



TEXAS GENERAL LAND OFFICE GEORGE P. BUSH, COMMISSIONER

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PRESS RELEASE

Cmr. George P. Bush announces \$1.74 million in coastal protection projects

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AUSTIN — Today Land Commissioner George P. Bush announced the selection of 21 projects to be funded through the Texas Coastal Management Program (CMP) Cycle #23, awarding a total of approximately \$1.74 million in federal funds to improve the management of the state's coastal resources and ensure its long-term ecological and economic productivity. Texas CMP focuses on five primary issues of concern to coastal communities: coastal hazards, wetland protection, water quantity and quality, dune protection, and shoreline access. Funding is provided through the National Oceanic and Atmospheric Administration. Projects will commence in October 2018.

"Coastal resiliency is vital to Texas' economic vitality and the quality of life for those who visit and call it home," said Commissioner George P. Bush. "I am proud of the work the Texas General Land Office does in partnership with federal and local leaders to strengthen our state's coastline and preserve natural storm mitigation resources. These 21 projects will have a profoundly positive impact on our coastal communities."

All CMP Cycle #23 project summaries by region or county:

Coastwide

Texas Wetlands Status and Trends Online GIS Viewer

The University of Texas, Bureau of Economic Geology (UTBEG) has completed extensive studies on the distribution, abundance, and status of wetlands and aquatic habitats along the Texas coast, providing critical information on the preservation and protection of wetland functions and uses. Based on previous study findings, a series of GIS datasets and reports were produced for coastal scientists, managers, planners, and decision makers to use as guidance for mitigation and restoration projects. With Cycle #23 funding, UTBEG will develop a user-friendly, interactive, web-based display of GIS-based maps of historical and current Texas wetland types, boundaries, and distribution. CMP Funded: \$23,439.17 Match: \$15,643.77 Total Project: \$39,082.94

Texas High School Coastal Monitoring Program

The University of Texas at Austin, Bureau of Economic Geology (UTBEG) will engage students and teachers in the study of the natural beach environment. Middle and high school students, teachers, and scientists will work together to gain a better understanding of dune and beach dynamics. Students and teachers will learn how to measure the topography, recognize and map the vegetation line and shoreline, and observe weather and wave conditions. By participating in an actual research project, the students will obtain an enhanced science education and heightened awareness of coastal processes. The students' efforts will provide coastal communities with valuable data on shoreline change. CMP Funded: \$80,753.75 Match: \$54,303.78 Total Project: \$135,057.53

Texas Citizen Planner, Local Coastal Planning in the wake of Hurricane Harvey

The Texas AgriLife Extension Service (AgriLife) will develop a coastal planning program for stakeholders along the Texas coast. The program will include hands-on clinics and training classes with presentations from experts, providing accessible and validated information for planning in the coastal zone. Local officials and stakeholders will learn how to guide community outcomes through ordinances and the use of planning tools to avoid flood and surge zones, more efficiently build to code, and further protect human safety and coastal natural resource areas. CMP Funded: \$99,968.63 Match: \$67,676.00 Total Project: \$167,644.63

Recent Bayhead Delta Shoreline and Wetland Loss: Potential Factors and Future Projections

Bayhead deltas along the Texas coast have experienced significant degradation and erosional loss over the last few decades. In the 1980's and 1990's, the University of Texas, Bureau of Economic Geology undertook a major initiative to examine historical changes in bayhead deltas. Texas A&M University-Corpus Christi will build on these previous efforts, focusing on recent changes in four bayhead delta systems. Changes will be documented using aerial imagery and high-resolution elevational data products and analyzed to understand the varying roles of sediment supply, basin characteristics, and relative sea level changes. Project results will be presented to coastal resource planners and managers, decision makers, and the public via an iterative process and an easy-to-use public website for visualization. CMP Funded: \$99,178.00 Match: \$66,447.37 Total Project: \$165,625.37

Quantifying Microplastic (Particles and Fibers) Loading to the Texas's Coastal Bays and Estuaries

Plastic debris in rivers, streams, and coastal bays adversely impacts tourism, the economy, and the health of aquatic organisms. Texas A&M University-Corpus Christi will quantify the inputs of microplastics from nine river catchments discharging to Texas coastal bays and estuaries and develop education and outreach materials to inform

the public about the impacts of plastic debris on ecosystem health. CMP Funded: \$92,749.16 Match: \$61,985.00 Total Project: \$154,734.16

Microplastic pollution and its occurrence in the diet of juvenile fish and shrimp in Texas bays

The loading of microplastics to Texas coastal bays and estuaries and the resulting impact on fish nursery function has not been comprehensively investigated. Texas A&M University will assess the ingestion of microplastic in juvenile finfish and shellfish in Baffin Bay, Aransas Bay, San Antonio Bay, and Matagorda Bay. Texas A&M University will quantify microplastic pollution near nursery habitats and identify the type and amount of plastic ingested by juvenile fish and shrimp species of commercial interest or high importance. Texas A&M University will work with the Texas State Aquarium and the Coastal Bend Bays and Estuaries Program to inform and educate the public and stakeholders about emerging concerns with microplastics. CMP Funded: \$63,818.04 Match: \$42,546.00 Total Project: \$106,364.04

