

Galveston Bay Estuary Program
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January 10, 2017

Dear Galveston Bay Council Members:

The next quarterly meeting of the Galveston Bay Council is scheduled for:

Wednesday, January 18, 2017
9:30 AM - 12:30 PM

Meeting location:
Harris-Galveston Subsidence District
1660 West Bay Area Blvd,
Friendswood, TX 77546-2640
(281) 486-1105

Information for the January 18, 2017 meeting is attached as noted below.

1. Council Agenda for January 18, 2017
2. Draft October 19, Council Meeting Minutes

Sincerely,

Sarah P. Bernhardt
Program Manager
Galveston Bay Estuary Program (GBEP) /Texas Commission on Environmental Quality (TCEQ)



A PROGRAM OF THE TCEQ

GALVESTON BAY COUNCIL QUARTERLY MEETING

Location: Harris-Galveston Subsidence District, 1660 West Bay Area Blvd, Friendswood, TX 77546-2640

AGENDA: Wednesday, January 18, 2017

- 9:30 A.M.:** **Call to Order:** Introduction of Members and Delegates
 Action Item: Approval of October 19, 2016 Meeting Minutes
 Report of the Chair (Nancy Parra)
 Report of the Program (Sarah Bernhardt)
- 9:50 A.M.:** **Presentation:** Data trends in the Galveston Bay Report Card, Lisa Gonzalez, HARC and Bob Stokes, Galveston Bay Foundation
 Presentation: Status of the Galveston Bay Plan Revision and Workshop One Results, Meredith Dang, Houston-Galveston Area Council
- 11:00 A.M.:** **Break**
- 11:15 A.M.:** **Presentation:** An update on the Coastal Storm Surge Protection Concept known as "Ike Dike", COL Len Waterworth, Texas A&M University, Galveston
 Subcommittee Reports: (Subcommittees Handouts included in Packets if available)
- Consistency Review
 - Monitoring and Research
 - Public Participation and Education
 - Water/Sediment Quality
 - Natural Resource Uses
 - Invasive Species Working Group
 - Budget and Priorities Subcommittee
 - Nominations
- Council Member Roundtable:** News and Announcements
- 12:25 P.M.:** **Public Comments**
- 12:30 P.M.:** **Adjourn**

Upcoming Galveston Bay Council Meeting Dates: April 19, 2017; July 19, 2017; October 18, 2017. Meetings are held on the third Wednesday of the quarter from 9:30am-12:30pm. If there are known conflicts, Council members are welcome to propose alternate dates to the Council.

GALVESTON BAY ESTUARY PROGRAM

Draft- Galveston Bay Council Meeting Minutes- October 19, 2016

Galveston Bay Council Chair: Nancy Parra (League of Women Voters)

Galveston Bay Council Vice-Chair: Helen Paige (Marinas)

Estuary Program Staff Lead: Sarah Bernhardt, Galveston Bay Estuary Program (GBEP)

The October 19, 2016 quarterly Galveston Bay Council meeting was held at Harris-Galveston Subsidence District, 1660 West Bay Area Blvd., Houston, Texas, from 9:32 AM to 12:30 PM.

Members Present: Scott Alford, Caryn Brooks, Andrea Catanzaro, Glenn Clingenpeel, Jarod Davis, Mark Fisher, Albert Gonzales, Rebecca Hensley, John Huffman, Doug Jacobson, Brian Koch, Luz Locke, Garry McMahan, Helen Paige, Nancy Parra, Ana Partin, Ronnie Schultz, Linda Shead, Sharron Stewart, Matthew Still, Jeff Taebel, Lori Traweek, Chuck Wemple

Members Not Present/Delegates: Bill Baker, Phillip Goodwin, Carla G. Guthrie, James Harcourt, Kelly Holligan*, Jace Houston*, John Jacob*, Kristin Lambrecht, Mike Lee*, Aaron Rice, Hanadi Rifai, Mary Beth Stengler, Bob Stokes*, Rusty Swafford, Kirk Wiles, Tracy Woody, Kate Zultner*

(*=Member designated a proxy)

Proxies Present (council member absent/designated proxy):

Bill Baker/Scott Alford, Carla G. Guthrie/Caimee Schoenbaechler, Kelly Holligan/Cory Horan, Jace Houston/Jordan Austin, John Jacob/Chariss York, Mike Lee/Zulimar Lucena, Bob Stokes/Scott Jones, Kate Zultner/Mollie Powell

Current Vacancies: None

Other Attendees: Glenn Laird, Janelle Stokes, George Guillen, Heather Young

Additional GBEP Staff present: Cynthia Clevenger, Michelle Krause, Lindsey Lippert, Lisa Marshall, Mary Stiles

Call to Order: Introduction of Members and Delegates

Action Item: Approval of July 20, 2016 Meeting Minutes

Dr. Nancy Parra (Chair) opened the meeting with approval of the July 20th meeting minutes and opened the floor for questions and comments. A motion was requested for approval of the minutes. Doug Jacobson commented he would like to make a change to some of his comments reported in the draft minutes. In the contact list Carla's Guthrie email address needs to be corrected on the GBC members list of emails. Zolmar Lucena surname needs to be corrected. Minutes were approved by Council

members. Chuck Wemple motioned to approve followed by Sharron Stewart seconding the motion for approval.

Chair Report:

Dr. Nancy Parra reported to the council members the Bylaws expiration date is November 16, 2015. Dr. Sarah Bernhardt reported Conflict of Interest acknowledgment forms would be passed out to members and placed on the entrance table.

Dr. Parra reported at the next council meeting January 18, 2017 will feature 2016 Galveston Bay Report Card with Bob Stokes and Lisa Gonzalez.

Report of the Program:

Dr. Bernhardt reported the first Galveston Bay Plan revision Workshop will take place October 26, 2016, 1:00 - 2:00 pm located at the Nessler Civic Center, Captain's Room in Texas City. Open House from 4:00 - 6:00 pm at same location.

Tentative Action Item: Nomination for vacancy

Dr. Parra reported she had contacted Russ Poppe, the new Executive Director to fill Mike Talbot's retirement vacancy. Ms. Linda Shead read Mr. Poppe's biography and made the nomination as Mike's successor as of September 1, 2016. A motion was requested for approval of the nomination Sharron Stewart motion for approval, Linda Shead seconded the motion of approval.

Biography of Russell "Russ" Poppe, P.E., Executive Director, Harris County Flood Control District

After graduating from Texas A&M University in 1999 with a civil engineering degree, Russ successfully practiced engineering in the private industry before joining the Harris County Architecture and Engineering Department in September 2005. Since then, Russ has held various leadership positions within both Harris County and Harris County Flood Control District, with project responsibilities spanning from roadway, park, and water quality projects, to multi-story buildings and complex flood risk reduction projects in highly urbanized areas. His tenure in the public service sector includes a collective project portfolio that exceeds \$1 billion in value on very diverse projects that has allowed him to gain a unique skill set and develop a solid track record focused on producing efficient and effective public projects.

Presentation: Andrea Catanzaro, Project Manager, United States Army Corps of Engineers (USACE), Houston Ship Channel 45-Foot Expansion Channel Improvement Project Section 216 Feasibility Study

USACE is conducting both a Feasibility Study and Environmental Impact Study (EIS) that will be integrated into a single report to determine the practicability of doing a 45-foot widening of the ship channel. With many bends in the channel, navigation can be difficult and widening the channel will improve safety. The widening of the channel

will reduce the number of tug boat assists necessary which will also cut down on congestion. Deepening the channel is not being considered. It will be a 50/50 cost share between the Port of Houston and USACE. Dredge material will be used to enhance bird islands in the upper bay and/or create underwater relief features for fish habitat.

Questions & Answers

Lori Traweek asked if permit holders who have outfalls in the ship channel will be notified when construction commences. Ms. Catanzaro replied that USACE and the Port Authority would be notifying and working with permit holders when they start the construction.

Mark Fisher stated that TCEQ may need to address how the permittees are discharging into the ship channel.

Glenn Laird asked if USACE is considering sea level rise in their modeling and forecasting, especially for areas such as under the 610 bridge. Ms. Catanzaro replied that it's early in the process, but they will be taking sea level rise into consideration.

Sharon Stewart asked if air quality was also a consideration during construction. Ms. Catanzaro said they were certainly taking air quality into consideration and would be mitigating for any negative impacts.

Mark Fisher asked Ms. Catanzaro to address how the draft of the feasibility study and Environmental Impact Study (EIS) will be done. Ms. Catanzaro said they would be incorporated into one document with chapters, but it would be a summary type of structure with appendices. Mr. Fisher followed up by asking what the procedure will be if the Tentatively Supported Plan (TSP) and EIS support different strategies. Ms. Catanzaro said they would go back to the public for comment and input.

Albert Gonzales asked how long will it take for the actual construction. Ms. Catanzaro stated that it could take several years before construction could begin. They have to go through the public scoping processes, get the approval and permits and then receive the funding before commencing construction. Mr. Gonzales followed up by asking if the current design of the ship channel allows those larger container ships to navigate through the channel. Ms. Catanzaro stated it did not.

Chuck Wemple asked about the areas the "pinch points" for widening the bends in the ship channel. Will this design create larger "pinch points?" Ms. Catanzaro said she's not sure how some areas will be impacted yet as it is early in the study. They know it's an issue and will consider mitigating for riparian areas.

Mark Fisher asked when the TSP will be completed and why they used the wording of Tentatively Supported Plan and not NEPA? Ms. Catanzaro stated that the plan is more conceptual and not a fully developed plan and based in large part on public comments rather than a well detailed NEPA plan.

Doug Jacobson requested clarification on when construction would commence. Ms. Catanzaro said that actual construction will not commence until 2029/2030. It will be completed over phases and segments depending on completion of the TSP/EIS, approval from federal government and when funding becomes available.

Presentation: Janelle Stokes, Regional Technical Specialist, Environmental Compliance Branch, Coastal Section Regional Planning and Environmental Center, USACE, Coastal Texas Protection and Restoration Feasibility Study

Ms. Jan Stokes presented to the council the four study areas along the Texas coast which fall under nine congressional districts and two U.S. senators.

The purpose of the Coastal Storm Risk Management (CSR) is to develop the evaluation of coastal storm damage risk reduction measures of coastal Texas residents, industries and businesses which are critical to the nation's economy.

Ecosystem Restoration (ER) increases the net quantity and quality of coastal ecosystem resources by maintaining, protecting, and restoring coastal Texas ecosystems and fish and wildlife habitat. The project process generates an executable project that is authorized by Congress and can compete for federal funding for construction and maintenance. USACE receives funding on an annual budget cycle from October through September.

Coastal Exemption approval from Corps is a study process with Congressional/Office of Management and Budget notification. Texas General Land Office (GLO) - Non-Federal Sponsor is a study sponsor and signed the feasibility cost sharing agreement in November 2015. GLO is working to identify construction sponsors on the local level - Counties, Cities, Levee Improvement districts, drainage districts, Municipal utility districts and other special taxing entities.

The Coastal Texas Feasibility study includes mega study (one of the first in the Corps), teams include the national team of USACE experts, generally have kickoff meetings in January of 2016. Working towards identification of tentatively selected plan in May 2018. The feasibility studies are three requirements Engineering, Economics and Environmental.

Modeling effects will be used at Galveston Bay. The 3-D Adaptive Hydraulics model will be used for Hydro, sediment and salinity modeling. Updating the existing modeling efforts. USACE will be performing the data and will be using existing modeling and data.

Public input is critical for understanding the needs and opportunities reaching an implementable plan for authorization. Information on the study will be posted on the

USACE website, draft integrated feasibility report and environmental impact study is currently scheduled for public review for July 2018.

Presentation of Proposed GBEP Fiscal Year (FY) 2018 Work Plan (GBEP Staff)

(see attached presentation slides for project details)

Dr. Bernhardt introduced GBEP staff to present to the council the proposed FY 2018 budget and projects to meet council vote approval.

Michelle Krause - Presented an estimated budget and planning for the GBEP for one year from Sept. 1, 2017 - August 31, 2017.

Lindsey Lippert - Presented proposed NRU projects

Lisa Marshall - Presented proposed WSQ and M&R projects.

Cynthia Clevenger - Presented proposed PPE projects.

Dr. Bernhardt thanked the GBEP staff, subcommittee chairs, and subcommittee members for their work in developing the projects.

