the physical nature of these terrains allows pollution to travel great distances quickly and with little to no filtration. Actions of individuals on the surface are directly correlated to groundwater quality.

Passage of SB 921<sup>2</sup> during the 84<sup>th</sup> Legislative session exempted wastewater treatment facilities from requirements to immediately report spills of 1,000 gallons or less. We are concerned that

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<sup>1</sup> "Flood Insurance Rate Map." *Lewis Creek Drainage Study*. N.p., n.d. Web. 10 Nov. 2015. <http://bulverdetx.gov/245/Lewis-Creek-Drainage-Study>

<sup>2</sup> <http://www.legis.state.tx.us/BillLookup/Text.aspx?LegSess=84R&Bill=SB912>

spills in volumes exempted from reporting requirements could have a negative impact on nearby wells and well owners would not be properly notified in the event of a spill.

E. The Permit Has Not Been Shown to be Adequately Protective of Human Health and Safety.

GEAA seeks a hearing with regard to whether the draft permit is adequately protective of human health and safety. The proposed discharge will result in the release of contaminants in an area where they will quickly move into groundwater relied upon as a source of drinking water by many people in the area. Furthermore, given the flooding conditions in the area, it is likely that contaminants in the wastewater will be deposited onto area properties when the receiving waters rise under flood conditions.

Emerging contaminants, which are not typically removed in wastewater treatment processes, are a matter of concern. On-going monitoring by the Edwards Aquifer Authority indicate that emerging contaminants (pharmaceuticals and personal care products) are being detected on a regular basis in the flows from Comal and Hueco springs (Attachment 3). This indicates that wastewater effluent is already having a negative impact on water quality of the Edwards Aquifer.

In the context of the thin soils, numerous springs, and sensitive Texas Hill Country streams, rivers, and aquifers, any wastewater effluent system represents a threat of permanent and significant degradation. Only by soundly based and strictly enforced regulations can we balance the provision of wastewater infrastructure to suburban residences with protection of the natural streams and springs.

F. The Draft Permit Has Not Been Shown to be Adequately Protective of the Use and Enjoyment of Property.

GEAA seeks a hearing with regard to whether the draft permit is adequately protective of the use and enjoyment of property. As noted, the draft permit will authorize the discharge of contaminants that will flow onto the property of others, and that will be deposited on the property of others particularly as a result of storm and flooding events.

According to the expert testimony of Dr. Lauren Ross<sup>3</sup>, as presented in the Johnson Ranch case, virtually all of the ammonia-nitrogen in wastewater is oxidized to nitrate in the aerated activated sludge treatment process. Therefore, the proposed discharge will contribute an amount of nitrate that will cause adverse impacts to the downstream channel. Because the nitrate concentrations "would likely range from 10 to 30 milligrams per liter," Dr. Ross determined the effluent nitrate concentration would be 1,500 times greater than the average nitrate concentrations measured in Texas Hill Country streams. Dr. Ross concluded that this nutrient loading will "include significant increases in the amount of vegetation, the occurrence of algae growth and blooms, and a loss of the very clear, high-quality water which would currently be present in the stream during times of flow."

As Dr. Ross explained, the nutrient loading would degrade the dissolved oxygen and create murky water, stimulate microbial activity, which may be harmful to human health, and produce anoxic dissolved oxygen concentrations during nighttime algae respiration. Under resulting

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<sup>3</sup> <http://www.aquiferalliance.net/wp-content/uploads/2014/01/PROPOSAL-FOR-DECISION-3-9-151.pdf> - page 26

anoxic conditions, bacteria will reduce sulfate, producing black muck and a "rotten egg" odor associated with eutrophic water bodies. Further, vegetation will impede access to the clean and open channel bottom where decaying vegetation, decomposing algae, and anoxic dissolved oxygen concentrations may lead to unpleasant odors and migration of metal ions that would otherwise remain bound to sediments.

