

Dickinson Bayou Wetland Restoration Project
Texas City, Texas
CMP Contract 14-090-000-7958
Final Performance Report
September 30, 2016



Project partially funded by a Texas Coastal Management Program Grant approved by the Texas Land Commissioner pursuant to



Introduction

The Texas Parks and Wildlife Department's (Department) application for Federal financial assistance for the Dickinson Bayou Wetland Restoration Phase II construction project was awarded \$116,610 by the Texas Coastal Management Program (CMP), administered by the General Land Office (GLO) under Grant Cycle 18, on January 22, 2013. This award was conditionally approved for work to begin following approval by the National Oceanic and Atmospheric Administration (NOAA) as part of the state's application for Coastal Zone Management Act (CZMA) §306/§306A program implementation funding. Although NOAA approved this grant in October 2013, work on this project or expenditure of funds for this project could not begin until an executed copy of the subrecipient grant agreement (contract 14-090-000-7958) was finalized on February 25, 2014. The goals of this project were to restore and enhance 10 acres of intertidal marsh complex, and enhance and protect 17.7 acres of existing marsh complex.

Previous Activities

Prior to the construction phase of this project, TPWD contracted Ducks Unlimited (DU) under a Memorandum of Agreement Site Specific Agreement in January 2013 to develop design and engineering plans for the project, conduct bid solicitation of qualified bidders, and provide oversight of the construction contract. DU completed the first set of 70% design and engineering plans in May 2013 using non-federal funds from the Texas Commission for Environmental Quality (TCEQ) 582-11-13416 Component B contract (\$100,000). These funds were also utilized to obtain additional geotechnical data and settlement evaluation of the project site by Eustis Engineering with oversight by DU in June 2013. TCEQ contract funds expired on July 30, 2013, and were non-federal match for the United States Fish and Wildlife Service (USFWS) Coastal Wetland Conservation Grant Program grant funds (CWCGP, Contract TX-C-32-D1 awarded \$500,000) which expire on December 31, 2017.

Although DU completed the final 100% design plans and bid solicitation package before March 30, 2014, they could not initiate their formal bid solicitation for construction contract using non-profit organization procedures before formal signatures were completed for the CMP contract 14-090-000-7958; and also for the Project Cooperative Agreement (PCA) 14-260-000-8371 awarded by GLO for \$630,000 under the Coastal Erosion Planning and Response Act (CEPRA) on April 2, 2016.

DU's first bid solicitation for project construction on April 26, 2014 resulted in only one bid cost proposal being received on May 27, 2014 that could not be considered because it was not within the existing construction budget. After receiving input from project partners (TCEQ, USFWS, CMP, CEPRA, and GBF) TPWD requested DU to redesign the project to reduce costs for excavation of earthen containment berms by incorporating existing shorelines of the adjacent marsh. DU completed the second set of 100% design plans and bid solicitation package by September 2014 for final review by project partners. DU submitted the final bid specifications and construction plans to TPWD (Tammy Dunham, TPWD's Contracting Director) for posting on the Electronic State Business Daily at: <http://esbd.cpa.state.tx.us/> on October 16, 2014. Following this second bid advertisement, two bid proposals were received on November 19, 2014, but both bid proposals were not within the

existing construction budget. Although a best and final offer was requested and received before the bid expiration deadline, there were insufficient funds to award a construction contract to one of the two bidders by the January 31, 2015. Following discussions with project partners, TPWD released DU from their Site Specific Agreement and requested DU cancel the bids. TPWD paid DU's pre-construction work (\$32,338) from a portion of the original Coastal Conservation (CCA) non-federal funds (\$75,000).

