

FINAL PERFORMANCE REPORT
SECTION 320 DRAFT 3.0
GALVESTON BAY ESTUARY PROGRAM



A PROGRAM OF TCEQ

GRANT #CE-00655006

Texas Commission on Environmental Quality
P.O. Box 13087, Austin, Texas 78711-3087

November 2021

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GBEP FINANCIAL STATUS FOR CLEAN WATER ACT §320 EPA GRANT #CE-00655006

(Spending through October 29, 2021)

Title	August 2021 REPORTED	October 2021 SPENT	October 2021 BALANCE*
01 - Salaries			
2017-2019 Salaries/Release	\$1,034,010.00	\$1,033,293.33	\$716.67
02 - Contracts			
1. Back the Bay Campaign	\$147,045.00	\$147,045.00	\$0.00
2. 2017-2020 Galveston Bay Estuary Program Websites	\$38,802.92	\$38,802.48	\$0.44
<i>Unallocated</i>	\$0.00	\$0.00	\$0.00
03 - Travel			
Travel and Training	\$16,207.18	\$16,205.68	\$1.50
04 - Other			
Other Operating Expense - Web Domain Registration	\$300.00	\$300.00	\$0.00
3. 2017-2019 Mickey Leland Intern	\$23,975.69	\$23,253.51	\$722.18
4. 2017 Conservation Assistance Program	\$100,000.00	\$99,999.55	\$0.45
5. Galveston Bay Public Awareness Campaign for Fats, Oil, and Grease	\$60,000.00	\$60,000.00	\$0.00
6. 2017-2018 Trash Bash	\$9,991.00	\$9,990.36	\$0.64
7. The Impacts of Assimilative Capacity of Reservoirs on Coastal Inflows	\$65,358.00	\$65,358.00	\$0.00
8. Galveston Bay Estuary Program Comprehensive Conservation and Management Plan Revision	\$78,784.00	\$78,784.00	\$0.00
9. 2018-2023 Conservation Assistance Program	\$200,000.00	\$200,000.00	\$0.00
10. State of the Bay: A Characterization of the Galveston Bay Ecosystem, Fourth Edition	\$85,000.00	\$85,000.00	\$0.00
11. Designing for Impact: Promoting Low Impact Development Implementation	\$30,000.00	\$29,976.23	\$23.77
12. White Oak Bayou Native Habitat Restoration and Outreach	\$45,000.00	\$44,993.40	\$6.60
13. Galveston Bay Seawall Recycling	\$18,420.00	\$18,420.00	\$0.00
14. Blackhawk Park	\$53,600	\$53,599.23	\$0.77
15. 2019 Trash Bash	\$15,000.00	\$15,000.00	\$0.00
16. Estuary Resilience Assessment	\$30,000.00	\$30,000.00	\$0.00
17. Galveston Bay Coalition of Watersheds	\$83,501.00	\$83,500.12	\$0.88
18. Texas Estuarine Resource Network Citizen Science Program	\$52,393.00	\$52,392.97	\$0.03
19. Freshwater Inflows in Galveston Bay: Relationship to Harmful Algal Blooms	\$80,000.00	\$79,882.83	\$117.17
20. Bacterial Source Tracking on Tributaries of Trinity and Galveston Bays	\$218,578.62	\$218,578.62	\$0.00

Title	August 2021 REPORTED	October 2021 SPENT	October 2021 BALANCE*
21. Green Infrastructure for Texas	\$111,697.00	\$110,878.67	\$818.33
22. Seafood Evaluation in a Portion of Upper Galveston Bay	\$99,375.00	\$99,375.00	\$0.00
23. Characterization of the Influence of Freshwater Inflow on Trinity River Delta Indicators	\$60,000.00	\$60,000.00	\$0.00
24. Know Your Watershed Educators' Summer Institute	\$38,341.00	\$38,341.00	\$0.00
25. Galveston Bay Intertidal Oyster Reef Mapping and Analysis	\$64,883.00	\$64,882.71	\$0.29
26. Highland Bayou Watershed Protection Plan	\$68,362.00	\$68,299.98	\$62.16
05 - Supplies			
Supplies	\$694.09	\$693.87	\$0.22
Total Direct Costs	\$2,929,318.00	\$2,926,845.90	\$2,472.10
Fringe	\$360,632.19	\$360,360.82	\$271.37
Indirect	\$305,002.45	\$304,775.30	\$227.15
<i>Unloaded Funding (Federal Funds Section - FFS)</i>	<i>\$5,047.36</i>	<i>\$0.00</i>	<i>\$5,047.36</i>
#CE-00655006 Grant Total	\$3,600,000.00	\$3,591,982.02	\$8,017.98

**October 2021 spending and balances differ from the previous semiannual report due to rounding. The Final Performance Report for \$320 EPA Grant #CE-00655006 uses full funding numbers and three different internal accounting systems to accurately track funding down to the cent and reflects what is submitted through the Texas Commission on Environmental Quality's Federal Funds Section.*

**GBEP PROJECT STATUS FOR CLEAN WATER ACT §320 EPA
GRANT #CE-00655006**

GRANT CATEGORY 02 – CONTRACTS

1. BACK THE BAY CAMPAIGN

Funding: \$147,045 (Grant # CE-00655006)

Status: Project complete; all funds spent.

Date Deliverables to Environmental Protection Agency (EPA): All deliverables were met by December 2017.

Outputs/Deliverables:

- Weekly status updates were submitted.
- The final report was submitted to EPA on December 22, 2017
- Developed three TV spots, each were 30-seconds. Each spot highlighted trash and marine debris in three different scenarios.
- Two radio spots were created in both English and Spanish.
- The “[Back the Bay](#)” website was redesigned.
- Media buys were purchased from 14 television stations and 13 radio stations, including Spanish language media. Total impressions were 19 million.
- Eight partner organizations participated in Back the Bay Day at the Houston Zoo, collaborating to highlight the work being done in the region to protect wildlife and water quality from trash and plastic pollution. The partners directly engaged with nearly 300 zoo visitors. 81 people signed a pledge to do a cleanup in their community and share photos and data on the amount and type of trash and plastic they picked up. 30 people created their own t-shirt bag at the Back the Bay table.
- Filmed a live segment with partners focusing on Back the Bay campaign messages on KPRC’s Houston Life, Houston’s number-one midday local entertainment show.
- KPRC-TV digital media outreach for Back the Bay Day, which included online, web, and mobile application banners for the event, garnered 540,000 impressions. The Houston Life Segment coupled with a seven-second TV spot advertised the zoo event, which earned 940,000 impressions.