Discussion and Action Item: FY 2018 work plan and alternates approval

Proposed Projects			
PRG Area	Project Name	Lead	GBC Members Who Abstained from voting on this project *
PRGM	1) State of the Bay 2018	HARC-GTRI	Doug Jacobson,
PRGM	2) GBEP Website/Back the Bay Website Update and Maintenance	GBEP	Doug Jacobson
NRU	3) Conservation Assistance Program	TBD	Doug Jacobson, Linda Shead, John Huffman
NRU	4) Coastal Heritage Preserve - Anchor Bay Acquisition	Artist Boat	Doug Jacobson, Linda Shead
NRU	5) Trinity Bay Discovery Center Living Shoreline	GBF	Scott Jones, Sharron Stewart, Lori Traweek, Doug Jacobson
NRU	6) Green Infrastructure for Texas - Freshwater Wetland Restoration	Texas Coastal Watershed Program	Scott Jones, Charriss York, Doug Jacobson

WSQ	7) Bacterial Source Tracking on Tributaries of Trinity and Galveston Bay	Texas Water Resources Institute	Doug Jacobson
WSQ	8) Coordinating Implementation of a Watershed Protection Plan for Double Bayou	HARC-GTRI	Doug Jacobson, Kate Zultner, Brian Koch
WSQ	9) Green Infrastructure for Texas - Stormwater Treatment Wetlands	Texas Coastal Watershed Program	Doug Jacobson, Charriss York
WSQ/M&R	10) Evaluating the potential of an index-velocity discharge station and surrogate parameters to estimate flow, nutrient and suspended-sediment loads from the San Jacinto River to Galveston Bay	USGS	Doug Jacobson, Kate Zultner
WSQ	11) Designing for Impact: Promoting Low Impact Development Implementation	H-GAC	Chuck Wemple, Jeff Taebel
M&R	12) Seafood Evaluation in a Portion of Galveston Bay	DSHS	Doug Jacobson,

M&R	13) Characterization of the Influence of Freshwater Inflow on the Trinity River Delta Salinity, Rangia, and Submerged Aquatic Vegetation	UHCL-EIH	Doug Jacobson, Lori Traweek
M&R (Supported by NRU)	14) Proposed Monitoring Regime for Sheldon Lake State Park Freshwater Wetland Restoration Sites	Texas Coastal Watershed Program	Doug Jacobson, Charriss York
PPE	15) River, Lakes 'N Bayous Trash Bash	H-GAC	Lori Traweek, Jeff Taebel, Chuck Wemple

PPE	16) White Oak Parkway Native Habitat Restoration and Outreach	Houston Parks and Recreation Department	Doug Jacobson,
PPE	17) TERN Citizen Science Program in Galveston Bay	TPWD	Doug Jacobson, Rebecca Hensley
PPE	18) Galveston Bay Action Network (GBAN) Education and Outreach Campaign	GBF	Doug Jacobson, Scott Jones, Lori Traweek, Sharron Stewart

**Doug Jacobson Abstained from voting on all the projects*

Subcommittee Reports: (Subcommittee Handouts included in Packets if available)

Monitoring and Research (M&R) – Lisa Marshall presented proposals for M&R to the council for FY 2018

Public Participation and Education (PPE) – Cynthia Clevenger presented proposals for PPE to the council for FY 2018

Water/Sediment Quality (WSQ) – Lisa Marshall presented proposals for WSQ to the council for FY 2018

Natural Resource Uses – Lindsey Lippert presented proposals for NRU to the council for FY 2018

Budget and Priorities Subcommittee – Dr. Bernhardt presented proposals for B&P to the council for FY 2018

Council Members Roundtable: News and Announcements:

Cory Horan (Proxy for Kelly Holligan) -

RESTORE:

In April of 2016, the court entered a consent decree among the United States, five Gulf States, and British Petroleum. Under the terms of the decree, BP will pay \$5.5 billion in Clean Water Act civil penalties, with \$4.4 billion to be allocated through the RESTORE Act. Adding this to the \$800 million from Transocean and \$128 million from Anadarko, a total of \$5.328 billion will flow through RESTORE.

Under Bucket 1 of the RESTORE Act, 35% of the Gulf Coast Restoration Trust Fund is equally divided among the 5 gulf coast states for ecosystem restoration, economic development, and tourism promotion. In Texas, the Request for Grant Applications for RESTORE Bucket 1, \$56 million, closed on April 18, 2016. 217 applications were received requesting just shy of \$3.4 billion. The applications are being reviewed by representatives from TCEQ, TPWD, GLO, TXDOT, and the Governor's Office. A draft Selected Projects List will be published with final project selection to come.

Regarding the Memorandum of Understanding between the Board and the TCEQ:

- A public hearing to receive comments was held on July 12 at the TCEQ. No comments were received.
- The MOU is currently scheduled to go to agenda for adoption on October 19th, 2016
- Once adopted the rulemaking will be effective on November 10, 2016

Regarding the TMDL Program:

- The Mountain Creek Lake Bacteria TMDL is scheduled to go to agenda for adoption on November 2nd, 2016.

Regarding the NPS Program:

- The TCEQ NPS FY17 319(h) Request for Grant Applications closed on September 1, 2016. It is anticipated that applicants will be notified of project selection by November 2016. Projects will begin in September 2017.

A draft of the Texas NPS Management Program update will be completed in the immediate future and circulated for review.

Brian Koch - The Trinity Bay Soil & Water Conservation District is hiring a Technician to develop Water Quality Management Plans to implement the Cedar Bayou and Double Bayou WPPs.

Linda Shead - Announced Double Bayou WPP accepted by EPA; a WQMP Tech will be hired to support the Double Bayou and Cedar Bayou WPPs and the TSSWCB will support implementation until funding is available to hire a watershed coordinator.

Luz Lock - Announced she no longer works with the City of Pasadena, but will continue representing the minority group until a new member is nominated and chosen. Prescription Drug Take Back Day at the Pasadena ISD Summit (1838 e. Sam Houston Parkway), Saturday October 22nd.

Another event and opportunity to outreach is the Construction Exposition from the Campbell Hall, FFA Pavilion and Ross Kelley rodeo Arena (Red Bluff, South of Fairmont), on Thursday, October 27th and it is by invitation only, for more information the number to call is 281-487-3900, located in La Porte.

Scott Jones - Announced September 28th EPA proposed San Jacinto waste pits removal alternatives. There will be an official public meeting on October 20th at Highlands. GBF is supporting removal plans. EPA will base their final decision from the official public comment period of September 29-November 28, 2016

Sarah Bernhardt - Reminded everyone about the first Galveston Bay Plan Revision workshop on October 26, and also reminded everyone to sign up by the end of the day as registration closes today. However, there will be an open house from 4:00-6:00 pm everyone is welcome to attend and all the documents will be available online for input and comments. Announced the next GBC meeting is January 18, 2017, mark on your calendar.

Nancy Parra - Announced to the council post meeting lunch invitation (Mexican restaurant may have changed name: Los Cucos Baybrook, 1300 Bay Area Blvd.), other adjacent options include Olive Garden, PF Chang, or Cheesecake Factory. Encouraged everyone to vote in the upcoming election.

Doug Jacobson - NRDA calls for proposals released July 6 - August 31 for proposals on restorethetexascoast.org.

Camiee Schoenbachler (Proxy for Carla Guthrie) - Texas Water Development Board is hiring a coastal scientist, see for details twdb.texas.gov

Rebecca Hensley - Planted stormwater wetland at exploration green

John Huffman - Announced the next State of the Gulf summit will take place in March at the Omni Hotel in Houston. This year it will be conjunction with the GOMA All Hands meeting. There is a position at USFWS that was filled (Beau Hardegree), and will be based out of Corpus Christi.

Jeff Taebel - Announced Our Great Region 2014 is not two years into implementation and their first award program is now available and H-GAC is taking applications submit by October 25th.

Charriss York (proxy for John Jacob) - Announced the next Clean Water Institute Workshop on November 1st, Texas Coastal Watershed Program will be demonstrating other CHARM models. Must RSVP for this workshop as there will be limited seating for the model demonstration.

Public comments: No public comments were received.

Adjourn: Meeting was adjourned at 12:14pm

Upcoming Galveston Bay Council Meeting Dates: January 18, 2017, April 19, 2017, July 19, 2017, October 28, 2017. If there are known conflicts, Council members are encouraged to propose alternate dates to the Council. Proposed dates are all third Wednesday of each quarter from 9:30am to 12:30pm.

HOUSTON SHIP CHANNEL 45-FOOT EXPANSION CHANNEL IMPROVEMENT PROJECT



Andrea Catanzaro
USACE Project Manager

19 October 2016



"The views, opinions and findings contained in this report are those of the authors(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation."



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STUDY INTRODUCTION & STATUS

- Continuing need for safe & efficient shipping on Houston Ship Channel (HSC) System
- RHA 1970 Section 216 authority to further study existing authorized Houston & Galveston Navigation Channels project
- 2014 Reconnaissance Study showed Federal interest to further study HSC system
- Exemption Approval – November 2015
- Feasibility Cost-Share Agreement with Port of Houston Authority (PHA) as Non-Federal Sponsor – Nov 2015
- Notice of Intent to File EIS, March 2016
- Public Scoping Meetings – May 2016



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HSC ECIP - EXEMPTION

Exemption approval (10 November 2015) from Corps 3x3x3 study process with Congressional/Office of Management and Budget notification

- **\$10 million**
- **4 years**
- **Non-Federal Sponsor: Port of Houston Authority**
 - ▶ **Feasibility Cost Sharing Agreement – 13 November 2015**
- **Single Purpose - Navigation**
- **Mega Study Protocol (MSP)**
 - ▶ Study required to follow the approved MSP (ECB 2014-14) a three-tier governance structure to augment prescribed quality, cost, and schedule management standards and procedures for Civil Works Planning Studies.



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Study Milestones and Funding Requirements

Activity		Date
Scoping	Exemption Approval by Senior Leaders	Sep 2015 (A)
	Exemption Approval by ASA(CW)/OMB	Nov 2015 (A)
	Execute FCSA	Nov 2015 (A)
Alternative Evaluation & Analysis	Alternatives Milestone	June 2016 (A)
	Tentatively Selected Plan (TSP) Milestone	Mar 2017
Feasibility Level Analysis	Agency Decision Milestone	Oct 2017
	Feasibility Report Complete	May 2019
	CWRB	July 2019
	S&A Review begins	Aug 2019
	Chief's Report	Oct 2019

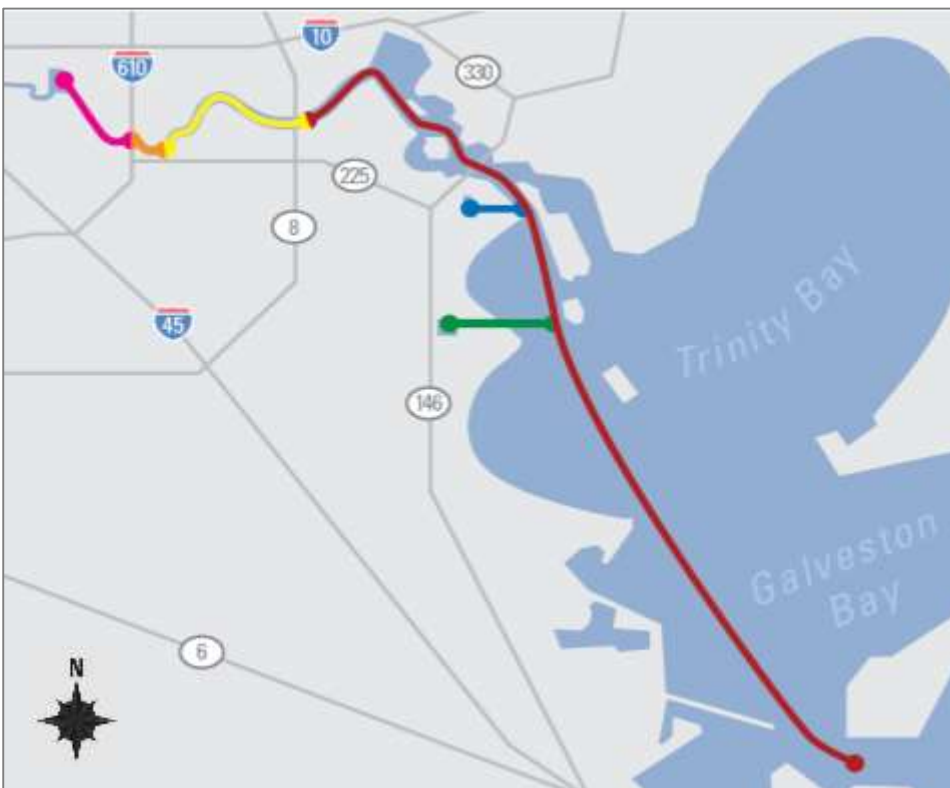
Fiscal Year	Total Funding (\$)	Federal Funding (\$)	Non-Federal WIK - Value
2016	1,614,000	807,000	807,000
2017	3,250,000	1,750,000*	1,500,000
2018	3,000,000	1,500,000	1,500,000
2019	2,146,000	1,073,000	1,073,000
Total	10,000,000	5,130,000	4,870,000






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STUDY SEGMENTS

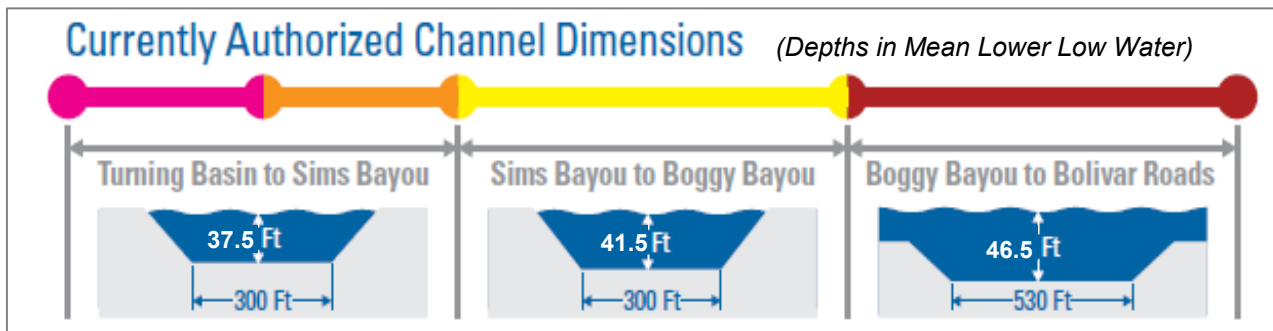


Bay

-  Bolivar Roads to Boggy Bayou (40 miles)
-  Bayport Ship Channel (3.8 miles)
-  Barbours Cut Channel (1.1 miles)

