

# FISCAL 2018 ANNUAL WORK PLAN

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A PROGRAM OF THE TCEQ

May 2017

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## LIST OF ABBREVIATIONS

**Table 1. Abbreviations List**

Name	Abbreviation
Bacteria Implementation Group	BIG
Best Management Practice	BMP
Clean Water Act	CWA
Comprehensive Conservation and Management Plan	CCMP
Conservation Assistance Program	CAP
Environmental Institute of Houston	EIH
Fats, Oils, and Grease	FOG
Freshwater Inflows Action Plan	FW
Galveston Bay Bacteria Reduction Plan	GBBRP
Galveston Bay Council	GBC
Galveston Bay Estuary Program	GBEP
Galveston Bay Foundation	GBF
Galveston Bay Plan	GBP
Galveston Bay Public Awareness and Education Campaign	Back the Bay
GeoTechnology Research Institute	GTRI
Green Infrastructure for Texas	GIFT
Habitat Protection Action Plan	HP
Houston Advanced Research Center	HARC
Houston-Galveston Area Council	H-GAC
Implementation Plan	I-Plan
Low Impact Development	LID
Municipal Separate Storm Sewer System	MS4
Monitoring and Research	M&R
National Estuary Program	NEP

Name	Abbreviation
National Wildlife Refuge	NWR
Natural Resource Uses	NRU
Nonpoint Source	NPS
Point Sources of Pollution Action Plan	PS
Public Participation and Education	PPE
Quality Assurance Project Plan	QAPP
Research Action Plan	RSC
Shoreline Management Action Plan	SM
Species Population Protection Action Plan	SP
Spills and Dumping Action Plan	SD
Submerged Aquatic Vegetation	SAV
Surface Water Quality Monitoring	SWQM
Technical Advisory Committee	TAC
Texas Commission on Environmental Quality	TCEQ
Texas Department of State Health Services	DSHS
Texas Estuarine Resource Network	TERN
Texas General Land Office	GLO
Texas Parks and Wildlife Department	TPWD
Texas Water Resources Institute	TWRI
Texas State Soil and Water Conservation Board	TSSWCB
Unmanned aerial vehicles	UAV
U.S. Army Corps of Engineers	USACE
U.S. Environmental Protection Agency	EPA
U.S. Fish and Wildlife Service	USFWS
United States Geological Survey	USGS

Name	Abbreviation
Water Quality Improvement Project	WQIP
Water and Sediment Quality	WSQ
Watershed Protection Plan	WPP

## SECTION 1: PROGRAM OVERVIEW

The initial application of grant #CE-00655006 was for three years of time and one year of funding with the intent to request another year of time and funding each year for the next two years. The fiscal 2018 work plan is the second request of funding for this grant. The Texas Commission on Environmental Quality (TCEQ) has found this method is most effective for successful operation and coordination of the Galveston Bay Estuary Program (GBEP).

Galveston Bay is the largest and one of the most productive estuaries in Texas. It sits adjacent to one of the most heavily industrialized areas in the nation. The GBEP service area encompasses 5,000 square miles and 232 miles of estuarine shoreline along the upper Texas Coast and incorporates the 5-county area bordering Galveston Bay: Liberty, Chambers, Harris, Galveston, and Brazoria counties.

The GBEP was established in 1989 to provide comprehensive management of this vital resource. In 1990, the GBEP began working with a diverse group of stakeholders to develop a comprehensive plan that would receive broad based support from and involvement by federal and state agencies with jurisdiction in Galveston Bay, industries and businesses, local government officials, commercial and recreational fisherman, conservation organizations, and citizens. In 1994, the Galveston Bay Plan (GBP), the comprehensive conservation and management plan (CCMP), was completed, and in 1995 it was approved by the Governor of Texas and the U.S. Environmental Protection Agency (EPA) Administrator. The initial effort was jointly funded by the EPA, the Texas General Land Office (GLO), and the TCEQ.

The GBP identifies 82 action items to protect and restore the health and productivity of the estuary while supporting continued economic growth and public use of the Galveston Bay. The GBEP received a grant from the EPA to begin implementing the GBP in 1995. This grant ran from fiscal 1995 - 1999 and is now closed. Subsequent grants have run from fiscal 2000 - 2003, fiscal 2004 - 2007, fiscal 2008 - 2010, and fiscal 2011 - 2015. Currently grant #CE-00655005 (fiscal 2014 - 2018) is open but is no longer receiving allocations. Over 200 implementation projects have been initiated under these grants.

The GBEP and its partners have received 17 national awards for its partnerships and progress in implementing the GBP and preserving Galveston Bay.

### *Pre-2008 AWARDS*

- Four awards from Coastal America: one in 1999, Clear Creek Habitat Restoration project, for the beneficial use of dredge material, one in 2002 for Galveston Island State Park habitat restoration, one in 2003 for habitat restoration at Jumbile Cove, and one in 2005 for San Jacinto State Park for beneficial use of dredge material.
- Recognition award from the National Aeronautics and Space Administration for Galveston Bay estuary restoration and five years of implementation of the GBP.
- National Wetland Conservation Award for the Delehide Cove Protection and Restoration project from the U.S. Fish and Wildlife Service (USFWS) in 2006.
- The EPA Gulf of Mexico Program Gulf Guardian Partnership Award for the Brays Bayou Urban Wetlands project.
- The Fisheries and Habitat Conservation Partnership award for the cumulative habitat conservation work on the part of the Natural Resource Uses (NRU) subcommittee.
- Two EPA Gulf of Mexico Program Gulf Guardian Awards to GBEP partners, including an award in the non-profit category to SCENIC GALVESTON for the Virginia Point Coastal Preserve; in which the GBEP played an instrumental role, and an award in the individual category to Dick Benoit, a highly active local citizen.

### *2008-PRESENT AWARDS*

- The EPA Gulf of Mexico Program awarded the First Place Gulf Guardian Award in the Partnership category for the East Bay Shoreline Protection project.
- Department of Interior's Collaborative Conservation award for the East Bay Shoreline Protection project.

- The EPA's Gulf of Mexico Program Gulf Guardian Partnership Award for the North Deer Island Protection project.
- The Coastal America Partnership Award for the North Deer Island Protection project.
- The Coastal America Partnership Award for the Savannah Oaks Conservation project.
- The Houston-Galveston Area Council's (H-GAC) Our Great Region Diligence Award for Double Bayou Watershed Protection Plan (WPP) in 2016.
- USFWS' Southwest Region Annual "Partnership of the Year" Award for 2016 for Oyster Lake Shoreline Protection and Marsh Restoration Project.

## SECTION 2: INTRODUCTION

The GBEP, a special non-regulatory program of the TCEQ, is a partnership of local governments, business and industry, conservation organizations, bay user groups, and resources agencies. The GBEP is charged with implementing the GBP, the CCMP for Galveston Bay. The GBEP is part of the TCEQ's Office of Water, Water Quality Planning Division. A program manager and staff of six located in the Houston-Galveston area directly oversee implementation of the GBP. Program staff responsibilities are as follows:

- acquire, manage, and disperse funds to implement specific actions in the GBP;
- provide for coordination and communication among state and federal resource agencies for the many cross jurisdictional issues;
- coordinate, monitor and track implementation activities of the Galveston Bay Council (GBC) partners;
- identify and communicate bay improvements to agencies, stakeholders, and the public;
- conduct public outreach and education to increase awareness of Galveston Bay;
- advocate conservation of the estuary (see Figure 1); and
- maintain stakeholder involvement in the decision-making process through the GBC and its subcommittees.



Figure 1. Keynote presentation from the 2016 State of the Bay Symposium hosted by the GBEP.



## SECTION 2.1: GBEP ORGANIZATIONAL STRUCTURE

The GBEP has the primary responsibility for coordinating and administering the work plan. Program staff and job descriptions are provided below.

**Sarah P. Bernhardt, M.S., Ph.D.**, program manager, is responsible for overall implementation of the GBP, including: securing and managing funds to support operations, staff, and projects; fostering stakeholder involvement to facilitate GBP implementation; managing program staff and operations to ensure efficient use of resources; and representing the GBEP on national, state, and local boards and committees and at national and state conferences/events to garner federal and state support. Dr. Bernhardt also coordinates the GBC and the Budget and Priorities subcommittee.

**Lindsey Lippert**, NRU coordinator, is responsible for coordinating implementation of habitat protection (HP), species population protection (SP), freshwater inflows (FW), shoreline management (SM), and spills and dumping (SD) actions in the GBP; coordination of invasive species workgroup and the NRU subcommittee of the GBC; implementing specific projects to restore and protect habitat and manage and control invasive species; maintaining Government Performance and Report Act and EPA reporting.

**Lisa M. Marshall, M.S.**, monitoring and research (M&R) coordinator and water and sediment quality (WSQ) coordinator, is responsible for coordinating implementation of stormwater, wastewater, septic systems, point sources of pollution (PS), seafood safety, and research (RSC) actions in the GBP; coordinating the regional monitoring program, including data management/reporting, and development and application of environmental indicators; facilitating the M&R and WSQ subcommittees of the GBC; and researching, evaluating and reporting findings concerning scientific and technical issues impacting GBP implementation.

**Cynthia Clevenger**, public participation and education (PPE) coordinator and community relations specialist, is responsible for building relationships and developing communication channels and dialogue with local government officials, private sector, and other outside organizations key to implementing the GBP. This position facilitates cross-sectoral learning of public relations and marketing activities for the Galveston Bay watershed; organizes and manages community relations events and the State of the Bay symposium; tracks emerging stakeholder community concerns/issues. Ms. Clevenger also coordinates the PPE subcommittee; provides information to stakeholders, the general public and media; oversees the Galveston Bay Public Awareness campaign; promotes special events and projects; and website maintenance.

**Michelle Krause, M.S.**, technical programs coordinator, is responsible for serving as the quality assurance officer and as the contracts specialist, budget liaison and grants coordinator for the GBEP. Ms. Krause also coordinates development and submission of federal reports, identifies and tracks the evolution of issues affecting bay management, and researches policy, technical and management results that pertain to Galveston Bay in collaboration with the NRU and WSQ coordinators.

**Mary Stiles**, education and outreach support, handles GBEP exhibiting events, maintains the GBEP contacts database, handles timekeeping, conducts K - 12 presentations, and supports general activities of the PPE team and PPE subcommittee. Ms. Stiles manages the annual Trash Bash contract and Spanish language community outreach.

**Doretta G. Thomas**, administrative assistant, is responsible for travel coordination, vehicle and equipment maintenance and repairs, mail, correspondence, office safety, and general administrative support for the GBEP.

## PROGRAM COMPETENCY DEMONSTRATION

The following statements demonstrate the GBEP's competency as a Continuing Environmental Program:

- Competency is demonstrated by the TCEQ Quality Systems Audit conducted biennially by Sharon Coleman, the TCEQ quality assurance manager.
- Competency is demonstrated through the EPA Quality Project and Program Management training taken by Sarah Bernhardt, Lisa Marshall, and Michelle Krause on 4/8/14 - 4/10/14. Lindsey Lippert completed the EPA Quality Assurance Management training on 3/21/2007. Certificates are available upon request.
- Competency is demonstrated through the EPA approved TCEQ Quality Management Plan (Revision 22 approved January 2017) that the GBEP operates under, which provides descriptions of the quality policies, including all the requirements described in the EPA document QA/R-2.
- The program manager and staff take a large number of professional development training classes annually which are available upon request.

## FISCAL 2016 - 2017 LEVERAGING, TRAVEL, AND TECH TRANSFER AMOUNTS

Figures reported in Table 2 provide a mid-year estimate of leveraged funding reported by partners and grantees from September 2015 - August 2016. The number is subject to change as additional funding may be reported for the period.

**Table 2. Fiscal 2016 Leveraging**

EPA Funds to Program (Section 320)	Other Federal Funds	State Funds	Local Government Funds and In-Kind	Private funds & In-kind
\$600,000	\$2,592,613	\$1,596,303	\$22,188	\$160,900

Figures reported in Table 3 depict the travel expenses and tech transfer descriptions from the last year.