Site Visit and/or Audit Findings: N/A

Project Summary: The Back the Bay campaign aimed to improve the environmental quality of Galveston Bay by increasing awareness about the bay’s value among the public. The campaign educated citizens in the Houston-Galveston region and focused on three main goals of improving water quality, conserving water, and protecting critical fish and wildlife habitats. Because the campaign started in 2010 after stakeholders identified a lack of public awareness and public stewardship as one of the biggest threats to preserving Galveston Bay, this project engaged stakeholders, specifically the public, in the creative process to help design outreach materials, the website, public service announcements, video and digital materials as well as identify key audiences. Galveston Bay Estuary Program (GBEP) included stakeholders and partners in the planning and execution of the campaign throughout the entire process. From 2016 to 2017, stakeholders identified trash and marine debris as a priority issue, and the campaign’s theme, updated messaging, and creative assets were designed with that in consideration. This message also aligned with the EPA’s Trash Free Waters initiative.

GBEP Project Manager: Cynthia Clevenger

2. 2017-2019 GALVESTON BAY ESTUARY PROGRAM WEBSITES

Funding: \$38,802.92 (Grant # CE-00655006)

Status: Project complete; \$0.44 lapsed.

Date Deliverables to EPA: All outcomes were met by the contractor, Wilkins Group, Inc. The grant agreement did not require a final report or other deliverables to be submitted to the EPA.

Outputs/Deliverables: N/A

Site Visit and/or Audit Findings: N/A

Project Summary: Hosting and maintenance complete for 2017-2019. The website redesign was completed in August 2018. The outcomes of these projects included:

- Redesign of the GBEP website in WordPress, which allows designated GBEP staff to make minor adjustments and updates.
- Responsive web design that can be viewed by multiple devices with minimum and maximum display sizes.
- Included five draft reviews.
- Americans with Disabilities Act compliant.
- GBEP staff training for making minor updates.
- Web hosting and maintenance.

GBEP Project Manager: Cynthia Clevenger

GRANT CATEGORY 04 - OTHER

3. 2017-2019 MICKEY LELAND INTERN

Funding: \$23,975.69 (Grant # CE-00655006)

Status: Project complete; \$722.18 lapsed.

Date Deliverables to EPA: The grant agreement did not require a final report or other deliverables to be submitted to the EPA.

Outputs/Deliverables: N/A

Site Visit and/or Audit Findings: N/A

Project Summary: Projects for Mickey Leland interns included reviewing completed historical and ongoing GBEP projects and contracts, creating a georeferenced database of project locations for GBEP, which was used to support the State of the Bay Report, 4th Edition, and tracking implementation of The Galveston Bay Plan, 2nd Edition (GBP, 2nd Edition) by GBEP partners. Interns also assisted with developing a mechanism by which GBEP partners can submit projects for GBP, 2nd Edition implementation tracking. In addition, interns worked on creating communication and messaging assets for the Partners in Litter Prevention (PLP). The materials included a one-page quick reference about PLP and its initiatives, the design and layout of the Galveston Bay Watershed Aquatic Debris Action Plan, a social media tool kit with examples of Facebook, Twitter, and Instagram posts for partners participating in the July Plastic Pickup Challenge. In addition, interns contacted entities with Municipal Separate Storm Sewer Systems (MS4) to identify their outreach plan and add relevant information to GBEP's MS4 database. The interns attended Galveston Bay Council (GBC) and partner meetings.

GBEP Project Manager: Lisa Marshall

4. 2017 CONSERVATION ASSISTANCE PROGRAM

Funding: \$100,000 (Grant # CE-00655006)

Status: Project complete; \$0.45 lapsed.

Date Deliverables to EPA: All deliverables were met by June 2018.

Outputs/Deliverables:

- Monthly and/or quarterly progress reports (PR) until contract expiration: 26 monthly/quarterly PRs were submitted.

- Final report due September 2017: The final report was submitted by the contractor on December 17, 2017 and submitted to the EPA as an appendix in the June 2018 Semiannual Report.
- The permanent conservation of approximately 1,000 acres of important coastal habitat: The Conservation Assistance Program (CAP) successfully implemented or supported the completion of nine acquisition projects within the Galveston Bay watershed, totaling 5,015 acres.

Site Visit and/or Audit Findings: N/A; Project tasks were mainly administrative, but multiple site visits to specific properties were completed.

Project Summary: The CAP provided regional support for land conservation efforts within the Galveston Bay watershed. The CAP partnership between GBEP and the Galveston Bay Foundation (GBF) provided financial resources to coordinate, develop, and implement land acquisition projects along with transactional support to local conservation organizations. The CAP partnership also organized a work group of natural resource partners dedicated to perpetual land conservation efforts within the Galveston Bay watershed. Program objectives included identifying and developing priority land acquisition projects, implementing conservation strategies, negotiating fee simple and conservation easement acquisitions, and closing land conservation projects.

Tasks identified for accomplishing the CAP objectives included: (1) grant administration; (2) coordination of a land conservation work group; (3) conservation project tracking; (4) preparation of grant proposals to secure acquisition funding; (5) implementation of conservation projects and identified strategies; and (6) public outreach related to regional land conservation efforts.

CAP efforts from 2011 to 2017 resulted in the success of the program's goals and objectives. Successful conservation projects were completed in Chambers, Galveston, and Brazoria counties and high priority habitats were protected within target geographic areas. GBF led efforts on four successful conservation projects and provided support to partner organizations for completing five projects. The Galveston Bay watershed gained more than 5,000 acres of perpetually conserved lands as a direct result of CAP investment.

GBEP Project Manager: Lindsey Lippert

5. GALVESTON BAY PUBLIC AWARENESS CAMPAIGN FOR FATS, OILS, AND GREASE

Funding: \$60,000 (Grant # CE-00655006)

Status: Project complete; all funds spent.

Date Deliverables to EPA: All deliverables were met by December 2018.

Outputs/Deliverables:

- Quarterly PRs until contract expiration: 13 quarterly PRs were submitted.
- Work Plan due annually until contract expiration: Five Work Plans were submitted.
- Marketing and Outreach Plan due annually until contract expiration: Four Marketing and Outreach Plans were submitted.
- Partnership Coordination Report due annually until expiration: Five Partnership Coordination Reports were submitted.
- Draft final report due June 2018: Draft final report was submitted on June 30, 2018.
- Final report due August 2018: The final report was submitted by the contractor on August 11, 2018 and submitted to the EPA as an appendix in the December 2018 Semiannual Report.