Bayou

-  Boggy Bayou to Sims Bayou (3.5 miles)
-  Sims Bayou to I-610 Bridge (1.3 miles)
-  I-610 Bridge to Main Turning Basin (0.8 miles)



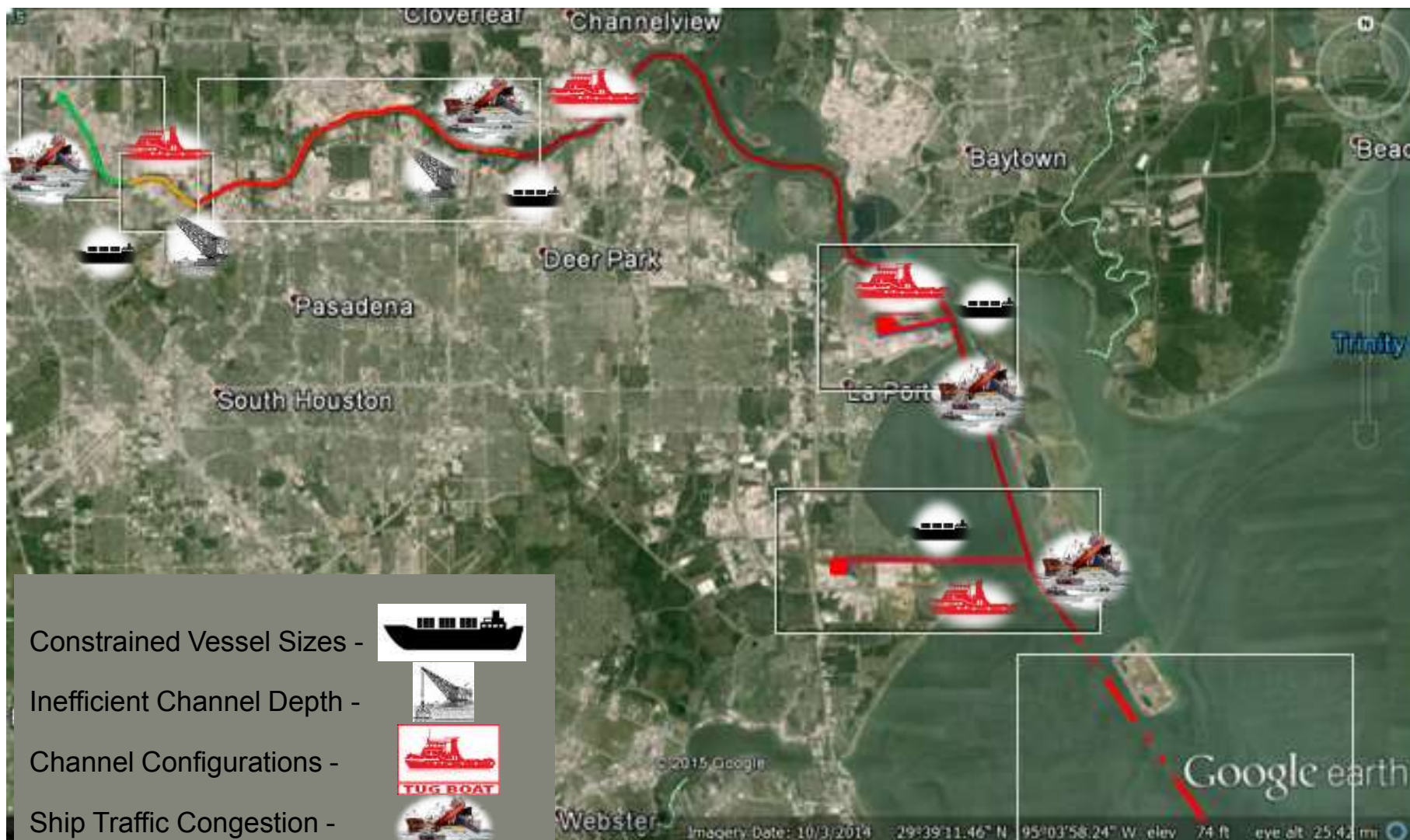
Depth (feet)	
MLT	MLLW
45	46/46.5
40*	41.5
36	37.5



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PROBLEMS



Constrained Vessel Sizes -



Inefficient Channel Depth -



Channel Configurations -



Ship Traffic Congestion -

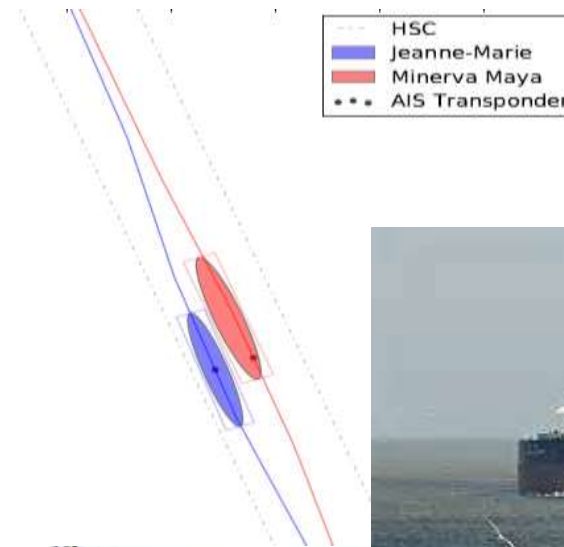


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OPPORTUNITIES

- Reduce transportation cost of forecasted commodity volume;
- Eliminate or reduce navigation inefficiencies (i.e., delay times, intraport movements, and transit times);
- Eliminate or reduce beam, length, and draft restrictions
- Cost effective and environmentally acceptable channel configurations while improving safety
- Use new work and maintenance dredged material to develop environmentally suitable PAs/BU
- Reduce the risk of environmental impacts while protecting or improving environmentally sensitive areas through BU of dredge materials.



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PLANNING GOAL & OBJECTIVES

Goal

- The overall study goal is to provide an efficient and safe navigation channel while contributing to the NED consistent with protecting the nation's environment.

Objectives

- Improve deep-draft navigation efficiency to accommodate existing fleet and larger vessels (PPX class vessels)
- Reduce vessel traffic delays and transportation costs
- Increase channel safety for vessels utilizing the HSC
- Establish environmentally suitable PAs & utilizing BU of dredged material for placement of the dredged material over the 50-year period of analysis

***** The study does not include deepening of the channel beyond 45 feet MLT/46.5 MLLW.**



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PLANNING CONSTRAINTS

- Minimize significant impacts to social, environmental and cultural resources
- Bridge air draft (vertical clearance) restriction at I-610 Bridge – air draft of 135 feet MHW
- Washburn Tunnel - max dredge depth of 39 feet MLT (40 feet MLLW)
- Lynchburg Ferry – width constraint at landings
- Pipeline crossings and hardened development adjacent to constrained channel etc.
- Plans should not cause or amplify problems in other areas



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STATUS OF NEPA EFFORTS

Resource Agency Meetings

- 10 Mar and 19 May 2016 - Beneficial Uses Group Meetings
- 03 May, 03 August, 29 Sept 2016 - Agency Stakeholder Meeting

Public Involvement/Scoping

- 29 Mar 2016 - NOI to prepare an EIS published in the Federal Register
<https://www.federalregister.gov/articles/2016/03/29/2016-07061/intent-to-prepare-a-draft-environmental-impact-statement-for-the-houston-ship-channel-45-foot>
- 18 Apr 2016 - Public Scoping Meeting Notice
- 17, 19 May 2016 - Public Scoping Meetings

Future Resource Agency Coordination

- Bi-monthly Resource Agency Meetings (more frequent, as needed)

Project Website for Public Access

- <http://www.swg.usace.army.mil/Missions/Projects/Houston-Ship-Channel-Expansion/>



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Public Scoping Meetings

Public Meetings were held on 17,19 May 2016

Concerns focused mainly on two topics:

- ▶ Impacts to sailing and recreational boating community, to the use of the existing boater's cuts and to Redfish Island from the location of a mid-bay anchorage, passing lanes and placement area
- ▶ Industry support for deepening immediately upstream of the current 45-foot depth expeditiously to support use by Aframax vessels



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RESOURCE AGENCY STAKEHOLDER GROUP

- U.S. Fish and Wildlife Service*
- Environmental Protection Agency *
- National Marine Fisheries Service *
- Natural Resources Conservation Service *
- Texas General Land Office *
- Texas Park and Wildlife Department *
- Texas Department of Transportation
- Texas Commission on Environmental Quality(TCEQ) *
- Galveston Bay Estuary Program
- Texas Water Development Board
- Texas Historical Commission
- USACE *
- PHA *

**Members of the Beneficial Uses Group (BUG)*



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RESOURCE AGENCY STAKEHOLDERS: ISSUES

- Subsidence and Loss of Habitat, especially in upper bay and San Jacinto River (e.g. Burnett Bay, Scott Bay, Grennel Slough)
- HTRW/Contaminants (e.g. San Jacinto Waste Pits (SJWP) Superfund Site)
- Sediment Quality - testing requirements of new work and maintenance dredged material from HSC, especially in area of concern for SJWP
- Water and Air Quality
- Salinity & salt water intrusion
- Impacts to unknown submerged cultural resources
- Loss of oyster resources (reef and habitat)
- Dissolved oxygen in Buffalo Bayou/HSC
- Recreation (Sailing clubs, public fishing piers, parks, etc.)
- Impacts to coastal prairie (from potential new terrestrial upland confined PAs)



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RESOURCE AGENCY STAKEHOLDERS: BENEFICIAL USE OPPORTUNITIES

Maximize beneficial use of new work and/or maintenance dredged material to construct or restore:

- Lost or degraded tidal marsh
 - ▶ Small embayments (e.g. Burnett and Scott Bays, Grennel Slough)
 - ▶ Trinity Bay shorelines and fringe marsh
 - ▶ Trinity River Delta and Marsh

******Avoid open water placement to maintain vision of the original HGNC Interagency Coordination Team - Beneficial Uses Group***

- Bird islands in Upper Galveston Bay for colonial waterbird habitat and nesting
- Underwater relief features for fisheries habitat (e.g. berm capped with oyster cultch)



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Array Of Measures

BAY REACH (BOLIVAR ROADS TO BOGGY BAYOU)	<ul style="list-style-type: none">• Selective widening for meeting areas (two-way traffic)• Bend easing/barge lane modifications• Bay mooring/anchorage
BAYPORT SHIP CHANNEL	<ul style="list-style-type: none">• Evaluate (federalize) 46.5 MLLW (45-foot MLT) deepening/widening• Additional flare modification• Additional turning basin• Jetty/structures to address shoaling
BARBOURS CUT CHANNEL	<ul style="list-style-type: none">• Evaluate (federalize) 46.5 MLLW (45-foot MLT) deepening/widening• Additional flare modification• Additional turning basin• Jetty/structures to address shoaling
BOGGY BAYOU TO SIMS BAYOU	<ul style="list-style-type: none">• Deepening > 41.5 MLLW (40 feet MLT)• Widening > 300 feet• Selective widening for meeting areas• Additional turning and mooring basins
SIMS BAYOU TO I-610 BRIDGE	<ul style="list-style-type: none">• Deepening > 37.5 MLLW (36 feet MLT)• Widening > 300 feet• Selective widening for meeting areas• Additional Turning and mooring basins
I-610 BRIDGE TO TURNING BASIN	<ul style="list-style-type: none">• Deepening > 37.5 MLLW (36 feet MLT)• Widening > 300 feet• Selective widening for meeting areas• Additional Turning and mooring basins• Removal of I-610 Bridge air draft restriction (134 feet MLLW)

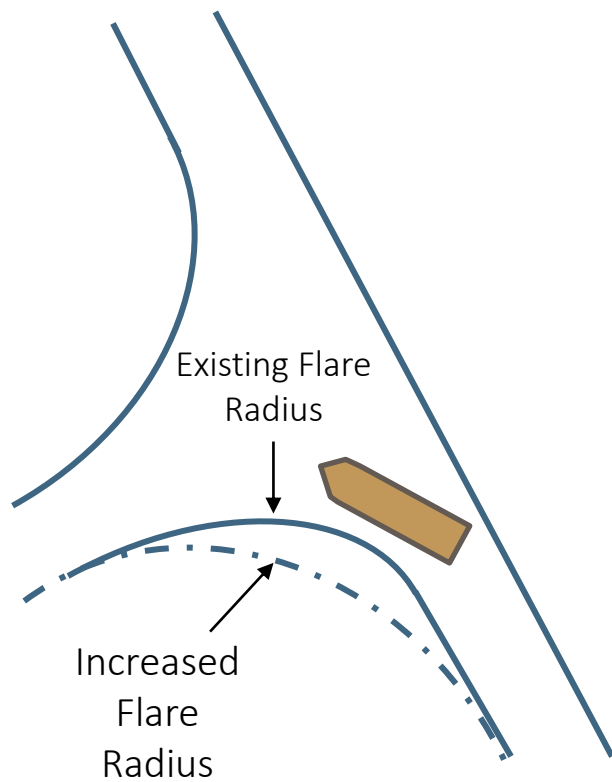


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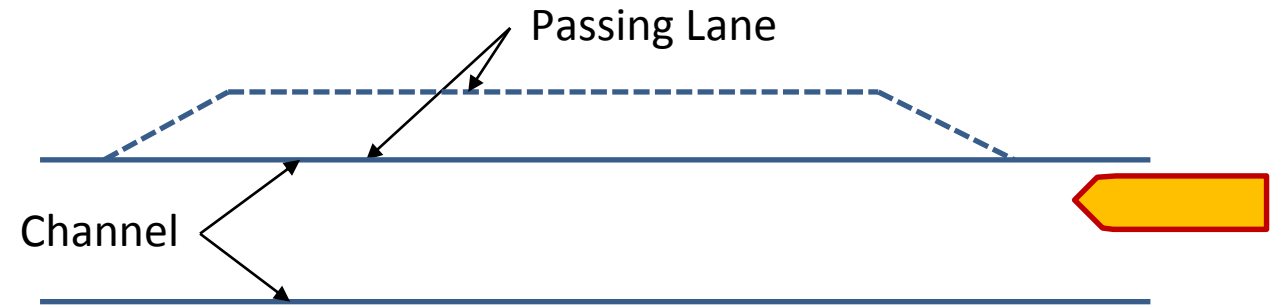


