FINAL REPORT

Know Your Watershed

TCEQ Contract #582-19-90211

July 15, 2020

Prepared for:

GALVESTON BAY ESTUARY PROGRAM

A PROGRAM OF THE TCEQ

Galveston Bay Estuary Program
17041 El Camino Real, Suite 210
Houston, TX 77058

Prepared by:

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I. EXECUTIVE SUMMARY

The Know Your Watershed project was designed to provide content and inquiry-based pedagogy to teachers allowing them to incorporate environmental and science education into their current curriculum resulting in an increase in the student's knowledge and understanding of their community and place within their watershed. In addition, the project included a one-day symposium/seminar (seminar) to provide content and support to administrators focusing on environmental and science education so that the administrators would be able to assist classroom teachers in the implementation of environmental and science education.

The one-day symposium/seminar/seminar was a success as administrators indicated in the post evaluations. Participants revealed a 100% change in attitude/view regarding integrating environmental education into K-12 curriculum, left with more knowledge of what good environmental education includes, and would recommend the seminar to colleagues.

The two-week long summer institute for educators was also a success as indicated by the results of the post evaluation and surveys. Teachers indicated they felt more capable of teaching content related to watersheds and teaching environmental issues related to watersheds and water quality.

Overall, the project was a success and both the administrators and the teachers requested additional symposia and summer institutes.

II. PROJECT DESCRIPTION

This project consisted of two parts. Part one focused on the administrators and part two focused on the classroom teacher. Part one was a one-day symposium/seminar conducted for local administrators that addressed such questions as what is good environmental education (EE), the benefits of incorporating EE into the curriculum, how to support your local educators with their EE efforts, alignment to the Texas Essential Knowledge and Skills, and the connection between the Every Student Succeeds Act (ESSA) and EE. Administrators were also introduced to the Superintendent's Environmental Education Collaborative (SEEC). SEEC aims to bring partnerships between superintendents and environmental organizations. The in-field component of this day demonstrated a meaningful and well-rounded EE program for administrators. Funding for the symposium/seminar provided a key note speaker from SEEC along with hands-on activities demonstrating how teachers could use EE in the classroom.

The target audience was 10-15 administrators from the following ISDs – Clear Creek, Pasadena, Galveston, Houston, Channelview, and Dickinson. To assess the needs of local school district administrators and construct the symposium/seminar/seminar format and logistics, a questionnaire was sent to administrators. Additionally, using a survey instrument, the administrators completed an evaluation directly after the symposium/seminar. Two evaluations were created specifically for 1) campus level admin and 2) district level admin to identify any disparities that might be seen at each level. The symposium/seminar evaluations focused on how their schools are more connected to environmental education and its impact. In December, a second (final) evaluation was sent to participants to observe how they utilized the

knowledge they learned in the symposium/seminar and assess any progress towards their goals.

Part two was designed to provide accurate and scientifically sound content relating to the importance of watersheds through an eight-day summer institute. The institute incorporated site visits, water quality testing, educator workshops, and guest speakers for teachers living in and around the Galveston Bay Watershed. The institute focused on watersheds, wetland creations and restorations, the importance of wetlands, storm water quality, benefits of various best management practices (i.e. what people can do to improve water quality), and marshes. Educators toured wastewater treatment plants and constructed outfall wetlands for storm water treatment and described how they may use such information in their classroom, school, and/or community.

Funding provided curriculum to classroom teachers making connections between environmental knowledge and improved academic performance while emphasizing local environmental issues. Teachers received training in nationally known curricula including WOW – The Wonders of Wetlands, Aquatic WILD, and Healthy Water - Healthy People. In addition, the Science of Galveston Bay was provided to each participant. Teachers received additional training in the *National Guidelines for Excellence in Environmental Education*, which provides guidelines for the selection of non-biased EE materials. The institute's intent was to enable teachers to incorporate more environmental and science education into their curriculum, thus increasing the student's knowledge and understanding of their community and place within the watershed.

The target audience was grades 5 – 12 classroom teachers in the Houston-Galveston area. A special emphasis was placed on teachers from Dickinson Independent School District, Clear Creek Independent School District, and Pasadena Independent School District. The target number was 30 teachers.

Using a survey instrument, the summer institute participants completed an evaluation at the end of each school semester. The evaluation focused on the implementation of the various curricula and environmental issues being addressed in the classroom. Dissemination of these results were to be presented at local, state, and national meetings.

The ultimate goal was to educate the public, including administrators, educators and their students, on the importance of watersheds. Through the summer institute and field experiences, educators would participate in and promote environmental education programs and activities stressing the importance of watersheds – benefits, what is a watershed, where is your watershed, and protection. Participants gained not only an appreciation for their watershed, but will also learn how their actions impact the watershed.

III. PROJECT METHODOLOGY

The methodology used for this project was based on a timeline and evaluations (surveys).

The timeline was as follows:

Timeline: (Sept 2018 – Dec. 2020)

- Fall 2018/Spring 2019 – begin to secure presenters, field trips, etc. for both institute and Administrator Symposium/seminar
- Fall 2018/Spring 2019 – recruit/solicit educators to participate in the 8-day summer institute and invite administrators to the symposium/seminar
- Spring 2019 – order supplies, materials, finalize agenda and outside presenters
- Summer 2019 – conduct watershed summer institute; conduct Administrator Symposium/seminar
- Fall 2019 – follow-up evaluation
- Spring 2020 – follow-up evaluation
- Fall 2020 – presentation of results (possible conferences TAEE, CAST and NAAEE)

***Part One,* Environmental Education Seminar for Administrators**

Agenda

July 20, 2019

Time	Activity
8:00	Registration, light breakfast 3 teachers/table – 5 tables; partners fill in
8:30	Welcome, Introductions Icebreaker (Find a person, local watershed related)
9:00	What is environmental education?
9:15	Kathy McGlauflin: What does the national scene look like for EE? What is the Superintendent's Environmental Education Collaborative (ESSA, national information, EE benefits) (30 min presentation, 15 min for Q&A)
10:00	Short break
10:10	Field trip to the pier: What is good EE and place-based experience? • H2O testing, plankton tow & ID/bird adaptations (20 min rotations) • Wash up (10 min)
11:00	Sarah Gossett: Local water quality issues
11:30	Linking Curriculum/Reflection (each table gets a question and a flipchart page, hang around room to discuss) 1. What are the benefits of EE 2. How can you connect EE to the real world? 3. What are the challenges for teachers and how can you address them? 4. How can you support teachers at your campuses? 5. How can you make EE cross-curricular?