G. A Sufficient Need for the Facility has not been Demonstrated.

GEAA further seeks a hearing with regard to whether a sufficient need has been demonstrated for the facility. The Applicant has an existing land application permit that sufficiently provides wastewater service to the service area of the proposed treatment plant, and the availability of alternate service options has not been adequately addressed.

By approving the amendment to the original land application permit, you are allowing the neighboring subdivision to relegate sewage infrastructure on to property that they do not own. In essence, you are giving them the right to dump their refuse on to the property of their neighbor, thereby depriving the neighboring property owners of the full use and enjoyment of their land while substantially devaluing their property.

It is not as if this TPDES permit is absolutely necessary for the health and safety of those residing in the 4S Ranch Subdivision. We believe that the subdivision simply seeks to convert their existing TLAP permit to a discharge permit in order to free up land currently planned for use for application of treated sewage from the subdivision so that they could build additional homes on this site.

It appears to us that property rights are being apportioned without regard to the true meaning of this standard. In making the decision to grant this amendment to the TLAP in this matter, TCEQ seems to be recognizing a very tenuous right of the developer over the solid rights of the downstream property owners on both sides of Lewis Creek to enjoy their property free from incursion, and negative impacts, of sewage effluent.

H. The Draft Permit Has Not Been Shown to Include Sufficient Monitoring Requirements.

GEAA seeks a hearing with regard to whether the monitoring requirements of the draft permit are sufficient. The surface water and groundwater in the area of the facility are particularly sensitive to contamination, and, as noted, a number of people rely on groundwater in the area as a source of drinking water. Under these circumstances, it is imperative that any problem be detected and addressed in a timely manner to minimize the risks to human health and the environment. The monitoring required by the draft permit does not accomplish this, and has not been shown to meet the requirements of the TCEQ rules.

### Conclusion

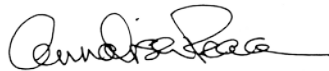
Because urban development occurs (and degrades water quality) in increments on a project-by-project basis, and often without context, we are concerned that the TCEQ is issuing permits without examining what the cumulative impacts of these permits will mean for those who rely on Edwards and Trinity wells within this area, on flows from Comal and Hueco springs, and for the future of our region in terms of reliance on the Edwards Aquifer as a high quality water supply. The effects of high density development within this extremely vulnerable karst landscape are not limited to destruction of rural lands, wildlife habitats, and pristine Hill Country

streams and springs. They include severe financial and social costs as well, some of which we are only beginning to understand.

For these reasons, GEAA seeks a contested case hearing with regard to the Application by 633-4S-Ranch, Ltd., and Stahl Lane, Ltd. for TPDES Permit No. WQ0015095001 with regard to the issues identified within this request.

Thank you for the opportunity submit this request.

Respectfully,

A handwritten signature in black ink, appearing to read "Annalisa Peace". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Annalisa Peace  
Executive Director  
Greater Edwards Aquifer Alliance

Attachment 1

Subject: TSS Bulverde data request  
Date: Sat, 22 Oct 2005 12:19:29 -0500  
From: George Veni <[gveni@satx.rr.com](mailto:gveni@satx.rr.com)>  
Organization: George Veni & Associates  
To: [csparks@bulverdecity.com](mailto:csparks@bulverdecity.com)  
CC: "William H. Russell" <[whrussell@gmail.com](mailto:whrussell@gmail.com)>, Orion Knox  
<[Orion-Knox@alumni.utexas.net](mailto:Orion-Knox@alumni.utexas.net)>

