



EDWARDS AQUIFER  
AUTHORITY

Aquifer Education Program

2016 - 2017



## *Aquifer Education*

The EAA's education program offers a wide range of resources for students and educators to explore the Edwards Aquifer system and related issues such as water conservation, endangered species and aquifer protection. Additionally, the EAA has geologists, hydrologists, biologists, mathematicians and engineers who can discuss STEM careers and how they are vital the EAA's mission of managing, enhancing and protecting our aquifer.

All presentations, materials and resources are provided free of charge to schools and organizations within our region. More information about our educational programs can be found at [www.edwardsaquifer.org/aquifer\\_education](http://www.edwardsaquifer.org/aquifer_education).

## *Our Audiences*

The EAA targets educators and students from Kindergarten through college and beyond who are interested in learning about the Edwards Aquifer system.

## *Our Goal*

To inform students of all ages about the Edwards Aquifer and the issues affecting it through age-appropriate, interactive, entertaining presentations, materials and resources.

## *Contact Us*

Call us: **210-222-2204**

Email Us: **[info@edwardsaquifer.org](mailto:info@edwardsaquifer.org)**

Book us online: **<http://www.edwardsaquifer.org/educators-presentation>**

Follow us on social media: **<https://www.facebook.com/edwards.aquifer.education>**

**<https://twitter.com/EdwardsAquifer> #aquismarty #beaquifersmart #ouraquifer**



Edwards Aquifer Authority

900 E Quincy, San Antonio, TX 78215

**[edwardsaquifer.org](http://edwardsaquifer.org)**





Los colores y las formas			
rojo	amarillo	azul	verde
morado	rosado	cafe	negro
blanco			
el circulo	el cuadrado	la estrella	el diamante
el corazon			





## SCHEDULE A PRESENTATION

QR Code



KARST LEARNING LAB

Kinder - 1st

### Karston and Water Conservation

INTERACTIVE

This presentation includes story-telling with colorful illustrations, movement and motion activity and an engaging game on water conservation. When available, huggable Karston enjoys coming out to visit too. The presentation lasts 20 minutes, which is perfect for younger students, and all participants receive a special souvenir.



Karston, a loveable Texas blind Salamander named after our karst aquifer, promotes goodwill while raising awareness of the Edwards Aquifer and the species that depend on it. His message teaches young children how their small actions can make a big difference. Current program resources are found here on our website [www.edwardsaquifer.org/aquifer\\_education/karston](http://www.edwardsaquifer.org/aquifer_education/karston) and include two e-books, sing-along song sheets, and a Karston dance video highlighting the lyrics of the song so the youngest students can learn to read with Karston.

**TEKS: Kindergarten 1:C, 3:A and 7:B 1st grade 1:C and 7:B**

## SCHEDULE A PRESENTATION

QR Code



 **AquiFriends**

2nd - 3rd

### AquiFriends

INTERACTIVE

An EAA AquiFriend (another name for a trained presenter) takes eager students on a journey through the three zones of the aquifer while AquiAgents (endangered species of the Edwards Aquifer) report on their whereabouts and environmental conditions. This program was created by professional educators to meet the TEKS required in 2nd and 3rd grade.



**TEKS: 2nd & 3rd grades: 9: A, B, C and 10: A, B, C**



**SCHEDULE A  
PRESENTATION**

*QR Code*



**EXCURSIONS**

**Educators**

**CEMEX Educator Excursion Series**

**INTERACTIVE**

Why should students have all the fun?  
The EAA is a registered State Board for Educator Certification (SBEC) Continuing Professional Education (CPE) provider offering numerous teacher training opportunities each year. Get access to exclusive aquifer-related locations and personal interaction with staff geologists, hydrologists and biologists while earning CPE hours and Gifted and Talented credit. Educators can gain hands-on experience and leave with kits/materials to carry on the learning experience to their students. All excursions, supplies, transportation and food are free.