Site Visit and/or Audit Findings: N/A

Project Summary: The mission of the Cease the Grease Campaign was to educate communities surrounding Galveston Bay on the issues improper disposal of fats, oils, and grease (FOG) can cause and the threats it poses to local water quality. An outreach campaign was modeled after the City of Dallas Water Utilities FOG outreach campaign. The contractor initiated a mass media campaign with Houston Public Media, Houston Press, Pandora, Houston Chronicle, and TV ads with CW39. Used oil

recycling stations were set up in four areas: City of Nassau Bay, Seabrook, Dickinson, and Clear Lake City Water Authority. The campaign progress was tracked by 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. In addition, sanitary sewer overflow reports were requested from the Texas Commission on Environmental Quality (TCEQ) and municipalities to track if a bacteria reduction resulted from campaign implementation. The campaign was able to make over 8.3 million impressions throughout the Houston-Galveston region and reached over 17,300 people through in-person outreach at various events. In addition, the Cease the Grease work group grew to 36 organizations.

GBEP Project Manager: Lisa Marshall

6. 2017-2018 TRASH BASH

Funding: \$9,991 (Original: \$10,000; Grant # CE-00655006) (fiscal 2017 \$5,000/ fiscal 2018 \$4,991; the remaining \$9.00 originally allocated to this project was dedicated to another project upon the end of this project to avoid lapse).

Status: Project complete; \$0.64 lapsed.

Date Deliverables to EPA: All deliverables were met by December 2018.

Outputs/Deliverables:

- Trash Bash Steering Committee meeting agendas and meeting minutes due annually on July 31st: The meeting agendas and previous meeting minutes were submitted monthly during the project and are available in the annual final reports. Steering Committee meetings were conducted monthly from September 2017 to March 2018.
- Final report due annually on July 31st: The 2017 and 2018 final reports were submitted by the contractor in July 2017 and July 2018 respectively, and submitted to the EPA as appendices in the December 2017 and December 2018 Semiannual Reports.

Site Visit and/or Audit Findings: N/A; the GBEP Trash Bash coordinator worked with Houston-Galveston Area Council (H-GAC) to help plan the 2017 and 2018 Trash Bash event.

Project Summary: This project supported the facilitation of the River, Lakes, Bays 'N Bayous Trash Bash® events for 2017 and 2018 (the 24th and 25th years of the annual one-day litter event). The 2017 Trash Bash event was held on March 25, 2017 and the 2018 Trash Bash event was held on March 24, 2018. The events resulted in a total combined number of 1,605.5 miles of covered shoreline, 3,591 volunteers, 137.4 tons of trash removed, 2.4 tons of materials recycled, and 930 discarded tires removed.

GBEP Project Manager: Mary Stiles

7. THE IMPACTS OF ASSIMILATIVE CAPACITY OF RESERVOIRS ON COASTAL INFLOWS

Funding: \$65,358 (Grant # CE-00655006)

Status: Project complete; all funds spent.

Date Deliverables to EPA: All deliverables were met by December 2019.

Outputs/Deliverables:

- Monthly PRs until contract expiration: 15 monthly PRs were submitted.
- Draft Quality Assurance Project Plan (QAPP) due October 30, 2015: Draft QAPP was submitted on October 7, 2015.
- Final QAPP due November 21, 2015: Final QAPP approved February 24, 2016.
- QAPP Revision 1 due February 2017: QAPP Revision 1 was approved on February 22, 2017, QAPP Revision 2 was approved on February 13, 2018, and QAPP Revision 3 was approved on February 8, 2019.
- Year-end summary report due annually in September: Three final year-end summary reports were submitted.

- Final report due May 2019: The final report was submitted by the contractor on April 30, 2019 and submitted to the EPA as an appendix in the June 2019 Semiannual Report.

Site Visit and/or Audit Findings: A quality assurance (QA) desk audit was performed on January 28, 2019 and produced one positive finding.

Project Summary: The project sought to assess the assimilative capacity of the Lake Livingston reservoir and relate the impacts of freshwater inflows to Galveston Bay. Samples were collected from inflows to Lake Livingston from the upper Trinity River and from outflows south of Lake Livingston Dam. Sampling events quantified nutrient and suspended sediment concentrations, tracked flow patterns and currents, and collected depth profiles to determine the degree of stratification. The results did not show elevated nutrient or sediment concentrations leaving the lake during high or base flow conditions. Most of the suspended sediment, phosphorus, and total nitrogen sample events resulted in a decreasing pattern from north to south. These results suggest the Lake Livingston Reservoir is a nutrient and sediment sink.

GBEP Project Manager: Lisa Marshall

8. GALVESTON BAY ESTUARY PROGRAM COMPREHENSIVE CONSERVATION AND MANAGEMENT PLAN REVISION

Funding: \$78,784 (Grant # CE-00655006)

Status: Project complete; all funds spent. The GBC approved the final draft at its October 17, 2018 meeting. The contractor completed the draft of the Executive Summary and delivered all final documents to GBEP by December 19, 2018. The Comprehensive Conservation and Management Plan (CCMP) was approved by the TCEQ Commissioners at the March 27, 2019 Agenda Meeting. The EPA found the document generally met the requirements of the revision process and approved the CCMP on May 19, 2020. GBEP prepared a 2021 update to the approved edition, adding several elements to round out and update the Finance Strategy in accordance with EPA Funding Guidance. The designation of the lead implementers in each action was also added. The Finance Plan Addendum and Lead Implementers were submitted to EPA on June 15, 2021 and approved on September 1, 2021.

Date Deliverables to EPA: All deliverables were met by December 2018.

Outputs/Deliverables:

- Quarterly PRs until contract expiration. Nine quarterly PRs were submitted.
- Final plan revision due December 2018. The contractor submitted the final plan on November 29, 2018.
- Final report due December 2018. The final report was submitted by the contractor on December 20, 2018 and submitted to the EPA as an appendix in the June 2019 Semiannual Report.

Site Visit and/or Audit Findings: N/A

Project Summary: The revision of GBP, 2nd edition builds upon 30 years of factual and scientific information. The updated GBP, 2nd Edition identifies specific actions, goals, and objectives to address plan priorities identified by stakeholders. The strategies and tools identified in the GBP, 2nd Edition, in concert with the collaboration, coordination, and monitoring that occur through the GBC and its subcommittees, will help guide its implementation.

GBEP Project Manager: Cynthia Clevenger

9. 2018-2019 CONSERVATION ASSISTANCE PROGRAM

Funding: \$200,000 (Grant # CE-00655006)

Status: Project ongoing (through 08/31/2023); all 2018-2019 funds spent.

Date Deliverables to EPA: All deliverables related to 2018-2019 funds were met by October 16, 2020.