ALTERNATIVE CONCEPTS

Additional Flare Modification



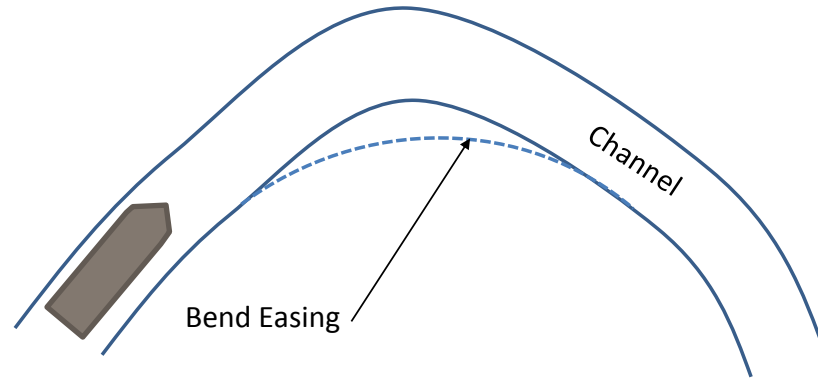
Two-Way Traffic Meeting Areas



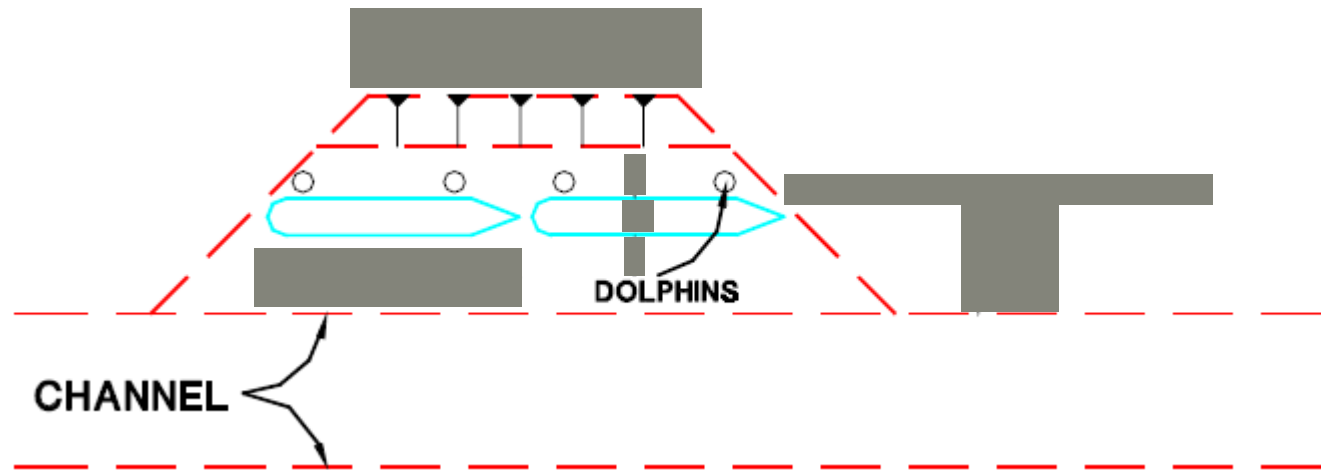
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ALTERNATIVE CONCEPTS



BEND EASING



ANCHORAGE/MOORING



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NEXT STEPS

Pre-TSP Work (SMART):

- Fully develop list of alternatives
- Evaluate Alternatives based on existing information - Identify preliminary TSP
- TSP Milestone Meeting

Post TSP Work:

- Draft Feasibility Report and EIS
- Concurrent Reviews: Public, ATR, IEPR, USACE
- Public Meeting
- Agency Decision Milestone
- Detailed Engineering, Environmental and Economic Analysis
- Dredged Material Management Plan Development



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Study Contact Information

Mail:

**U.S. Army Corps of Engineers,
New Orleans District
Attn: Ms. Tammy Gilmore, CEMVN-PDN-CEP
P.O. Box 60267
New Orleans, LA 70160-0267**

Email: HSC-ECIP@usace.army.mil

Online:

<http://www.swg.usace.army.mil/Missions/Projects/HoustonShipChannelExpansion.aspx>



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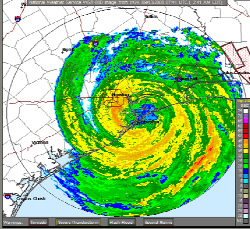


QUESTIONS ???





COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY UPDATE

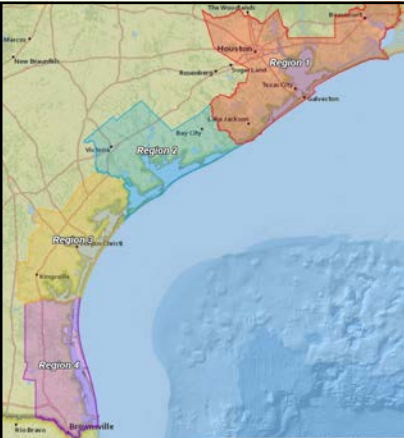
Galveston Bay Council Meeting
Prepared by Sheri Willey and Jan Stokes
October 19, 2016





The views, opinions and findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation.

STUDY AREA




- Broad area of possible effects
- 4 unique areas identified under Recon
- 9 Texas Congressional Districts
- U.S. Senators Cornyn and Cruz (TX)

PURPOSE

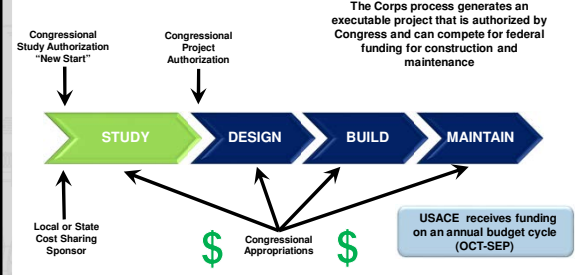
Coastal Storm Risk Management (CSRM)- Develop and evaluate coastal storm damage risk reduction measures for coastal Texas residents, industries and businesses which are critical to the nation's economy.



Ecosystem Restoration (ER) - Increase the net quantity and quality of coastal ecosystem resources by maintaining, protecting, and restoring coastal Texas ecosystems and fish and wildlife habitat

PROJECT PROCESS

The Corps process generates an executable project that is authorized by Congress and can compete for federal funding for construction and maintenance





COASTAL TEXAS EXEMPTION

Exemption approval (October 2015) from Corps 3x3x3 study process with Congressional/Office of Management and Budget notification

- \$19.8 million
- 5.5 years
- Non-Federal Study Sponsor: Texas General Land Office
- CSRM and ER along the entire Texas coast
- Comprehensive Plan for Texas
- Actionable Feasibility recommendations for CSRM & ER

NON-FEDERAL SPONSOR


Texas General Land Office (GLO) - study sponsor

- Signed Feasibility Cost Sharing Agreement in November 2015
- Working to identify construction sponsors on the local level
 - Counties
 - Cities
 - Levee improvement districts
 - Drainage districts
 - Municipal utility districts
 - Other special taxing entities

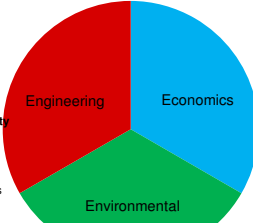



COASTAL TEXAS FEASIBILITY STUDY OVERVIEW


- Mega-Study – one of the 1st in the Corps
- Team includes National Team of USACE experts
- Kickoff Meeting – January 2016
- Notice of Intent to Prepare EIS– March 31, 2016
- Initiated Agency Coordination Initiated– May 2016
- Alternatives Milestone – June 28, 2016
- Working towards identification of Tentatively Selected Plan – May 2018



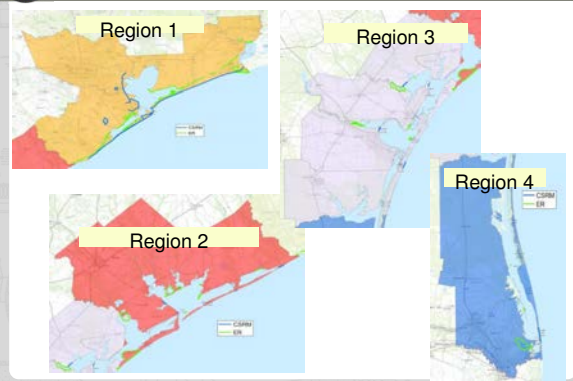
FEASIBILITY STUDIES REQUIRED



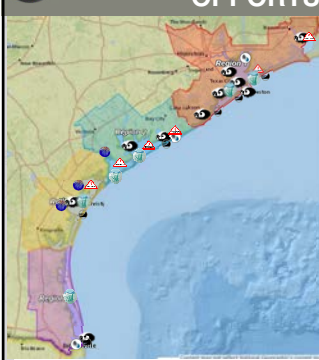
- Impacts to estuarine physical environment and processes**
 - Circulation
 - Salinity
 - Flooding
 - Sedimentation
 - Erosion
- Constructability / operability**
 - Engineering feasibility
 - Engineering design
 - Operations and maintenance (O&M)
 - Real estate requirements
- Damages to property**
 - Personal and public damages from storm surge flooding
- Project costs**
 - Study, design, construction and O&M
- Benefit-to-cost ratio**
 - National Economic Development (NED)
- Life/health**
 - Social impacts
 - Environmental Justice
- NED Environmental Impact Analysis**
 - NEPA compliance
 - Circulation/sedimentation/salinity impacts
 - Estuarine and marine organism access
 - Endangered species and Critical Habitat impacts
 - Hazardous material spills
 - Cultural resources impacts
- National Ecosystem Restoration (NER) Benefits**
 - Critical geomorphic feature restoration
 - Estuarine habitat restoration
 - Hydrologic restoration
 - Erosion reduction




COASTAL TEXAS STUDY SCOPING



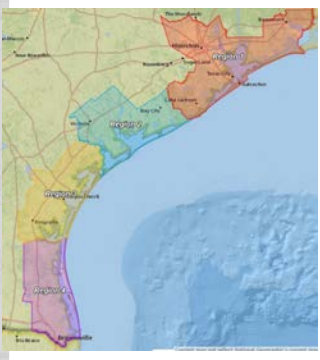
OVERALL PROBLEMS AND OPPORTUNITIES




- Economic damage from coastal storm surge
- Inland shoreline erosion
- Gulf shoreline erosion
- Loss of T&E Critical Habitats (migratory bird habitat, critical T&E habitat, shellfish habitat)
- Loss of Natural Delta Processes
- Disrupted Hydrology



OVERALL CONSTRAINTS




- Avoid or minimize negative impacts:
 - to threatened and endangered species and protected species;
 - to critical habitat, (e.g. Essential Fish Habitat.)
 - to commercial fisheries;
 - that affect the ability of authorized navigation projects to continue to fulfill their purpose;
 - that induce flooding.




MODELING EFFECTS ON GALVESTON BAY

- Galveston Bay Estuarine Modeling - 3-D Adaptive Hydraulics Model
 - Hydro, Sediment, & Salinity Modeling
 - Update existing modeling efforts
 - 3-D model of Galveston Bay/Houston Ship Channel (1990s)
 - Sediment transport models (2006-2014)
 - 2D and 3D mesh development with bathymetric updates
 - Field data processing for model/field comparisons
 - Boundary conditions development
 - Model validation
 - Modeling for TSP using current and future conditions, including relative sea level change




ENVIRONMENTAL MODELING & ANALYSIS

- Particle Tracking Model to simulate impacts of gate in Bolivar Roads on larval fish transport
- Evaluation of effects of salinity, velocity, circulation and sediment changes throughout the greater Galveston Bay system on:
 - Endangered species (sea turtles, piping plovers, etc.) and Critical Habitat (piping plovers)
 - Oyster reef
 - Finfish
 - Marine mammals
 - Submerged aquatic vegetation
 - Estuarine marsh shorelines in the bay
 - Changes in sediment transport and erosion within the bays
 - Erosion and sediment transport to the barrier island and Gulf shorelines



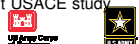
ECOSYSTEM RESTORATION (ER)

- Evaluating ecosystem restoration opportunities in entire Texas coastal zone
- Establishing existing and future conditions with relative sea level change
- Identifying natural and man-made drivers of ecological stress and physical landscape changes
- Categorizing ecosystem restoration measures for Comprehensive Plan
 - Measures complement or have synergistic effects with GLO Coastal Resiliency Master Plan
 - Measures proposed by Federal and state sponsored projects that are authorized, under construction or subject of separate, on-going study
 - Small-scale measures that could be studied and constructed using other authorities (CEPRA, NRDA, NFWF, GOMESA, RESTORE, etc.)
 - Larger scale measures with Federal interest to be evaluated by Coastal Texas study