12:00	Lunch (sticky notes at each table for new thoughts/ideas for flipchart pages) (Community partners start setting up at 12:35)
12:45	Local Resources • Partners are set up at each table. 10 minute rotations (depending on # of partners)
2:15	Break, sticky notes of new thoughts/ideas go on flipchart pages
2:30	Laura Downey: Real World Implementation (real life successes that have incorporated EE into your schools/school districts and how to support your teachers) (30 min and 15 for Q&A).
3:15	Closing & evaluation, ah ha moments/answer evaluation questions
3:30	End

Part Two, Eight Day Summer Institute Agenda/Timeline Course Outline

Know Your Watershed: A Summer Institute for Teachers
Agenda
July 8 – July 12, 2019

Day	Activities
Day 1 **July 8**	**Know Your Watershed** 1. Course Overview, Icebreaker-people search-expanded version from admin. Day 2. What is EE? History of EE, Why use EE in Your Class 3. DW-Water Cycle table pg. 15 Constructed Cycle pg27 Lunch 4. Coastal Health Index and Galveston Bay Jenny Oakley 5. Model Watershed on a Piece of paper Activity 6. Cindy and Topo map activity 7. Guest Speaker: GBF-Watershed Topo Map-Cindy Wilems
Day 2	**Watershed Issues and Armand Bayou Watershed** 1. Healthy Water, Healthy People (HWHP)-page 61 A Snapshot in time. 2. Bright Child vs. Gifted Child Card Sort 3. *Galveston Bay Report Card-T'Noya Gonzales 4. Lunch 5. Juli Martin Salzman-Augmented Reality with watershed map 6. Goggle Earth and history of our local watershed-fill in times; PAW-Watered Down History page 138
Day 3	**Aquatic Wildlife in the Watershed**

	1. Kayaking Armand Bayou - Nick Ellis 2. Lunch 3. Water Quality Testing on Armand Bayou Kayak trip 4. Subsidence and the watershed 1:00 Subsidence district speaker. Mike Turco 5. PAW-Designing a Habitat pg 34-based on something from Kayak Ride
Day 4	**Taking Galveston Bay into the Classroom** 1. Where does the bay get its water? Rivers in Texas-Brazos, Trinity, San Jacinto 2. Field Trip to GBF Trinity Bay Facility. All day 3. Activities: Seining, Oysters, Plankton, Wetlands, Cordgrass, Water Quality 4. Rain day July 17
Day 5	**Healthy Water, Healthy People** 1. GBF- Water Quality-Ted Driscoll Testing Stations 2. Teaching Activities With the Most Impact. Work on Project from Science Buddies https://www.sciencebuddies.org/teacher-resources/lesson-plans/environmental-monitoring-circuit?from=Newsletter#lesson
Day 6	**Where does my water go?** Field Experiences: Waste Water Treatment Plants (Friendswood – Blackhawk, 1. 9:00 Water Treatment Plant Tour; Brianna Morales, 281-488-4115 2. Water Quality Activities - Healthy Water, Healthy People Book
Day 7	**Wetlands – They are Important** 1. Pedagogy-Kagan Structures 2. DW-Streams of Data pg 57 3. River Reflections pg. 107 4. Healthy Waters, Healthy People 5. A Snapshot in Time pg 61 6. Benthic Bugs pg 155 7. Water Quality Station pg 164 *Rain day for Trinity Field Trip*
Day 8	**Taking Action: What are the issues?** 1. Field Trip-Exploration Green 9:00-10:00 2. Community guidelines 3. What is Your Water Footprint? 4. Water conservation activity

	5. Taking Action: Environmental Issues in Your Watershed 6. Green schools water investigation 7. Workshop review and closure

Part One Evaluations were created, administered, and analyzed by the Galveston Bay Foundation. The initial evaluations were administered via paper in the summer 2019 and the final evaluation in the fall 2019 was administered via survey monkey.

Part Two Evaluation were created by Drs. Brenda Weiser and Michelle Peters, University of Houston-Clear Lake. The evaluation was administered via survey monkey and Dr. Peters performed the analysis on the results for both the survey administered in the fall 2020 and in the spring 2020. Both surveys consisted of 15 questions along with demographics.

IV. PROJECT RESULTS

The results of the project will be presented based on the two different parts of the grant.

Part One, EE Administrative Symposium/seminar

Thirteen district and campus administrators from five school districts were in attendance for the event from Clear Creek ISD, Houston ISD, Pasadena ISD, Galveston ISD, and Channelview ISD:

- 2 district level administrators (elementary and high school science coordinators)
- 2 Principals
- 1 Vice/Assistant Principal
- 1 K-2 Administrator
- 7 campus specialists (STEM coach, Magnet coordinator, GT Specialist, science specialist)

Throughout the seminar, participants heard from local and national speakers on environmental education and the Galveston Bay watershed:

- Kathy McGlauflin, Senior Advisor for the Superintendents' Environmental Education Collaborative, spoke about national environmental education initiatives and programs, the Environmental Literacy Framework and Guidelines for Excellence that the North American Association for Environmental Education has produced, the importance and mission of the SEEC (currently there is no Texas superintendent representative on the SEEC), and highlighted the known benefits that environmental education has to students and the surrounding community.
- Laura Downey, Executive Director of the Kansas Association for Conservation and Environmental Education, examined environmental education options and

opportunities for school districts by highlighting success stories that she was involved with in Kansas.

- Brenda Weiser, Associate Professor of Curriculum and Instruction at the University of Houston – Clear Lake, discussed the history behind environmental education, defined "good" environmental education (incorporating Environmental, Social, Political, Economic, and Cultural components), and discussed how to create an environmentally literate citizenry.
- Sarah Gossett, Water Programs Manager for the Galveston Bay Foundation, highlighted GBF's Water Monitoring Volunteers, explained the water quality parameters that are tested around Galveston Bay, and touched on local water quality issues.

Attendees participated in field work demonstrations lead by Galveston Bay Foundation staff. Cindy Wilems, Director of Education, and Megan Imme, Education Coordinator, lead the group down the yacht club's long pier. Participants tested water quality, examined the health of the bay, viewed plankton under microscopes, learned about bird adaptations while viewing them with binoculars, and discussed the benefits of allowing students to have field experiences such as these. A highlight of the morning was finding three Purple Martin nests with babies under the pavilion eaves. Cindy Wilems also guided discussions with the group on the challenges of integrating environmental education, how they can support their schools and teachers, and potential resources they can use during the next school year. Local community partners Harris County Precinct One, Artist Boat, TPWD Angler Education, Armand Bayou Nature Center, NOAA Flower Garden Banks National Marine Sanctuary, Native Prairies Association of Texas, Texas Master Naturalist, and H-GAC, were in attendance to meet with participants and discuss future programming.