**Table 3. Fiscal 2017 Travel and Tech Transfer**

EVENT, LOCATION, & PURPOSE	STAFF PERSON	EPA SECTION 320 FUNDS	TCEQ 100% STATE FUNDS
U.S. Army Corps of Engineers (USACE) Stakeholder Partnering Forum Galveston, Texas - Quarterly meeting -The USACE Galveston District meets with non-federal sponsors, customers and agency partners to collaborate on best practices regarding programs ranging from ecosystem restoration to flood risk management, maintaining and improving Texas coastal navigation systems, and regulatory oversight of U.S. waters	Lindsey Lippert	\$0	\$0

EVENT, LOCATION, & PURPOSE	STAFF PERSON	EPA SECTION 320 FUNDS	TCEQ 100% STATE FUNDS
<p>Interagency Group meetings for the USACE Coastal Texas Protection and Restoration Feasibility Study Galveston, Texas (and via teleconference)- Monthly -The USACE Galveston District meets with state and federal agency partners to consults on the progress of the study which will identify critical data needs and recommend a comprehensive strategy for reducing coastal storm flood risk through structural and nonstructural measures that take advantage of natural features like barrier islands</p>	Sarah Bernhardt	\$0	\$0
<p>Watershed Coordinators Steering Committee Meeting Columbus, Texas, March 2016 -This meeting provided updates about projects in the Galveston Bay watershed and watersheds in the area; this meeting provided networking opportunities with other project managers and watershed coordinators.</p>	Lisa Marshall	\$0	\$0
<p>Blue Carbon workshop Texas City, Texas, April 2016 -The goal of the workshop was to identify blue carbon applications and its potential to increase the value of wetland conservation and restoration, build capacity to integrate greenhouse gas management into plans and projects, and to assess opportunities &amp; constraints for implementing projects.</p>	Sarah Bernhardt Michelle Krause Lisa Marshall	\$0	\$0
<p>Rice SPPEED Center Avoiding Disasters Conference Houston, Texas, April 2016 -This conference provided information about proposed structural storm surge protection measures in Galveston Bay and the Texas Coastal Exchange as a non-structural hurricane surge damage avoidance concept.</p>	Sarah Bernhardt Michelle Krause	\$0	\$161
<p>Clean Waters Initiative: stormwater approaches by regional municipal separate storm sewer system (MS4) programs Houston, Texas, April 2016 -This meeting provided an overview of the MS4 permit, active coalitions in the area, and permittee success stories and lessons learned.</p>	Michelle Krause Lisa Marshall	\$0	\$0

EVENT, LOCATION, & PURPOSE	STAFF PERSON	EPA SECTION 320 FUNDS	TCEQ 100% STATE FUNDS
<p>TCEQ Trade Fair Austin, Texas, May 2016 -GBEP staff demonstrated the Back the Bay Campaign booth and distributed educational materials regarding Galveston Bay. Cynthia attended the trade fair sessions for continuing education.</p>	<p>Cynthia Clevenger Mary Stiles</p>	<p>\$0</p>	<p>\$695</p>
<p>Texas Watershed Coordinator Roundtable Waco, Texas, July 2016 -This meeting provided a forum for water professionals to establish and maintain dialogue between watershed coordinators, facilitate interactive solutions to common watershed issues faced throughout the state, and add to the fundamental knowledge conveyed at the short courses. Sarah gave a presentation on the GBP revision.</p>	<p>Sarah Bernhardt Lisa Marshall</p>	<p>\$0</p>	<p>\$21</p>
<p>Fundamentals of Developing a Water Quality Monitoring Plan Austin, Texas, July 2016 -Provide participant the tools to develop and implement a monitoring program for watershed characterization and evaluation of water quality improvements and best management practice (BMP) effectiveness from implementation activities.</p>	<p>Lisa Marshall</p>	<p>\$0</p>	<p>\$294</p>
<p>General Land Office Technical Advisory Committee (TAC) Texas City, Texas, July 2016 -Development of the Texas Coastal Resiliency Master Plan to provide a framework for community, socio-economic, ecologic and infrastructure protection from coastal hazards (storm surge/flooding, erosion, habitat loss). The TAC was formed to identify Issues of Concern for coastal regions and evaluate potential solutions. The TAC is comprised of State &amp; federal agencies, local government, universities, non-governmental organizations, engineering firms, ports, regional trusts, foundations and partnerships.</p>	<p>Lindsey Lippert Sarah Bernhardt</p>	<p>\$0</p>	<p>\$0</p>
<p>Texas OneGulf Science Advisory Committee Meeting Austin, Texas, August 2016 -Participants were introduced to the leadership of the Texas OneGulf Center of Excellence, reviewed the policy and operational guidelines, then were briefed on the process for drafting a Strategic Research &amp; Action Plan for the organization. Sarah is the TCEQ appointee for the Science Advisory Committee.</p>	<p>Sarah Bernhardt</p>	<p>\$0</p>	<p>\$360</p>

EVENT, LOCATION, & PURPOSE	STAFF PERSON	EPA SECTION 320 FUNDS	TCEQ 100% STATE FUNDS
<p>Watershed Coordination Steering Committee Columbus, Texas, September 2016 -This meeting provided updates about projects in the Galveston Bay watershed and watersheds in the area and provided networking opportunities with other project managers and watershed coordinators.</p>	Lisa Marshall	\$0	\$0
<p>Managing our Stormwater, from Gutter to Gator Lake Jackson, Texas, September 2016 -Participants learned about natural techniques for cleansing and conserving stormwater for humans and wildlife, at different scales-- backyard to urban/suburban/industrial to regional.</p>	Michelle Krause Lisa Marshall	\$0	\$0
<p>Bayou Preservation Association Symposium Houston, Texas, October 2016 -50th anniversary symposium for the Bayou Preservation Association. Staff learned the status of Galveston Bay watershed bayous and how they have changed over 50 years.</p>	Sarah Bernhardt Cynthia Clevenger Lisa Marshall Michelle Krause Mary Stiles	\$0	\$325
<p>Clean Waters Initiative: Watershed Planning Projects Houston, Texas, October 2016 -This meeting provided information on regional watershed planning efforts, the Galveston Bay Plan revision pre-planning effort, and how to implement different types of watershed based plans.</p>	Michelle Krause Lisa Marshall	\$0	\$0
<p>Houston Galveston Area Council's Natural Resources Advisory Committee Houston, Texas, November 2016 -This meeting provided information on polychlorinated biphenyls and dioxins contamination in Galveston Bay, the Galveston Bay Report Card's second update, and urban pollinators.</p>	Sarah Bernhardt Michelle Krause	\$0	\$0
<p>General Land Office TAC Houston, Texas, November 2016 - Development of the Texas Coastal Resiliency Master Plan to provide a framework for community, socio-economic, ecologic and infrastructure protection from coastal hazards (storm surge/flooding, erosion, habitat loss). The TAC was formed to identify Issues of Concern for coastal regions and evaluate potential solutions. The TAC is comprised of State &amp; federal agencies, local gov't, universities, non-governmental organizations, engineering firms, ports, regional trusts, foundations and partnerships.</p>	Lindsey Lippert Sarah Bernhardt	\$0	\$0

EVENT, LOCATION, & PURPOSE	STAFF PERSON	EPA SECTION 320 FUNDS	TCEQ 100% STATE FUNDS
<p>Restore America's Estuaries Conference New Orleans, Louisiana, December 2016 -The conference provided staff information to address all aspects of coastal and estuarine restoration and management in all coastal communities, ecosystems and watersheds and to share lessons learned from successful restoration projects. Cynthia presented a poster.</p>	<p>Cynthia Clevenger Lindsey Lippert</p>	<p>\$2,875</p>	<p>\$0</p>
<p>NEP Fall Tech Transfer Meeting New Orleans, Louisiana, December 2016 -The meeting provided a venue for technology transfer, education, training, and sharing of lessons learned between NEPs. Sarah presented a lightning talk.</p>	<p>Sarah Bernhardt</p>	<p>\$1,472</p>	<p>\$0</p>
<p>Urban Riparian Symposium Houston, Texas, February 2017 -The conference provided an opportunity for natural resource professionals to share ideas, discuss management and policy issues, lessons learned in urban riparian and stream planning, assessment, design, construction, and evaluation.</p>	<p>Sarah Bernhardt Michelle Krause Lisa Marshall (estimate)</p>	<p>\$0</p>	<p>\$450</p>
<p>Houston Galveston Area Council's Natural Resources Advisory Committee Houston, Texas, February 2017 -This meeting provided information regarding Houston's urban forests and tree planting efforts in the region.</p>	<p>Sarah Bernhardt</p>	<p>\$0</p>	<p>\$0</p>
<p>Texas Watershed Coordinators Roundtable Dallas, Texas, February 2017 -This meeting provided a forum for water professionals to establish and maintain dialogue between watershed coordinators, facilitate interactive solutions to common watershed issues faced throughout the state, and add to the fundamental knowledge conveyed at the short courses.</p>	<p>Lisa Marshall</p>	<p>\$0</p>	<p>\$36</p>
<p>Watershed Coordinator Steering Committee Meeting Columbus, Texas, March 2017 -This meeting provided updates about projects in the Galveston Bay watershed and watersheds in the area; this meeting provided networking opportunities with other project managers and watershed coordinator</p>	<p>Lisa Marshall (estimate)</p>	<p>\$0</p>	<p>\$36</p>

EVENT, LOCATION, & PURPOSE	STAFF PERSON	EPA SECTION 320 FUNDS	TCEQ 100% STATE FUNDS
State of the Gulf of Mexico Summit 2017 Houston, Texas, March 2017 -The summit aims to bring together practitioners, policy makers, industry, and government together to answer questions that will drive the fate of Gulf of Mexico environmental and economic health, over the coming decades. Topics to be highlighted include efficacy of restoration actions, linkages between environmental, human, and economic health to ensure a healthier and more sustainable future, and engagement with adjacent international partners over the large marine ecosystem of the Gulf of Mexico.	Sarah Bernhardt (estimate)	\$0	\$44
Texas Surface Water Quality Monitoring (SWQM) training Corpus Christi, Texas March 2017 -This will be a cross agency training opportunity for GBEP staff to learn SWQM sampling techniques. GBEP staff will be able to use this information during QAPP audits.	Lisa Marshall Michelle Krause (estimate)	\$0	\$72
TCEQ Trade Fair Austin, Texas, May 2017 -Sarah will present highlights of the GBEP's coastal atlas, habitat conservation achievements, and ongoing GBP revision.	Sarah Bernhardt (estimate)	\$0	\$336
Spring NEP Tech Transfer Meeting Washington, D.C., May 2017 -This meeting provides training, information transfer and provides an opportunity for NEP directors to share lessons learned.	Sarah Bernhardt (estimate)	\$2,500	\$0
Total		\$6,847	\$2,830

## **SECTION 2.2: FISCAL 2017 GOALS AND ACCOMPLISHMENTS**

The GBEP partners made notable achievements in improving water quality, restoring wetlands, protecting unique habitats, and educating the public in 2017. These achievements are highlighted in the following sections.

### **HABITAT AND LANDSCAPE-LEVEL CONSERVATION: CREATE, RESTORE, AND PROTECT IMPORTANT COASTAL HABITATS**

The Texas coast features a wealth of coastal habitats that support a tremendous abundance and diversity of fish and wildlife. Although the habitat conservation efforts of the GBEP and its partners are bay wide, particular attention has been given to the West Bay watershed. Preserving wetlands and natural areas is critical to maintaining the water quality and protecting valuable fish and wildlife habitat in this region.