In February 2015, CEPRA provided TPWD an option for GLO to take over the administration of this project and hire an engineering firm (HDR, Engineering, Inc.) to modify DU's plans for a less expensive construction project, and provide bid solicitation assistance and oversight of the contractor during construction. TPWD consulted with USFWS and CMP for guidance since TPWD's contract agreements with these two federal grant programs did not include using CEPRA as administrator for project construction. After receiving approval from both federal project partners, TPWD coordinated with GLO to amend the original PCA to transfer administration of the project to CEPRA. As part of this agreement CEPRA provided supplemental state funds (\$70,000). Additional funds from CMP provided supplemental federal funds (\$50,000) to increase the project's overall construction budget. A portion of CEPRA supplemental funds (\$68,410.80) were used as the non-federal match requirement for CMP's total grant funds (\$166,610). CCA's unspent funds (\$42,622.53) that were not used for DU's contract, were also used for non-federal match for CMP. In addition to budgetary changes, TPWD provided state discretionary funds (\$70,250), which are not match for any federal or state grant, towards the overall project's budget (\$1,479,522.53). The final overall project budget included HDR's engineering and design contract (\$196,856) and the actual construction budget (\$1,282,666.53).

First Contract Amendments

Following these events, TPWD was required to revise their grant agreement with USFWS to reflect changes in non-federal match for this grant and supplemental funds provided from multiple project partners added to the project's overall construction budget. TPWD's application for Federal financial assistance, Amendment No. 1, titled TX C-32-D-1 Dickinson Bayou Wetland Restoration, CFDA Program number 15.614 was approved to change State match, increasing the Federal participation rate. This award was made under the authority of the Coastal Wetlands Conservation Program Grant Program (CWCPG) based on USFWS's approval of TPWD's application, and was hereby incorporated by reference into this award (effective date May 7, 2015).

Also occurring during this same time period, TPWD submitted formal first amendments to GLO's CEPRA Cycle 8 PCA (14-260-000-8371 CEPRA 1572)) and CMP's 14-090-000-7958 contract agreement. Both documents were signed and executed on June 26, 2015. The revised CMP contract provided an extension of time for bid solicitation and award of construction contract by March 31, 2016. The CEPRA PCA amendment states that GLO with TPWD as a Qualified Project Partner (QPP) will administer and oversee construction of the project. The PCA also indicates GLO would utilize CEPRA program staff to contract with a professional service provider (PSP) to develop a set of engineered construction drawings, develop contract documents, technical

specifications, and bid documents for equipment and materials, mobilization, and construction of the marsh containment berms, and excavation of dredge materials for placement in the marsh containment units. Once the PCA amendment was executed GLO finalized a contract with HDR Engineering as the Project's PSP to redesign the project so that it would be possible to construct within a revised budget.

Second Contract Amendments

Following delays in the bid solicitation process and awarding the construction contract documented below, TPWD requested a second no cost extension of time for the CMP contract 14-090-000-7958 due to expire on March 31, 2016 until September 30, 2016. This amendment included revisions to the project description that incorporated design plan changes and planting schedule changes. CMP received approval from NOAA and authorized the second amendment for Grant Agreement No. 14-090-000-7958 (TPWD contract 447419) effective on February 22, 2016.

A second CEPRA PCA (14-260-000-8371 CEPRA 1572) amendment between TPWD and GLO was approved (effective date June 16, 2016) to provide a no cost extension of time until August 31, 2017 to complete additional work on the project site after existing construction contracts with HDR and Apollo are completed.

Pre-Construction Activities

Kickoff-Meeting July 8, 2015

On July 8, 2015 TPWD hosted a "kick-off" meeting at the Dickinson Marine Lab to discuss project goals and go over the schedule for completion of the project and the construction budget constraints (HDR Kick-Off Meeting Report was previously submitted during the July 10, 2015 monthly progress report). Representatives from USFWS (Woody Woodrow), CEPRA (Carla Kartman), Texas Commission for Environmental Quality's Galveston Bay Estuary Program (TCEQ-GBEP) (Lindsey Lippert and Michelle Krause), Galveston Bay Foundation (GBF) (Philip Smith), TPWD (Jan Culbertson, Winston Denton, and Cherie O'Brien) and HDR Engineering (Philip Blackmar and Dan Heilman) attended this meeting. HDR was informed during this meeting that the construction budget was approximately \$1,200,000. A field trip to the project site was hosted by TPWD after this meeting. HDR's engineers were able to walk portions of the proposed project area to gain a general understanding of the geographical layout of the relative soil conditions. Following this meeting, TPWD provided HDR all previous relevant information (USACE Permits, GLO surface lease, geotechnical reports, hydrographic and magnetometer surveys, CAD files for DU's former design plans, etc.). HDR also conducted a thorough project site evaluation and review of existing geotechnical reports conducted by Ducks Unlimited/Eustis Engineering to consider alternative designs that might provide a more cost effective project and still achieve the project goal of creating 10 acres of wetland complex habitat and enhancing 17.7 acres of wetland complex habitat.