GALVESTON BAY CSRM AND ER MEASURES

- Measures and alternatives still being screened and refined
- CSRM alternatives - evaluating "lines of defense" concept that combines structural, non-structural and natural and nature-based features
 - Sabine to Galveston (S2G) study recommending new CSRM levee system for Orange Co
 - S2G study also recommending improvements to existing Port Arthur and Freeport Hurricane Flood Protection Systems
- ER measures also developed with "lines of defense" concept
 - 1st Line of Defense – Barrier System Restoration
 - 2nd Line of Defense – Bay Shorelines, Islands, Estuarine Marsh and Other Habitats
 - 3rd Line of Defense – Bayhead Deltas
- Jefferson County ER being evaluated by concurrent USACE study



RESOURCE AGENCY COORDINATION

- Extensive coordination with resource agencies (EPA, USFWS, NMFS, NRCS, TPWD, TCEQ, TWDB, GLO) and NWR/WMA managers


CSRM

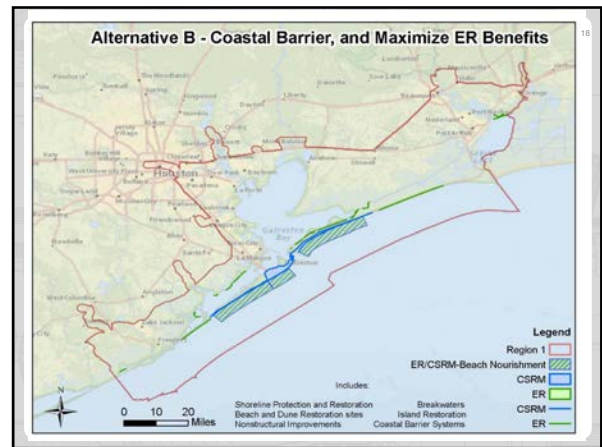
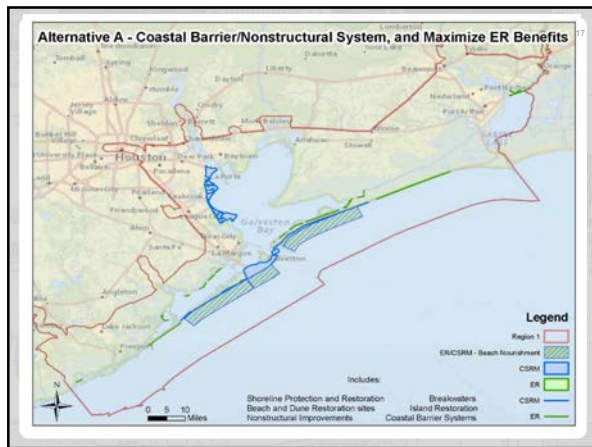
- Avoid and minimize impacts of CSRM alternatives
- Identify and model CSRM alternative impacts
- Identify appropriate mitigation measures and develop plan that fully compensates for impacts

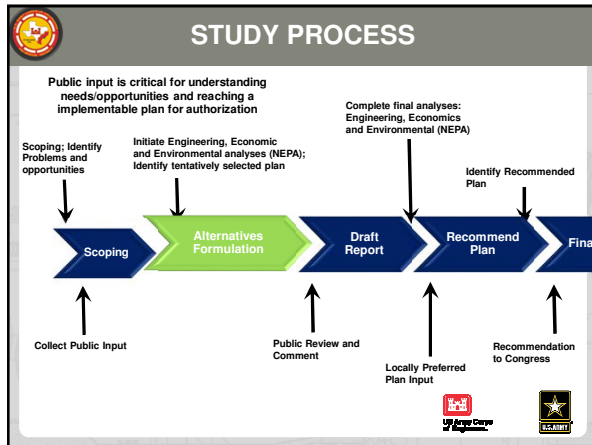
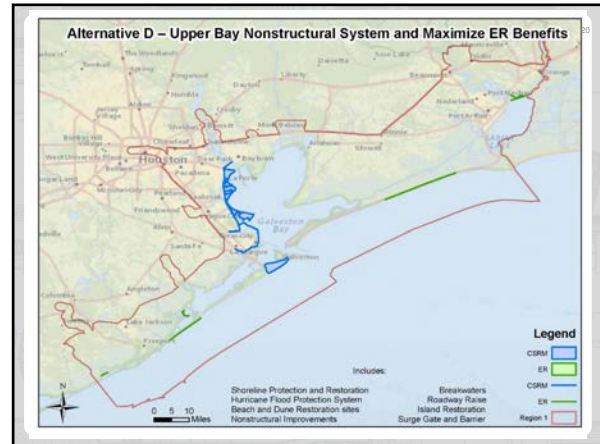
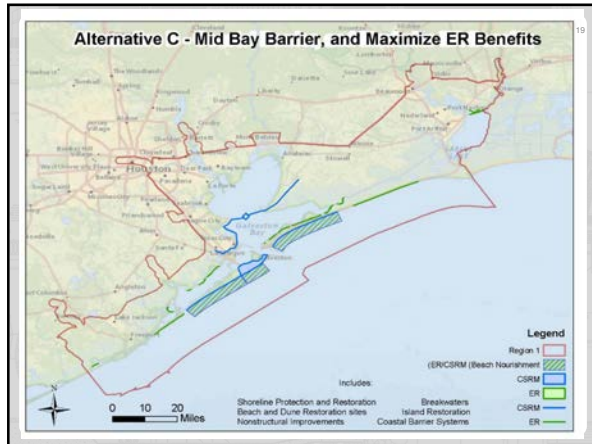
ER

- Identify ER measures and develop alternatives
- Model ER alternative benefits

File Name







STUDY MILESTONES AND FUNDING REQUIREMENTS

Milestone	Date	Fiscal Year	Total Funding (\$)	Federal Funding (\$)	Non-Federal Funding (\$)	
Scoping	Exemption Approval by Senior Leaders	Sep 2015				
	Exemption Approval by ASA(CW)/OMB	Nov 2015	2016	2,506,000	1,253,000	1,253,000
	Execute FCSA with GLO	Nov 2015	2017	3,650,000	1,825,000	1,825,000
Alternative Evaluation and Analysis	Alternatives Milestone	June 2016	2018	3,950,000	2,175,000**	1,775,000
	Tentatively Selected Plan (TSP) Milestone	May 2018	2019	5,350,000	2,675,000	2,675,000
	Agency Decision Milestone (ADM)	Oct 2018	2020	4,244,000	2,122,000	2,122,000
	Feasibility Report Complete	Oct 2020	2021	100,000	50,000	50,000
	Total			19,800,000	10,100,000	9,700,000
Feasibility Level Analysis	Civil Works Review Board (CWRB)	Jan 2021				
	S&A Review	Feb 2021				
	Chief's Report	Apr 2021				

* USACE FY is 1 Oct thru 30 Sept
 ** Includes \$400,000 for Independent External Peer Review (IEPR)

In partnership with the Texas General Land Office, the Corps of Engineers has a funding strategy to achieve project authorization

PROVIDING INPUT

- Contact us at anytime at CoastalTexas@usace.army.mil
- Information on the study will be posted to <http://www.swg.usace.army.mil/>
Full link: <http://www.swg.usace.army.mil/Missions/Projects/CoastalTexasFeasibilityStudy.asp>
- Draft Integrated Feasibility Report and Environmental Impact Study currently scheduled for public review – July 2018

COLLABORATION WITH OTHERS

Reports and Data

Stakeholders

CONNECT WITH US!

 **ON FACEBOOK**
www.facebook.com/GalvestonDistrict

 **ON TWITTER**
www.twitter.com/USACEgalveston

 **ON YOUTUBE**
www.YouTube.com/GalvestonDistrict

 **ON DVIDS**
www.dvidshub.net/units/USACE-GD

 **ONLINE**
www.swg.usace.army.mil



BACK THE BAYOVS
BACK
— THE —
BAY

GALVESTON BAY ESTUARY PROGRAM: FISCAL 2018 WORK PLAN

GALVESTON BAY COUNCIL MEETING
10/19/2016

FISCAL YEAR (FY) 18 GBEP FUNDING

- Funding estimates based on FY17 levels
 - Salary, fringe & indirect levels subject to change
- Federal
 - \$1,200,000 §320 CWA Funding
 - Comes “pre-matched” by TCEQ (1:1)
 - \$600,000 from TCEQ, \$600,000 from EPA
- State
 - \$284,613

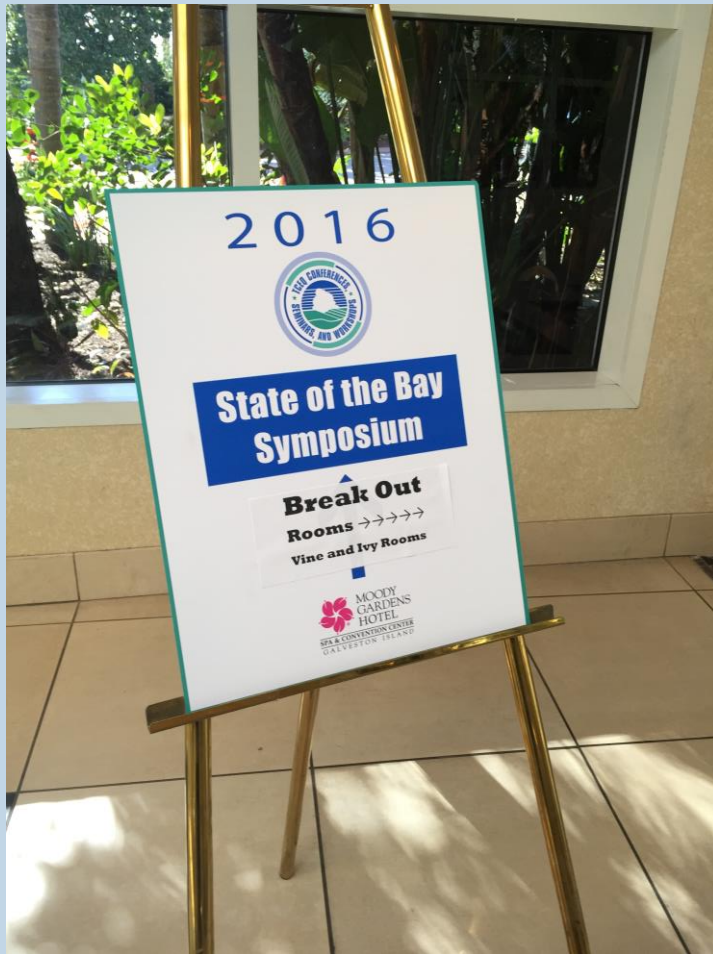
FUNDING ESTIMATES FOR FY 18 PROJECTS

Funding Type	<u>Federal (CWA §320)</u>	<u>State</u>	<u>Total</u>
Total Funding	\$ 1,200,000	\$ 284,613	\$ 1,484,613
Administration	<u>\$ (605,705)</u>	<u>\$ (24,613)</u>	<u>\$ (630,318)</u>
Remaining	<u>\$ 594,295</u>	<u>\$ 260,000</u>	<u>\$ 854,295</u>

Proposed Projects		FY18 Funding Amount	\$ 594,295	\$ 260,000
PRG Area	Project Name	Lead	Federal	State
PRGM	1) State of the Bay 2018	HARC-GTRI	\$ 85,000	
PRGM	2) GBEP Website/Back the Bay Website Update and Maintenance	GBEP	\$ 33,098	\$ 5,821
NRU	3) Conservation Assistance Program	TBD	\$ 120,000	
NRU	4) Coastal Heritage Preserve – Anchor Bay Acquisition	Artist Boat		\$ 40,000
NRU	5) Trinity Bay Discovery Center Living Shoreline	GBF		\$ 85,000
NRU	6) Green Infrastructure for Texas – Freshwater Wetland Restoration	Texas Coastal Watershed Program		\$ 37,500
WSQ	7) Bacterial Source Tracking on Tributaries of Trinity and Galveston Bay	Texas Water Resources Institute	\$ 80,000	
WSQ	8) Coordinating Implementation of a Watershed Protection Plan for Double Bayou	HARC-GTRI		\$ 31,679
WSQ	9) Green Infrastructure for Texas – Stormwater Treatment Wetlands	Texas Coastal Watershed Program	\$ 37,500	
WSQ/M&R	10) Evaluating the potential of an index-velocity discharge station and surrogate paramters to estimate flow, nutrient and suspended-sediment loads from the San Jacinto River to Galveston Bay	USGS		\$ 40,000
WSQ	11) Designing for Impact: Promoting Low Impact Development Implementation	H-GAC	\$ 30,000	
M&R	12) Seafood Evaluation in a Portion of Galveston Bay	DSHS	\$ 30,000	
M&R	13) Characterization of the Influence of Freshwater Inflow on the Trinity River Delta Salinity, Rangia, and Submerged Aquatic Vegetation	UHCL-EIH	\$ 42,000	
M&R (Supported by NRU)	14) Proposed Monitoring Regime for Sheldon Lake State Park Freshwater Wetland Restoration Sites	Texas Coastal Watershed Program	\$ 36,697	
PPE	15) River, Lakes 'N Bayous Trash Bash	H-GAC	\$ 5,000	
PPE	16) White Oak Parkway Native Habitat Restoration and Outreach	Houston Parks and Recreation Department	\$ 45,000	
PPE	17) TERN Citizen Science Program in Galveston Bay	TPWD	\$ 10,000	\$ 20,000
PPE	18) Galveston Bay Action Network (GBAN) Education and Outreach Campaign	GBF	\$ 40,000	
		Project Total	\$ 594,295	\$ 260,000
		Difference	0	0

\$5,821 allocated by B&P subcommittee as programmatic cost, not part of State of the Bay

FY 18 PROGRAMMATIC PROJECTS



1. STATE OF THE BAY REPORT

Lead: Geotechnology Resources Institute (GTRI)

Proposed Amount: \$85,000 (Federal or State)

Description: Update State of the Bay Report in 2018 based on GBEP's 2017 update of The Galveston Bay Plan, using data and monitoring information available through 2017.