Since 2000, the GBEP and its partners created, protected, and enhanced 27,331 acres of important coastal habitats, leveraging approximately \$96,907,232 in local, industry, state, and federal contributions. During fiscal 2016, the GBEP protected and restored 1,969 (57 acres restored, 1,912 acres protected) acres of wetlands and coastal habitats, and leveraged \$4,372,004 in local, industry, state, and federal contributions. Through projects currently in progress, the GBEP and partners will protect or restore an additional 5,000 acres of coastal habitat. Since the start of fiscal 2017, an additional 75 acres of coastal habitat have been permanently protected through the conservation efforts of the NRU subcommittee, including the Conservation Assistance Program (CAP) and West Bay Conservation Initiative.

#### **CAP**

The goal of the CAP is to support regional efforts to preserve wetlands and important coastal habitats that protect the long-term health and productivity of Galveston Bay. With the help and consensus of conservation partners, a collaborative effort between the GBEP, the Galveston Bay Foundation (GBF), and Texas Coastal Partners identifies conservation projects, develops funding strategies, works with landowners to negotiate conservation transactions, carries out due diligence, and finalizes purchase and transfers of title to the appropriate land conservation entity.

To date, ten projects have closed under this partnership, including the Lone Pine Farm and Anahuac National Wildlife Refuge (NWR) Coastal Prairie, permanently protecting 5,837 acres and leveraging approximately \$9,000,000. Many additional projects are ongoing, including the Hitchcock Prairie conservation easement (3,200 acres) and the Coastal Heritage Preserve - Anchor Bay acquisition (50 acres), which have already leveraged an additional \$5,075,000.

In 2008, the GBEP secured \$2,000,000 from the GLO's Coastal Impact and Assistance Program funding to conserve properties in the West Bay watershed. During the winter of 2017, two projects were completed using this funding. These properties were identified through the CAP and included the Chocolate Bayou Conservation Project (102 acres) and the Settegast Coastal Heritage Preserve Mid-tract (47 acres).

#### **West Bay Conservation Initiative**

The West Bay Conservation Initiative is a concentrated effort in West Bay comprised of numerous conservation, restoration, and habitat protection projects supported by non-profit organizations, state and federal agencies, and private partners. The objective of the initiative is to protect and restore habitat and associated biological communities critical to the Galveston Bay ecosystem, including fringing intertidal and high marsh, tidal flats, freshwater wetlands, and coastal prairie.



## Settegast Coastal Heritage Preserve



**Figure 2. Settegast Coastal Heritage Preserve is located in West Bay, Galveston County. Image courtesy of The Artist Boat.**

Identified as a key conservation priority by multiple different conservation plans for the Galveston Bay area, the Settegast Coastal Heritage Preserve is the largest undeveloped, unfragmented tract of land on west Galveston Island. Acquiring parcels within the Settegast project area contributes to ongoing efforts to maintain the physical and biological integrity of Galveston Island and the productivity of West Galveston Bay. The preserve is divided into four distinct tracts by roadways; the bay tract, the Marquette middle tract, the Marquette beach tract, and the Anchor Bay tract.

The Settegast bay tract contains 360 acres of coastal prairie and freshwater depressional wetlands along the northern shoreline of West Bay (see Figure 2). To date, project partners have permanently protected the entire bay tract, leveraging approximately \$8,000,000. Additional acreage on the bay and the Marquette middle tract were donated to the Artist Boat in 2016, because of a development permit being activated on the remainder of the 1,000-acre property. In addition, another 46 acres of the mid-tract were purchased in December 2017. With the addition of the donated and newly purchased acreage, approximately 600 acres of the 1,000-acre tract are permanently protected from development. The preservation of the Anchor Bay and Marquette middle tracts remainder are currently under development, with \$1,000,000 secured from the Coastal Wetlands Planning, Protection and Restoration Act, and multiple grant applications in progress.

### **IMPROVING & PROTECTING WATER QUALITY: SUPPORTING CORE CLEAN WATER ACT (CWA) PROGRAMS**

In support of the EPA's core CWA goals the GBEP has worked to build capacity of local stakeholders through watershed protection planning and implementation of water quality improvement projects (WQIPs). Through this effort in coordination with other water programs of the TCEQ and local stakeholders, the majority of impaired waters in the five county region surrounding Galveston Bay have some level of watershed protection or improvement being enacted.

### **WPPs**

### *Highland Bayou*

In 2015 and 2016, the modeling for pollution sources was completed and loading estimates were revised, social media sites were updated and work groups were recruited and initialized. In 2017, work group meetings continued, management measures were discussed and prioritized, and the WPP was updated. A draft WPP was completed and submitted to the TCEQ. Due to insufficient flow data which is needed to estimate load values and the inability to calibrate modeled nonpoint source (NPS) load values with observed values, the WPP has not been submitted to EPA for consistency review.

### *Bacteria Implementation Plan (I-Plan)*

The Bacteria Implementation Group (BIG) is a thirty-one-member committee that has developed and is overseeing implementation of a plan, or I-Plan, to remedy high levels of bacteria in waterways identified in Total Maximum Daily Load projects in the Houston-Galveston region. Activities of the BIG are open to all interested parties, and people are encouraged to attend meetings and participate in the various water quality issues pertinent to the I-Plan. The BIG began implementation activities in 2013 and plans to continue implementation through 2036, with periodic reviews to track success and make necessary course corrections to improve success.

While most activities in the I-Plan are to be funded using existing funding sources, such as public works department budgets, grant funding opportunities through the TCEQ and other entities, other sources will be needed to help sustain regional coordination efforts; advance the use of new or novel technology and best management practices (BMPs); and expedite implementation. The BIG continues to coordinate the implementation of BMPs listed in the I-Plan.

The Top Five Most and Top Five Least Impaired Water Bodies Project came from the BIG. Using information from the BIG, 10 watersheds were targeted to identify sources of bacteria pollution through targeted monitoring. Once the sources are identified, the sources will be reported to the appropriate entity for correction, demonstration of improved water quality, and document the project to demonstrate the value of a prioritized watershed approach through outreach materials and workshops. In fiscal year 2016, the desk review took place and the water bodies were prioritized to the top two most and top two least impaired water bodies. The Ground Truth Preliminary Action Report which summarized the process for narrowing down the water bodies was submitted. In fiscal year 2017, H-GAC began sampling the wet and dry weather sites; reporting sources to the appropriate entities, and presenting data to interested groups. The Data Collection and Analysis Report (also referred to as the Source Identification Report) was completed in March, 2017.

### *Double Bayou*

For fiscal 2015, the GBC approved \$129,126 to provide state funding to be used as matching funds required under the grant to complete work on the WPP. In fiscal 2016, the WPP had initial approval by the stakeholders and went out for public comment. As of July 19, 2016, the WPP received final approval by stakeholders and was accepted by the EPA. In November of 2016, the Double Bayou WPP was selected to receive the H-GAC Our Great Region Diligence Award.

### *Galveston Bay Coalition of Watersheds*

The increase in WPPs and I-Plans over time has created a number of autonomous groups, all with similar goals. After the re-formation of the Armand Bayou Watershed Partnership as a 501(c) 3 non-profit, options for the future of the Dickinson Bayou Watershed Partnership were explored. Based on this research, creation of a group with a larger focus (similar to the BIG) with support from local governments (like the Plum Creek Watershed Partnership in South Central Texas) was identified as a sustainable model for coordinating local watershed efforts.

Through this project, a coalition of watershed groups will be created for the Galveston Bay area and partner with the GBF to maintain the existing Galveston Bay Bacteria Reduction Plan (GBBRP). The new coalition will include stakeholders from existing watershed groups including Dickinson, Highland, and Jarbo Bayous, as well as adjacent watersheds that will likely be developing WPPs or I-Plans in the future such as Moses Bayou. This regional approach will:

- extend limited resources for coordinating implementation efforts,
- reduce the number of meetings stakeholders are asked to attend, and
- facilitate the information coordination already happening between watershed groups.

Funding for this project will be used for a full time coordinator who will establish and maintain the coalition. This coordinator will help determine the makeup of the group, work with stakeholders to establish a unified vision and goals, and define a plan for continued funding which should include a matching component from local governments, be it financial or in-kind. Local contributions will be leveraged for grant applications to fund implementation measures and continued coordination. The coordinator will also work with coalition members to carry out implementation measures in existing plans across all of the partner watersheds. The coordinator will also work with GBF staff to ensure facilitation of active stakeholder participation in the GBBRP and collaborate with adjacent watershed groups in order to guide successful implementation and tracking of plan progress, which addresses oyster water bacteria impairments in Galveston Bay.

The coalition of watersheds and partnership with GBBRP is an important next step in implementing existing WPPs and I-Plans. Watershed coordinators and stakeholders have worked hard to create plans which address many of the same issues with the same methodologies. A unified approach to implementation is both sustainable and necessary to improve local water quality.

## **WQIPs**

### *Ghirardi Family Water Smart Park*

The City of League City with encouragement from the GBEP, sought and received a 2011 TCEQ CWA Section 319 Program grant to control NPS pollution within the city limits. The million dollar grant and match from the GBEP funded the construction of the Ghirardi Family WaterSmart Park, a 3.75 acre park that features NPS best management green infrastructure features including rain gardens, pervious pavement, bios-wales, rain water harvesting and a green roof. This award winning facility serves as a demonstration for residents, city staff and local developers as to how these practices can be implemented into landscapes and developments around League City and Galveston County. Additional tasks in fiscal 2015 included reviewing and re-writing existing city ordinances, completing a report on BMPs retrofit recommendations for the Creekside District to control NPS runoff, and completing modeling of runoff quantity and quality for areas of new developments, including how BMPs can best be utilized to reduce both. Monitoring of the BMPs occurred during most of fiscal 2015 but was suspended until a quality assurance project plan (QAPP) was developed for the fiscal 2016 contract. The QAPP was approved on 06/21/16. Because no rain events took place during the work week that met the criteria of greater than .29 inches of rain, the contract has been extended until 05/31/18 in order to get all 18 sampling events within the timeframe of the contract.

### *Galveston Bay Fats, Oils, and Grease (FOG) Campaign*

Starting in fiscal 2014, the FOG campaign has been a joint project with the WSQ and the PPE subcommittees. In an effort to coordinate outreach and education efforts to the upper Galveston Bay watershed in the Dallas area, the GBEP is funding a project with the City of Nassau Bay to implement the City of Dallas Water Utilities FOG outreach campaign called Cease the Grease. This project supports the CWA core program of addressing diffuse, NPS sources of pollution. The Dallas campaign not only shows measureable success in reducing FOG-related sanitary sewer overflows, but the City of Dallas is also willing to allow the City of Nassau Bay to use their materials free of charge. The campaign has been implemented in the Galveston Bay region through the City of Nassau Bay and outreach materials and efforts have been tailored for the Galveston Bay region (see Figure 3). City of Nassau Bay in partnership with the GBF are tracking the progress of the campaign based on the number of impressions achieved through marketing and outreach activities, knowledge change throughout the campaign based on pre and post test data in outreach programs and other indicators developed by the campaign work group. Additionally, the GBF will request sanitary sewer overflow reports from the TCEQ and municipalities in order to track whether or not a bacteria reduction results from campaign implementation. Tracking results are shared with campaign

partners, the City of Dallas as well as potential future partners and other regions looking for examples of a successful FOG reduction campaign. Funding for fiscal year 2017 incorporated launching a grease recycling station in the City of Nassau Bay with plans of also establishing a recycling station in at least one other location in the lower Galveston Bay watershed by July 2017. The campaign also created a new, more family oriented Grease Monster. The Cease the Grease Campaign has also continued its social media posts and marketing with local National Broadcasting Company affiliate KPRC and added a Pandora audio advertisement campaign that launched in December 2016.



Figure 3. New Grease Monster Mascot.

### CONTINUE BUILDING REGIONAL SUPPORT FOR PPE

The PPE subcommittee continued supporting the Galveston Bay Public Awareness and Education Campaign (Back the Bay) in fiscal 2017. After the successful January 2016 State of the Bay Symposium, which had over 300 attendees and 90 speakers, the PPE coordinated with local stakeholders and identified trash and plastic pollution as a priority initiative in 2017. This supports the EPA's Trash Free Waters initiative.