District level administrators stated that 27 elementary schools and eight high schools from Clear Creek ISD and Pasadena ISD currently implemented EE curriculum via inquiry labs, in-class lessons, on-campus field work, and off-campus field work. Both ISD's stated 100% support for EE in K-12 curriculum and offer two to three teacher professional development workshops on the topic each year. Alternatively, on the campus level evaluation, three participants stated their school currently includes EE in their curriculum and eight participants said it did not. Reasoning behind why it is not taught is:

- not in scope and sequence
- no push on campus, TEKS alignment
- need more education on how to incorporate
- lack of teacher interest/knowledge
- alignment, cross curricular awareness

Table 1 below shares EE initiatives from the perspective of campus level administrators.

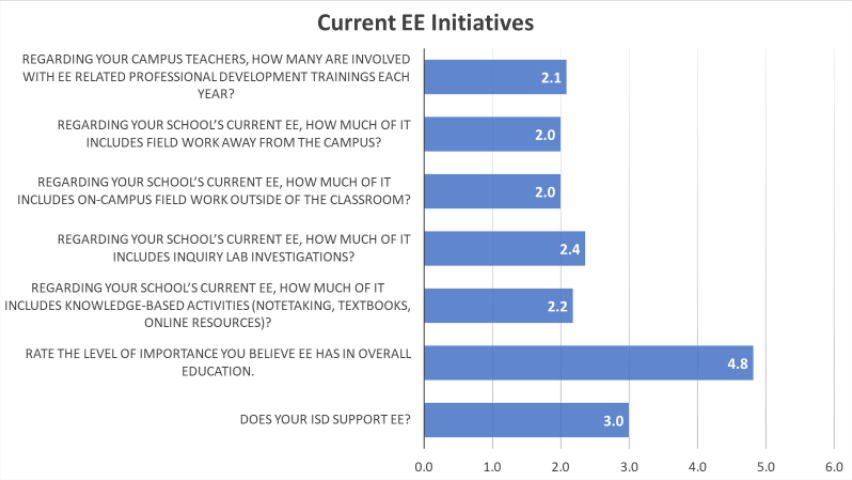


Table 1

As seen in Table 2, participants enjoyed the seminar and left with more knowledge about true environmental education and how to implement it in their school districts.

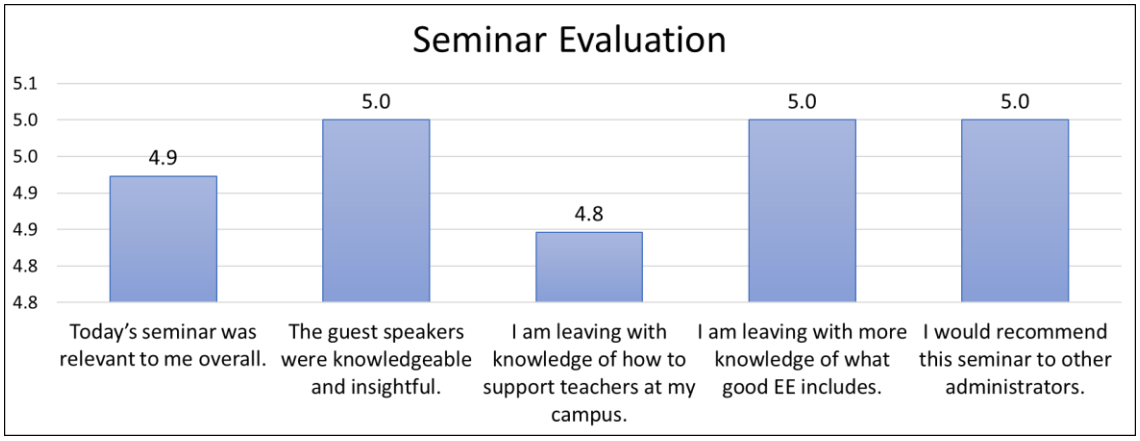


Table 2

Participant comments include:

- "A well planned and thoughtful day. The professional learning was excellent! It was an honor to be present."
- "This was great! Thank you for putting this together. Looking forward to the next one."
- "Great presenters! Love to find and discover more community partners."

Fall Evaluation Results

A second evaluation was sent to participants via email in December 2019. Of the 13 participants, 6 completed the evaluation.

District	**Title**
Channelview ISD	Assistant Principal
Galveston ISD	Campus Magnet Coordinator
Pasadena ISD	Campus Science Specialist
Pasadena ISD	District High School Science Supervisor
Clear Creek ISD	District Elementary Science Coordinator K-5
Clear Creek ISD	Elementary STEM Liaison and Science Instructional Coach

Participants revealed a 100% change in attitude/view regarding EE in K-12 curriculum and stated that they shared their new knowledge with supervisors, classroom teachers, or colleagues. When asked which actions they had initiated since the seminar,

- 50% Offered an EE professional development opportunity for my campus teachers at my campus or encourage schools to do so.
- 50% Integrated EE curriculum into 1+ grade levels on your campus
- 33% Met with other campus or district administrators to discuss topics learned at the seminar
- 33% Partnered with more than one local EE organization
- 33% Formed a district level task force to facilitate the integration of EE curriculum into 1+ grade levels
- 17% Researched and applied for grant funding
- 17% Partnered with one local EE organization
- 17% Nothing planned in fall 2019, but is planned for 2020
- 17% Nothing planned or initiated for the 2019-2020 school year

Part Two, Know Your Watershed: A Summer Institute for Teachers
There were 20 participants in the summer institute. The participants represented six local school districts including Angleton, Channelview, Clear Creek, Cy-Fair, Houston, and LaPorte. Below is additional demographics from the teachers.

Grades	Number of Teachers	Number of ISDs
K – 5	4	3
6 - 8	12	3
9 - 12	4	3

A survey was administered the last day of the institute to obtain additional demographics. Of the participants, fourteen participants indicated that their district encouraged or included environmental education in the curriculum; scored the topics for the institute as relevant to what they teach; were leaving with new knowledge regarding watersheds and issues associated with watersheds and related issues; the curriculum/activities from the institute would be useful in their classroom/courses; and they were leaving with a better understanding of what is good environmental education.

The participants were also surveyed twice after the summer institute using SurveyMonkey. The first survey was sent in November 2019. There were 11 teachers that responded. A second survey was sent in May 2020. Only nine teachers responded. Due to the COVID – 19, many teachers were not able to implement or use the materials/plans in the spring. Of those responding to the survey in November, the participants represented larger ISDs, a majority had over 20 years of teaching experience, and most taught 8th grade or high school.

The survey focused on *Watershed and Environmental Issues Content* along with the institute format and logistics. When examining the questions related to the watershed and environmental issues content, the participants indicated that they were more capable of teaching content related to watersheds after attending the institute than prior to attending the institute. In addition, the participants indicated that they were more capable of teaching environmental issues related to watersheds and water quality now as compared to prior to attending the summer institute. The participants also revealed that they were more familiar with environmental issues and research related to watersheds and environmental issues now as compared to prior to attending the summer institute. The watershed topographic model, water testing kit, watershed models, new watershed content, subsidence information and videos have been used by the participants. They also shared with others the models, content, videos, books, pH meter, and kits.