Conference Call Meeting August 17, 2015

On August 17, 2015 HDR requested a conference call meeting with project partners to discuss potential changes to the existing project design and construction fill elevation levels based on funding constraints for the Dickinson Bayou Project. This meeting was attended by Dan Heilman and Philip Blackmar (HDR), Carla Kartman (CEPRA) and Jan Culbertson and Cherie Obrien (TPWD). During the meeting, HDR discussed the construction elevation fill/compaction curves provided in DU's Final Geotechnical Report. Based on these curves, filling the marsh containment areas to +2.0 feet (NAVD88 datum) would result in the marsh elevation at +1.8 feet a couple of months later, and +0.7 feet after five years of compaction. HDR had some concerns that the borrow material would continue to consolidate in many areas of the project area and eventually would settle to the lower limits of the existing marsh elevation (+0.3 feet) within about 10 years; and continue to settle below the existing marsh elevations over a 25 year period.

TPWD responded that we would be seeding all areas of the project area to promote early growth of plants while the material settles. TPWD was also optimistic that by vegetating the marsh containment areas and constructing armored containment berms to prevent any further sediment losses from erosion, the created marsh would help trap sediments in the marsh complex resulting in "elevational accretion" that would offset some of the anticipated consolidation rates. TPWD also indicated that another benefit of filling the project area to the +2.0-foot elevation would provide additional sediment enhancement for the existing fringe marsh at the +0.3 to +1.8-foot elevations, where the highest rates of erosion were causing excessive loss of sediments along the shoreline.

During the conference call meeting, HDR also discussed their concerns that the current construction budget may not have enough funds for filling the marsh containment areas to higher than the +2.0-foot elevation. They indicated there would be higher costs for pumping more cubic yardage to achieve a +2.5-foot elevation, and for constructing taller containment berms. In addition, HDR had concerns with the constructability of building higher containment berms using potentially soft sediments from the project area, as documented in the geotechnical evaluation. HDR also indicated that filling to higher elevations would cause greater sheet flow of material over the adjacent property owner's land. Based on all of these factors, HDR recommended only filling the marsh creation areas to the +2.0-foot elevation.

HDR also indicated that their current contract did not allow for surveying the project site to verify dredge depths that might have changed overtime, and also to survey shallow water areas adjacent to the existing marsh that TPWD and DU had not previously surveyed. Based on these concerns GLO amended HDR's contract to include additional funds to resurvey the project site.

Conference Call Meeting August 18, 2015

As a follow-up to questions raised by HDR during the August 17, 2015 meeting, TPWD contacted Carly Vaughn and Melissa Porter (CMP), Woody Woodrow and Susan McMillian (USFWS) and Carla Kartman (CEPRA) on August 18, 2015 to obtain additional input on HDR's proposed +2.0-foot fill elevation. After further discussions, Carly Vaughn and Susan McMillian responded they

were in agreement to proceed with the 70% design plan for the +2.0-foot fill elevation on August 20, 2015.

Design Plans (70%) Completion

On August 26, 2015 HDR Engineering completed the 70% design plan drawings and submitted them for review by GLO and TPWD. USFWS (Woody Woodrow) was also provided a copy of these plans.

Conference Call Meeting August 28, 2015

HDR held a second conference call meeting on August 28, 2015 to receive input from project partners on their 70% design plans and make recommendations. Carla Kartman (CEPRA), Carly Vaughn and Melissa Porter (CMP), Cherie OBrien, Collen Roco, and Jan Culbertson (TPWD) attended this conference call. A summary of items discussed during the conference call meeting and subsequent responses to questions raised during the conference call are documented below.