By attending outreach events and participating in speaking/presentation opportunities, the GBEP staff reached over 3,000 adults and children with the message of protecting and preserving Galveston Bay.

Examples of these activities include:

- Supported community-based events such as Boy Scouts, University of Houston Central Sustainability Festival, Bayou Greenway Day, Trash Bash, Bay Day, Family Fishing Day, Harvard Elementary School Science Night, and Houston Water Festival.
- Garnered support for the campaign with Houston-area businesses and conservation groups, and local governments in key watersheds: Galveston, Buffalo Bayou, Houston Ship Channel.
- Partnered with the City of Pasadena Municipal Library for two Back the Bay presentations for their children's program that engaged 80 children with the message of litter and plastic pollution prevent.
- Increased awareness of Galveston Bay and its value and actions that help protect the bay through a coordinated, regionally implemented campaign.
- Partnered with several groups on the Plastics Pollution Prevention Partnership to highlight messages about awareness on water pollution and marine debris risks to native wildlife such as fishing line at various education and outreach events.
- Lead coordination with several stakeholders on a marine debris workshop called the Trash Summit 2017 held at the Houston Zoo in May 2017. This was an effort to coordinate regional efforts and fill in missing gaps for projects, research, and communications on local trash, marine debris, and plastic pollution issues. This is also a follow up to the EPA's Trash Free Waters initiative meeting held in Galveston in 2015.

- Coordinated a region-wide workshop meeting for partners who provide K-12 environmental programs in the Galveston Bay watershed in an effort to fill missing gaps for projects, research, and communications.
- Attended the Restore America's Estuaries summit in New Orleans to present the Back the Bay poster (see Figure 4).
- Coordinated and hosted 24 quarterly meetings of the GBC and its subcommittees.



Figure 4. Back the Bay poster presentation at Restore America's Estuaries Summit.

### Trash Bash

In March 2016, the GBEP coordinated the 23rd annual Trash Bash cleanup at Mason Park along Brays Bayou and one of 15 clean-up sites across the Houston-Galveston area. The event promotes environmental stewardship and encourages volunteers to do their part at home by properly disposing of trash, household chemicals, and pet waste. Trash Bash supports two of the EPA's fiscal 2014 - 2018 Strategic Plan goals which include: 1) cleaning up our communities and advancing sustainable development, and 2) protecting America's waters.

At the event, 242 volunteers collected an estimated 4,800 lbs. of trash at Mason Park. Their efforts enabled 30 pounds of materials to be recycled. Each year, Trash Bash meets or surpasses volunteer goals. In 2016, 4,578 volunteers from all over the Houston-Galveston area cleaned 177 miles of shoreline, collected approximately 53.9 tons of trash—including 518 tires—and recycled 1.41 tons of trash. The GBEP staff also provided Back the Bay and Cease the Grease campaign education at the Mason Park event.

In March 2017 the GBEP will coordinate the 24th annual Trash Bash cleanup at Kuhlman Gully, which was a satellite site to the Mason Park Trash Bash site in 2016.



Figure 5. Volunteers collecting trash at the 2016 Trash Bash event located along Brays Bayou.

## Back the Bay

The GBEP implemented the Back the Bay public awareness campaign, involving key stakeholders, to reinforce implementation of the GBP's priorities. The goals of the Galveston the campaign are to build awareness of the value of Galveston Bay, and encourage and motivate actions that support habitat conservation, water conservation, and water quality improvement. The campaign was incorporated into stakeholder projects and workgroups through the following:

- Continued to work with the PPE Subcommittee on identifying priority goals or the campaign and ways to incorporate the message into ongoing outreach and education efforts around the region.
  - Plastics Pollution Prevention Partnership
    - A consortium of several area organizations including state and federal agencies who have created a network to educate, and conduct outreach including hands-on activities to bring about awareness of birds, turtles and other wildlife and the importance of preserving habitats.
    - Some of those key partners include: Houston Audubon, the GBF, the Houston Zoo, Turtle Island Restoration Network, Gulf Coast Bird Observatory, Texas Parks and Wildlife Department's (TPWD) Galveston Island State Park, and the EPA Trash Free Waters initiative.
  - Marine Debris Task Force
    - Participated in planning and education/outreach efforts for this group, which was an outcome of the 2015 Trash Free Waters stakeholder meeting held in Galveston. Some of the key partners with the group is Artist Boat, Galveston Island Parks Board of Trustees, Turtle Island Restoration Network, City of Galveston, and Moody Gardens.
  - GBEP provided Back the Bay campaign materials and messaging and reached over

2,180 adults and 865 children through targeted outreach events such as: Bay Day; Jane Long Festival; TCEQ Trade Fair; Pasadena Library, various community health and environmental safety fairs; Boy Scouts and TPWD Learn to Fish events; and stakeholder presentations.

## **IMPROVING RESOURCE MANAGEMENT THROUGH TARGETED RESEARCH THAT INCREASES ECOSYSTEM UNDERSTANDING**

The GBEP continues to focus on providing ecosystem based M&R and encouraging the sharing of new information to inform resource managers. From this work projects such as investigating mangrove restoration in Galveston Bay and monitoring the Galveston Bay system at monthly intervals were funded as a result of the fiscal 2014 - 2015 request for grant applications. In fiscal 2016, the M&R subcommittee supported a project that investigates the impacts of reservoirs on freshwater inflows, specifically the Lake Livingston reservoir. In 2015 the GBC approved funding to continue the Lake Livingston project in fiscal 2017 and a funding request was included in the fiscal 2017 work plan.

### *The Impacts of Assimilative Capacity of Reservoirs on Coastal Inflows*

The most recent Texas State Water Plan calls for 26 new reservoirs to increase water supplies by 1,500,000 acre-feet per year in 2060 to meet Texas' future water needs. Reservoirs are costly to build, and have ecologic and hydrologic impacts downstream by affecting freshwater inflow and the supply of sediment and nutrients to Texas coastal systems.

The goal of this project is to assess the assimilative capacity of the Lake Livingston reservoir and how it impacts coastal inflows. Lake Livingston's dam forms the upper boundary of the lower Galveston Bay watershed on the Trinity River. This project will monitor the inflows into Lake Livingston and the outflows to obtain before and after data for nutrients and sediments.

Assimilative capacity changes depending on flows so the study will obtain samples during low, medium, and high flows (ambient and event monitoring). The Lake Livingston reservoir may play an important role in controlling sediment and nutrient load variability to the coastal ecosystem. The effect Lake Livingston has in sequestering sediments and nutrients is not well understood; therefore quantifying the assimilative capacity of Lake Livingston is critical in understanding the impacts of reservoirs on the health of the Galveston Bay ecosystem. The QAPP was approved in February 2016 and in March 2016, the United States Geological Survey (USGS), the subcontractor, began exploratory sampling to estimate residence time in Lake Livingston and get baseline data. In May 2016, the Houston Advanced Research Center (HARC) began routine and event sampling.

### *Mangrove Restoration in Galveston Bay: Ecological Benefits and Effective Restoration Techniques*

The overall objective of this project is to determine if, when, and where mangrove restoration should be implemented in Galveston Bay. Data will be collected from at least three sites of each of four habitat types: mature and restored salt marshes, and mature and restored mangrove stands. This data will be used to inform the following questions: which mangrove planting techniques yield near- and long-term mangrove restoration success at sites throughout Galveston Bay, are there specific ecosystem functions between existing mangrove stands and salt marshes in Galveston Bay, and how do these restoration sites compare to other Texas estuaries? In addition to the research component of this project, there is an outreach piece that educates the public on the importance of wetland restoration for NPS management and integrates research findings into outreach and stewardship programs. Texas A&M University Galveston is the contractor for this project. The contractor interacted with the public at stormwater wetland volunteer days with the Texas A&M AgriLife Extension Texas Coastal Watershed Program (TCWP) stormwater wetland program and at the fall 2016 Marsh Mania event. The contractor will continue to sample through spring 2017.

### *Galveston Bay: Changing Land Use Patterns and Nutrient Loading. Causal or Casual Relationship?*

The objective of this project is to continue monitoring Galveston Bay at monthly intervals using the Dataflow system to measure water quality parameters, collect nutrient and other data at fixed stations in Galveston Bay which can then be used to explain patterns in water quality such as chlorophyll data, and measure phytoplankton productivity, community composition, and the

presence of harmful algal blooms, if present. The QAPP for this project was approved in March 2016 and TAMUG has been sampling routinely. They are on track to complete their sampling by May 2017.



## **SECTION 2.3: STRATEGIC ACTION PLAN GOALS TO FOCUS ON IN FISCAL 2018**

- Create, restore, and protect important coastal habitats.
- Reduce NPS pollutant loads.
- Minimize risk of waterborne illness resulting from contact recreation.
- Create a sense of personal ownership and shared responsibility among all cultural components of the community, including the public, industry and government.
- Ensure that stakeholders receive the knowledge necessary to act on the GBEP's priorities in ways that benefit Galveston Bay and the entire community.
- Increase understanding of the Galveston Bay ecosystem.
- Increase the number of partners actively involved in GBEP initiatives.
- Reduce human health risk from consumption of seafood contaminated with toxic substances.
- Increase understanding of the Galveston Bay ecosystem.

### **FISCAL 2018 EXPECTED OUTCOMES**

- Conserve, restore, and enhance important coastal habitats.
- Increase technical transfer from demonstration projects with local governments for improving storm water.
- Improve knowledge of sources of bacteria pollution in the lower Galveston Bay watershed.
- Increase coordination of marine debris and plastic pollution reduction efforts throughout the region.
- Increase public awareness of their connection and effect on the Galveston Bay Ecosystem.
- Increase coordination of environmental education efforts in the region.
- Continue to monitor the influence of freshwater inflows on Galveston Bay.
- Continue to monitor freshwater wetland restoration techniques.
- Continue the revision of the GBP.

### **FISCAL 2018 EXPECTED OUTPUTS**

- Conserve and protect 950 acres of habitat.
- Restore and enhance 50 acres of habitat.
- Initiate at least two stormwater treatment wetlands projects.
- Begin one bacterial source tracking project.
- Coordinate a LID workshop for municipalities in the Galveston Bay watershed.
- Coordinate/facilitate an environmental education workshop for educators who are working on environmental curriculum in the region.
- Initiate two bird and wildlife habitat restoration projects that incorporate educational workshops, interpretive signage, and volunteer opportunities.
- Continue to participate in the coordination of River, Lakes, Bays N' Bayous Trash Bash.
- Continue the Back the Bay campaign.
- Begin data collection to determine if a seafood advisory is still necessary for a portion of Galveston Bay.
- Support two freshwater inflow research projects.
- Begin one project that monitors freshwater wetland restoration.
- Initiate development of a State of the Bay Report, 4<sup>th</sup> Edition.
- Complete the revision of the GBP.
- Improve the GBEP and Back the Bay websites.

## FISCAL 2018 STATE AND FEDERAL FUNDING

The total cost of the fiscal 2018 work plan is \$1,200,000. Fifty percent (\$600,000) of the project cost is provided by federal funds; 50 percent (\$600,000) in match is being provided by the TCEQ through a waste water treatment inspection fee, as described in Table 4 and Table 5. These tables exclude additional state and local funding.

**Table 4. Fiscal 2018 Funding**

PROGRAM	AMOUNT (\$)	% OF TOTAL
GBEP	\$1,200,000	100%
Total	\$1,200,000	100%

**Table 5. Fiscal 2018 Budget Detail**

Budget Detail- see also fiscal 2018 federal projects (Table 6)	Amount (\$)
Salaries (includes Fringe and Indirect)	\$604,905
Travel	\$7,500
Capital	\$0
Supplies	\$200
Contracts	\$32,505
Other	\$554,890
Total	\$1,200,000

## PROJECT SCHEDULE

The execution of the tasks associated with this work plan will occur over a 36-month period, which is anticipated to begin September 1, 2017, and end August 31, 2020. The exact start date of the work plan and all due dates for deliverables are contingent upon the actual date the grant funds are awarded and contracts executed.