Dear Chance,

The Texas Speleological Survey (TSS) has approved your data request on behalf of the City of Bulverde for information on caves and karst features in the Oak Village North Subdivision. The TSS has information on six caves and two karst features in the study area. Attached are three files on those features in response to your request. The first is a location map of the reported caves and karst features. The second is an Excel spreadsheet with specific information about them. The third is an invoice for services. It is critical for you to be aware that none of the features have been located by GPS and the locations are approximate at best. Based on recent trips into the area by various people, TSS is confident that the locations for Ebert Cave (COM035), Falling Shadows Sink (COMF060), and Kappelman Salamander Cave (COM058) are fairly accurate. The accuracy of the remaining locations is unknown and they are based on rough sketches when the property was ranch and/or newly developed. Two of the caves, Flatrock Chasm (COM041) and Kappelman's Unnamed Cave (COM060) have locations that plot outside of Oak Village North, but because of the uncertainty about their locations they may in fact be within the city limits. It is also possible that both of these are the same cave, but listed as different caves by people who discovered them about 20 years apart. The "uncertainty" column in the Excel file lists the estimated precision of the GPS coordinates provided in the spreadsheet.

Other information in the file includes the owners' names, which are certainly well out of date, and any known significance for the caves. A "FALSE" entry may not mean there is no significance within a particular category, but only that nothing is yet known. Two caves are known to contain species of salamander that are on the Texas list of threatened species and are marked "TRUE" under the columns for biological significance. Ebert Cave is the only known cave to capture significant quantities of water. Per your agreement to receive this information, TSS will greatly appreciate whatever updates, corrections, and new information you can provide.

On Monday morning I will mail you copies of maps and printed information that are not digitally available.

If you have questions, I will be out most of this week but will be glad to reply the following week.