Texas Coastal Bend

Assessment and economic valuation of nitrogen mitigation in Texas Coastal Bend restored marsh

Texas A&M University-Corpus Christi (TAMU-CC) will monetize the ecosystem value of wetlands for restoration and recovery investment in the Texas Coastal Bend. TAMU-CC will identify the sources of reactive nitrogen species in different water sources and investigate denitrification, nitrification, and remineralization processes in surface sediments of marsh sites. Seasonal denitrification rates will be quantified in collected sediment cores. The economic value of nitrogen mitigation will be calculated using the replacement cost method and the value of the nitrogen removal ecosystem service established in scientific literature. CMP Funded: \$98,876.62 Match: \$65,924.00 Total Project: \$164,800.62 Aransas

Lamar Peninsula Whooping Crane Habitat Enhancement

The Coastal Bend Bays & Estuaries Program (CBBEP) will enhance protection of Whooping Crane habitat on the Lamar Peninsula in Aransas County. New bollards will be installed to protect 107 acres of Whooping Crane habitat. Individual plant treatments will be conducted on approximately 20 acres of shrub habitat to control the encroachment of mesquite. Debris will be removed to enhance the coastal marsh and tidal flat habitat. Signs will be installed to educate the public about Whooping Cranes. CMP Funded: \$43,074.00 Match: \$28,717.00 Total Project: \$71,791.00

Brazoria Hanson Riverside County Park - Columbia Bottom Land Educational Access Plan

Brazoria County will expand the infrastructure at Hanson Riverside County Park to improve recreational access and enhance public education and awareness of coastal natural resource areas. The County will design and construct a pavilion to educate

visitors about coastal issues and the technology available for the protection and improved management of coastal resources. The County will install a freshwater wetland garden and rain harvesting system, creating an outdoor living laboratory that demonstrates the usefulness of water harvesting. A covered observation deck will be constructed to overlook the wetland garden, allowing visitors to study and survey native wildlife and migratory birds. Interpretative signage will be installed describing the importance of coastal habitats. CMP Funded: \$131,702.00 Match: \$88,734.00 Total Project: \$220,436.00

Cameron Storm Surge Flood Maps Development for the Lower Laguna Madre Coastal Emergency Management

The University of Texas Rio Grande Valley (UTRGV) will develop a hurricane storm surge model for the South Texas coastal region. Meetings will be held with end users to discuss ideal model scenarios, including hypothetical storm events, storm drain channels, and local traffic capacity. UTRGV will produce a coastal watershed flood routing model and coastal storm surge flood maps to predict watershed inundation from excessive channel flows. UTRGV will analyze local emergency routes and provide recommendations for roadway operation strategies, public outreach, and capital roadway improvements. CMP Funded: \$59,901.34 Match: \$42,566.00 Total Project: \$102,467.34

Galveston Boater Waste Education Campaign: Growing local capacity to reduce vessel discharge in Galveston Bay

The Galveston Bay Foundation (GBF) will continue the Boater Waste Education Campaign (BWEC). GBF will expand the number and distribution of available pump-out facilities for recreational vessels, incorporate community-based social marketing strategies into outreach efforts, increase benefits of clean boating behavior among recreational boaters, increase boater waste reports and enforcement via the Galveston Bay Action Network, analyze and publicize current volunteer water quality data to support and encourage best boating practices, and collaborate with commercial boaters and government agencies to encourage support for a Galveston Bay No Discharge Zone designation. CMP Funded: \$72,271.44 Match: \$49,000.00 Total Project: \$121,271.44

Development of a Galveston Bay 3D Hydrodynamic and Sediment Transport Models to Support Oyster Reef

Texas A&M University at Galveston (TAMUG) will develop a 3D, intertidal sediment transport model that represents the physical characteristics of Galveston Bay (e.g., particle size distribution; sediment erosion, re-suspension, and deposition; and oyster larvae and spat size distribution at various growth stages). TAMUG will research published and non-published data on sediment distributions within the study area and collect and analyze field data. Project efforts will focus on the development of the model to simulate the transport of Hurricane Harvey flood pulse sediment and determine potential impacts to oyster beds for future restoration efforts. CMP Funded: \$103,712.12 Match: \$69,143.00 Total Project: \$172,855.12

Galveston Bay Foundation Oyster Shell Recycling Program

The Galveston Bay Foundation (GBF) will continue the Galveston Bay Oyster Shell Recycling Program, a program that reclaims spent oyster shell from local seafood restaurants and properly cures the shell in preparation for reuse in local oyster reef restoration projects. GBF will enhance the program through a new citizen science component and expansion of recycling efforts and hands-on gardening activities. CMP Funded: \$79,869.35 Match: \$53,587.79 Total Project: \$133,457.14