Outputs/Deliverables:

- Quarterly PRs until contract expiration: 11 quarterly PRs have been submitted.
- Annual reports due August 31st until contract expiration: Per the contract, this project will be reported on annually. The 2018 annual report was removed from the scope of work as the contract was not executed until July 19, 2018. The 2019 annual report, which covered the remaining month of 2018, was submitted by the contractor on October 18, 2019, and submitted as an appendix in the September 2020 Semiannual Report. Annual reports related to the 2020-2023 funds will be reported in Semiannual Reports and future Final Performance Reports for those associated grants.
- Final report due August 2023: Per the contract, this project will be reported on annually. The removal of the final report as an output for this project will be corrected in future work plans and reports.

Site Visit and/or Audit Findings: N/A; project tasks are mainly administrative, but multiple site visits to specific properties have been completed.

Project Summary: CAP funding was used to provide financial resources to coordinate, develop, and implement land acquisition projects, provide transactional support to local conservation organizations, and organize a work group of natural resource partners within the Galveston Bay watershed.

- During fiscal year 2019, CAP helped one 38-acre land transaction close (Coastal Heritage Preserve Moore Donation); developed eight additional projects and received partial or full funding during the first year of the project for six projects.
- During fiscal year 2020, CAP helped conserve 295 acres of coastal habitat through two project initiatives (Angleton and Follet's Island, five separate tracts); eight projects were supported during the second year of the project.
- During fiscal year 2021, CAP helped conserve 1,340 acres of coastal habitat through six project initiatives (Angleton Prairie, Coastal Heritage Preserve, Dollar Bay, Follet's Island, High Island, and Oyster Bayou; eight separate tracts).

Additional CAP supported projects are expected to close in fiscal year 2022, which will result in the conservation of more than 5,000 acres of coastal habitat within the Galveston Bay watershed.

GBEP Project Manager: Lindsey Lippert

10. STATE OF THE BAY: A CHARACTERIZATION OF THE GALVESTON BAY ECOSYSTEM, FOURTH EDITION

Funding: \$85,000 (Grant # CE-00655006)

Status: Complete; all funds spent.

Date Deliverables to EPA: All deliverables were met by December 2020.

Outputs/Deliverables:

- Quarterly PRs until contract expiration: 14 quarterly PRs were submitted.
- Draft QAPP due within 60 days of contract execution: The draft QAPP was submitted on November 1, 2017.
- Final QAPP due within 45 days of draft: The final QAPP was submitted on March 8, 2018 and approved on March 22, 2018. Revision 1 was approved on March 22, 2019, and Revision 2 was approved on March 17, 2020.
- Crosswalk document between old and new State of the Bay Report was submitted on August 14, 2018.
- 11 updated sections in a web format, storyboard, and success stories were submitted on September 13, 2019.
- Final State of the Bay website due October 2020: The State of the Bay website was launched on October 21, 2020.

- Final report due December 2020: The Executive Summary was submitted by the contractor on November 17, 2020 and submitted to the EPA as an appendix in the March 2021 Semiannual Report.

Site Visit and/or Audit Findings: A QA desk audit was performed on January 28, 2019 and produced one positive finding. A second QA desk audit was performed on August 26, 2020 and produced one positive finding and two comments, which were addressed by the contractor.

Project Summary: The State of the Bay: A Characterization of the Galveston Bay Ecosystem, 4th Edition was updated and migrated to an online platform located at www.stateofgalvbay.org. Like the previous reports, the website is a resource for historical context and up-to-date analyses for the conditions in and around Galveston Bay. The online platform combines legacy information with new data visualization tools, interactive maps, success stories, a searchable bibliography, and a database of GBEP supported projects from 2005–2020. Together, the site provides over 50 quality-assured state, federal, and local datasets incorporated into 10 sections of text. This report serves as a resource for scientists, managers, educators, and local decision-makers.

GBEP Project Manager: Lisa Marshall

11. DESIGNING FOR IMPACT: PROMOTING LOW IMPACT DEVELOPMENT IMPLEMENTATION

Funding: \$30,000 (Grant # CE-00655006)

Status: Project complete; \$23.77 lapsed.

Date Deliverables to EPA: All deliverables were met by December 2018.

Outputs/Deliverables:

- Quarterly PRs until contract expiration: Seven quarterly PRs were submitted.
- Revised findings report per consultant review due November 2018: The findings report was submitted on October 15, 2018.
- Revised findings report per City of Pearland review due May 2018: The City of Pearland findings report was submitted on November 15, 2018.
- Community Low Impact Development workshop due November 2018: A workshop was held on November 7, 2018.
- Final report due December 2018: The final report was submitted by the contractor on December 1, 2018 and submitted to the EPA as an appendix in the June 2019 Semiannual Report.

Site Visit and/or Audit Findings: N/A

Project Summary: This project provided designers, policymakers, developers, and most importantly, local communities, with information to consider when implementing low impact development. By hosting workshops, the H-GAC determined the primary barriers for low impact development are proper maintenance practices, installation inspections, and ordinance driven design requirements. To address these barriers, H-GAC conducted a thorough review of the city's code of ordinances and developed a set of recommendations and resources that included the following:

- maintenance agreements, maintenance schedules, and installation checklists;
- opportunities to reduce impervious surfaces and incorporate low impact development features;
- recommended design requirement adjustments in ordinances;
- examples of financial incentives for developers;
- examples of low impact development requirements and design provisions in the region; and
- examples of completed low impact development projects near Pearland.

GBEP Project Manager: Lisa Marshall

12. WHITE OAK BAYOU NATIVE HABITAT RESTORATION AND OUTREACH

Funding: \$45,000 (Grant # CE-00655006)

Status: Project complete; \$6.60 lapsed.

Date Deliverables to EPA: All deliverables were met by August 2019.

Outputs/Deliverables:

- Quarterly PRs until contract expiration: Eight quarterly PRs were submitted.
- Quarterly public education and volunteer events: Four public outreach and education events occurred.
- Final report due July 2019: The final report was submitted by the contractor on August 30, 2019 and submitted to the EPA as an appendix in the December 2019 Semiannual Report.

Site Visit and/or Audit Findings: N/A

Project Summary: The City of Houston Parks and Recreation Department (HPARD) subcontracted with a Student Conservation Association (SCA) crew to remove invasive species from the 10-acre restoration area and led community planting events to install native trees. The crew worked one day each month for 12 months on restoration and community engagement activities at the site. Most of the invasive species at the site were removed and native trees, shrubs, and wetland plants were planted. Three invasive species removal and native planting events were held for the community. Two bird watching opportunities were provided for community members through a partnership with Houston Audubon Society. HPARD and SCA participated in the Houston City Challenger event at the park, taking pictures of plants and animals for iNaturalist in the spring of 2018. In February 2019, HPARD established a monthly community workday. In the summer of 2019, HPARD completed invasive species removal with a subcontractor using specialized equipment and herbicide.