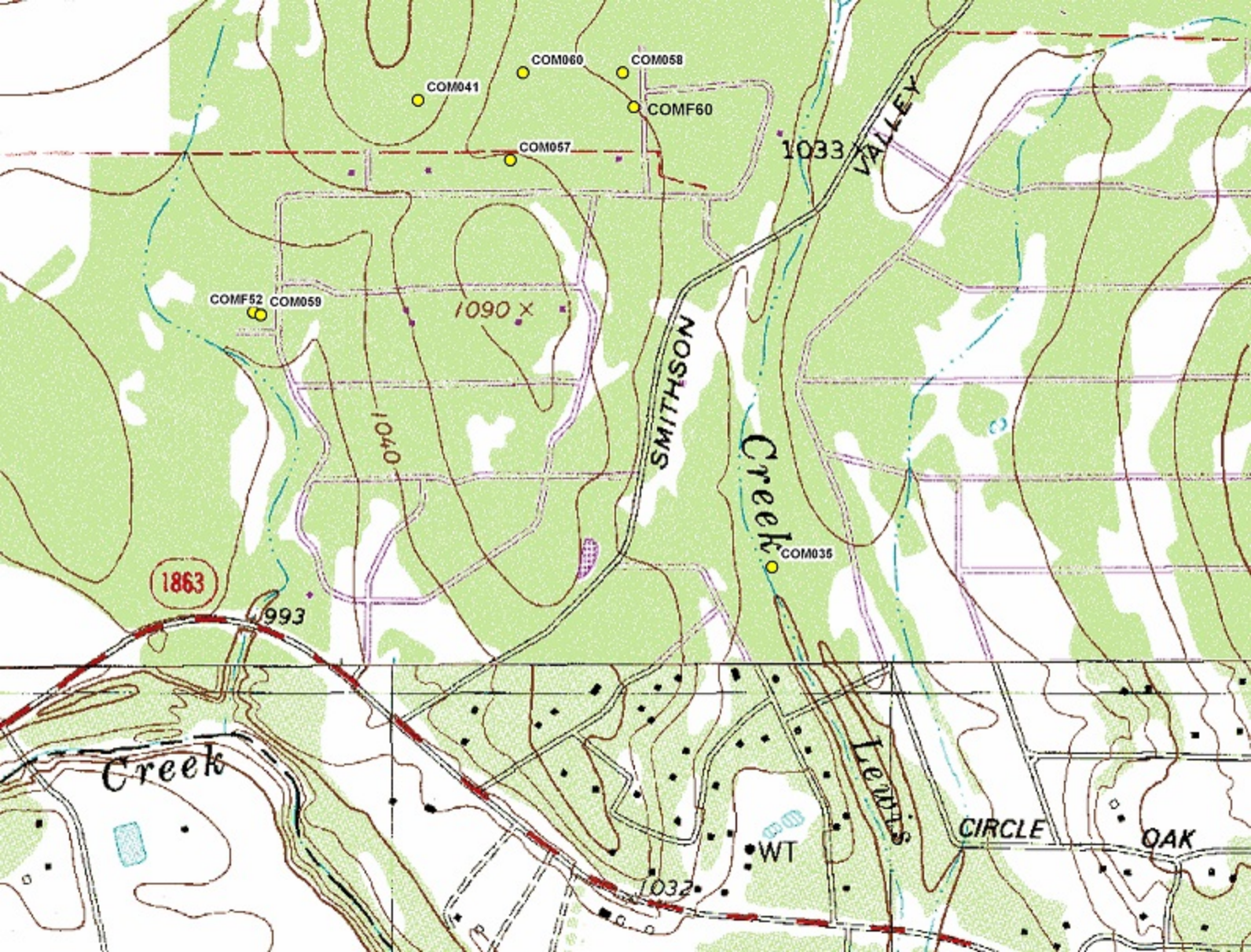
Cordially,

George Veni  
TSS President and Comal County Data Manager

\*\*\*\*\*

George Veni, Ph.D.  
George Veni and Associates  
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Texas Professional Geoscientist License #682





Attachment 2 – Current Permit Applications for Effluent Discharge Received by Cibolo Creek

Name	Stream Segment	Daily Average Flow	Cubic Feet per Second
45 Ranch WWTP	1908, Lewis Creek	480,000	0.74281
Bulverde 46 Water Recycling Center	1908, Upper Cibolo	60,000	0.09283
C D Reed WWTP	1908, Upper Cibolo	180,000	0.2785
Cibolo Valley WWTP	1908, Upper Cibolo Creek	500,000	0.7736
CISD Smithson Valley High School	1908, Dripping Springs Creek	27,000	0.04178
Johnson Ranch WWTP	1908, Upper Cibolo Creek	75,000	0.116
Park Village WWTP	1908, Upper Cibolo Creek	195,000	0.3017
Spring Branch Middle School	1908, Upper Cibolo Creek	13,000	0.02011