The projects outlined in this work plan were developed by the NRU subcommittee, WSQ subcommittee, PPE subcommittee, and the M&R subcommittee, ranked by the Budget and Priorities subcommittee, and submitted to the GBC for approval in October, 2016. The GBC approved the projects listed in this work plan at the October 19, 2016 quarterly meeting.

The project scopes of work will be submitted to the TCEQ Quality Assurance Officer to determine which projects in the work plan will require a QAPP. Under the authority granted by the EPA to the TCEQ to approve QAPPs for the GBEP, the GBEP staff and their project partners will develop QAPPs for projects determined by the TCEQ and the EPA to require QAPPs. QAPPs will be developed in accordance with the EPA requirements for QAPPs, EPA document QA/R-5.

**SECTION 3: FISCAL 2018 PROJECTS**

**SECTION 3.1: FISCAL 2018 FEDERAL PROJECTS**

Table 6 depicts the fiscal 2018 federal projects.

**Table 6. Fiscal 2018 Federal Projects (CTRL+CLICK Project Names)**

<b>PROJECT NAME</b>	<b>YEARS (FISCAL)</b>	<b>FEDERAL</b>	<b>STATE MATCH</b>	<b>TOTAL 2018 GBEP BUDGET</b>	<b>STATUS</b>
Program Administration (Includes supplies, travel, salary, fringe & indirect, intern)	2018	\$310,531.50	\$310,531.50	\$621,063.00	Annual
GBEP Website	2018	\$16,252.50	\$16,252.50	\$32,505.00	Annual
1. State of the Bay Report, Fourth Edition	2018	\$42,500.00	\$42,500.00	\$85,000.00	New Project
<b>Administration Total</b>				<b>\$738,568.00</b>	
2. Conservation Assistance Program	2018	\$50,000.00	\$50,000.00	\$100,000.00	New Project
<b>NRU Total</b>				<b>\$100,000.00</b>	
3. Bacteria Source Tracking on Tributaries of Trinity and Galveston Bays	2018 - 2020	\$40,000.00	\$40,000.00	\$80,000.00	New Project
4. Green Infrastructure for Texas (GIFT)	2018	\$37,099.00	\$37,099.00	\$74,198.00	New Project
5. Designing for Impact: Promoting Low Impact Development Implementation	2018	\$15,000.00	\$15,000.00	\$30,000.00	New Project
<b>WSQ Total</b>				<b>\$184,198.00</b>	
6. Trash Bash 2018	2018	\$2,500.00	\$2,500.00	\$5,000.00	Annual
7. White Oak Parkway Native Habitat Restoration and Outreach	2018	\$22,500.00	\$22,500.00	\$45,000.00	Annual
8. Texas Estuarine Resource Network (TERN) Citizen Science Program in Galveston Bay	2017 - 2018	\$13,696.00	\$13,696.00	\$27,392.00	Ongoing
<b>PPE Total</b>				<b>\$77,392.00</b>	
9. Seafood Evaluation in a Portion of Galveston Bay	2018 - 2019	\$15,000.00	\$15,000.00	\$30,000.00	Ongoing
10. Characterization of the Influence of Freshwater Inflow on Trinity River Delta Indicators	2018 - 2019	\$21,000.00	\$21,000.00	\$42,000.00	New Project
11. The Impacts of Assimilative Capacity of Reservoirs on Coastal Inflows Phase II	2017 - 2019	\$13,921.00	\$13,921.00	\$27,842.00	Ongoing
<b>M&amp;R Total</b>				<b>\$99,842.00</b>	
<b>FUNDING REQUEST GRANT TOTAL</b>				<b>\$1,200,000.00</b>	

## **SECTION 3.2: FISCAL 2018 FEDERAL PROJECT DESCRIPTIONS**

### **3.2A - ADMINISTRATIVE PROJECTS FOR FISCAL 2018**

#### **GBEP Websites**

The GBEP Website maintenance: The contractor will maintain the “back end” of the program website to ensure its stability and make format edits upon request. There is no specific project or task beyond a full year of maintenance, hosting, domain name registration and updates of the gbep.texas.gov website.

The GBEP Website revision: The contractor will work with the GBEP team to develop a new layout and look for the gbep.texas.gov website, and the final website will be created and launched. The contractor will provide a guidebook to the GBEP team providing operational guidelines for ongoing maintenance and updates. The redesign tasks for the GBEP website include:

- Completely designed, programmed and deployed, fully-functional website;
- Knowledge transfer and training for GBEP staff;
- Documentation such as administrative guides and development guides; and
- May provide some image.

Back the Bay Website maintenance: The tasks for the Back the Bay website include maintenance and updates as needed throughout the year, hosting, and domain name registration.

**Total Project Budget:** \$32,505

#### **Mickey Leland Intern**

The Mickey Leland Environmental Intern will generate a white paper and final presentation that summarizes their efforts at the end of the summer internship period. The intern will work on a project that helps to implement, or tracks implementation of, the Galveston Bay Plan.

**Total Project Budget:** \$8,458

#### **1. State of the Bay Report, Fourth Edition**

**CCMP Actions Implemented:** Galveston Bay Regional Monitoring Program, PPE-2.

**Grantee/Contractor:** The GeoTechnology Research Institute (GTRI) through HARC

**Fiscal 2018 Budget:** \$85,000

**Total Project Budget:** \$85,000

**Milestones:** QAPP approval and finalize State of the Bay text and graphics by June 2018.

**Project period:** September 2017- August 2019

**Status:** New project

**Objective(s):** The GTRI proposes to produce the State of the Bay: A Characterization of the Galveston Bay Ecosystem, Fourth Edition in fiscal 2018 based on GBEP’s fiscal 2017 update of the GBP, Status and Trends data and monitoring information available through 2017, Galveston Bay research findings from peer-reviewed and gray literature, and GBP implementation information provided by the GBEP staff and the GBC. The Report will present an analysis of the conditions and activities within the Galveston Bay ecosystem.

**Project Description:** The first (1994) and second (2002) editions of the State of the Bay Report were published as books and the third edition (2011) was published as an interactive CD and internet-available PDFs. In order to present a more user-friendly, accessible, and dynamic version of the State of the Bay report, the fourth edition of the State of the Bay Report will be developed as an easily updateable website and internet-available PDFs.

The updated State of the Bay Report will present a summary of GBP implementation, research and an analysis and presentation of the indicators and metrics available for Galveston Bay, based on acquired and quality assured monitoring data from the Galveston Bay Status and Trends project.

Information will be related to the goals of the revised GBP (set to be completed in 2017) and issues of concern for managers and stakeholders. The web-based format will enable content, graphics, narrative geographic information system (GIS) story maps, analysis, and linked data to be presented in a format that is easily updated, sharable and accessible to managers, scientists and other stakeholders. The web-based format also will enable information to be accessible to more stakeholders. In this format, the State of the Bay Report can become a continuing electronic record of the progress of the GBP and the accomplishments of the TCEQ GBEP, the GBC, and partner organizations.

**Partners and Their Role(s):** While the lead contractor is GTRI, the State of the Bay Report, 4<sup>th</sup> Edition will draw on the expertise of all GBC members and subcommittee members including a diverse group of research institutions and federal, state, local, and non-governmental organizations that collect data in the watershed.

**Outputs/Deliverables:**

- quarterly progress reports until contract expiration,
- draft QAPP due within 60 days of contract execution,
- final QAPP due within 45 days of draft,
- final State of the Bay website and report August 2018, and
- final report due June 2019.

**Long-term Outcomes:** Galveston Bay estuary is managed by all GBEP partners based on best known data.

### 3.2B - NRU PROJECTS FOR FISCAL 2018

#### 2. Conservation Assistance Program (CAP)

**CCMP Actions Implemented:** HP-1, HP-5, SP-1, SM-5, PPE-1

**Grantee/Contractor:** TBD (New solicitation)

**Fiscal 2018 Budget:** \$100,000

**Total Project Budget:** TBD

**Milestones:** Not applicable. Milestone dates for individual tasks are not applicable as project identification is a continuous task, and specific project support is applied for as needed.

**Project period:** September 2017- August 2018

**Status:** New project. GBEP developing a new solicitation for project contractor.

**Objective(s):** The goal of this project is to place 2,500 acres of coastal habitat in the Galveston Bay area in permanent conservation.

**Project Description:** The overall goal of the CAP is to support the GBEP and its partners' efforts to preserve wetlands and other important coastal habitats to protect the long-term health and productivity of Galveston Bay. The CAP will continue to accomplish these goals by:

- identifying priority conservation properties with the help and consensus of conservation partners;
- building funding strategies through grant identification, grant writing, and fundraising;
- working with willing sellers to negotiate fee simple or conservation easement transactions;
- carrying out legal, title, and other due diligence transaction support; and
- finalizing the sale and transfer of title to a third party organization or government entity.

**Partners and Their Role(s):** While the lead contractor is TBD, the CAP workgroup is comprised of a diverse group of federal, state, local, and non-governmental organization resource managers.

#### **Outputs/Deliverables:**

- quarterly progress reports until contract expiration, and
- final report due August 2018.

**Long-term Outcomes:** The permanent conservation of coastal habitat and preservation of important hydrologic and water quality functions in lower Galveston Bay.

### 3.2C - WSQ PROJECTS FOR FISCAL 2018

#### 3. Bacteria Source Tracking on Tributaries of Trinity and Galveston Bays

**CCMP Actions Implemented:** NPS-3, WSQ-1

**Grantee/Contractor:** Texas A&M AgriLife Extension/Texas Water Resources Institute (TWRI)

**Fiscal 2018 Budget:** \$80,000

**Project Total:** \$240,000

Project received approval from the GBC to receive \$80,000 a year for three consecutive years, dependent on funding.

**Milestones:** QAPP approval and water quality sampling by March 2018.

**Project Period:** September 2017 - May 2020

**Status:** New project

**Objective(s):** To gather information needed to address bacteria concerns in five watersheds of the Trinity and Galveston bays.

**Project Description:** Through this project, a water quality monitoring regime will be employed that will help decisions makers make appropriate recommendations for addressing the bacteria

impairments in Buffalo, Double, Cedar, and Dickinson bayous and Clear Creek. Monthly sampling will be conducted by TWRI at one site on each waterbody for 12 months (5 total sites). Field parameters collected will include pH, temperature, conductivity, and dissolved oxygen. Samples will be delivered to the TAMU Soil and Aquatic Microbiology Laboratory (SAML) where *E. coli* will be prepared for bacteria source tracking analysis. SAML will also conduct library-dependent bacteria source tracking and analyze *E. coli* isolates (4 isolates per sample) using the ERIC-PCR and RiboPrinting combination method. TWRI will collect approximately 75 known source samples from the local watersheds to improve the accuracy of the bacteria source tracking results. Known source sample isolates will be archived in the Texas *E.coli* bacteria source tracking library. Results of both the known source sampling and bacteria source tracking analysis will be reported in a project final report and presented as necessary.

**Partners and Their Role(s):** Contractor will be working with the SAML at Texas A&M to perform the sample analyses.

**Outputs/Deliverables:**

- quarterly progress reports until contract expiration,
- draft QAPP due within 60 days of contract execution,
- final QAPP due within 45 days of draft,
- data results and interpretation due with QPRs,
- final report due April 2020.

**Long-term Outcomes:** A better understanding of the sources contributing to bacteria pollution in the lower Galveston Bay watershed.

**4. Green Infrastructure for Texas (GIFT)**

**CCMP Actions Implemented:** HP-1, NPS-1, 2, PPE-1, 5

**Grantee/Contractor:** Texas A&M AgriLife Extension/TCWP

**Fiscal 2018 Budget:** \$74,198

**Project Total:** \$74,198

**Milestones:** Initiate partnerships done by December 2017 and develop QAPP by March 2018.

**Project Period:** September 2017 - August 2018

**Status:** New project

**Objective(s):** The goal of this project is to monitor freshwater wetland restoration in Sheldon Lake State Park and to develop several stormwater treatment wetlands.