**CHECK OUT THESE EDUCATOR EXCURSIONS FOR 2016-2017:**

**SUBTERRANEAN SCIENCE**

**Friday October 21, 2016**

A trip to Natural Bridge Caverns, Texas' largest show cavern, promises to unearth the geological mysteries of the aquifer. EAA geologists will lead the group on a 75 minute, half mile tour through the northern chamber of this spectacular cavern. Participants will receive their very own Rock Mineral Test Kit. Registration will open one month prior to event date.





## CHECK OUT THESE EDUCATOR EXCURSIONS FOR 2016-2017:

### KARST CRAWL

**Friday November 4, 2016**

*Go underground to learn about the geology of the Edwards Aquifer. Explore a wild cave under the guidance of experienced and professional cavers. Learn what the aquifer looks like from inside out! Participants will receive a Survival Compass. Registration will open one month prior to event date.*



## CHECK OUT THESE EDUCATOR EXCURSIONS FOR 2016-2017:

### AQUIFER APPRENTICE

**Friday April 14, 2017**

*Spend a day in the field with an EAA scientist. Test water quality at Comal Springs, visit an Edwards Aquifer well and see the endangered species at San Marcos Springs. Participants will receive a Ph Meter. Registration will open one month prior to event date.*





## CHECK OUT THESE EDUCATOR EXCURSIONS FOR 2016-2017:

### **Aquitechs**

**Friday July 7, 2017**

Get ready to have a blast! Travel to the CEMEX- the largest quarry in the United States to learn how innovative industry monitors and conserves water. Review how basic circuits, wind generators, seismographs and solar panels are used to study and protect the Edwards Aquifer. Participants will receive a Build Your Own Wind Generator Kit. Registration will open one month prior to event date.



## CHECK OUT THESE EDUCATOR EXCURSIONS FOR 2016-2017:

### **WATERWORKS: AQUIFER ART**

**Friday August 11, 2017**

Join the EAA educators on an artistic journey to the Yanaguana Garden in Hemisfair Park. Included is a guided tour of San Pedro Springs. Express yourself and embrace your natural affinity for water using paints, pictures and other creative mediums. Participants will receive a Paint Set to use in the classroom. Registration will open one month prior to event date.



**SCHEDULE A  
PRESENTATION**

*QR Code*



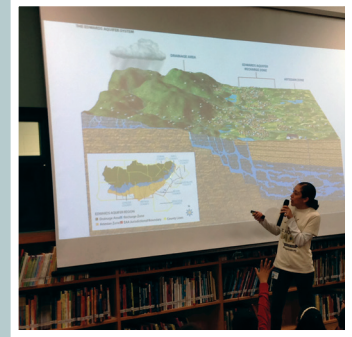
**ALL ABOUT THE AQUIFER**

**4th - 6th**

### **All About the Aquifer**

**INTERACTIVE**

EAA Educator, Sarah Valdez, provides informative presentations on the Edwards Aquifer, including water conservation, geological facts, and an overview of how the Edwards Aquifer works. 30-45 Minutes.



**SCHEDULE A  
PRESENTATION**

*QR Code*



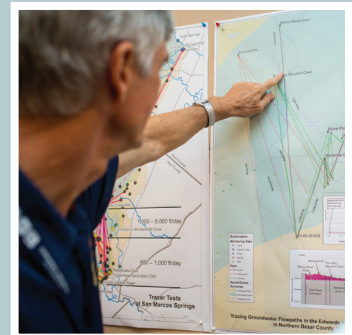
**STEM FAIRS & CAREER DAYS**

**K - 12th**

### **STEM Fairs and Career Days**

**INTERACTIVE**

Staff geologists, hydro-geologists, mathematicians and/or biologists will discuss their careers including the required education and experience, daily responsibilities and how their work allows the EAA to manage, enhance and protect the Edwards Aquifer. Presenters will demonstrate tools and technology used in their professions. 30-45 Minutes.



**SCHEDULE A  
PRESENTATION**

*QR Code*



**STEM PROGRAM**

The EAA supports the national STEM initiative and recognizes that STEM courses and professions are vital to effectively manage the Edwards Aquifer today and in the future. STEM presentations can be customized by grade-level and subject matter and each presentation will offer a problem-solving exercise for students to engage in active learning.