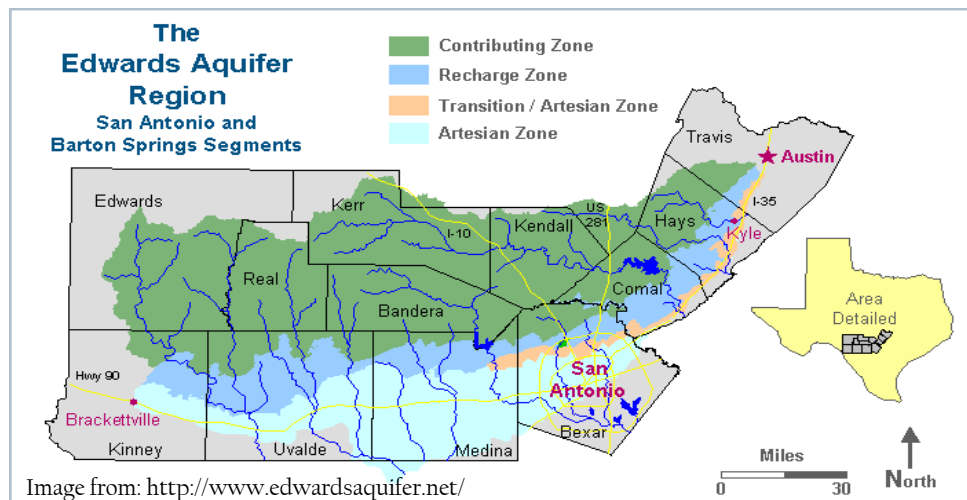
Name	Address	County	Discharge Type	TCEQ ID Number	Permit Status	Activity	Stream Segment	Limit-Daily AVERAGE flow in
45 RANCH WWTP	6000 FT N OF INTERX OF SMITHSON VALLEY RD & FM 1863	COMAL	WASTEWATER	WQ0015095001	PERMIT	ACTIVE	1908, Lewis Creek	480,000
BULVERDE 46 WATER RECYCLING CENTER	400 OLD BOERNE RD BULVERDE TX 78163 3285	COMAL	WASTEWATER	WQ0014131001	PERMIT	ACTIVE	1908, Upper Cibolo	60,000
C D REED WWTP	1015 E AMMANN RD BULVERDE TX 78163 2019	COMAL	WASTEWATER	WQ0015092001	PERMIT	ACTIVE	1908, Upper Cibolo	180,000
CIBOLO VALLEY WWTP	1600 SE OF 281 AND 1863	COMAL	WASTEWATER	WQ0014980001	PERMIT	ACTIVE	1908, Upper Cibolo Creek	500,000
CISD SMITHSON VALLEY HIGH SCHOOL	14001 HIGHWAY 46 W SPRING BRANCH TX 78070 7053	COMAL	WASTEWATER	WQ0014295001	PERMIT	ACTIVE	1908, Dripping Springs Creek	27,000
JOHNSON RANCH WWTP	3695 FM 1863 BULVERDE TX 78163	COMAL	WASTEWATER	WQ0014875001	PERMIT	ACTIVE	1908, Upper Cibolo Creek	75,000
PARK VILLAGE WWTP	APPROXIMATELY 5,900 FT DUE SOUTH OF THE INTERSECTION	COMAL	WASTEWATER		PERMIT	ACTIVE		

***Bill Summary***

H.B. 595 prohibits the Texas Commission on Environmental Quality (TCEQ) from authorizing the discharge of domestic sewage effluent into any water in the contributing or recharge zones of the San Antonio or Barton Springs segments of the Edwards Aquifer.

### Recharging the Edwards Aquifer

The Edwards Aquifer, the primary source of drinking water for almost 2 million Texans, is recharged through rainfall and runoff that enter the aquifer through fractures, caves, sinkholes, and streams within the contributing and recharge zones of the aquifer. Most of the water that recharges the aquifer enters via streams that originate in the contributing zone and subsequently cross the recharge zone (i.e., the Nueces, Frio, Sabinal, Medina, Guadalupe and Blanco Rivers, and the Hondo, Cibolo, Barton, Onion, and San Geronimo Creeks, etc.).



### A High Risk Practice To Be Avoided

In December 2008, TCEQ approved a permit for wastewater discharge in Hays County that allowed discharge of treated effluent from the Belterra subdivision into Bear Creek, a tributary of Onion Creek that recharges the Barton Spring segment of the Edwards Aquifer. Currently, Baruch Properties' pending application for the Hills of Castle Rock subdivision proposes to release treated effluent into the San Geronimo Creek, a prolific Edwards Aquifer Recharge Creek.

Effluent discharged directly into creeks and waterways that recharge the Edwards enters the Aquifer unfiltered through fractures and sink-holes within the creek beds. Consensus among scientists is that this practice results in eutrophication – an excess of nutrients (such as phosphorus) that end up in creeks, and eventually in groundwater, producing an increase of microorganisms and algae and a depression of oxygen. Such an outcome would be disastrous for the Edwards Aquifer – and the millions of Texans who depend on it for their water. Additionally, the U.S. Environmental Protection Agency



and the U.S. Geological Survey have both acknowledged an increasing presence of pharmaceutical chemicals that have not historically been considered as contaminants in treated water. These emerging contaminants may be toxic or carcinogenic for people at very low concentrations. They are not removed during the water treatment process. Emerging contaminants will be present in the treated effluent that TCEQ has allowed to be directly recharged into the Aquifer.