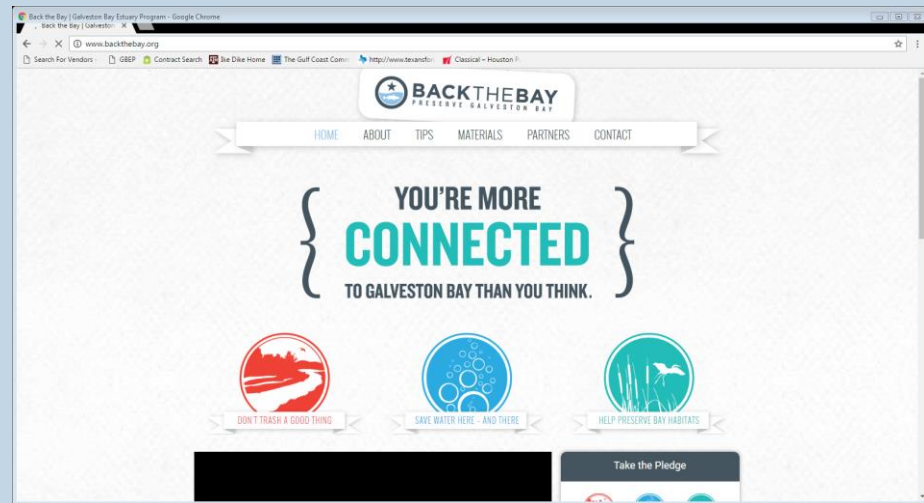
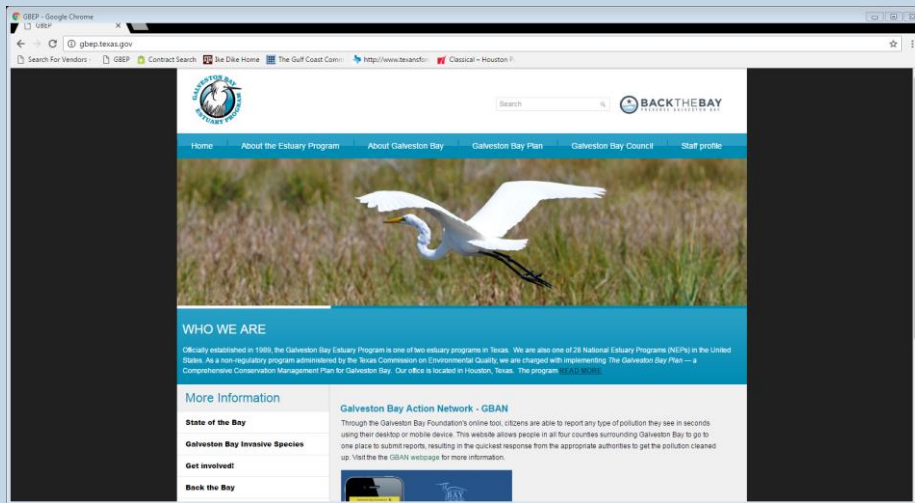
- Present an analysis of the conditions and activities within the Galveston Bay ecosystem
- The updated State of the Bay Report will be developed as a website with input from the GBEP and the Galveston Bay Council
- Will present a summary of Galveston Bay Plan implementation, research and an analysis and presentation of the indicators and metrics available for Galveston Bay, by sub-bay, watershed, or station as appropriate, based on acquired and quality assured monitoring data.
- Information will be related to the goals of the updated Galveston Bay Plan (2017) and issues of concern for managers and stakeholders

2. GBEP WEBSITE/ BACK THE BAY WEBSITE UPDATE AND MAINTENANCE

Lead: State approved vendor (TBD)

Proposed Amount: \$38,919

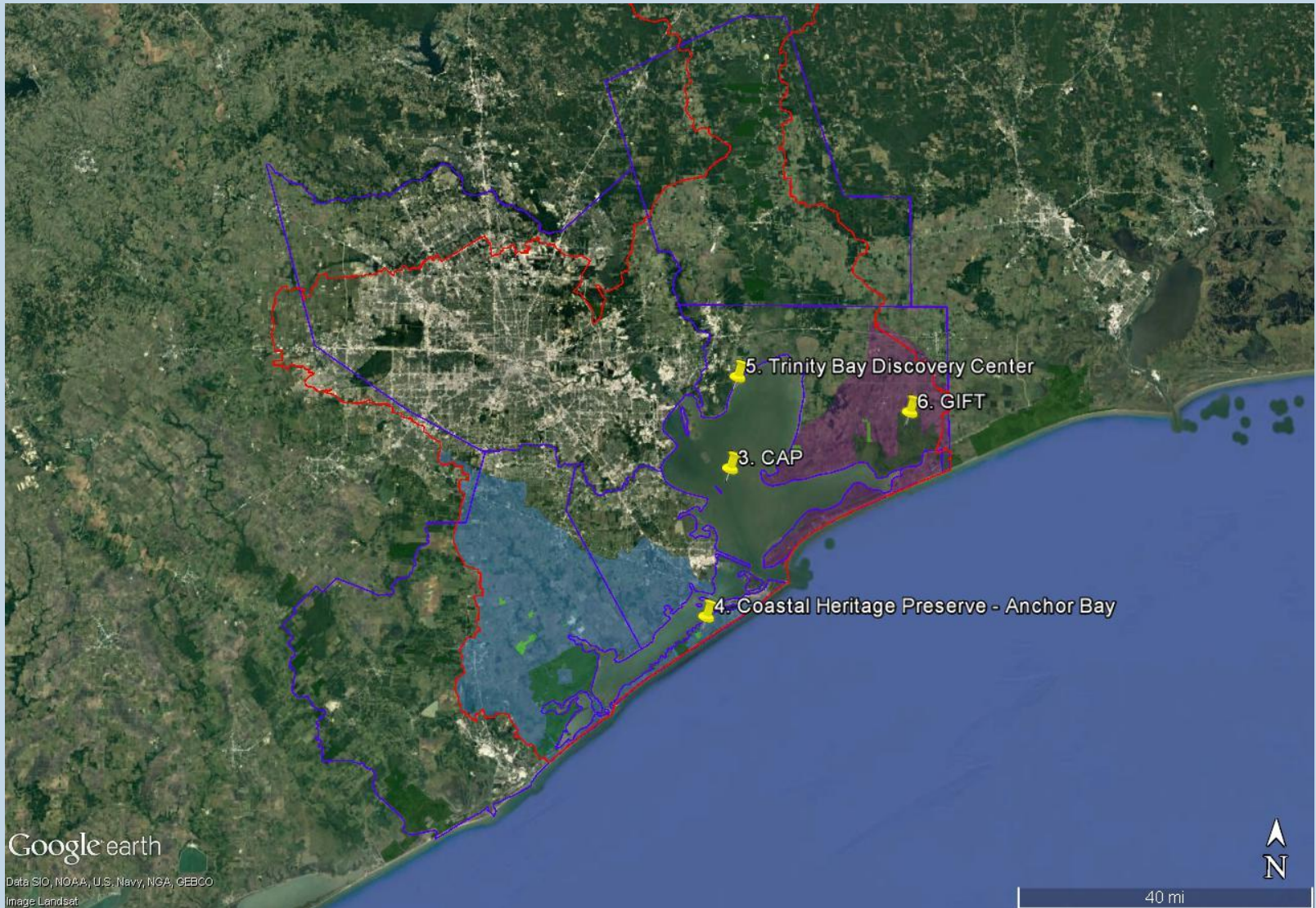
Description: A refresh of the GBEP website, and updates for BacktheBayBay.org as needed. Includes hosting services for both websites.



FY 18 NATURAL RESOURCES USES (NRU) PROJECTS



FY18 NRU PROJECT OVERVIEW



3. CONSERVATION ASSISTANCE PROGRAM

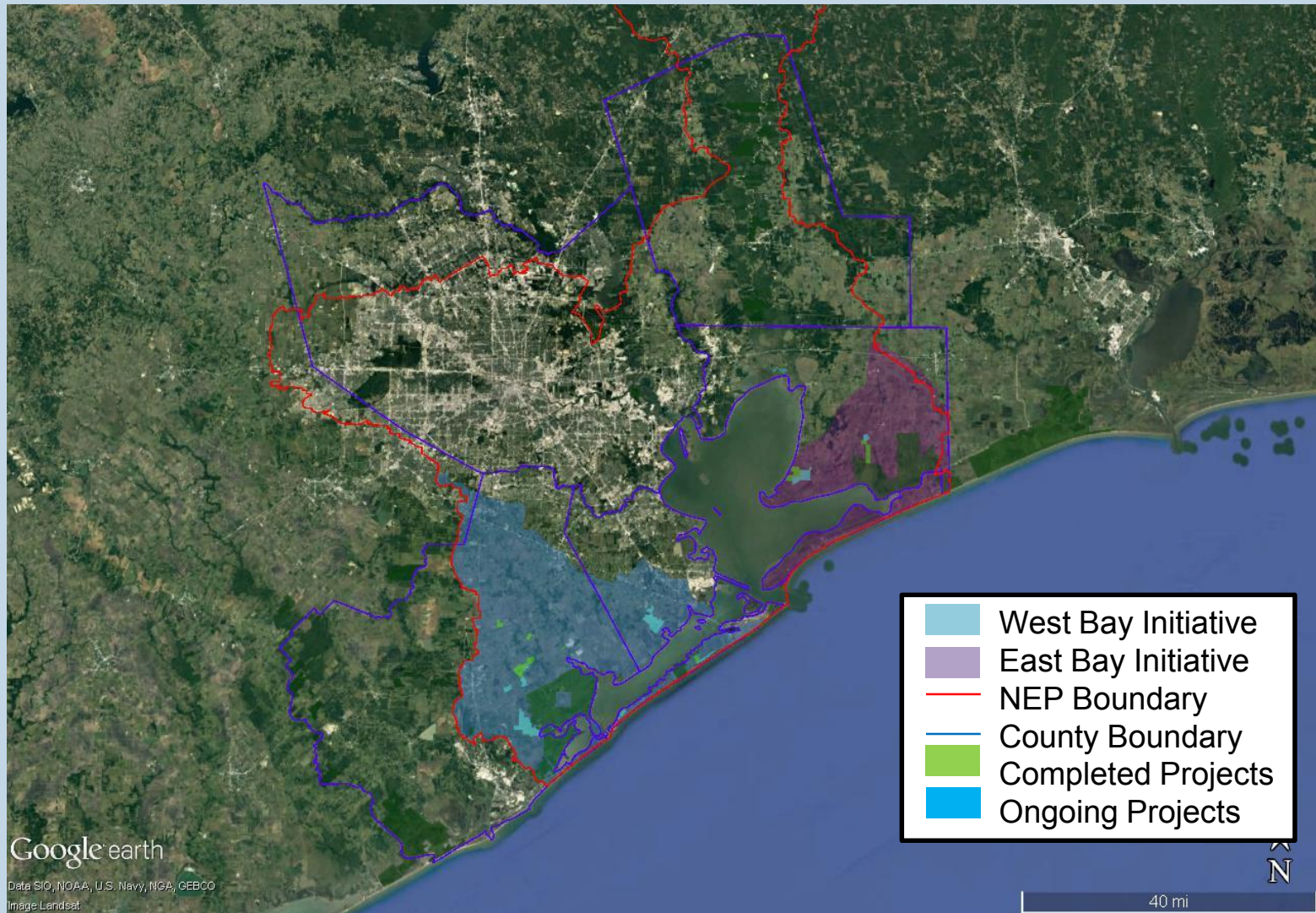
Lead: TBD by Request for Grant Activities (RFGA)

Proposed Amount: \$120,000

Description: The overall goal of the CAP is to support GBEP and its partners' efforts to preserve wetlands and other important coastal habitats to protect the long-term health and productivity of Galveston Bay. 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
- Finalizing the sale and transfer of title to a third party organization or government entity