As for the format and the logistics, the format (4 days per week for two weeks) was appropriate for the content provided (55% in the fall and 88% in the spring strongly agreed). Everyone either strongly agreed or agreed that the field trips were - beneficial and enhanced their knowledge of watersheds and related issues. Of the field trips, the day on Galveston Bay conducting hands-on research was ranked most meaningful experience over the eight days. The participants ranked the field trip to Exploration Green as the least meaningful experience over the eight days. As for the guest speakers, the participants strongly agreed or agreed that the guest speakers were valuable and increased their knowledge of watersheds and environmental issues. The speakers from Galveston Bay Foundation were considered the most valuable (Cindy Wilems, T'Noya Thompson, and Ted Driscoll) where others did not rank as high or were not ranked at all. Other comments included yes, do this again and include more field trips and speakers; do more with Galveston Bay Foundation; more water quality testing; more hands-on activities and less curriculum.

Overall, the Know Your Watershed Project was successful as indicated by the results of the surveys. The results for the fall and spring surveys are included in the appendix.

V. MOVING FORWARD

The project was very successful with lots of interest. For the future, additional administration seminars would be most beneficial along with additional summer institutes. When analyzing the symposium/seminar evaluation results, we noticed there was a discrepancy among campus and district level administrators regarding how EE is conducted and perceived. Both districts stated 100% commitment to integrating EE at schools, however campus administrators noted a lack of support (3 out of 5), a lack of on and off-campus field work, and a lack of EE related district professional development training for teachers. This identified the relevance and importance of hosting seminars, such as this one, each year. All symposium/seminar participants surveyed stated the seminar was an important event that should continue on a yearly basis. "The seminar was well planned and well thought through. I cannot think of improvements at this time. I found the seminar to be inspirational." Topics of interest included national or local guest speakers, local environmental education/knowledge, alignment with the TEKS, networking with each other and community partners, and participating in field work.

Participants indicated in the post surveys field experiences were tremendous learning experiences and easily adaptable to specific classroom settings and grade levels across the board. They also commented the class was great and they learned valuable information about Galveston Bay. Based on the comments, there would be justification to replicate both the administration seminar and the teacher institute.

VI. PROJECT FUNDING

Though the grant did not require in-kind or matching funds, additional funds were used to enhance the project. The University of Houston-Clear Lake/College of Education contributed materials and supplies in the value of $300. From other non-restricted funds for environmental education, UHCL/COE/Science Education funded an additional instructor ($5,500); kayak rental $1,280) for the teacher institute and for venue rental for the administrators' seminar in the amount of $500. Total leveraging: $7,580.00

The project requested funds to be moved twice. The first request was requesting the moving of travel funds (UHCL) to contractual (GBF for travel). The second request was due to the inability to travel due to COVID-19. Travel funds were moved along with the remaining fringe benefits and supplies to contractual (Galveston Bay Foundation) in order to provide watershed education kits for teachers and students visiting the GBF educational site. Below is the revised project funding.

Budget Category	Cost for Work to be Performed
Salary/Wages	$7,953.00
Fringe Benefits	$1,147.35

Budget Category	Cost for Work to be Performed
Travel	$0
Supplies	$5,109.27
Equipment	$0
Contractual	$17,741.38
Construction	$
Other	$
Total Direct Cost	$31,951.00
Indirect Costs (*)	$6,390.00
Total	$38,341.00

VII. CONCLUSION & LESSONS LEARNED

Overall, the symposium/seminar and the summer institute for teachers was a success. The administrators had wonderful comments and expressed lots of interest in the programs that were presented during the "exhibit fair". As a result, Crenshaw EE Magnet School in Galveston ISD requested some additional training for their teachers. A Project Learning Tree workshop was conducted in August 2019 at the school. Additionally, Galveston Bay Foundation conducted various field trips, classroom programs, and teacher workshops during the 2019-2020 school year with many symposium/seminar and institute participants as a direct result of this project, This included teachers/students from Seabrook Intermediate School (Clear Creek ISD), Crenshaw Elementary (Channelview ISD), Ed White Elementary (Clear Creek ISD), Pasadena ISD, Clear Creek ISD, and Oppe Elementary (Galveston ISD).

For future symposiums/seminars, it has been suggested that each administrator bring a classroom teacher and give both time to reflect together. This would assist in bridging the gap between campus and district viewpoints. The agenda went as planned except the time to network with community partners was shortened due to other activities running long. In the future, either extend the day or have a 2-day session to allow more time for participants to network between themselves, network with community partners, and reflect on the lessons learned.

There was one issue that the grant recipient along with the contractor and the participants did not have any control over nor anticipate – COVID-19. This impacted several of the deliverables for this grant. First, the teachers were not in their class after Spring Break and were teaching on-line. This made it difficult for the teachers to use the materials, activities or have a field trip with their students. Most teachers were excited and planned on using the materials and activities as indicated by the surveys but were not able to do so. Next, all the planned presentations at state, regional and national conferences were cancelled. This included

presenting at the International Project Learning Tree Coordinator's Conference and the North American Association for Environmental Education Annual Conference. However, a presentation was shared at the GBEP PPE meeting in December 2019. This did not include the survey from May 2020 but it was well received by the members of the committee.

As for the EE Summer Institute, the teachers requested additional workshops and institutes and continue to use the materials and knowledge that they gained during the two week institute. Lesson learned from the summer institute included the following:

1. Teachers want content knowledge, especially from experts in the field.
2. The STEM career connections mentioned throughout the workshop were meaningful to the teachers.
3. Field trips are a must for a multiday workshop. The teachers favorite was the trip to GBF's beach house trip.
4. The supplies and curriculum guides are a must so teachers can take what they learned back to school.
5. The alternate plans for the kayak trip for teachers who did not want to get on the water were needed. The teachers that stayed behind had health issues that prevented them from doing the kayak trip. They did water quality testing with local ponds.
6. Always have a plan B for bad weather days when doing field work.
7. Use a bus to transport people to and from field trip locations.

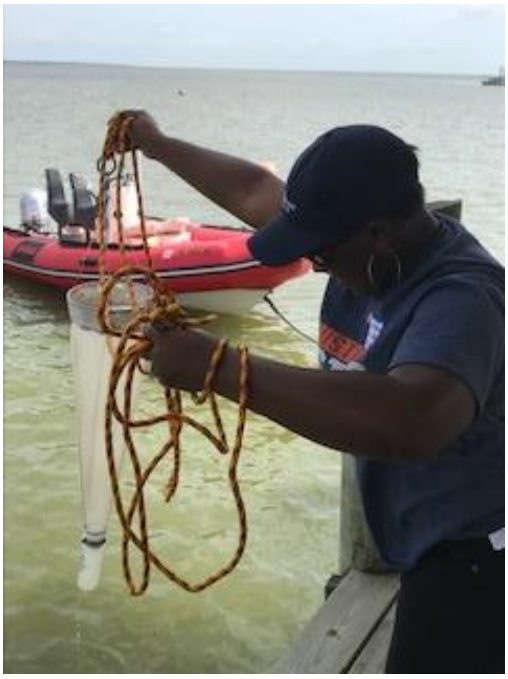
Based on the comments, enthusiasm of the participants, and survey results, the Know Your Watershed Project was a success. The scope of work outlined included the Eight Day Summer Institute for Teachers and the One Day Symposium/Seminar for Local Administrators were completed and evaluated. Quarterly reports were submitted along with communication between the performing party and the project manager.