**Project Description:** In order to establish green infrastructure, or natural drainage, in the Galveston Bay watershed, the TCWP will demonstrate a range of green infrastructure techniques using a multi-level approach, from individual property owners to large-scale undeveloped lands, with built-in applied research projects focused on water quality and quantity. The GIFT project brings together three TCWP programs—Freshwater Wetland Restoration, Stormwater Treatment Wetlands, and Green Stormwater Infrastructure—for a unified, holistic approach addressing current and emerging needs to protect surface water resources. Each of the programmatic areas has three components: 1) implementing on-the-ground demonstration projects for stormwater BMPs; 2) conducting research to study green infrastructure in situ; and 3) educating stakeholders to manage their water resources through courses, workshops, and publications.

Specifically in this project, stormwater treatment wetlands are proposed to be developed in three areas where partnerships have already been initiated; an 8,500 square foot basin on the MD Anderson Cancer Center campus in the Texas Medical Center in Houston, a three and half acre basin on the Brazosport College campus in Lake Jackson, and five acres of wetlands at Exploration Green Recreation Area in Clear Lake City (Phase I of five planned phases). In addition, this project will monitor freshwater wetland restoration at Sheldon Lake State Park. The goal of the vegetation monitoring focuses on understanding how the plant community changes by season and with time

(post initial planting). Sampling has been conducted on a quarterly basis since 2003. This project will continue the data collection for Phase II and III, but add sites within Phase IV (one year post construction) and future Phase V.

**Partners and Their Role(s):** MD Anderson Cancer Center, Brazosport College, and Clear Lake City will provide MOUs and contribute to the planning of the stormwater wetlands; Sheldon Lake State Park will assist with the monitoring and provide the land.

**Outputs/Deliverables:**

- quarterly progress reports until contract expiration,
- draft QAPP due within 60 days of contract execution,
- final QAPP due within 45 days of draft,
- signed MOUs by December 31, 2017,
- final report due August 2018.

**Long-term Outcomes:** Green infrastructure BMPs installed and monitored and used to demonstrate the effectiveness of green infrastructure.

**5. Designing for Impact: Promoting Low Impact Development Implementation**

**CCMP Actions Implemented:** NPS-2-7, NPS-10-11,

**Grantee/Contractor:** The H-GAC

**Fiscal 2018 Budget:** \$30,000

**Project Total:** \$30,000

**Milestones:** Coordinate kick-off meeting with the City of Pearland in October, 2017.

**Project Period:** September 2017 - August 2018

**Status:** New project

**Objective(s):** The goal of this project is to work directly with local governments to encourage greater usage of low impact development (LID) throughout the Houston-Galveston region.

**Project Description:** The H-GAC is partnering with the City of Manvel, the City of Mont Belvieu, and the City of Pearland in this pilot project to make their municipal codes more "LID-friendly." The H-GAC will focus on the City of Pearland but will conduct initial kick-off meetings with City of Manvel and the City of Mont Belvieu. The H-GAC will present the City of Pearland with a tailored report outlining impediments to LID implementation in their code, proposing code and ordinance revisions, and prioritizing LID techniques appropriate for their jurisdiction. The H-GAC will conclude the project by hosting a community LID workshop.

**Partners and Their Role(s):** The City of Manvel, the City of Mont Belvieu, and the City of Pearland will allow the H-GAC to review their municipal codes and offer recommendations.

**Outputs/Deliverables:**

- quarterly progress reports until contract expiration,
- revised findings report per consultant review by April 2018,
- revised findings report per City of Pearland review by May 2018,
- community LID workshop by June 2018,
- final report due August 2018.

**Long-term Outcomes:** Municipalities will use LID-friendly practices in the future.

**3.2D - PPE PROJECTS FOR FISCAL 2018**

**6. Trash Bash 2018**

**CCMP Actions Implemented:** PPE-1, PPE-3, PPE-5, SD-5

**Grantee/Contractor:** The H-GAC



**Fiscal 2018 Budget:** \$5,000

**Total Budget:** \$16,500 (\$6,500 in Grant #CE-00655005: fiscal 2015 \$1,500/ fiscal 2016 \$5,000; \$10,000 in Grant #CE-00655006: fiscal 2017 \$5,000/ fiscal 2018 \$5,000)

**Milestones:** Trash Bash event will occur between March and April 2018.

**Project Period:** September 2016 - July 2018

**Status:** Ongoing. The GBEP Trash Bash coordinator is working with the H-GAC to help plan the 2017 Trash Bash event.

**Objective(s):** The goal of Trash Bash is to promote environmental stewardship of our watershed through public education by utilizing hands-on educational tools and by developing partnerships between environmental, governmental and private organizations.

**Background:** Trash Bash is a successful volunteer-based litter cleanup event that has been held at multiple sites in the Houston-Galveston area on an annual basis since 1994. In fiscal 2017 funding was used to support staff time and salaries to organize the event.

**Project Description:** The GBEP continues to support Trash Bash in 2018 by providing funds at the \$5,000 sponsorship level to fund the salary and fringe benefits for a portion of the H-GAC Trash Bash coordinator position. For fiscal 2018 GBEP staff will continue to support the event by co-coordinating the Sims Bayou site and recruiting local volunteers in the local area as well as schools in the Spanish speaking community.

**Partners and Their Role(s):** Partners for this project include the H-GAC which organizes and coordinates the event, Gulf Coast Waste Disposal which provides equipment and t-shirts for the event, Texas Conservation Fund which manages the funding, and private and corporate sponsorships.

**Outputs/Deliverables:**

- Trash Bash Steering Committee meeting agendas and meeting minutes due July 31 annually, and
- final report due July 2018.

**Long-term Outcomes:** Increase awareness level of the connection between littering, how litter enters into our waterways, and the negative impacts it has on neighboring communities, fish and wildlife by 10% at all Trash Bash locations. Decrease the amount of trash flowing into area waterways through educating citizens on appropriate actions i.e. do not litter in your neighborhood, along the roads, and support EPA Trash Free Waters initiative.

## 7. White Oak Parkway Native Habitat Restoration and Outreach

**CCMP Actions Implemented:** PPE-1, PPE-3, PPE-7, HP-1, FW-6

**Grantee/Contractor:** City of Houston Parks and Recreation Department

**Fiscal 2018 Budget:** \$45,000

**Total Project Budget:** \$45,000

**Milestones:** Complete four acres of invasive species removal and native plant installation by February 2018.

**Project period:** September 2017 - August 2018

**Status:** New project

**Objective(s):** The White Oak Parkway Native Habitat Restoration and Outreach project will enhance urban bird and wildlife habitat along one of Houston's bayou corridors and serve as a demonstration for future birding interpretation and recreation sites within Houston. The project aims to link Houston's birds to a diverse audience—from the casual passerby to the advanced citizen scientist—as well as families participating in activities at adjacent community centers.

**Description:** A 10-acre (approximately) portion of White Oak Parkway will be managed for birds and

interpreted for the public as a pilot location for Houston Audubon's Bird-Friendly Community Initiative. Management activities will focus on the removal of invasive species and planting of native plants suited for the riparian corridor. Support in the form of Student Conservation Association's work crews will remove invasive species and ensure ongoing habitat restoration in the first year of native plant installation. The project will also include understory clearing in forested areas to reduce the collection of debris after flooding episodes. Interpretation will include educational signage at trail head and throughout trail, highlighting 1) the significance of our bayou systems to birds, 2) the importance of diverse habitats to support diverse species, and 3) actions people can take to support birds. A major challenge for the area is NPS pollution, particularly after flooding events when the trees, shrubs, and grasses become inundated with plastic materials. In addition to habitat restoration and interpretation, bird surveys funded independently and coordinated simultaneously by Houston Audubon will be conducted two ways: through citizen science activities and through point counts conducted by expert biologists. Coordinating educational events and activities with nearby community centers, local businesses, and schools will also enhance educational opportunities and link people to the habitat site as well as to each other in their own neighborhoods.

**Partners and Their Role(s):** Houston Audubon will provide education/outreach and volunteer coordination, the Student Conservation Association will provide invasive species removal and habitat restoration.

**Outputs/Deliverables:**

- quarterly progress reports until contract expiration,
- quarterly public education and volunteer events, and
- final report due July 2018.

**Long-term Outcomes:** Increase awareness level of the connection between the natural environment and the impacts the public can have on water quality and habitat preservation.

**8. Texas Estuarine Resource Network (TERN) Citizen Science Program in Galveston Bay**

**CCMP Actions Implemented:** PPE-1, PPE-5, PPE-8, SP-8, HP-7

**Grantee/Contractor:** TPWD

**Fiscal 2018 Budget:** \$27,392 Federal (plus an additional \$20,000 State funding = \$47,393)

**Total Project Budget:** \$75,000 (\$52,392 Federal in Grant #CE-00655006: fiscal 2017 \$25,000/ fiscal 2018 \$27,392) (\$20,000 State: fiscal 2018 \$20,000)

Dependent upon available funding, to receive remaining \$2,606 in fiscal 2019 work plan.

**Milestones:** A Seabird Scout Project working guidance plan established by January 2018.

**Project period:** August 2017 - May 2019

**Status:** Ongoing. GBEP is working with TPWD and Audubon Texas Coastal Program for contract development. The project was initially developed as an amendment under another GBEP contract with Audubon Texas. After a delay in the TCEQ contracting process, once legal reviewed the project, it was determined that it should be its own contract and not as an amendment. Since Audubon Texas already partners with TPWD on assisting injured birds and wildlife in the region, the project is now being developed with TPWD and Audubon Texas Coastal Program will be a sub-contractor/partner.

**Background:** In 2017 stakeholders identified a need to engage and train citizen scientist to participate in conservation work alongside biologists and wardens in the Galveston Bay watershed and to collect and disseminate information for injured wildlife affected by plastic pollution and monofilament fishing line through Audubon Texas' TERN program.

**Objective(s):** To continue to facilitate and establish public/citizen involvement as an integral part in Galveston Bay policy and natural resource management.

**Description:** TPWD and Audubon Texas will work with citizens, local governments and agencies, and

wildlife rehabilitation facilities to develop a working guidance plan such as a Standard Operating Procedure for volunteers to collect information to identify and report injured and sick birds and wildlife in need of aid. The two parties will work with citizens and partners on collecting and disseminating information reported by TERN volunteers—a program developed by Audubon Texas—volunteers to help TPWD and other organizations and agencies who will assist in rescuing sick and injured wildlife. These efforts will cumulatively improve the health and ecological function of natural habitats within the watershed, and provide a significant benefit to wildlife and water quality. The wildlife will not be handled by the Audubon Texas Coastal Program staff or citizens under this project. Any wildlife found injured or visibly ill will be reported immediately to TPWD. Any chemically contaminated or oiled birds (or other wildlife) will not be handled or approached, and the proper authorities will be notified.

In addition, Audubon Texas will also conduct public outreach events and citizen science training opportunities.

**Partners and Their Role(s):** TPWD will be the main contractor and Audubon Texas Coastal Program will be the subcontractor and will work with TPWD on collecting and disseminating information reported by TERN volunteers.

**Outputs/Deliverables:**

- quarterly progress reports until contract expiration,
- quarterly public education and volunteer events, and
- final report due August 2018.

**Long-term Outcomes:** Provide further educational opportunities for new and existing TERN citizen scientists to assist with impacts to injured birds and wildlife. Create a better educated public about nesting birds, human disturbance, and the impacts of trash and discarded fishing line on local birds and other wildlife.