**Secondary STEM****Hydrogeology**

Discover the unique geology of the Edwards Aquifer - sandwiched between the Glen Rose formation below and the Del Rio Clay formation above. Learn about karst, groundwater movement and what makes the aquifer vulnerable to contamination.

30-45 Minutes.

**Biology**

Students will learn what classifies as an endangered species, basic principles of the Endangered Species Act, and how to identify the Endangered Species of the Edwards Aquifer. Specifically, staff will utilize pictures and/or specimens from the Edwards Aquifer to highlight the importance of the Endangered Species Act, the Habitat Conservation Program and resource protection. 30-45 Minutes.

**Chemistry**

Water quality sampling and testing are a vital part of the EAA's mission to manage, enhance and protect the Edwards Aquifer. Scientists will demonstrate and allow students to test samples of Edwards water for pH, conductivity, temperature, dissolved oxygen and total alkalinity. These scientists will explain where, how and why these samples are collected.

**Technology (Data Management)**

Students will learn how and why certain types of data are continually collected and maintained such as: well data, surface water analysis, rain gauge and weather station measurements. This information is stored in a database system and used by various departments to predict, quantify and report on all aspects of aquifer management. The presentation will make students aware of the importance of collecting, interpreting and storing critical data.

**Engineering (Aquifer Protection)**

The principles of engineering are used in a variety of occupations at the EAA. Presenters will discuss how engineering, or problem solving, can help filter polluted water runoff after flood events and how engineering plans are evaluated to ensure proper design standards and installation of storage containers on the Recharge Zone comply with the rules of the EAA.

**Mathematics (Numerical Computer Modeling)**

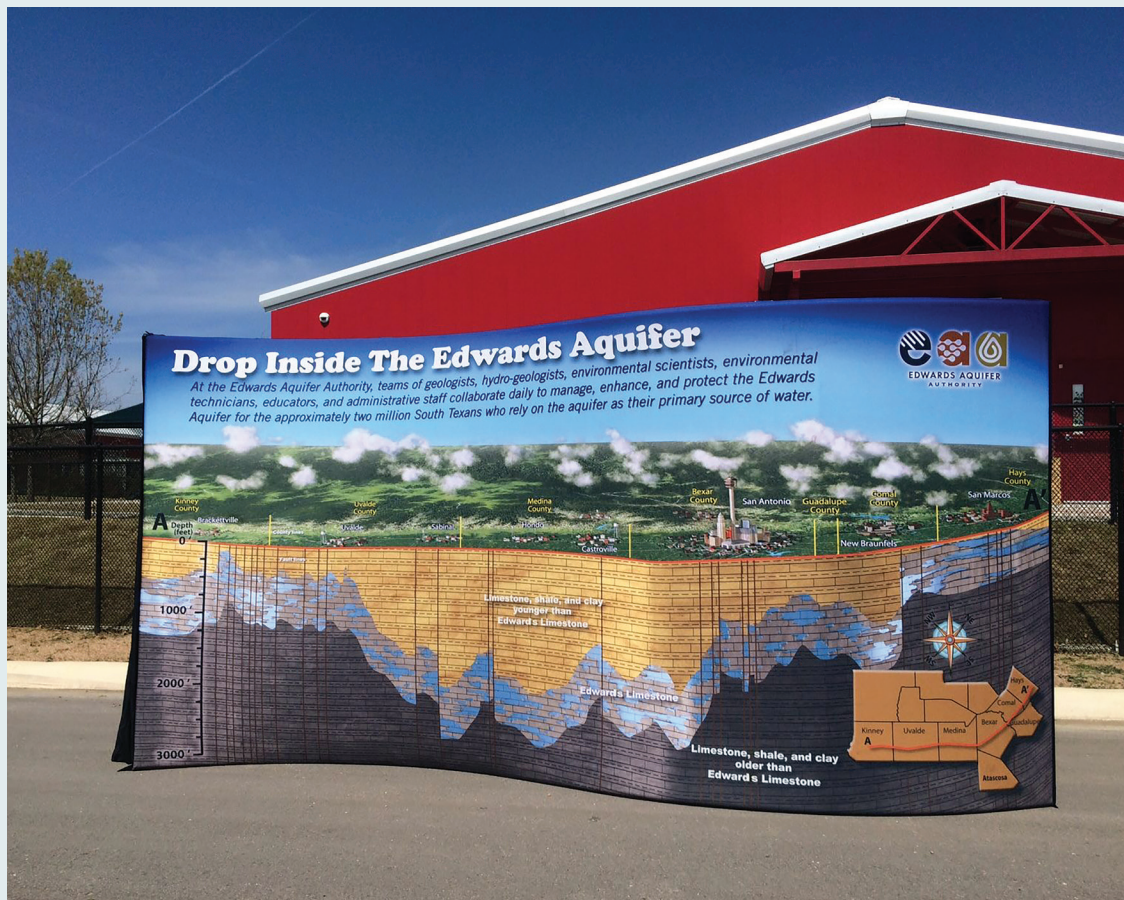
Presenters explain how they develop mathematical, statistical, and computer models that can calculate the inflows, outflows, and storage capacity within the aquifer. Once the past is accurately simulated, these models can then predict how the aquifer might respond in the future when certain resource management actions are applied.