### **Land Application: The Better Alternative**

Developments located on the contributing or recharge zones of the Aquifer typically apply for a Texas Land Application Permit (TLAP), which allows them to dispose of treated effluent by land application (surface irrigation, evaporation, drain fields, or subsurface land application), rather than directly into recharge waterways. Treated effluent discharged onto land goes through a natural filtration process by being used in vegetation and percolating through large volumes of soil, under specific regulation by TCEQ. Appropriate application removes most of the dangerous chemicals before they reach our drinking water supply. Water that recharges the Aquifer this way is of much better (and safer) quality. Almost all subdivisions within the Hill Country have successfully employed this method of wastewater treatment.

### **Protect Aquifer Water Quality**

Prohibiting discharge of effluent into contributing zone waterways will help to ensure that the quality of water that Central Texans drink and use every day stays as pristine as possible. This bill encourages growth and development that does not unnecessarily harm the most prolific natural resource of Central Texas: the Edwards Aquifer.

## Emerging Contaminants

### What Are They?

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Research is documenting with increasing frequency that many **chemical and microbial constituents that have not historically been considered as contaminants** are present in the environment on a global scale. Emerging contaminants (sometimes called “Organic Wastewater Contaminants” [OWCs] or “Pharmaceuticals and Personal Care Products as Pollutants” [PPCPs]) can originate from a variety of animal- and human-waste sources, including municipal, agricultural, and industrial wastewater pathways. These pathways to the environment range from rapid and direct discharges of effluent into a water body to the slow leaching of stored waste through soils. These newly recognized contaminants represent a shift in traditional thinking, as many are produced industrially yet are dispersed to the environment from domestic, commercial, and industrial uses<sup>1,2</sup>.

### Common sources of emerging contaminants include<sup>3</sup>:

- Human activity (bathing, shaving, swimming, ingested chemicals and pharmaceuticals, etc.)
- Veterinary drug use, especially antibiotics and steroids
- Residues from hospitals

### Are They Harmful?

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Much is yet to be known about the potential toxicological effects of many emerging contaminants. Due to the contaminants’ low concentrations, acute effects appear limited. **However, more subtle, chronic effects from low-level environmental exposure over time are of much greater concern.** Further, little is known about the potential interactive effects (synergistic or antagonistic toxicity) that may occur from complex mixtures of these compounds in the environment<sup>4</sup>.

Despite growing concerns about the effects of emerging contaminants, the federal government does not require testing for these compounds, and it has not set safety limits for these newly recognized contaminants in water. At present, no municipal sewage treatment plants are engineered specifically for the removal of these compounds or for any other unregulated contaminants<sup>5</sup>.

For this reason, the Greater Edwards Aquifer Alliance is calling on our State Elected Officials to pass HB 595, which would prohibit discharge of treated sewage effluent into waterways that recharge the Edwards Aquifer.

### Want More Information?

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Visit the United States Geological Survey’s “Toxic Substances Hydrology Program” homepage at <http://toxics.usgs.gov/regional/emc> or go to the Environmental Protection Agency’s fact sheet at <http://www.epa.gov/ppcp/faq.html#Insimpleterms> .

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<sup>1</sup> <http://toxics.usgs.gov/regional/emc/>

<sup>2</sup> <http://www.epa.gov/ppcp/faq.html#Insimpleterms>

<sup>3</sup> <http://www.epa.gov/ppcp/faq.html#Insimpleterms>

<sup>4</sup> Kolpin, D.W., Furlong, E.T., Meyer, M.T., Thurman, E.M., Zaugg, S.D., Barber, L.B., and Buxton, H.T., 2002,

Pharmaceuticals, hormones, and other organic wastewater contaminants in U.S. streams, 1999- 2000: A national reconnaissance: Environmental Science & Technology, v. 36, no. 6, p. 1202-1211.