### 3.2E - M&R PROJECTS FOR FISCAL 2018

#### 9. Seafood Evaluation in a Portion of Galveston Bay

**CCMP Actions Implemented:** PH-1

**Grantee/Contractor:** Texas Department of State Health Services (DSHS)

**Fiscal 2018 Budget:** \$30,000

**Total Project Budget:** \$99,375

Project received approval from the GBC, dependent upon available funding, to receive remaining \$69,375 in fiscal 2019 work plan.

**Milestones:** Develop QAPP and begin water quality sampling by March 2018.

**Project period:** September 2017 - August 2019

**Status:** New project

**Objective(s):** To evaluate the risk associated with consumption of fish and crabs from a portion of Galveston Bay.

**Project Description:** Recently, fish tissue samples have been collected from the upper portion of the Houston Ship Channel to assess current fish advisories. However, the advisory area below HWY 146 down to a line from Red Bluff Point to Five Mile Pass to Houston Point has not been sampled lately. This area has a consumption advisory for catfish, blue crabs and spotted seatrout due to PCBs and Dioxins. The area is a popular recreational fishing area for spotted seatrout. Fishing occurs regularly in Tabb's and Barnett bays that are contained in this advisory area. It is important that the targeted area that is selected is a geographical area that is of a size that will allow an evaluation of tissue concentrations and risk that allows a high degree of confidence so that appropriate regulatory decisions can be made by the Commissioner of Health related to altering an existing fish consumption advisory.

Approximately 63 samples will be collected and analyzed from this area. Four or five locations in the area will be selected to collect fish and crab samples based upon habitat and areas where fishing occurs. Targeted species would include those species that are commonly eaten such as blue crab, spotted seatrout, red drum, black drum, sheepshead, catfish, flounder and croaker. Once the samples are collected and analyzed, a risk characterization will be conducted to determine the adequacy of the current fish consumption advisory in this location.

**Partners and Their Role(s):** The Geochemical Environmental Research Group lab at Texas A&M University, Galveston will analyze the samples while the DSHS will do the sampling.

**Outputs/Deliverables:**

- quarterly progress reports until contract expiration,
- draft QAPP due within 60 days of contract execution,
- final QAPP due within 45 days of draft,
- final report due July 2019.

**Long-term Outcomes:** To determine if a fish advisory continues to be necessary for a portion of Galveston Bay.

**10. Characterization of the Influence of Freshwater Inflow on Trinity River Delta Indicators**

**CCMP Actions Implemented:** FW-1; FW-3; FW-7

**Grantee/Contractor:** University of Houston Clear Lake - Environmental Institute of Houston (EIH)

**Fiscal 2018 Budget:** \$42,000

**Total Project Budget:** \$42,000

**Milestones:** Develop QAPP and begin sampling by March 2018.

**Project period:** September 2017 - August 2019

**Status:** New project

**Objective(s):** The objective of this project is to quantify the influence of freshwater inflow on the Trinity River delta salinity regime and indicator biota.

**Project Description:** Recent studies by the USGS have documented inconsistencies between gaged upstream flows on the Trinity River and monitored inflows at the Trinity River mouth. In addition, little is known about the influence of freshwater inflow on the salinity regime and response of multiple freshwater indicator fauna including *Rangia cuneate* (Rangia clams) and *Vallisneria americana* (wild celery). Recent studies have documented the recent and past abundances of Rangia clams in open bay portions of the Galveston Bay system. However, spatial and temporal trends in populations of Rangia clams and wild celery remain poorly documented within the shallow portions of the Trinity River delta. EIH therefore proposes to conduct a comprehensive study that includes three components: 1) remote sensing of submerged aquatic vegetation [(SAV) wild celery and other species] using unmanned aerial vehicles (UAV's) and on the ground surveys, 2) establishment of a network of shallow automated salinity monitoring sites and 3) an on the ground inventory of SAV and Rangia clams.

The first study element will utilize fixed wing and/or copter UAV's along with airboats to inventory SAV beds within the delta. Sites containing SAV will be delineated and input into geographic information system databases. This data and historical information will be used to establish a network of monitoring sites within the delta. During the second phase 10-25 automated temperature and salinity/conductivity meters, one to two water/tide level recorders, and one to two recording precipitation gages will be deployed at strategic locations within the delta region to characterize changes in salinity regime associated with freshwater input. The salinity/conductivity automated probes will automatically log salinity and temperature at varying intervals for over one and a half years. Data collected from these units will be compared to nearby National Oceanic Atmospheric Association tide and precipitation gages, and the USGS gage at Romaine to assess temporal and spatial patterns and correlations between precipitation, tide stage, freshwater inflow

and the response of ambient salinity, SAV and Rangia clams. Although the field portion of this project will end in one and a half years, it is anticipated that the meters will be deployed for an additional one to two years to collect additional data. The third concurrent phase of the project will be an inventory of SAV and Rangia clam beds.

**Partners and Their Role(s):** None

**Outputs/Deliverables:**

- quarterly progress reports until contract expiration,
- draft QAPP due within 60 days of contract execution,
- final QAPP due within 45 days of draft,
- final report due July 2019.

**Long-term Outcomes:** A better understanding of the influence of freshwater inflow on salinity and indicator biota.

**11. The Impacts of Assimilative Capacity of Reservoirs on Coastal Inflows Phase II**

**CCMP Actions Implemented:** FW-1-5, RSC-2

**Grantee/Contractor:** GTRI

**Fiscal 2018 Budget:** \$27,842

**Total Project Budget:** \$160,000 (\$80,000 in Grant #CE-00655005: fiscal 2016 \$80,000; \$46,535 in Grant #CE-00655006: fiscal 2017 \$41,300, fiscal 2018 \$27,842)

Project received approval from the GBC in October 2016 to continue project and increase project amount from \$80,000 to \$160,000 to fund phase II and extend project to May, 2019. Project received \$41,300 in fiscal 2017 work plan for phase II work. Dependent upon available funding, to receive remaining \$10,858 in fiscal 2019 work plan.

**Milestones:** Coordination meeting originally to occur in January 2017 but due to contracting delays will occur in February 2017.

**Project period:** September 2017 - May 2019

**Status:** Ongoing

**Objective(s):** The goal for the proposed project is to assess the assimilative capacity of the Lake Livingston reservoir and related impacts on coastal inflows.

**Background:** More than half of the inflow into Galveston Bay comes from the Trinity River. The Lake Livingston reservoir feeds into the Trinity and the goal of the project will be to assess the assimilative capacity of Lake Livingston and the related impacts on coastal inflows. The USGS in cooperation with the Texas Water Development Board, has evaluated a number of high flow events on the Trinity River in order to evaluate the variability of nutrient and sediment concentrations entering Texas bays and estuaries during a variety of flow conditions. Initial results from this study indicate that releases from the Lake Livingston reservoir may play an important role in controlling sediment and nutrient load variability to the coastal ecosystem. The effect Lake Livingston has in sequestering sediments and nutrients is not well understood; therefore quantifying the assimilative capacity of Lake Livingston is critical in understanding the impacts of reservoirs on the health of the Galveston Bay ecosystem.

**Project Description:** The QAPP was developed and approved during the first year of the project. The monitoring will begin during the second half of fiscal 2016 under grant #CE-00655005 and continue through the end of the project. Fiscal 2017 allowed the GTRI to double the sampling time period and sampling amounts. Fiscal 2018 and fiscal 2019 funding will be used to continue sampling and support personnel involved with the project analysis, final reporting and final summary work.

**Partners and Their Role(s):** The USGS will assist with the development of the QAPP and the monitoring plan, and will also conduct the monitoring; the Texas Water Development Board will contribute sampling data from the Trinity River.

**Outputs/Deliverables:**

- quarterly progress reports until contract expiration,
- QAPP revision due February 2017,
- year-end summary report due annually in September, and
- final report due April 2019.

**Long-term Outcomes:** Insight into assimilative capacity of reservoirs and impacts to inflows for Galveston Bay.

**SECTION 3.3: FISCAL 2018 GRANT BUDGET SPREADSHEET**

Table 7 depicts the Grant Budget Spreadsheet for fiscal 2018. Table 8 provides a summary of the fiscal 2018 budget.

Table 7. Fiscal 2018 Grant Budget Spreadsheet

<b>2018 Grant Budget Totals</b>	<b>Administration</b>	<b>NRU</b>	<b>WSQ</b>	<b>PPE</b>	<b>M&amp;R</b>	<b>Total Costs</b>
<b>Project #</b>	915210	915210	915210	915210	915210	-
<b>Salaries</b>	\$365,745	\$0	\$0	\$0	\$0	\$365,745
<b>Contracts</b>	\$32,505	\$0	\$0	\$0	\$0	\$32,505
<b>Travel</b>	\$7,500	\$0	\$0	\$0	\$0	\$7,500
<b>Other</b>	\$93,458	\$100,000	\$184,198	\$77,392	\$99,842	\$554,890
<b>Supplies</b>	\$200	\$0	\$0	\$0	\$0	\$200
<b>Equipment</b>	\$0	\$0	\$0	\$0	\$0	\$0
<b>Construction</b>	\$0	\$0	\$0	\$0	\$0	\$0
<b><u>Sub-Total</u></b>	<b><u>\$499,408</u></b>	<b><u>\$100,000</u></b>	<b><u>\$184,198</u></b>	<b><u>\$77,392</u></b>	<b><u>\$99,842</u></b>	<b><u>\$960,840</u></b>
<b>Fringe 36.30%</b>	\$132,765	\$0	\$0	\$0	\$0	\$132,765
<b><u>Indirect 29.09%</u></b>	<b><u>\$106,395</u></b>	<b><u>\$0</u></b>	<b><u>\$0</u></b>	<b><u>\$0</u></b>	<b><u>\$0</u></b>	<b><u>\$106,395</u></b>
<b>GRANT TOTAL</b>	<b><u>\$738,568</u></b>	<b><u>\$100,000</u></b>	<b><u>\$184,198</u></b>	<b><u>\$77,392</u></b>	<b><u>\$99,842</u></b>	<b><u>\$1,200,000</u></b>

Table 8. Fiscal 2018 GBEP Budget Summary (CTRL+ CLICK Project Names)

<b>2018 GBEP Budget Summary</b>	<b>Amount</b>
<b>Salaries</b>	<b>\$365,745</b>
Salaries for staff members of GBEP	\$365,745
<b>Contracts</b>	<b>\$32,505</b>
GBEP Website	\$32,505
<b>Travel</b>	<b>\$7,500</b>
Travel for program manager and two staff to attend Fall NEP Tech Transfer meeting/Coastal Estuarine Research Meeting in Providence, Rhode Island	\$5,522
Travel for program manager to attend Spring EPA NEP Workshop in Washington, D.C.	\$1,978
<b>Other</b>	<b>\$554,890</b>
1. State of the Bay Report, Fourth Edition	\$85,000
2. Conservation Assistance Program	\$100,000
3. Bacteria Source Tracking on Tributaries of Trinity and Galveston Bays	\$80,000
4. Green Infrastructure for Texas (GIFT)	\$74,198
5. Designing for Impact: Promoting Low Impact Development Implementation	\$30,000
6. Trash Bash 2018	\$5,000
7. White Oak Parkway Native Habitat Restoration and Outreach	\$45,000
8. Texas Estuarine Resource Network (TERN) Citizen Science Program in Galveston Bay	\$27,392
9. Seafood Evaluation in a Portion of Galveston Bay	\$30,000
10. Characterization of the Influence of Freshwater Inflow on Trinity River Delta Indicators	\$42,000
11. The Impacts of Assimilative Capacity of Reservoirs on Coastal Inflows Phase II	\$27,842
12. Mickey Leland Intern	\$8,458
<b>Supplies</b>	<b>\$200</b>
Supplies for Outreach and Education	\$200
<b>Fringe and Indirect</b>	<b>\$239,160</b>
<b>2018 GRANT TOTAL</b>	<b>\$1,200,000</b>



Table 9. Travel Summary by Trip

<b>Travel Summary</b>	<b>Amount</b>
<b>Fall NEP Tech Transfer meeting/Coastal Estuarine Research Meeting in Providence, Rhode Island (1 person travel, 4 days)</b>	<b>\$2,761</b>
Airfare	\$1,200
Lodging (\$147/night)	\$588
Hotel Tax (13.0%)	\$77
Taxi/transport	\$100
Per diem (\$59/day)	\$236
Conference registration	\$560
<b>Fall NEP Tech Transfer meeting/Coastal Estuarine Research Meeting in Providence, Rhode Island (1 person travel, 4 days)</b>	<b>\$2,761</b>
Airfare	\$1,200
Lodging (\$147/night)	\$588
Hotel Tax (13.0%)	\$77
Taxi/transport	\$100
Per diem (\$59/day)	\$236
Conference registration	\$560
<b>Spring NEP Tech Transfer Meeting in Washington, D.C. (1 person travel, 4 days)</b>	<b>\$1,978</b>
Airfare	\$800
Lodging (\$189/night)	\$756
Hotel Tax (14.5%)	\$110
Taxi/transport	\$36
Per diem (\$69/day)	\$276
<b>2018 Travel Estimate Total*</b>	<b>\$7,500</b>

\*All out of state travel is dependent on management review and approval. Rates for fiscal 2018 are subject to change and estimates are based on previous trips from fiscal 2017 as well as the current fiscal 2017 federal and state per diem rates.