VIII. PROJECT MAP [*IF APPLICABLE]* *NA*

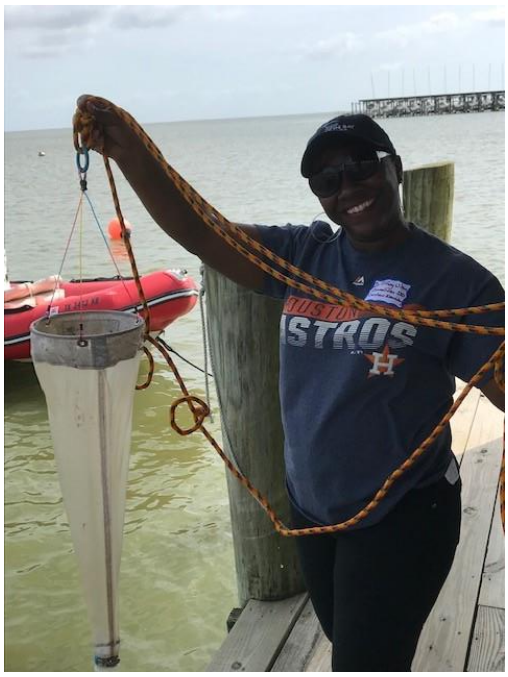
IX. PROJECT PHOTOGRAPHS

Administrator's Seminar (June 20, 2019)

Learning how to use the microscope and look for organisms.



Using water quality equipment



Using water quality equipment

Learning how to use the microscope and look for organisms.

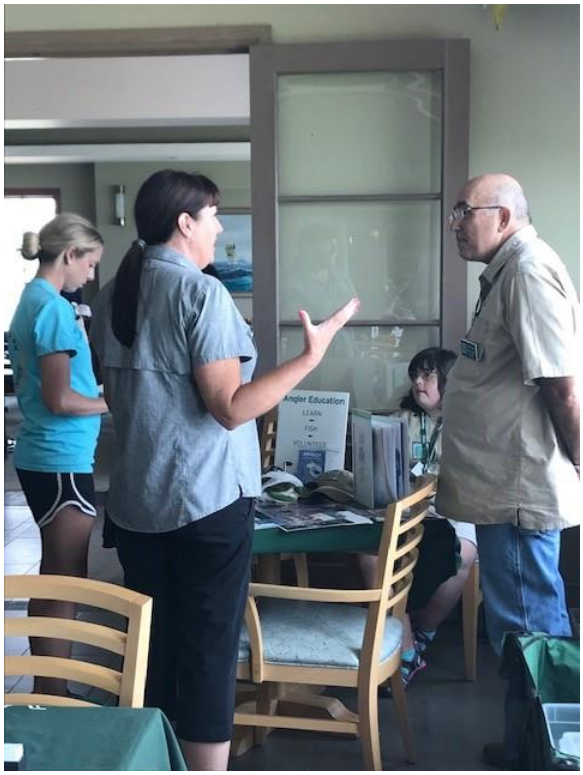
Checking water salinity with a refractometer

Kathy McGlauflin, SEEC

Dr. Laura Downey, Kansas Association of Conservation Education

Participants

Della Barbato, sharing information regarding the importance of prairies with a participant.



Master Naturalist sharing information with participant.

Know Your Watershed: A Summer Institute for Teachers

Water Quality Testing – Armand Bayou with Galveston Bay Foundation

Water Quality testing in Armand Bayou with GBF

Water Quality testing in Armand Bayou with GBF

Kayak Field Trip/Water Quality with GBF

Watershed Activity

Watershed Activity

Galveston Bay Watershed Elevation Activity

Galveston Bay Watershed Elevation Activity

Blackhawk Wastewater Treatment Plant Field Trip

Water Quality Analysis – new toys to take back to the schools

Water Quality Analysis – new toys to take back to the schools

Water Quality Analysis – new toys to take back to the schools

Trinity Bay Discovery Center

Trinity Bay Discovery Center

Trinity Bay Discovery Center

Trinity Bay Discovery Center, Organisms

Trinity Bay Discovery Center, Oyster Dissection

Trinity Bay Discovery Center, Oyster Dissection

Appendix

APPENDIX

Post Award Orientation Meeting

Texas Commission on Environmental Quality (TCEQ)
Galveston Bay Estuary Program (GBEP)

Contract No. 582-19-90211

Know Your Watershed

September 25, 2018 at 3:00PM

Meeting Notes

1. **Project Personnel –**

   Cynthia Clevenger – Project Manager for GBEP/TCEQ
   Cassidy Kempf – Backup Project Manager for GBEP/TCEQ
   Carole Clester – Contract Manager for Invoicing for TCEQ
   Clay Sebek – Temporary Contract Manager for TCEQ
   Laura Mosely – Contract Manager for UHCL
   Brenda Weiser – Project Manager for UHCL
   Cindy Wilems – Project Manager for GBF

2. **Project Overview**
   - Contract period
     - 9/1/2018 – 8/31/2008
       - Draft final report due week of 7/13/2020
       - Final report due 8/17/2020

   - Major task overview
     - An educator Summer Institute
     - One-day Administrator Symposium
       - Roles and Responsibilities

3. **Contract Terms and Conditions**
   - Allowable Costs
     - State terms and condition section p. 31 sect 3
     - No food can be purchased through this contract

   - Contract Amendment
     - P3. Sect. 4. – Changes in deliverables or due dated that don't change the SOW or the contract end date can be approved by PM through email communication, unless otherwise directed.
     - Budget revision - P. 4. 6.b – All budget revisions must be approved in writing (email). PM can approve small budget revisions. However, if moving the budget categories around is above 10% of the Total budget cost then it will require an official Budget Request Form approval (p. 45).

4. **Payment Procedures**
   - Financial Status Report- supporting documentation requirements for all invoices
     - P. 40-43

- Personnel Eligibility List to be submitted once and any time there is a change in personnel working on the project.
  - P. 46
- Invoice Submittal
  - P. 39 #5 – Invoices must be submitted to WQPDInv@tceq.texas.gov and copy Cynthia (Poject Manager) and Carole Clester (TCEQ Contract Manager for Invoicing).
- Release of Claims will be filled out at the end of the contract to release any remaining funds that were not spent.
  - P. 44
- Performance Evaluation p. 47 is for the TCEQ PM to fill out and return to the Contractor at the end of each fiscal year.