## CHECK OUT THESE ADDITIONAL TOOLS & RESOURCES

### WALK THROUGH CAVE

As part of our outreach initiative, the EAA offers an interactive, mobile cave exhibit which serves as an educational tool for people of all ages. As students walk through the mobile cave, they are transported into a darkened environment complete with a motion-triggered audio presentation about the Edwards Aquifer. Upon exiting, they are able to explore the outside of the display, which offers visually detailed images of the Edwards Aquifer region, and information about the threatened and endangered species that live in the aquifer's ecosystem.





## CHECK OUT THESE ADDITIONAL TOOLS & RESOURCES

### HANDS ON AQUIFER MODEL

*The Edwards Aquifer is a karst aquifer characterized by features such as caves, sinkholes, disappearing streams and conduits.*

*Our LED aquifer model is a generalized representation of a segment of the Edwards Aquifer system that demonstrates how the three zones (drainage area, recharge zone and artesian zone) function to replenish, store and provide water for approximately 2 million people. Students can activate various parts of the "aquifer" to learn how they function together as a system.*





## CHECK OUT THESE ADDITIONAL TOOLS & RESOURCES

### KARST LEARNING LAB

Now, homeschool groups or gifted and talented classes have a place to come explore and learn about the Edwards Aquifer system. Our realistic, indoor, karst cave has geologic features that give a representational explanation of how our aquifer was formed — including the development of stalactites, stalagmites and even a sinkhole. Lessons on aquifer recharge and discharge are given and a presentation of the threatened and endangered species, with actual specimens, is also a part of our unique learning lab. Small group learning. Transportation not provided. 45 - 60 min.





EDWARDS AQUIFER HABITAT CONSERVATION PLAN  
HABITAT PLAN  
**ENDANGERED & THREATENED SPECIES**  
OF THE EDWARDS AQUIFER REGION  
EACNP.ORG

**TEXAS BLIND SALAMANDER**  
ENDANGERED  
Habitat: San Marcos

**PECK'S CAVE AMPHIPOD**  
ENDANGERED  
Habitat: Comal Springs

**SAN MARCOS GAMBUSIA**  
ENDANGERED  
Habitat: San Marcos Springs

**COMAL SPRINGS RIFFLE BEETLE**  
ENDANGERED  
Habitat: San Marcos & Comal Springs

**FOUNTAIN DARTER**  
ENDANGERED  
Habitat: San Marcos & Comal Springs

**SAN MARCOS SALAMANDER**  
THREATENED  
Habitat: San Marcos Springs

**COMAL SPRINGS DRYOPID BEETLE**  
ENDANGERED  
Habitat: Comal Springs

**TEXAS WILD RICE**  
THREATENED  
Habitat: San Marcos & Comal Springs







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