3. CONSERVATION ASSISTANCE PROGRAM



4. COASTAL HERITAGE PRESERVE – ANCHOR BAY ACQUISITION

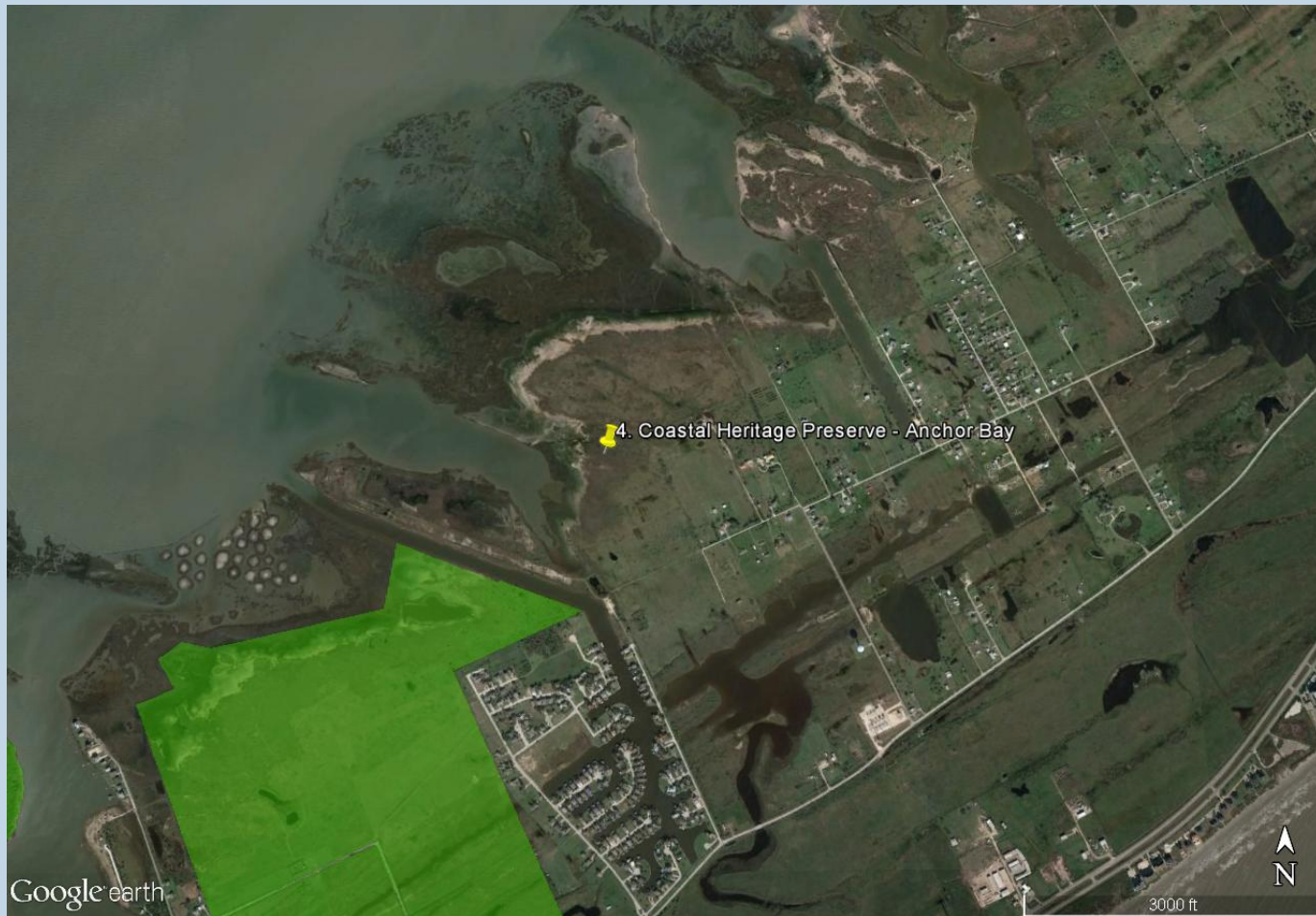
Lead: The Artist Boat

Proposed Amount: \$40,000 (State)

Description: The project goal is to provide funding and technical assistance toward purchase of a portion of the proposed Anchor Bay development (~285 acres total) on Galveston Island, to protect a highly valuable tract of coastal wetlands habitat. The conserved land would add to the ~576 acres of land already conserved at the Coastal Heritage Preserve.

Habitats present include irregularly exposed intertidal emergent marshes, regularly flooded estuarine intertidal emergent marsh, regularly flooded sand flat habitat, irregularly flooded estuarine emergent salt flat marsh habitat, and upland coastal prairie.

4. COASTAL HERITAGE PRESERVE – ANCHOR BAY ACQUISITION



5. TRINITY BAY DISCOVERY CENTER LIVING SHORELINE

Lead: Galveston Bay Foundation

Proposed Amount: \$85,000 (State)

Description: The project goal is to construct a living shoreline in front of currently failed or failing bulkhead at GBF's Trinity Bay Discovery Center. The project would construct approximate 1,200 linear foot nearshore breakwater and provide the opportunity to restore up to 2 acres of estuarine intertidal marsh habitat.

The Galveston Bay Foundation acquired the Trinity Bay Discover Center in 2014, with the goal of developing it into a publicly accessible nature center with a variety of habitat restoration demonstration projects and ongoing environmental education and volunteer opportunities. The property sits on a point with views of Trinity Bay and is bisected by Cedar Gully, a freshwater gully that flows directly into the bay.

5. TRINITY BAY DISCOVERY CENTER LIVING SHORELINE



6. GREEN INFRASTRUCTURE FOR TEXAS (GIFT) – FRESHWATER WETLAND RESTORATION

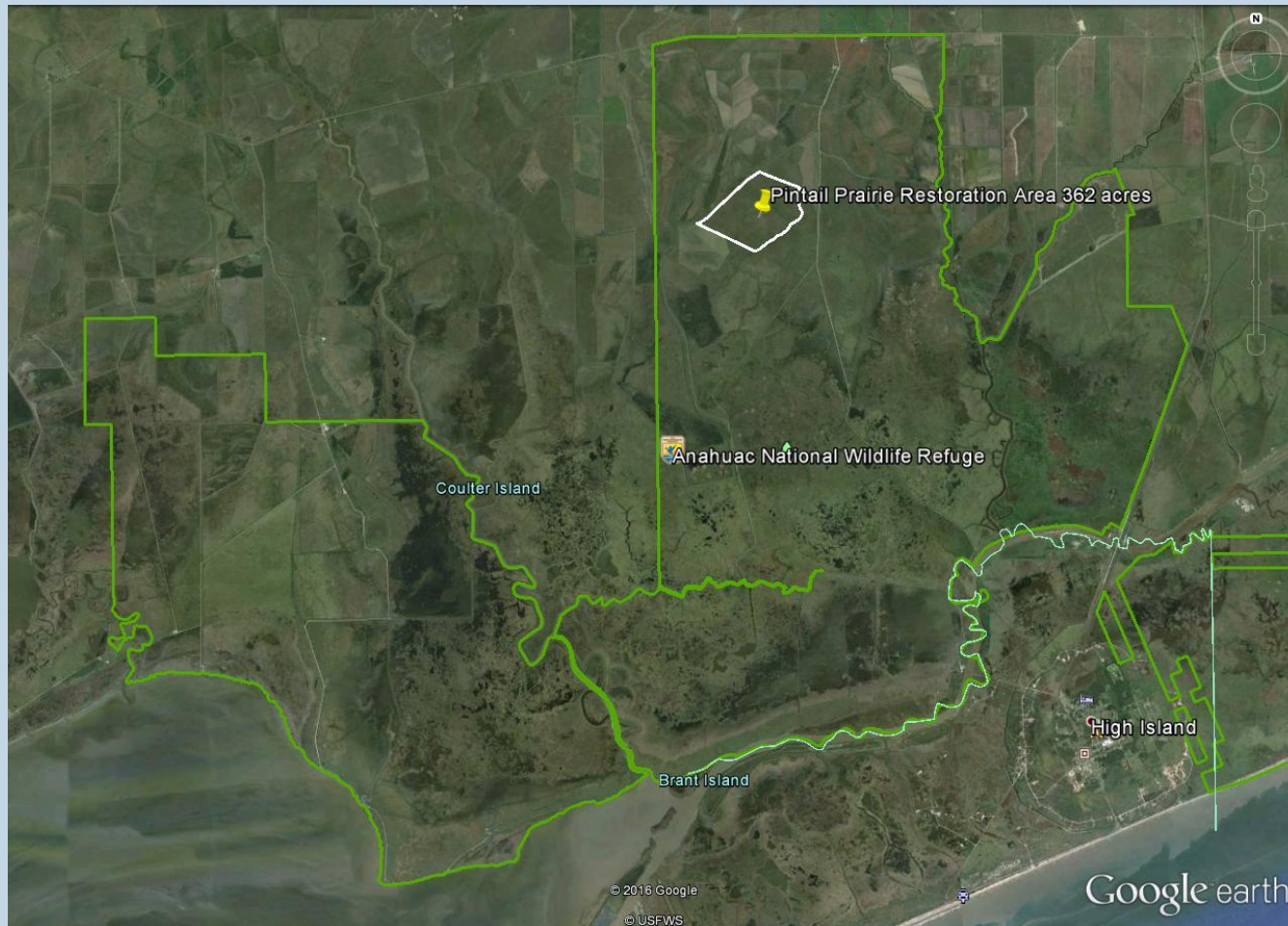
Lead: Texas Coastal Watershed Program

Proposed Amount: \$37,500 (State)

Description: The project goal is to support the freshwater wetland restoration component of GIFT. The proposed restoration project at Anahuac National Wildlife Refuge includes the restoration of 320 acres of fallow farm field to prime freshwater wet prairie habitat.

Funding from the Estuary Program would specifically support the initial survey work for Phase 1 of the proposed restoration (e.g. mapping of site and creating digital overlays).

6. GREEN INFRASTRUCTURE FOR TEXAS (GIFT) – FRESHWATER WETLAND RESTORATION



FY 18 WATER AND SEDIMENT QUALITY (WSQ) PROJECTS



7. BACTERIAL SOURCE TRACKING (BST) ON TRIBUTARIES OF TRINITY AND GALVESTON BAYS

Lead: Texas Water Resources Institute (TWRI)

Proposed Amount: \$80,000 per year for 3 years

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 conducted at one site on each waterbody for 12 months
- Field parameters collected - pH, temperature, conductivity, dissolved oxygen
- Conduct library-dependent BST and analyze E. coli isolates
- TWRI will collect approximately 75 known source samples from the local watersheds to improve the accuracy of the BST results

8. COORDINATING IMPLEMENTATION OF A WATERSHED PROTECTION PLAN FOR DOUBLE BAYOU

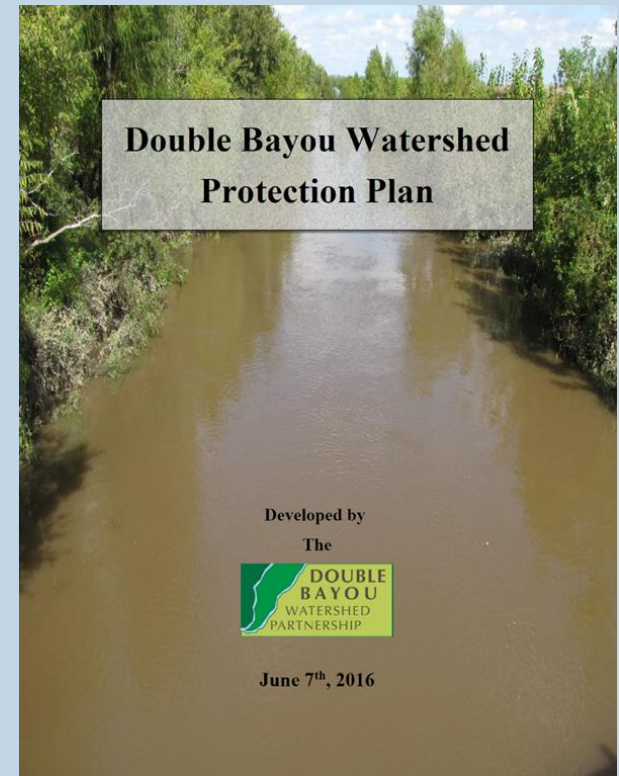
Lead: GeoTechnology Research Institute (GTRI)

Proposed Amount: \$31,679

Description: The Double Bayou Watershed Protection Plan (WPP) has been approved by stakeholders and was accepted by the EPA on June 7, 2016 as having met the nine element criteria for successful WPP's. This project will:

- Address the current water quality problems of dissolved oxygen and bacteria in the streams
- Maintain an effective monitoring program to provide critical water quality data used to judge the effectiveness of WPP implementation
- Maintain stakeholder efforts

Funding will be used as match for a TSSWCB grant for \$646K



9. GREEN INFRASTRUCTURE FOR TEXAS (GIFT) – STORMWATER TREATMENT WETLANDS

Lead: Texas Coastal Watershed Program (TCWP)

Proposed Amount: \$37,500

Description: The goal of this project is to support the stormwater treatment wetlands component of GIFT. The three stormwater wetlands that will be the focus of this project are:

- 8500 sf basin on the MD Anderson Cancer Center campus in the Texas Medical Center
- 3.5 acre basin on the Brazosport College campus in Lake Jackson
- 5 acre wetland at Exploration Green Recreation Area in Clear Lake City

Funding will support travel, staff time, and supplies to facilitate these projects

10. DESIGNING FOR IMPACT: PROMOTING LOW IMPACT DEVELOPMENT (LID) IMPLEMENTATION

Lead: Houston-Galveston Area Council (H-GAC)

Proposed Amount: \$30,000

Description: In partnership with the City of Manvel, City of Mont Belvieu and City of Pearland municipalities, H-GAC will evaluate ordinances, policies, and the development review process to identify regulatory barriers to LID implementation and provide a report offering recommendations for overcoming them. Specifically, H-GAC will:

- Evaluate building codes, plat requirements, and plat review process to identify regulatory barriers to LID implementation
- Offer recommendations for making these LID impediments more LID-friendly
- Provide guidance on how to implement the recommendations
- H-GAC will hold one technical assistance workshop for partner municipalities to help roll out the recommendations

10. DESIGNING FOR IMPACT: PROMOTING LOW IMPACT DEVELOPMENT (LID) IMPLEMENTATION



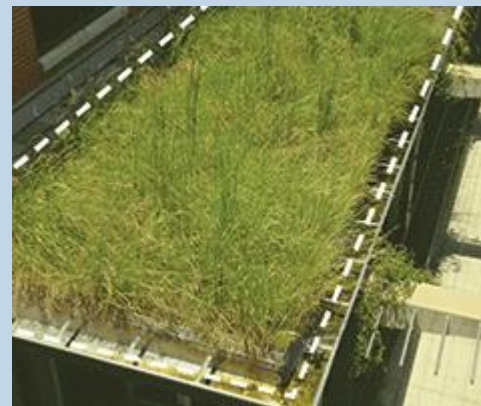
Bioswale



Cistern



Permeable Pavement



Green Roof

FY 18 MONITORING AND RESEARCH (M&R) PROJECTS



2004



2006

Sheldon Lake State Park

11. EVALUATING THE POTENTIAL OF AN INDEX-VELOCITY DISCHARGE STATION AND SURROGATE PARAMETERS TO ESTIMATE INFLOW, NUTRIENT AND SUSPENDED-SEDIMENT LOADS FROM THE SAN JACINTO RIVER TO GALVESTON BAY

Lead: United States Geological Survey (USGS)

Proposed Amount: \$40,000

Description: USGS has conducted research that improved the understanding of the processes driving the delivery of nutrients and sediment in freshwater inflow from the Trinity River to Galveston Bay.