5. Scope of Work and Schedule of Deliverables

Quarterly Progress Reports – Cynthia will submit a form for to fill out the quarterly report. The report will help gauge:

- Project goals and planning
- Schedule of Deliverables
- Measures of Success

Invited	Attended?
Brenda Weiser, UHCL	Yes
Laura Moseley, UHCL	Yes
Cindy Wilems, GBF	Yes
Cynthia Clevenger, GBEP	Yes
Cassidy Kempf, GBEP	Yes

Invited	Attended?

Administrator's Save the Date Flyer

Environmental Education One-Day Seminar For Administrators

Date: Thursday, June 20, 2019
Time: 8:30AM - 3:30PM
Location: *TBA*
Hosted by: *Galveston Bay Foundation and the University of Houston-Clear Lake*

Space is limited. Contact Cindy Wilems, Galveston Bay Foundation Director of Education at cwilems@galvbay.org for an official invitation.

- **Review the benefits of Environmental Education (EE) for students and teachers**
- **Discuss how to align EE initiatives to the TEKS and ESSA**
- **Learn ways to integrate EE into K-12 curriculum**
- **Identify community partners and potential funding sources**
- **Participate in local field experiences**

University of Houston Clear Lake
GALVESTON BAY FOUNDATION
GALVESTON BAY ESTUARY PROGRAM

Funding provided by Galveston Bay Estuary Program, A program of the Texas Commission on Environmental Quality and the U.S. Environmental Protection Agency

Administrator's Invitation

Education Seminar for Administrators Ir

Administrator's Pre-Seminar Questionnaire

Symposium Questionnaire.docx

Environmental Education Seminar for Administrators

Thursday June 20th, 2019

Agenda

Time	Activity	Materials	Lead
8:00	Registration, light breakfast 3 teachers/table – 5 tables; partners fill in	Sign in Name tags, sharpies	
8:30	Welcome, Introductions Icebreaker (Find a person, local watershed related)	Icebreaker worksheet Ppt slides Pens, sticky notes on tables	Cindy, Sally
9:00	What is environmental education?		Brenda
9:15	Kathy McGlauflin: What does the national scene look like for EE? (ESSA, national information, EE benefits) (30 min presentation, 15 min for Q&A)		Kathy
10:00	Short break		
10:10	Field trip to the pier • H2O testing, plankton tow & ID/bird adaptations (20 min each) • Wash up (10 min)	Water testing supplies plankton materials birding materials	Cindy, Megan, Sarah
11:00	Sarah Gossett: Local water quality issues		Sarah
11:30	Linking Curriculum/Reflection (each table gets a question and a flipchart page, hang around room to discuss) 1. What are the benefits of EE 2. How can you connect EE to the real world? 3. What are the challenges for teachers and how can you address them? 4. How can you support teachers at your campuses? 5. How can you make EE cross-curricular?	Flipcharts markers	Sally, Cindy
12:00	Lunch (sticky notes at each table for new thoughts/ideas for flipchart pages) (Community partners start setting up at 12:35)	Sticky notes Pens	
12:45	Local Resources • Partners are set up at each table. 10 minute rotations (depending on # of partners)	GBF table info Aquatic Wild info Funding sources handout	
2:15	Break, sticky notes of new thoughts/ideas go on flipchart pages	Sticky notes Pens	Cindy
2:30	Laura Downey: Real World Implementation (real life successes that have incorporated EE into your schools/school districts and how to support your teachers) (30 min and 15 for Q&A).		Laura
3:15	Closing & evaluation, ah ha moments/answer questions	Evaluations Additional papers (cross-curricular ideas, funding) Certificates	Cindy
3:30	End		

Environmental Education Seminar for Administrators

Thursday June 20, 2019

8:30 am – 3:30 pm

Texas Corinthians Yacht Club

Agenda:

- 8am – Check-in & light breakfast
- 8:30 – Welcome, Introduction to Galveston Bay
- 9:00 – What is environmental education?
- 9:15 – Guest speaker - Kathy McGlauflin, Senior Advisor, Superintendents' Environmental Education Collaborative (SEEC)
- 10:00 – Break
- 10:10 – Field lesson demonstrations: water quality testing, plankton ID, bird adaptations
- 11:10 – Guest speaker - Sarah Gossett, Water Programs Manager, Galveston Bay Foundation
- 11:30 – Linking curriculum & reflection
- 12:00 – Seated Lunch
- 12:45 – Local resources & community partner roundtables
- 2:15 – Break
- 2:30 – Guest speaker - Laura Downey, Executive Director, Kansas Association for Conservation and Environmental Education
- 3:15 – Closing & evaluation

Contacts:

- Cindy Wilems, Director of Education, Galveston Bay Foundation: cwilems@galvbay.org
- Brenda Weiser, Associate Professor of Curriculum and Instruction, University of Houston – Clear Lake: weiser@uhcl.edu
- Sally Wall, Science Consultant: sciencesally@gmail.com
- Kathy McGlauflin, Senior Advisor, Superintendents' Environmental Education Collaborative: kathym2001@gmail.com
- Sarah Gossett, Water Programs Manager, Galveston Bay Foundation: sgossett@galvbay.org
- Laura Downey, Executive Director, Kansas Association for Conservation and Environmental Education: ldowney@kacee.org
- Megan Imme, Education Coordinator, Galveston Bay Foundation: mimme@galvbay.org

Funding is provided by Galveston Bay Estuary Program, a program of the Texas Commission on Environmental Quality and the U.S. Environmental Protection Agency.

EE Symposium for Administrators Questionnaire Answers

Seminar questionnaire answ

Seminar questionnaire answ

EE Symposium for Superintendents Questionnaire

Seminar questionnaire answ

Seminar questionnaire answ

Seminar Evaluation 1 Campus Level Leaders

Environmental Education (EE) Seminar Evaluation: Campus Level Administrators

1. Name: _____ 2. Job Title:

   _____

3. School District: _____ 4. Campus:

   _____

5. Email address: _____

6. Is your school considered Title 1? *Yes / No*
7. Does your school currently include EE into their curriculum? *Yes / No*
   a. If yes, which grade levels/courses at your school include EE ? _____
   b. If yes, at what point during the school year is EE taught? (a single unit, integrated throughout the year, etc) _____
   c. If no, why not? _____

Circle your response to the questions below: 1-none 2-little 3-average 4-moderate 5-high						
8.	Does your ISD support EE?	1	2	3	4	5
9.	Rate the level of importance you believe EE has in overall education.	1	2	3	4	5
10.	Regarding your school's current EE, how much of it includes knowledge-based activities (notetaking, textbooks, online resources)?	1	2	3	4	5
11.	Regarding your school's current EE, how much of it includes inquiry lab investigations?	1	2	3	4	5
12.	Regarding your school's current EE, how much of it includes on-campus field work outside of the classroom?	1	2	3	4	5
13.	Regarding your school's current EE, how much of it includes field work away from the campus?	1	2	3	4	5
14.	Regarding your campus teachers, how many are involved with EE related professional development trainings each year?	1	2	3	4	5

15. What current partnerships does your school have with various environmental groups in the area (non-profits, zoos, nature centers, etc)?