Harris Sylvian Rodriguez Park Habitat Restoration Project

In the absence of natural processes, such as fire and intermittent grazing, Chinese Tallow and other invasive species have inundated the Sylvan Rodriguez Park. With Cycle #23 funding, the Houston Parks and Recreation Department (HPARD) will restore 14 acres of coastal prairie habitat within the park. Chinese Tallow and invasive woody vegetation will be removed, and the area will be seeded with locally collected native grasses and forbs. During community planting events, HPARD will educate volunteers on the importance of the prairie ecosystem. Interpretive signage will be placed along the newly installed boardwalk. CMP Funded: \$99,869.00 Match: \$104,360.00 Total Project: \$204,229.00

Exploration Green Public Access Development and Ecosystem Restoration, Phase 3

The Galveston Bay Foundation (GBF) will continue developing Exploration Green, a 200-acre stormwater detention, natural conservation and recreation area in the Bay Area of Houston. CMP Cycle #23 funds will help restore approximately 1.76 acres of wetland habitat and 18.5 acres of upland habitat, construct approximately 4,000 feet of hike and bike trail for public use, and install an irrigation system to optimize growing conditions within the restoration area. CMP Funded: \$100,000.00 Match: \$100,000.00 Total Project: \$200,000.00

Green Infrastructure For Texas: Educating Coastal Stakeholders on the Role of Green Infrastructure

Texas A&M AgriLife Extension Service (AgriLife) will increase the Green Infrastructure For Texas (GIFT) outreach effort through stakeholder education. AgriLife will produce a web-hosted video to showcase green infrastructure projects and explain how green infrastructure improves water quality, reduces flood risks, and provides habitat. The GIFT website will be fully developed as a clearinghouse of information and resources. Factsheets will be created for distribution. Workshops and field days will be held to educate stakeholders and decision makers on the importance and benefits of green infrastructure. CMP Funded: \$76,978.00 Match: \$51,324.15 Total Project: \$128,302.15

Houston Botanic Garden Stormwater Wetlands

The Houston Botanic Garden (HBG) will partner with Texas A&M AgriLife Extension Service to create stormwater treatment wetlands and educate visitors on the importance of coastal wetlands. HBG will complete engineering design, identify and remove

invasive species, and create and plant the basins, constructing a total of five acres of stormwater treatment wetlands. Interpretive signage will be installed, explaining the functions and values of natural and constructed wetlands. CMP Funded: \$100,000.00 Match: \$94,560.00 Total Project: \$194,560.00

Initiating water quality sampling of stormwater treatment wetlands in Galveston Bay watersheds Texas A&M AgriLife Extension Service (AgriLife) will develop a Quality Assurance Project Plan water quality monitoring protocol and sample three stormwater wetland sites during qualifying rain events, including two sites at the Exploration Green Conservation and Recreation Area in Clear Lake and one site at MD Anderson Cancer Center's South Campus. Measured parameters include nitrate/nitrite, total phosphorous, total suspended solids, E. coli, dissolved oxygen, pH, conductivity, and total suspended solids. Samples will be analyzed in a National Environmental Laboratory Accreditation Program-certified lab. AgriLife will prepare the results for dissemination, conduct presentations, and distribute information via the Texas A&M University website. CMP Funded: \$64,298.00 Match: \$43,685.00 Total Project: \$107,983.00

Nueces Shell Bank: Oyster shell recycling, restoration resources, and reef resilience

Texas A&M University-Corpus Christi (TAMU-CC) will continue the oyster shell recycling program. TAMU-CC developed the program to reclaim and recycle shucked oyster shells from Coastal Bend restaurants, seafood wholesalers, and seafood festivals for use in reef restoration. At two community-based oyster restoration events, volunteers will fill mesh bags with reclaimed oyster shells to create reef building blocks. In the future, the shell bags will be used to build oyster reef at Goose Island State Park to protect and stabilize the eroding marsh for living shoreline restoration activities. TAMU-CC will conduct sampling and facilitate two field monitoring events to teach students about habitat restoration and its role in conserving coastal environments. CMP Funded: \$99,607.35 Match: \$70,277.00 Total Project: \$169,884.35

Dagger Island Restoration Project The Texas Parks and Wildlife Department will design and construct a living shoreline at Dagger Island in Nueces County to enhance shoreline stabilization and restore important habitat that are vital to the health of the bay ecosystem. The living shoreline will be created through the planting of approximately 2.4 acres of *Spartina alterniflora*. Monitoring will be conducted post-planting. CMP Funded: \$60,000.00 Match: \$40,000.00 Total Project: \$100,000.00

Modeling Freshwater inflows, Nutrient Dynamics and their Relationships to Algal Blooms in Nueces Bay

Texas A&M University-Kingsville will evaluate the effect of varying nutrient loads from the Nueces River Basin on the temporal and spatial nutrient concentration variation within Nueces Bay and assess the effect on harmful algal bloom occurrences. Reliable and site-specific decision support tools will be developed to balance the needs for freshwater inflows and reduce impacts of excess nutrient inputs. The project will provide an enhanced quantitative understanding of the controlling factors for hypoxia and harmful algal bloom occurrences and aid coastal resource managers in effective decision making. CMP Funded: \$89,935.32 Match: \$78,249.76 Total Project: \$168,185.08

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