<sup>5</sup> <http://www.epa.gov/ppcp/faq.html#Insimpleterms>

## Increased Urbanization in the Edwards Aquifer Recharge and Contributing zones is Impairing Water Quality

- Results of EAA well tests (2011 – 2012\*) detecting anthropogenic or “emerging” contaminants (pharmaceuticals and personal care products)
  
- Analytic MethodChemical NameResultUnitAY-68-28-2118/22/11 10:50 AMWS-LC-002217a-Estradiol1.2ng/LAY-68-28-2118/22/11 10:50 AMWS-LC-0022Equilenin3.8ng/LAY-68-28-2118/22/11 10:50 AMWS-LC-0022Estrone6.9ng/LAY-68-28-2118/22/11 10:50 AME1694Triclocarban2.9ng/LAY-68-28-2118/22/11 10:50 AME1694Tylosin2.3ng/LAY-68-28-6088/18/11 10:30 AME1694Cotinine1.7ng/LAY-68-28-6088/18/11 10:30 AME1694Cotinine1.7ng/LAY-68-28-6088/18/11 10:30 AME1694Lincomycin0.51ng/LAY-68-28-6088/18/11 10:30 AME1694Lincomycin0.51ng/LAY-68-28-6089/19/12 12:40 PME1694Diltiazem7.9ng/LAY-68-29-1128/18/11 1:35 PME1694Lincomycin0.42ng/LAY-68-29-1121/11/12 11:05 AME1694Caffeine53ng/LAY-68-29-1121/11/12 11:05 AMWS-LC-0022Estrone1.6ng/LAY-68-29-1121/11/12 11:05 AME1694Lincomycin0.27ng/LAY-68-29-1138/18/11 12:05 PME1694Lincomycin0.31ng/LAY-68-29-1138/18/11 12:05 PME1694Lincomycin0.31ng/LAY-68-29-1131/10/12 11:25 AMWS-LC-002217a-Estradiol1.4ng/LAY-68-29-1131/10/12 11:25 AMWS-LC-002217b-Estradiol1.5ng/LAY-68-29-1131/10/12 11:25 AME1694Caffeine320ng/LAY-68-29-1131/10/12 11:25 AME1694Diltiazem0.48ng/LAY-68-29-1131/10/12 11:25 AMWS-LC-0022Estrone1.3ng/LAY-68-29-1131/10/12 11:25 AME1694Lincomycin0.69ng/LAY-68-29-1131/10/12 11:25 AME1694Triclosan17ng/LAY-68-29-4181/17/12 9:45 8/16/12 9:50 AME1694Thiabendazole24ng/IDX-68-15-901 Hueco Springs12/3/12 1:15 PME169817a-Estradiol1.60ng/IDX-68-15-901 Hueco Springs12/3/12 1:15 PME1694Cotinine4.85ng/IDX-68-15-901 Hueco Springs12/3/12 1:15 PME1694Diltiazem0.705ng/IDX-68-23-301 Comal Springs8/23/11 8:50 AMWS-LC-002217a-Estradiol4.3ng/IDX-68-23-301 Comal Springs8/23/11 8:50 AMWS-LC-002217b-Estradiol7.0ng/IDX-68-23-301 Comal Springs8/23/11 8:50 AMWS-LC-0022Equilenin0.72ng/IDX-68-23-301 Comal Springs8/23/11 8:50 AMWS-LC-0022Estrone5.8ng/ILR-67-01-801 Hotel Springs at San Marcos12/3/12 11:50 AME1694Cotinine4.73ng/ILR-67-01-801 Hotel Springs at San Marcos12/3/12 11:50 AME1694Diltiazem0.451ng/ILR-67-09-101 12/14/12 12:00 AME1694Caffeine250ng/ILR-67-09-101 12/14/12 12:00 AME1694Carbamazepine19ng/ILR-67-09-101 12/14/12 12:00 AME1694Sulfamethoxazole12ng/l
  
- \*excludes results from test well near Cibola Nature Center
  
- Lincomycin and sulfamethoxazole are antibiotics ·Diltiazem is a blood pressure medication · Carbamazepine is an epilepsy medication · Cotinine is a nicotine metabolite