16. What steps will you take to increase the amount of environmental education in your school during the 2019-2020 school year? (check all that apply)

- ☐ Meet with other campus admin this summer to discuss topics learned today
- ☐ Partner with one local EE organization
- ☐ Partner with more than one local EE organization
- ☐ Encourage campus teachers to attend EE trainings and/or conferences and be willing to help pay their way
- ☐ Offer an EE professional development opportunity for my campus teachers at my campus.
- ☐ Encourage Principals and AP's to attend EE trainings and/or conferences
- ☐ Research and apply for grant funding

- ☐ Integrate EE curriculum into 1+ grade levels on your campus
- ☐ Other: _____

Rate the seminar today: 1-strongly disagree 2-disagree 3-neutral 4-agree 5-strongly agree						
17.	Today's seminar was relevant to me overall.	1	2	3	4	5
18.	The guest speakers were knowledgeable and insightful.	1	2	3	4	5
19.	I am leaving with knowledge of how to support teachers at my campus.	1	2	3	4	5
20.	I am leaving with more knowledge of what good EE includes.	1	2	3	4	5
21.	I would recommend this seminar to other administrators.	1	2	3	4	5

Please write any additional comments on the back. Thank you!

Seminar Evaluation 1 District Level Leaders

Environmental Education (EE) Seminar Evaluation: District Level Administrators

2. Name: _____ 2. Job Title:

_____

4. School District: _____ 4. Email address:

_____

5. How many campuses in your district are considered Title 1? _____

6. Do you know how many schools in your district currently include EE into their curriculum? *Yes / No*

If yes:	**#**	***Put an X for each Implementation method used:***			
		Inquiry labs	In-class lessons	On-campus field work	Off-campus field work
7. How many elementary schools?					
8. How many intermediate and/or middle schools?					
9. How many high schools?					

10. If your schools don't include EE into their curriculum, why not? *(Please answer for each level.)*

a. Elementary schools: _____

b. Intermediate and/or middle schools: _____

c. High schools: _____

Circle your response to the questions below: 1-none 2-little 3-average 4-moderate 5-high						
11.	Does your ISD support EE at all campuses?	1	2	3	4	5
12.	Rate the level of importance you believe EE has in overall education.	1	2	3	4	5
13.	How many EE related professional development trainings and/or conferences does your district provide or pay for your teachers to attend each year? *(1: none, 2: 1/year, 3: 2/year, 4: 3/year, 5: 4+/year)*	1	2	3	4	5

15. What current partnerships does your district have with various environmental groups in the area (non-profits, zoos, nature centers, etc)?

16. What steps will you take to increase the amount of environmental education in your district during the 2019-2020 school year? (check all that apply)

- ☐ Meet with other district admin this summer to discuss topics learned today
- ☐ Encourage 1+ schools to partner with one local EE organization
- ☐ Encourage 1+ schools to partner with more than one local EE organization
- ☐ Facilitate EE related professional development trainings on a district level
- ☐ Encourage teachers to attend out-of-district EE trainings and/or conferences and be willing to help pay their way
- ☐ Encourage district Principals and AP's to attend EE trainings and/or conferences and be willing to help pay their way
- ☐ Form a district level task force to facilitate the integration of EE curriculum into 1+ grade levels
- ☐ Research and apply for grant funding

☐ Other: _____

Rate the seminar today: 1-strongly disagree 2-disagree 3-neutral 4-agree 5-strongly agree						
17.	Today's seminar was relevant to me overall.	1	2	3	4	5
18.	The guest speakers were knowledgeable and insightful.	1	2	3	4	5
19.	I am leaving with knowledge of how to support teachers at my campus.	1	2	3	4	5
20.	I am leaving with more knowledge of what good EE includes.	1	2	3	4	5
21.	I would recommend this seminar to other administrators.	1	2	3	4	5

Please write any additional comments on the back. Thank you!

Seminar Evaluation 2

Seminar Evaluation 2.pdf

Seminar Fall Follow-up Survey Answers

Seminar fall followup survey ans

Know Your Watershed: A Summer Institute for Teachers
Agenda
July 8 – July 12, 2019

Day	Activities
Day 1 **July 8**	**Know Your Watershed** 1. Course Overview, Icebreaker-people search-expanded version from admin. Day 2. What is EE? History of EE, Why use EE in Your Class 3. DW-Water Cycle table pg. 15 Constructed Cycle pg27 Lunch 4. Coastal Health Index and Galveston Bay Jenny Oakley 5. Model Watershed on a Piece of paper Activity 6. Cindy and Topo map activity 7. Guest Speaker: GBF-Watershed Topo Map-Cindy Wilems
Day 2	**Watershed Issues and Armand Bayou Watershed** 1. Healthy Water, Healthy People (HWHP)-page 61 A Snapshot in time. 2. Bright Child vs. Gifted Child Card Sort 3. *Galveston Bay Report Card-T'Noya Gonzales 4. Lunch 5. Juli Martin Salzman-Augmented Reality with watershed map 6. Goggle Earth and history of our local watershed-fill in times; PAW-Watered Down History page 138
Day 3	**Aquatic Wildlife in the Watershed** 1. Kayaking Armand Bayou - Nick Ellis 2. Lunch 3. Water Quality Testing on Armand Bayou Kayak trip 4. Subsidence and the watershed 1:00 Subsidence district speaker. Mike Turco 5. PAW-Designing a Habitat pg 34-based on something from Kayak Ride
Day 4	**Taking Galveston Bay into the Classroom** 1. Where does the bay get its water? Rivers in Texas-Brazos, Trinity, San Jacinto 2. Field Trip to GBF Trinity Bay Facility. All day 3. Activities: Seining, Oysters, Plankton, Wetlands, Cordgrass, Water Quality 4. Rain day July 17
Day 5	**Healthy Water, Healthy People** 1. GBF- Water Quality-Ted Driscoll Testing Stations 2. Teaching Activities With the Most Impact. Work on Project from Science Buddies

	https://www.sciencebuddies.org/teacher-resources/lesson-plans/environmental-monitoring-circuit?from=Newsletter#lesson
Day 6	**Where does my water go?** Field Experiences: Waste Water Treatment Plants (Friendswood – Blackhawk, 1. 9:00 Water Treatment Plant Tour; Brianna Morales, 281-488-4115 2. Water Quality Activities.- Healthy Water, Healthy People Book
Day 7	**Wetlands – They are Important** 1. Pedagogy-Kagan Structures 2. DW-Streams of Data pg 57 3. River Reflections pg. 107 4. Healthy Waters, Healthy People 5. A Snapshot in Time pg 61 6. Benthic Bugs pg 155 7. Water Quality Station pg 164 *Rain day for Trinity Field Trip*
Day 8	**Taking Action: What are the issues?** 1. Field Trip-Exploration Green 9:00-10:00 2. Community guidelines 3. What is Your Water Footprint? 4. Water conservation activity 5. Taking Action: Environmental Issues in Your Watershed 6. Green schools water investigation 7. Workshop review and closure