GBEP Project Manager: Cynthia Clevenger

13. GALVESTON SEAWALL RECYCLING

Funding: \$18,420 (Grant # CE-00655006)

Status: Project complete; all funds spent.

Date Deliverables to EPA: All deliverables were met by September 2020.

Outputs/Deliverables:

- Quarterly PRs until contract expiration: Four quarterly PRs were submitted.
- Recycling receptacles: All receptacles were deployed by February 3, 2020.
- Map of recycling container locations: The map was completed by February 27, 2020.
- Analysis of materials collected: Analysis of materials was not completed due to COVID-19.
- Final report due July 2020: The final report was submitted by the contractor on August 10, 2020 and submitted to the EPA as an appendix in the September 2020 Semiannual Report.

Site Visit and/or Audit Findings: N/A

Project Summary: This project added recycling opportunities along six miles of Galveston Island's seawall to reduce litter affecting the stormwater system and Galveston Bay. A total of 20, 58-gallon recycling cans were placed at seawall bus stops, and one, six-compartment recycle station was placed in an area of high need. The recycling cans and station were retrofitted with restrictor holes installed from the manufacturer, campaign signage (Save Our Shores (S.O.S), and logos (GBEP, Back the Bay, Galveston Island, and Artist Boat)). Data collection and analysis were not completed due to COVID-19; however, this is something the Galveston Island Park Board of Trustees and the Artist Boat are interested in tracking in the future.

GBEP Project Manager: Cynthia Clevenger

14. BLACKHAWK PARK

Funding: \$53,600 (Grant # CE-00655006)

Status: Project complete; \$0.77 lapsed.

Date Deliverables to EPA: All deliverables were met by September 2020.

Outputs/Deliverables:

- Quarterly PRs until contract expiration: Four quarterly PRs have been submitted.
- Quarterly public education and volunteer events: All public education and volunteer events took place. The events focused on invasive species removal and native species planting.
- Final report due July 2020: The final report was submitted by the contractor on July 24, 2020 and submitted to the EPA as an appendix in the September 2020 Semiannual Report.

Site Visit and/or Audit Findings: N/A

Project Summary: The project focused on native coastal prairie restoration of a 10-acre section of Blackhawk Park located in southeast Houston. Restoration efforts included the removal of invasive woody species and the establishment of native grasses and forbs. This increased habitat function, improved ecosystem services, and created habitat for many grassland-dependent species native to the Houston area. Two interpretive signs were installed, and three community events were hosted by HPARD and SCA to educate the public and increase the acceptance of natural areas in the community park.

GBEP Project Manager: Cynthia Clevenger.

15. 2019 TRASH BASH

Funding: \$15,000 (Grant # CE-00655006)

Status: Project complete; all funds spent.

Date Deliverables to EPA: All 2019 deliverables were met by July 2019.

Outputs/Deliverables:

- Trash Bash Steering Committee meeting agendas and meeting minutes due July 31st annually: The agendas and previous meeting minutes were submitted monthly during the project and are available in the annual final reports.
- Final report due July 31st annually: The 2019 final report was submitted by the contractor on July 31, 2019 and submitted to the EPA as an appendix in the December 2019 Semiannual Report. Annual reports related to the 2020-2022 funds will be reported in Semiannual Reports and future Final Performance Reports for those associated grants.

Site Visit and/or Audit Findings: N/A

Project Summary: This project supported the facilitation of the River, Lakes, Bays 'N Bayous Trash Bash® event for 2019, the 26th year of the annual one-day litter event. The 2019 Trash Bash event was held on March 30, 2019. The event resulted in a total of 153.3 miles of covered shoreline, 4,290 volunteers, 56.5 tons of trash removed, 2.8 tons of materials recycled, and the removal of 513 discarded tires.

GBEP Project Manager: Patricia Thompson

16. ESTUARY RESILIENCE ASSESSMENT

Funding: \$30,000 (Grant # CE-00655006)

Status: Ongoing. A stakeholder work group was established to develop the Resilience Risk and Goals Matrix; the first project workshop was held on February 21, 2019, the second workshop was held on August 22, 2019, and the final workshop was held on May 20, 2020. The GeoTechnology Research Institute (GTRI) reviewed information from the first work group meeting, input on the resilience matrix, and risks associated with the identified organizational goals and estuary stressors. GTRI led the work group through a risk analysis, during which the group gave input on developing an initial characterization of consequence and likelihood for each risk and developed an updated matrix. The matrix has been reviewed by GBEP, TCEQ, and stakeholders, and the initial draft Estuary Resilience Assessment was submitted on January 29, 2021, for review. This document was presented to the

stakeholders for comments at the June 2021 Subcommittee Meetings and July 2021 GBC Meeting. The deadline to receive comments was August 11, 2021 and these comments informed changes that needed to be made for the secondary final draft.

Date Deliverables to EPA: N/A

Outputs/Deliverables:

- Quarterly PRs until contract expiration: 11 quarterly PRs have been submitted.
- Three stakeholder meetings or workshops: All stakeholder work group meetings have been held.
- Final Estuary Resilience Assessment document and report due November 2021: The final Consequence/Probability Matrix was submitted on July 30, 2020, and the initial draft Estuary Resilience Assessment was submitted on January 29, 2021. The secondary draft Estuary Resilience Assessment was due May 31, 2021, but due to delays, was submitted September 3, 2021. The finalized second draft was submitted to TCEQ for review on October 29, 2021 and approved on November 10, 2021.
- Final report: This deliverable was removed from the scope of work in an amendment, as the Estuary Resilience Assessment is the final report.

Site Visit and/or Audit Findings: N/A

Project Summary: This project assessed the goals, objectives, and actions in the GBP, 2nd Edition against a series of coastal resilience criteria, meeting the requirements identified in the EPA's National Estuary Program Funding Guidance Document. The final output of the project is a companion document to the GBP, 2nd edition and will provide resiliency adaptation considerations for implementers of the GBP, 2nd edition. The document was developed in coordination with subject matter experts and/or members of the GBC and its committees through workshops or via existing meeting structures.

GBEP Project Manager: Lindsey Lippert

17. GALVESTON BAY COALITION OF WATERSHEDS

Funding: \$83,501 (Original: \$85,000; Grant # CE-00655006; of the remaining \$1,499.88 originally allocated to this project, \$1,499 was dedicated to another project upon the end of this project to avoid lapse, and \$0.88 was lapsed).

Status: Project complete; \$0.88 lapsed.

Date Deliverables to EPA: All deliverables were met by December 2018.

Outputs/Deliverables:

- Quarterly PRs until contract expiration: Nine quarterly PRs were submitted.
- Galveston Bay Oyster Waters annual report: The annual report was submitted on June 28, 2017.
- Final report due May 2018: The final report was submitted by the contractor on July 31, 2018 and submitted to the EPA as an appendix in the December 2018 Semiannual Report.