- USGS will be collecting water-quality samples in the lower reaches of the San Jacinto River over a range of hydrologic conditions to improve our understanding of the variability of nutrient and sediment concentrations in freshwater inflows from the San Jacinto River into Galveston Bay
- Developing an index velocity rating and surrogate relations in the San Jacinto River would complement the data currently collected in the Trinity River, providing a more complete picture of the volume and water-quality in inflows to Galveston Bay.
- Recommended by both M&R and WSQ Subcommittees

12. SEAFOOD EVALUATION IN A PORTION OF GALVESTON BAY

Lead: Department of State Health Services

Proposed Amount: \$30,000 (\$70,000 year 2)

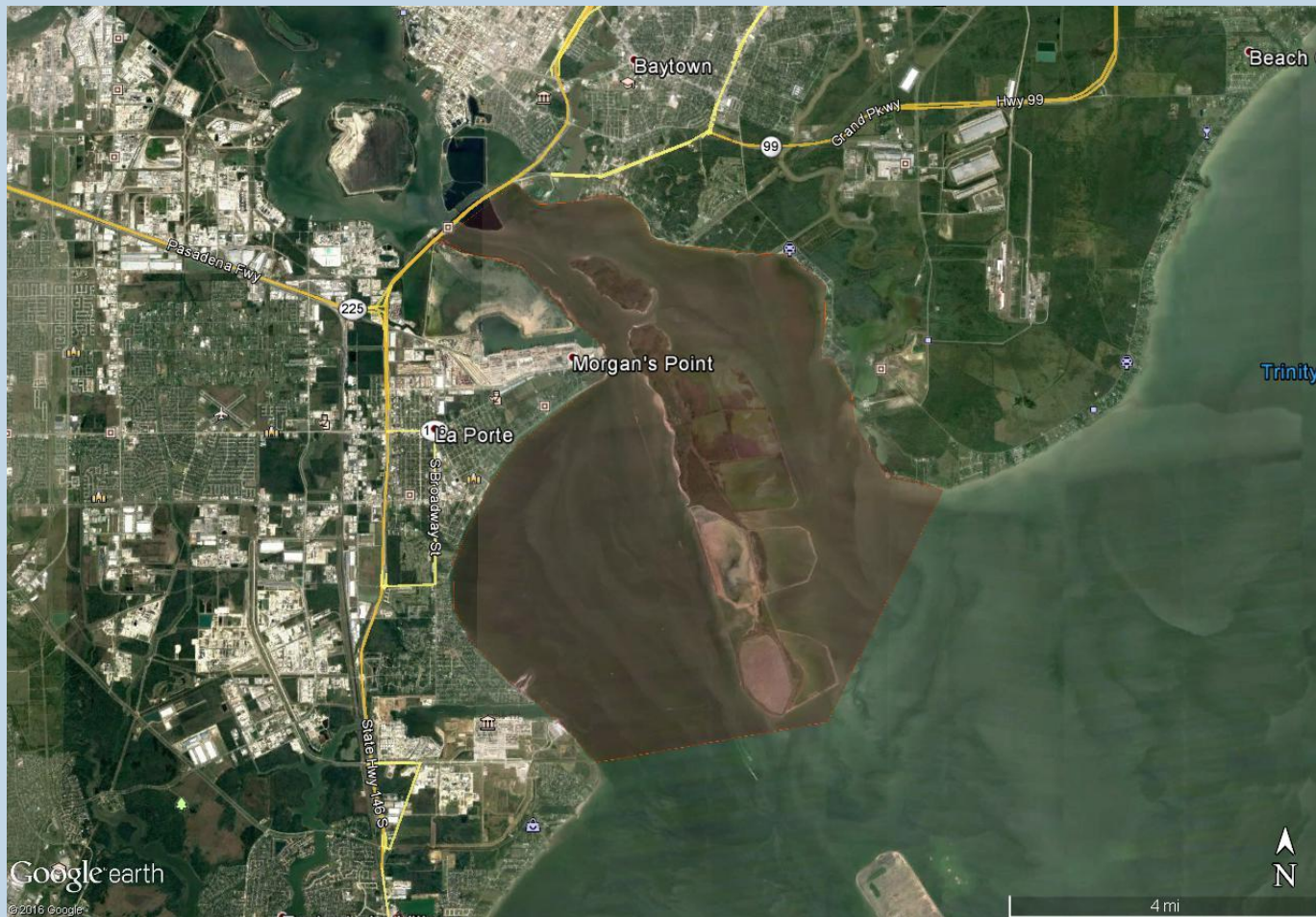
Description: The goal of this project is to evaluate the risk associated with consumption of fish and crabs from a portion of Galveston Bay.

- Advisory area located below Hwy 146 down to a line from Red Bluff Point to five Mile Pass to Houston Pass
- Includes Tabb's and Barnett Bay - regularly fished
- Advisory for catfish, blue crabs and spotted Seatrout for PCBs and Dioxins

Sample analysis, travel, fuel and indirect cost will be funded by the grant.



12. SEAFOOD EVALUATION IN A PORTION OF GALVESTON BAY



13. CHARACTERIZATION OF THE INFLUENCE OF FRESHWATER INFLOW ON THE TRINITY RIVER DELTA SALINITY, RANGIA, AND SUBMERGED AQUATIC VEGETATION

Lead: University of Houston at Clear Lake (UHCL)/Environmental Institute of Houston (EIH)

Proposed Amount: \$42,000

Description: Spatial and temporal trends in populations of Rangia and Vallisneria remain poorly documented within the shallow portions of the Trinity River delta. The purpose of this project is to conduct a comprehensive study of the influence of freshwater inflow on the salinity regime and response of multiple freshwater indicator fauna including Atlantic Rangia and Wild Celery. This study 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
- 3) An on the ground inventory of SAV and Rangia

14. PROPOSED MONITORING REGIME FOR SHELDON LAKE STATE PARK FRESHWATER WETLAND RESTORATION SITES

Lead: Texas AgriLife Extension Service/Texas Coastal Watershed Program (TCWP)

Proposed Amount: \$36,697

Description: In 2013, Texas AgriLife Extension Service and Texas Parks and Wildlife Department partnered together to establish a monitoring protocol for the newly created Phase II and Phase III prairie wetlands. The goal of the vegetation monitoring focused 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 proposal would continue the data collection for Phase 2 and 3, but add sites within Phase 4 (1 year post construction) and future Phase 5 (no construction).

FY 18 PUBLIC PARTICIPATION & EDUCATION (PPE) PROJECTS



15. RIVER, LAKES 'N BAYOUS TRASH BASH

Lead: Houston-Galveston Area Council

Proposed Amount: \$5,000

Description: Trash Bash is the largest single-day waterway cleanup in the state of Texas, with 15 sites across the region and 4,000–5,000 volunteers annually. The scale and scope of the event requires year-round administration and coordination. GBEP funds would be used to support the event coordinator's position.



16. WHITE OAK PARKWAY NATIVE HABITAT RESTORATION AND OUTREACH

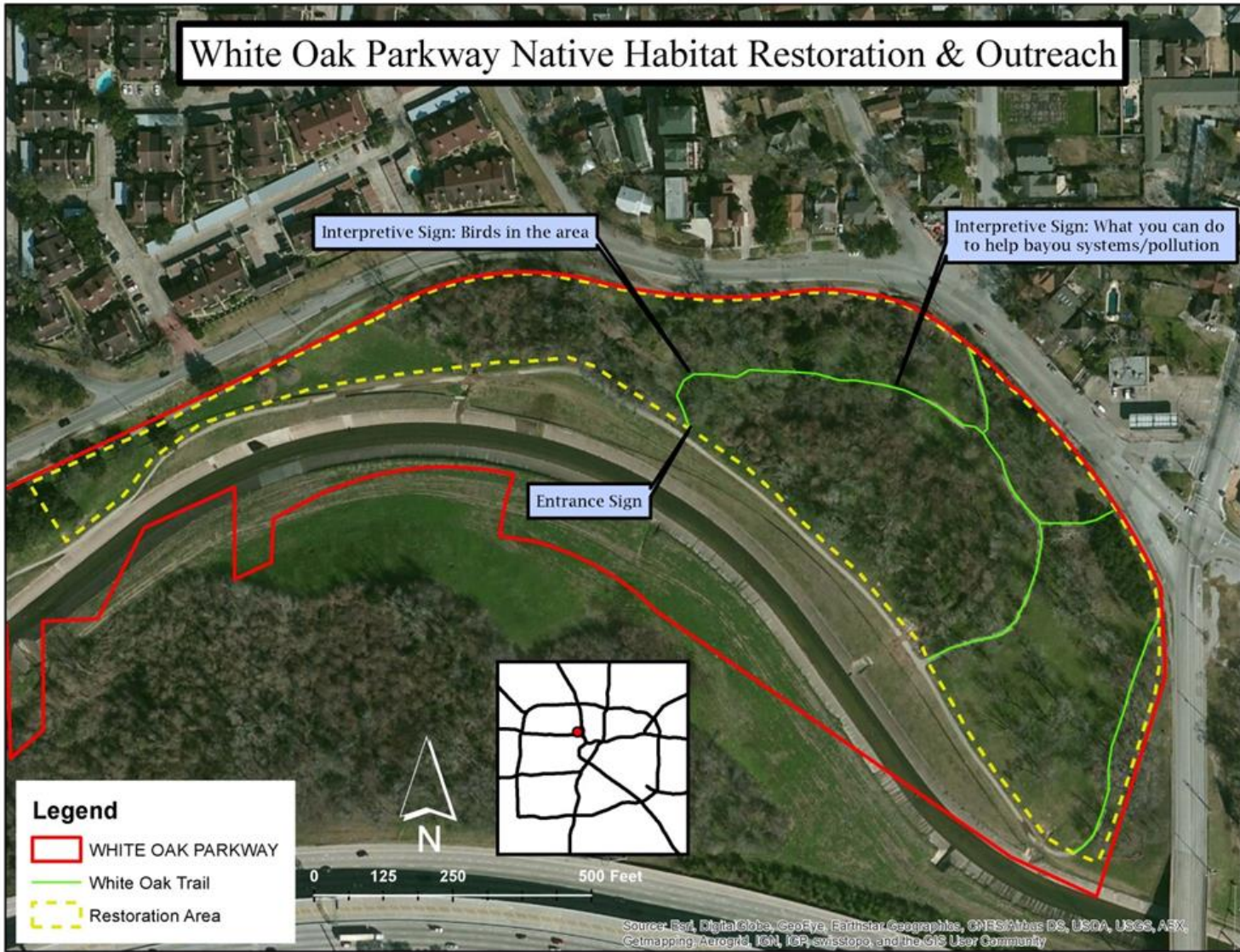
Lead: Houston Parks and Recreation Department

Proposed Amount: \$45,000

Description: A partnership between Houston Parks and Recreation Department, Houston Audubon, Houston Parks Board, and the Student Conservation Association (SCA).

- Approximately 10-acre portion of White Oak Parkway
- Management activities include:
 - Removal of invasive species, planting of native plants.
 - Understory clearing in forested areas to reduce the collection of debris after flooding episodes.
 - Educational signage at trail head and throughout trail to include Galveston Bay Foundation's Galveston Bay Action Network.
 - Include bird identification information provided through coordination of public activities and education events.

White Oak Parkway Native Habitat Restoration & Outreach



17. TERN CITIZEN SCIENCE PROGRAM IN GALVESTON BAY

Lead: Texas Parks and Wildlife Department

Proposed Amount: \$30,000

Description: A partnership with Texas Parks and Wildlife Department (TPWD) and Audubon Texas Coastal Conservation Program to continue to build capacity for the TERN program.

- Allow TPWD and Audubon Texas to successfully leverage a database portal such as the Galveston Bay Foundation's Galveston Bay Action Network and engage TPWD's Kills and Spills Team.
- Develop stronger public outreach messaging about citizen science opportunities through the TERN, connecting it to conservation.
- Provide further educational opportunities for new and existing TERN volunteers to assist with anthropogenic impacts to birds in the Galveston Bay Watershed.
- Provide the general public with more education about nesting birds, human disturbance, and the impacts of trash and discarded fishing line on local birds and other wildlife.

18. GALVESTON BAY ACTION NETWORK (GBAN) EDUCATION AND OUTREACH CAMPAIGN

Lead: Galveston Bay Foundation

Proposed Amount: \$40,000

Description: The project will increase awareness of the Galveston Bay Action Network (GBAN) pollution reporting tool, and expand GBAN's reach and use within the greater Houston area by:

- Coordinating and executing an outreach plan.
- Collecting feedback from users to determine opportunities for GBAN improvement through software maintenance, message delivery, or application functionality.
- Facilitating stakeholder education and tutorial opportunities for using the reporting tool.
- Maintaining and developing new partners to expand GBAN's use, specifically local and state-level enforcement agencies.