Know Your Watershed Summer Institute Evaluation, July

3. Name: _____

4. Grade/Subject You Teach: _____

5. School District: _____ Email address: _____

6. Is your school considered Title 1? *Yes / No*

7. Does your curriculum currently include watersheds and/or related issues? *Yes / No*

   a. If yes, which grade levels/courses/units? _____

   b. If yes, at what point during the school year is watersheds and/or related issues taught? (a single unit, integrated throughout the year, etc.) _____

6. Do you address watershed issues in your class? *Yes / No*

7. If so, which ones? (Check all that apply)

- ☐ Water Quality (non-point, point, or both)
- ☐ Storm water and its impact on water quality
- ☐ Impact of humans on a watershed
- ☐ Impact of runoff and flooding on a watershed
- ☐ Impact of runoff and flooding on Galveston Bay
- ☐ Importance of wetland creations and restorations,
- ☐ Importance of wetlands
- ☐ Benefits of various best management practices (i.e. what people can do to improve water quality),
- ☐ Marshes and their importance, impact of humans
- ☐ State of Galveston Bay
- ☐ Other:

_____

8. Based on the summer institute/tours, describe how you plan to use your new knowledge/activities in your classroom, school, and/or community. Be sure to include when you plan on using your new knowledge/activities from this institute.

9. What was your favorite activity, speaker, field trip, etc. from the summer institute?

10. What was your least favorite activity, speaker, field trip, etc. from the summer institute?

Rate the overall summer institute: 1-strongly disagree 2-disagree 3-neutral 4-agree 5-strongly agree						
11.	Overall, the topics were relevant to me and what I teach.	1	2	3	4	5
12	The guest speakers were knowledgeable and insightful.	1	2	3	4	5
13.	I am leaving with new knowledge regarding watersheds and issues associated with watersheds.	1	2	3	4	5
14.	I am leaving with new ideas or strategies that can help me teach about watersheds and their issues.	1	2	3	4	5
15.	The curriculum/activities provided will be useful in my class/course(s).	1	2	3	4	5

16.	Experiencing community field trips enhanced this summer institute.	1	2	3	4	5
17.	I am leaving with more knowledge of what good EE includes.	1	2	3	4	5
18.	I would recommend this summer institute to other teachers.	1	2	3	4	5

19. Does your school currently include EE in the curriculum? *Yes / No*

a. If yes, which grade levels/courses include EE? _____

b. If yes, at what point during the school year is EE taught? (a single unit, integrated throughout the year, etc) _____

20. What steps will you take to increase the amount of environmental education in your school during the 2019-2020 school year? (check all that apply)

- ☐ Meet with other educators to discuss topics learned this past two weeks
- ☐ Partner with one local EE organization
- ☐ Partner with more than one local EE organization
- ☐ Encourage others to attend EE trainings and/or conferences
- ☐ Encourage Principals and AP's to either attend EE trainings and/or conferences OR support other teachers in attending EE trainings and/or conferences
- ☐ Other: _____

Circle your response to the questions below: 1-none 2-little 3-average 4-moderate 5-high						
21.	Does your ISD support EE?	1	2	3	4	5
22.	Rate the level of importance you believe EE has in overall education.	1	2	3	4	5
23.	Regarding your school's current EE, how much of it includes knowledge-based activities (notetaking, textbooks, online resources)?	1	2	3	4	5
24.	Regarding your school's current EE, how much of it includes inquiry lab investigations?	1	2	3	4	5
25.	Regarding your school's current EE, how much of it includes on-campus field work outside of the classroom?	1	2	3	4	5
26.	Regarding your school's current EE, how much of it includes field work away from the campus?	1	2	3	4	5
27.	Regarding your colleagues (other teachers at your school), how many incorporate EE in to their class/course(s)?	1	2	3	4	5
28.	Regarding your colleagues (other teachers at your school), how many are involved with EE related professional development trainings each year?	1	2	3	4	5

Post survey of the summer institute for teachers, November 2019

Know Your Watershed, fall 201

Post survey of the summer institute for teachers, May 2020

Know Your Watershed, spring 2

Powerpoint Presentation to the PPE/GBEP, December 2019

Know Your Watershed.pptx

Galveston Bay Foundation
Environmental Education Kits

With remaining funds, GBF will create 2 types of EE kits to be used by local educators, homeschool or scout groups. Kits are basic and we will include activity binders with a variety of investigations for elementary – high school classes along with safety and user guides.

1. Schoolyard EE Kits:
    a. Teachers will be able to check out these kits to be used at their own school or park.
    b. Enough materials are included for the class to be broken into 4 groups
    c. Materials include all equipment for insect discovery, plant investigations, biodiversity activities, and birding.
    d. All items will be housed in a backpack or duffel bag
    e. 4 identical kits will be created
2. Kemah EE Kits:
    a. 3 distinct kits will be created for educators to check out and use on our Kemah property with their class.
    b. Teachers can check out any and all kits, depending on their focus
    c. These kits include much of the same equipment, but takes investigations further by using the mini-microscopes/iPads as well as introducing the pond ecosystem
    d. Enough materials are included in each kit for the class to be broken into 4 groups
    e. Kits:
        i. Insects & Plant Discovery
            - Includes mini-microscopes and mini iPads along with id guides, nets, and other equipment
        ii. Pond Discovery
            - Includes nets, jars, guides, and other equipment
        iii. Bird Discovery
            - Includes binoculars and guides

The reasoning for the different kits is to allow educators varied options, based on their comfort level, funding, and experience. Teachers can also use the schoolyard kit first and then come to Kemah and have students compare their investigations.

Kit Budget:

Item	Unit price	# Units	Total
Schoolyard EE Kit (insects, plants, birding)	$637	4	$2,548
Kemah Kits (Insects & Plants, Pond life, Birding)	$2,977	1	$2,977
Personnel time to put together kits and activity binders	15	19	$285
TOTAL			**$5,830**

*Shipping is estimated

*Many items GBF already has: mini-microscopes, tweezers, insect nets, some magnifying glasses, and plant field guides that we can use in the kits