Site Visit and/or Audit Findings: N/A

Project Summary: GBEP funding was used as seed funding for a full-time coordinator who established and maintained the Galveston Bay Coalition of Watersheds (GBCW). The coordinator helped determine the makeup of the group, worked with stakeholders to establish a unified vision and goals, and defined a plan for continued funding, which should include a matching component from local governments, be it financial or in-kind. Local contributions should be leveraged for grant applications to fund implementation measures and continued coordination. The coordinator also worked with GBCW members to carry out implementation measures in existing plans across all the partner watersheds. The coordinator also worked with the GBF staff to ensure facilitation of active stakeholder participation in the Galveston Bay Bacteria Reduction Plan and collaborated with adjacent watershed groups to guide successful implementation and tracking of plan progress, which

addresses oyster waters bacteria impairments in Galveston Bay.

GBEP Project Manager: Lisa Marshall

18. TEXAS ESTUARINE RESOURCE NETWORK CITIZEN SCIENCE PROGRAM

Funding: \$52,393 (Grant # CE-00655006)

Status: Project complete; \$0.03 lapsed.

Date Deliverables to EPA: All deliverables were met by September 2020.

Outputs/Deliverables:

- Quarterly PRs until contract expiration: Five quarterly PRs were submitted.
- Quarterly public education and volunteer events: All public education and volunteer events were held.
- Final report due August 2020: The final report was submitted by the contractor on June 26, 2020 and submitted to the EPA as an appendix in the September 2020 Semiannual Report.

Site Visit and/or Audit Findings: N/A

Project Summary: The Audubon Texas Coastal Program in partnership with the Texas Parks and Wildlife Department (TPWD) grew the Texas Estuarine Resource Network by recruiting and training citizen scientists. This project reached coastal communities in the Galveston Bay area by developing a campaign, the Seabird Scout Project, aimed at reducing plastic pollution. The project also engaged citizen scientists to document data and provide coordination for sick and injured birds. Those efforts grew the volunteer network, which provided over 5,000 hours of volunteer service for coastal bird conservation in 2019. Due to limited resources and individuals who are permitted to handle and transport injured birds, TPWD and Audubon Texas worked together to produce a guidance document on permitting for citizen scientists to capture and transport injured birds and wildlife in the Galveston Bay watershed.

GBEP Project Manager: Cynthia Clevenger

19. FRESHWATER INFLOWS IN GALVESTON BAY: RELATIONSHIP TO HARMFUL ALGAL BLOOMS

Funding: \$80,000 (Grant # CE-00655006)

Status: Project complete; \$117.17 lapsed.

Date Deliverables to EPA: All deliverables were met by June 2019.

Outputs/Deliverables:

- Quarterly PRs until contract expiration: Nine quarterly PRs were submitted.
- Draft QAPP due November 2016: The draft QAPP was submitted on March 11, 2017 (the contract was executed in January 2017 rather than September 2016).
- Final QAPP within 45 days of draft: The final QAPP was submitted on April 3, 2017 and approved on June 9, 2017. Revision 1 was approved on July 25, 2018.
- Final report due May 2019: The final report was submitted by the contractor on May 17, 2019 and submitted to the EPA as an appendix in the June 2019 Semiannual Report.

Site Visit and/or Audit Findings: A QA desk audit was performed on February 22, 2019. The audit resulted in one positive finding and two comments, which were addressed by the contractor.

Project Summary: Phytoplankton in Galveston Bay can respond to many environmental and anthropogenic pressures by forming algal blooms, which under certain conditions (e.g., particular species at high concentrations) are harmful to aquatic and terrestrial organisms. This project used an Imaging FlowCytobot capable of detecting and identifying phytoplankton to continuously monitor algal populations at the intersection of Galveston Bay and the Gulf of Mexico to act as an early warning system for alerting scientists and state and federal agency personnel to the presence of harmful algal bloom forming species. Harmful algal bloom forming genera including *Akashiwo*, *Anabaena*, *Dinophysis*, *Karenia*, *Microcystis*, *Prorocentrum*, and *Pseudo-nitzschia* were identified, but

did not occur in high enough concentrations to create a toxic bloom during the study period.

The Imaging FlowCytobot was also used to quantify the taxonomic composition of phytoplankton in each sample. This allowed for visualization of the phytoplankton community response to changes in the environment. During the study period, Hurricane Harvey made landfall in Texas on August 25, 2017. Before the hurricane, the analysis showed that the phytoplankton community was dominated largely by dinoflagellates. However, after the storm flooded Galveston Bay with freshwater, the community shifted to include higher numbers of chlorophytes and cyanobacteria. No blooms were observed following the large shift in community composition. This may have been a result of the high flushing rate associated with floodwater discharge.

GBEP Project Manager: Lisa Marshall

20. BACTERIAL SOURCE TRACKING ON TRIBUTARIES OF TRINITY AND GALVESTON BAYS

Funding: \$218,578.62 (Grant # CE-00655006)

Status: Project complete; all funds spent.

Date Deliverables to EPA: All deliverables were met by September 2020.

Outputs/Deliverables:

- Quarterly PRs until contract expiration: 11 quarterly PRs have been submitted.
- Draft QAPP due within 60 days of contract execution: The draft QAPP was submitted on October 30, 2017.
- Final QAPP due within 45 days of draft: The final QAPP was submitted on December 14, 2017 and approved on February 28, 2018. Revision 1 was approved on February 28, 2019.
- Data results and interpretation due with quarterly PRs: The collected data was maintained in a master database, and the most current version of the database was sent to the GBEP Project Manager with each quarterly PR. The data was evaluated and interpreted, which was detailed in the final report.
- Final report due June 2020: The final report was submitted by the contractor on June 2, 2020 and submitted to the EPA as an appendix in the September 2020 Semiannual Report.

Site Visit and/or Audit Findings: A QA desk audit was performed on February 7, 2019, and produced one positive finding and a comment, which was addressed by the contractor. A QA field audit was conducted on April 9, 2019, which resulted in one positive finding.

Project Summary: To better characterize sources of bacteria entering Trinity and Galveston bays, a bacterial source tracking study was employed to help decision-makers determine the most appropriate management measures needed to reduce bacteria in the waterbodies. Monthly sampling was conducted by the Texas Water Resources Institute (TWRI) at one site on Buffalo, Double, Cedar, and Dickinson bayous and Clear Creek for one year (60 total water samples). TWRI also worked with local experts to determine key sources of bacteria within the watersheds and collected a total of 91 known source samples. The Texas *Escherichia coli* (*E. coli*) bacteria source tracking library was then expanded and refined with the addition of the known source samples. The current version contains 1,886 isolates from 1,645 known source fecal samples retrieved from 4,301 individual known source samples in over 20 watersheds. Of the 77 known source isolates fingerprinted from the Trinity River and Galveston Bay watersheds, an additional 33 isolates from 31 fecal samples were added to the library. Bacteria source tracking analysis in Trinity River and Galveston Bay indicate that wildlife (non-avian and avian) were the leading contributors of *E. coli* in the five selected sample sites with variable levels of human contributions.