## SECTION 4: ONGOING PROJECTS

### SECTION 4.1: ONGOING FEDERAL PROJECT DESCRIPTIONS

#### 4.1A – ONGOING ADMINISTRATIVE PROJECTS

##### 1. The GBP Revision

**CCMP Actions Implemented:**

**Grantee/Contractor:** The H-GAC

**FY 2017 Budget:** \$75,000

**Total Project Budget:** \$75,000

**Milestones:** First public workshop occurred in October 2016.

**Project period:** September 2016 – May 2018

**Status:** Ongoing. Public Engagement Plan completed in October 2016. Workshop One completed October 2016, and plan revision website online in October 2016. Workshop Two is scheduled for March 2017. Draft plan revision frameworks developed in consultation with the subcommittees of the GBC between December and February 2017.

#### 4.1B- ONGOING NRU PROJECTS

##### 2. CAP

**CCMP Actions Implemented:** HP-1, HP-5, SP-1, SM-5, PPE-1

**Grantee/Contractor:** GBF

**FY 2017 Budget:** \$100,000

**Total Project Budget:** \$600,000 (\$300,000 in Grant #CE-00F20801: fiscal 2011 \$173,054/ fiscal 2012 \$126,946; \$200,000 in Grant #CE-00655005: fiscal 2014 \$94,450/ fiscal 2015 \$5,550/ fiscal 2016 \$100,000; \$220,000 in Grant #CE-00655006: fiscal 2017 \$100,000)

**Milestones:** N/A

**Project period:** 2011-2017

**Status:** Ongoing. To date, ten projects have closed under this partnership, including the Lone Pine Farm and Anahuac NWR Coastal Prairie, permanently protecting 5,837 acres and leveraging approximately \$9,000,000. Many additional projects are ongoing, including the Hitchcock Prairie conservation easement (3,200 acres) and the Coastal Heritage Preserve – Anchor Bay acquisition (50 acres), which have already leveraged an additional \$5,075,000. Current contract for the CAP with GBF will close in August 2017. Solicitation for a new contract will occur in fiscal 2018. See page 25 for details.

#### 4.1C- ONGOING WSQ PROJECTS

##### 3. Galveston Bay FOG Campaign

**CCMP Actions Implemented:** WSQ-1, 5, 6, PS-2, PPE-3

**Grantee/Contractor:** The City of Nassau Bay

**FY 2017 Budget:** \$60,000

**Total Project Budget:** \$216,000 (\$156,000 in Grant #CE-00655005: fiscal 2014 \$50,000/ fiscal 2015 \$46,000/ fiscal 2016 \$60,000; \$60,000 in Grant #CE-00655006: fiscal 2017 \$60,000)

**Milestones:** Installation of one oil recycling receptacle by January 2017. One recycling station was installed in the City of Nassau Bay in December 2016. A second station is scheduled to be installed by July 2017. The second station has been delayed because of difficulties finding an oil hauler and finding partners to host a recycling station. Two additional recycling stations are due by January 2018.

**Project period:** September 2014 – August 2018

**Status:** With the exception of the one recycling station, the project is on track. The contractor

continues to hold quarterly workgroup meetings and work with partners to find locations for the recycling stations. The outreach campaign includes social media posts on Facebook and Twitter. The contractor has also marketed the campaign with KPRC, a local TV station, and Pandora and they have had educational booths at many functions.

#### 4. Galveston County Coalition of Watersheds

**CCMP Actions Implemented:** HP-1, HP-5, SP-1, SM-5, PPE-1

**Grantee/Contractor:** Texas A&M AgriLife Extension/TCWP

**FY 2017 Budget:** \$85,000

**Total Project Budget:** \$85,000

**Milestones:** Coalition stakeholders will be identified and included in a participation list by November 2016. The first coalition stakeholder meeting will take place in April 2017 and the first GBBRP meeting took place in February 2017.

**Project period:** September 2016 - May 2018

**Status:** The project is slightly behind schedule due to a delay in getting the contract executed. However, both groups from this project (the coalition and the GBBRP group) began meeting in early 2017 and plan to begin coordinating with the stakeholders regularly. Websites have already been developed and coordination with adjacent watersheds established.

#### 4.1D- ONGOING PPE PROJECTS

##### 5. Back the Bay

**CCMP Actions Implemented:** All

**Grantee/Contractor:** Texas Creative

**FY 2017 Budget:** \$147,045

**Total Project Budget:** \$375,045 (\$230,000 in Grant #CE-00655005: fiscal 2016 \$230,000; \$147,045 in Grant #CE-00655006: fiscal 2017 \$147,045)

**Milestones:** GBEP experienced several delays in the TCEQ contracting process, however during this time the project manager worked with the PPE subcommittee to identify more diverse communities including non-English speaking and underserved/underrepresented communities during the summer and fall of 2016. The PPE subcommittee will continue to reach out to leaders of these communities as an ongoing effort to get the Back the Bay message into those communities. The campaign contract was executed in January 2017. The project manager will work with contractor Texas Creative on rebooting and fine-tuning the campaign message, creative materials, and the website by May 2017.

**Project period:** September 2016 - May 2018

**Status:** The project is slightly behind schedule due to a delay in getting the contract executed. However, both groups from this project began meeting in February 2017.

##### 6. Trash Bash 2017

**CCMP Actions Implemented:** PPE-1, PPE-3, PPE-5, SD-5

**Grantee/Contractor:** The H-GAC

**FY 2017 Budget:** \$5,000

**Total Project Budget:** \$16,500 (\$6,500 in Grant #CE-00655005: fiscal 2015 \$1,500/ fiscal 2016 \$5,000; \$10,000 in Grant #CE-00655006: fiscal 2017 \$5,000/ fiscal 2018 \$5,000)

**Milestones:** Event to occur on March 25, 2017.

**Project period:** September 2016 - July 2018

**Status:** Ongoing. See page 27 for more details.

##### 7. TERN Citizen Science Program in Galveston Bay

**CCMP Actions Implemented:** PPE-1, PPE-5, PPE-8, SP-8, HP-7

**Grantee/Contractor:** TPWD

**FY 2017 Budget:** \$25,000

**Total Project Budget:** \$75,000 (\$52,392 Federal in Grant #CE-00655006: fiscal 2017 \$25,000/ fiscal 2018 \$27,392) (\$20,000 State: fiscal 2018 \$20,000)

Dependent upon available funding, to receive remaining \$2,606 in fiscal 2019 work plan.

**Milestones:** A Seabird Scout Project working guidance plan established by January 2018.

**Project period:** August 2017 - August 2018

**Status:** Ongoing. The project was initially developed as an amendment under another GPBEP contract with Audubon Texas. After a delay in the TCEQ contracting process, once legal reviewed the project, it was determined that it should be its own contract and not as an amendment. Since Audubon Texas already partners with TPWD on assisting injured birds and wildlife in the region, the project is now being developed with Texas Parks and Wildlife and Audubon Texas Coastal Program will be a sub-contractor/partner. See page 29 for more details.

#### 4.1D- ONGOING M&R PROJECTS

##### 8. Freshwater Inflows in Galveston Bay: Relationships to Harmful Algal Blooms

**CCMP Actions Implemented:** FW-1, 7, SP-1

**Grantee/Contractor:** TAMUG

**FY 2017 Budget:** \$85,000

**Total Project Budget:** \$85,000

**Milestones:** Coordination meeting originally to occur in January 2017 but due to contracting delays will occur in February 2017.

**Project period:** January 2017 - August 2018

**Status:** Ongoing. The project is behind schedule due to a delay in contract execution. The contract was executed in January 2017. Contractor currently working on QAPP development.

##### 9. The Impacts of Assimilative Capacity of Reservoirs on Coastal Inflows Phase II

**CCMP Actions Implemented:** FW-1-5, RSC-2

**Grantee/Contractor:** The HARC

**FY 2017 Budget:** \$41,300

**Total Project Budget:** \$160,000 (\$80,000 in Grant #CE-00655005: fiscal 2016 \$80,000; \$46,535 in Grant #CE-00655006: fiscal 2017 \$41,300, fiscal 2018 \$27,842)

Dependent upon available funding, to receive remaining \$10,858 in fiscal 2019 work plan.

**Milestones:** Coordination meeting originally to occur in January 2017 but due to contracting delays will occur in February 2017.

**Project period:** September 2017 - May 2019

**Status:** Ongoing. See page 32 for details.

## SECTION 5: COMPLETED MAJOR PROJECTS

### SECTION 5.1: MAJOR PROJECTS COMPLETED IN FISCAL 2017

The following are major projects that were completed during fiscal 2017.

#### COMPLETED MAJOR PROJECTS

##### 1. Highland Bayou WPP

**CCMP Actions Implemented:** WSQ-1,2,6,7; NPS-1,2,3,4,5,6,10,11,12,13,14; PS-1,2,5

**Lead Implementer:** Texas A&M AgriLife Extension/TCWP

**Partners and Their Role(s):** Municipalities, MUDs, and residents from the Highland Bayou watershed, Galveston County, the GBF, the TSSWCB, the TCEQ Region 12, and the TPWD all participated and contributed to the WPP.

**Status:** Complete. Final report sent to EPA on January 11, 2017.

**Objective(s):** To complete a WPP for high levels of bacteria and low levels of dissolved oxygen for Highland and Marchand Bayous.

**Description:** Highland bayou is listed on the TCEQ's 303(d) list for high levels of bacteria and low levels of oxygen in the water. The bacteria impairment is classified as Category 5a and the dissolved oxygen impairment is classified as Category 5c. All segments are classified as tidally influenced. Local governments in the watershed are La Marque, Hitchcock, Bayou Vista, Texas City, and unincorporated Galveston County.

The Highland and Marchand Bayous WPP is a vision and set of project ideas for voluntary action by community stakeholders for improving water quality. The impaired water quality poses risks to public health and diminishes its value as a recreational, aesthetic, and ecological resource for these communities.

The group consisted of participants from state, county and municipal agencies, together with private citizens and not-for-profit organizations. Nearly 60 individuals were contacted for this process to hear and understand their experiences and concerns. This resulted in collecting over 100 project ideas, which were further organized into 38 Action Areas, all discussed in the WPP. From these, 10 Priority Action Areas were developed into detailed strategies, costs, required resources, timelines, and milestones.

#### **Accomplishments and Deliverable(s):**

- completed a draft WPP with stakeholder approval,
- completed a final report.

**CWA Section 320 Funds:** \$100,000

**Long-term Outcomes:** Improved water quality.

#### **CWA Core Program(s):**

- addressing diffuse, NPS of pollution,
- protecting wetlands,
- protecting coastal waters through the NEP,
- protecting large aquatic ecosystems.