GBEP Project Manager: Christian Rines

21. GREEN INFRASTRUCTURE FOR TEXAS

Funding: \$111,697 (Grant # CE-00655006)

Status: Project complete; \$818.33 lapsed.

Date Deliverables to EPA: All deliverables were met by September 2020.

Outputs/Deliverables:

- Quarterly PRs until contract expiration: 12 quarterly PRs were submitted.
- Draft QAPP due within 60 days of contract execution: The draft QAPP was submitted on October 27, 2017.
- Final QAPP due within 45 days of draft: The final QAPP was submitted on April 4, 2018 and approved on April 25, 2018. Revision 1 was approved on April 23, 2019. Amendment 1 was approved on July 3, 2019.
- Signed project partnership Memorandum of Understanding (MOU) by December 31, 2018: All project MOUs were received. The MOU for Exploration Green was submitted on March 28, 2019, and the MOU for the Houston Botanic Garden was submitted on April 12, 2019.
- Final report due January 2020: The final report was submitted by the contractor on February 26, 2020 and submitted to the EPA as an appendix in the September 2020 Semiannual Report.

Site Visit and/or Audit Findings: A QA desk audit was performed on February 26, 2019, and produced one positive finding and some comments, which were addressed by the contractor. A QA field audit was conducted on July 1, 2019, and produced one positive finding and a negative finding, which was addressed by the contractor.

Project Summary: This project consisted of two primary components: 1) vegetation monitoring at a restored freshwater wetland at Sheldon Lake State Park in Houston, Texas; and 2) the development of multiple stormwater wetland demonstration areas in the Galveston Bay watershed. The vegetation monitoring study helped advance the knowledge base for freshwater wetland restoration by developing a method to assess and analyze the response of the plant community and the condition of the wetland following restoration efforts. Vegetation monitoring data suggested the restored wetland is on a successful trajectory, with the older ponds further along the successional gradient for maturing wetlands. This project also supported the construction of three stormwater treatment wetlands: an 8,500-square foot basin on the MD Anderson campus, five acres of wetlands at Exploration Green Recreation Area in Clear Lake, and a functioning stormwater wetland at the Houston Botanic Garden. This project helped advance the knowledge and usage of ecological restoration and stormwater wetlands as green infrastructure practices in the watershed, established new partnerships, and encouraged entities to use these practices in their communities.

GBEP Project Manager: Christian Rines

22. SEAFOOD EVALUATION IN A PORTION OF UPPER GALVESTON BAY

Funding: \$99,375 (Grant # CE-00655006)

Status: Project complete; all funds spent.

Date Deliverables to EPA: All deliverables were met by December 2019.

Outputs/Deliverables:

- Quarterly PRs until contract expiration: Nine quarterly PRs were submitted.
- Draft QAPP due within 60 days of contract execution: The draft QAPP was submitted on September 18, 2017.
- Final QAPP due within 45 days of draft: The final QAPP was submitted on October 30, 2017 and approved on December 1, 2017. Revision 1 was approved on December 1, 2018.
- Final report due July 2019: The final report was submitted by the contractor on September 25, 2019 and submitted to the EPA as an appendix in the December 2019 Semiannual Report.

Site Visit and/or Audit Findings: A QA desk audit was performed from March 20 to April 3, 2019, and produced one positive finding and a comment, which was addressed by the contractor.

Project Summary: The project examined fish and blue crab (*Callinectes sapidus*) collected from Upper Galveston Bay in 2018 for the presence and concentrations of environmental toxicants that, if eaten, could negatively affect human health. The study also addressed public health implications of

consuming fish and blue crabs from Upper Galveston Bay and suggested actions to reduce potential adverse health outcomes. Results indicated that the combination of polychlorinated biphenyls (PCBs) and polychlorinated dibenzo-p-dioxins (PCDDs)/polychlorinated dibenzofurans (PCDFs) in gafftopsail catfish (*Bagre marinus*) and spotted seatrout (*Cynoscion nebulosus*) from Upper Galveston Bay exceed the Texas Department of State Health Services (DSHS) guidelines for the protection of human health. Concentrations of PCBs and PCDDs/PCDFs found in blue crab from Upper Galveston Bay no longer exceed DSHS guidelines for the protection of human health.

Recommendations:

- People should not consume gafftopsail catfish from Upper Galveston Bay.
- Women of childbearing age (women and girls under 50) including pregnant women, women who may become pregnant, and women who are nursing infants and children less than 12 years of age, or who weigh less than 75 pounds may consume up to two four-ounce meals per month of spotted seatrout from Upper Galveston Bay.
- Women past childbearing age (women 50 and older) and males 12 and older may consume up to two eight-ounce meals per month of spotted seatrout from Upper Galveston Bay.
- As resources become available, the DSHS should continue to monitor fish and crab from Galveston Bay to establish trends in contaminants of concern or to look for changes to contaminant concentrations that would require a change in consumption advice.

GBEP Project Manager: Lisa Marshall

23. CHARACTERIZATION OF THE INFLUENCE OF FRESHWATER INFLOW ON TRINITY RIVER DELTA INDICATORS

Funding: \$60,000 (Grant # CE-00655006)

Status: Project complete; all funds spent.

Date Deliverables to EPA: All deliverables were met by September 2020.

Outputs/Deliverables:

- Quarterly PRs until contract expiration: 10 quarterly PRs were submitted.
- Draft QAPP due within 60 days of contract execution: The draft QAPP was submitted on October 26, 2017.
- Final QAPP due within 45 days of draft: The final QAPP was submitted on January 8, 2018 and approved on January 29, 2018. Revision 1 was approved on January 29, 2019. Amendment 1 was approved on June 26, 2019.
- Final report due May 2020: The final report was submitted by the contractor on May 21, 2020 and submitted to the EPA as an appendix in the September 2020 Semiannual Report.

Site Visit and/or Audit Findings: A QA desk audit was performed on January 22, 2019 and produced one positive finding. A QA field audit was conducted on April 22, 2019, which resulted in one positive finding.

Project Summary: This project sought to conduct an on-the-ground inventory of Wild Celery and Atlantic Rangia, which are both bioindicator species of freshwater inflow, in the Trinity River Delta. This project also sought to conduct an analysis of the historical distribution of these species and to establish a network of salinity monitoring sites to describe the impacts of freshwater inflows on the salinity patterns of the Trinity River Delta. Wild Celery was not observed in the study area. Results indicate that there is a sustained reproducing population of Atlantic Rangia in the study area and that Atlantic Rangia collected during periods of elevated freshwater inflow are healthier than those collected during drought conditions.

GBEP Project Manager: Kristen McGovern

24. KNOW YOUR WATERSHED EDUCATORS' SUMMER INSTITUTE

Funding: \$38,341 (Grant # CE-00655006)

Status: Project complete; all funds spent.

Date Deliverables to EPA: All deliverables were met by September 2020.

Outputs/Deliverables:

- Quarterly PRs until contract expiration: Six quarterly PRs were submitted.
- Symposium and Summer Institute: The Education Symposium was held on June 20, 2019, and the Summer Institute took place on July 8-11, 2019 and July 15-18, 2019.
- Final report due July 2020: The final report was submitted by the contractor on July 15, 2020 and submitted to the EPA as an appendix in the September 2020 Semiannual Report.

Site Visit and/or Audit Findings: N/A

Project Summary: This project was designed to provide content and inquiry-based teaching to teachers and administrators, allowing them to incorporate environmental and science education into the curriculum resulting in an increase in the student's knowledge and understanding of their community and place within the watershed. The post evaluations indicated the one-day administrator symposium/seminar, and the two weeklong summer institute for teachers were a success. Administrators revealed a 100 percent change in attitude/view regarding integrating environmental education into the K-12 curriculum, left with more knowledge of what good environmental education includes, and would recommend the seminar to colleagues. The teachers indicated they felt more capable of teaching content related to watersheds, water quality, and other environmental issues. Both administrators and teachers requested additional symposia and summer institutes.

GBEPP Project Manager: Cynthia Clevenger

25. GALVESTON BAY INTERTIDAL OYSTER REEF MAPPING AND ANALYSIS

Funding: \$64,883 (Grant # CE-00655006)

Status: Project complete; \$0.29 lapsed.

Date Deliverables to EPA: All deliverables were met by February 2021.

Outputs/Deliverables:

- Quarterly PRs until contract expiration: 10 quarterly PRs were submitted.
- Draft QAPP due November 2018: The project required two separate QAPPs, one for GIS work and one for fieldwork. The draft GIS QAPP was submitted on November 30, 2018, and the draft fieldwork QAPP was submitted on January 16, 2019.
- Final QAPP due January 2019: The final GIS QAPP was submitted on April 1, 2019 and approved on May 15, 2019. Revision 1 of the GIS QAPP was approved on April 9, 2020. The final fieldwork QAPP was submitted on April 29, 2019 and approved on June 26, 2019. Revision 1 of the fieldwork QAPP was approved on June 15, 2020.
- Final shapefiles showing intertidal oyster reef habitat: The final shapefiles were submitted on October 31, 2020.
- Final white paper due January 2021: The final white paper was submitted on March 26, 2021.
- Final report due January 2021: The final report was submitted by the contractor on March 26, 2021 and submitted as an appendix in the March 2021 Semiannual Report.

Site Visit and/or Audit Findings: A QA field audit was performed on January 27, 2020 and produced one positive finding. A QA GIS desk audit was conducted on February 6, 2020, and produced two positive findings and two comments, which were addressed by the contractor. A QA fieldwork desk audit was conducted on September 18, 2020, and resulted in one positive finding and one comment, which was addressed by the contractor.

Project Summary: A total of 59,931 m² (14.8 acres) of intertidal reef was confirmed by ground-truthing in West Galveston Bay, with an additional 758,197 m² (187.35 acres) of presumed intertidal reef. Reefs that were ground-truthed generally fell into two categories: shell rakes, which were mainly piles of shell with little or no oysters or three-dimensional reef characteristics, and true

intertidal oyster reefs, with relatively high oyster abundance and three-dimensional reef characteristics. Intertidal reef habitat was mainly concentrated in three areas: North and South Deer Islands on the far northern extreme of West Bay, Bastrop Bay, and southern Christmas Bay into Drum Bay. The associated benthic macrofaunal community was sparse in terms of richness and diversity, indicating a lack of structural complexity on most of the reefs within this system. Avian utilization of this habitat type appeared to be mainly for self-maintenance, with limited foraging observed.

GBEP Project Manager: Kristen McGovern

26. HIGHLAND BAYOU WATERSHED PROTECTION PLAN

Funding: \$68,362 (Grant # CE-00655006)

Status: Project complete; \$62.16 lapsed. A unilateral agreement was signed to extend the project to March 31, 2021. The SELECT model was used to estimate bacteria loads, which were added to the draft watershed protection plan (WPP).

Date Deliverables to EPA: All deliverables were met by September 2021.

Outputs/Deliverables:

- Quarterly PRs until contract expiration: 14 quarterly PRs were submitted.
- Education and Outreach Plan due November 2018: The draft Education and Outreach Plan was submitted on October 30, 2018, and the Final Education and Outreach Plan was submitted and approved on November 29, 2018.
- Updated Highland Bayou WPP website due November 2018: The initial website update occurred by December 2018.
- Draft WPP due November 2020: The draft WPP was submitted on November 18, 2020.
- Final report due March 2021: The final WPP will count as the final report and was submitted to EPA for consistency review on February 22, 2021. The WPP was accepted by EPA on May 12, 2021 and was submitted as an appendix in the September 2021 Semiannual Report.

Site Visit and/or Audit Findings: N/A

Project Summary: Highland and Marchand bayous experienced periods of low dissolved oxygen (DO) and elevated bacteria levels, which can impact aquatic life and can be harmful to human health, respectively. All the state's assessments (Texas 303(d) List) since 2002 have listed multiple assessment units (AUs) within Highland Bayou (Segment 2424A) and Marchand Bayou (Segment 2424C) as impaired for these constituents. Texas AgriLife Extension Service coordinated a stakeholder driven draft WPP for Highland Bayou. The initial draft of the WPP only addressed the bacteria impairment. Guidance from EPA in 2018 indicated that the DO impairment and flow needed to be included for a WPP to meet all requirements for approval as a watershed-based plan. DO impairments, the elevated bacteria and flow were addressed as well as three new AUs impaired for bacteria added to the WPP - Highland Bayou Diversion Canal (AU 2424G_01), Moses Bayou (AU 2431A_01), and Unnamed Tributary of Moses Lake (AU 2431C_01). This project resulted in the completion of the final WPP revisions which included finalizing load reductions, obtaining stakeholder approval, and getting the WPP accepted by EPA on May 12, 2021.

GBEP Project Manager: Lisa Marshall