During this conference call, HDR provided a preliminary Opinion of Probable Construction Costs (OPCC) of \$1,285,000 to build the project, which was over the \$1,200,000 construction budget mentioned during the kick-off meeting in July 2015. HDR asked if the project's scope of work could be reduced to create less marsh in order to meet the current construction budget constraints. CMP indicated this would require additional coordination with NOAA if less acres of marsh were created and potentially could delay construction past the CMP grant expiration date.

In order to reduce construction costs, HDR proposed that CMP and CEPRA consider the two living shoreline structures around Marsh A and B creation areas (labelled Type 1 – rock armoring over earthen berm) plus the living shoreline structure (labelled Type 2 for only rock) as part of the marsh complex habitat required in the NOAA funding grant from CMP. CMP and CEPRA concurred with HDR's proposal and agreed to accept these living shoreline structures as part of the marsh complex created in the project.

Based on CMP's positive response, HDR also proposed if the approximately 2.2 acres of living shorelines could be substituted for approximately 2.2 acres of created marsh areas so the two marsh containment areas could be reduced in size. HDR said if the project could be pulled closer into shore where shallower water and firmer sediments were located, these types of changes would make the project easier to construct and less costly.

TPWD responded to HDR's proposal by stating that based on the previous Coastal Boundary Survey conducted for the GLO surface lease and TPWD's wetland survey of the existing marsh, we considered HDR's proposed marsh overlap area as part of the original 17.7 acres of marsh enhancement acreage in the work plans for CMP and CEPRA agreements.

HDR responded they had not considered the marsh overlap in their acreage calculations because the existing marsh limits were not well defined in the drawings they had reviewed from DU's CAD file. They indicated they had not converted these files into GIS shape files to calculate the marsh acreage overlap. They also indicated because the dredged material was going to flow over the

existing marsh at the +1.8-foot elevation before settling back to its original elevation they had not considered this area to be part of the marsh enhancement acreage.

CMP responded to HDR's proposal by indicating that they would prefer to wait until TPWD provided verification of how much acreage was included in the marsh overlap area before they discussed any further changes in created marsh acreage with NOAA.

As a follow-up to this cost reduction proposal discussion, TPWD used ARCMAP and GIS shape files of DU's previous survey to define the marsh edge at +0.3-foot contour. Then using an overlay of HDR's CAD converted GIS shape files for the created marsh, TPWD calculated the marsh overlap to be 2.2 acres. Based on these results, TPWD notified HDR and project partners by email that the living shoreline structures could not be moved any closer to shore without reducing the 10 acres of marsh created by the project and 17.7 acres of marsh enhanced and protected. CMP concurred with this recommendation.

During the August 28, 2015 conference call, HDR also discussed another construction cost issue. Their recent survey of the three borrow areas showed the average existing depths were close to the authorized USACE permitted dredge depths (-6.5 feet at NAVD88 datum) and did not allow for more than the following average dredge depths:

- Borrow Area 1 -0.74 feet
- Borrow Area 2 -0.64 feet
- Borrow Area 3 -0.13 feet

HDR indicated based on their professional experience, it would be difficult for a contractor to dredge where there is not more than 3 to 4 feet of material in the dredge template. According to the plan drawings, the average dredge depths for most of the borrow areas only allows dredge cuts that are less than 3 feet, which might make potential contractors cautious and add costs to their proposal, or cause them to avoid bidding.

HDR recommended TPWD amend the USACE permit to allow dredging up to -9 feet (NAVD88 datum (-10.2 feet MHW)) if possible to reduce the over-all construction costs. After some considerations to HDR's request and potential construction cost reductions, TPWD, agreed to apply for a USACE permit amendment using the new plan drawings and the proposed -9-foot (NAVD88 datum) dredged depth.

Additional discussions concerning the plan drawings and information needed to complete the 100% design plans and bid specifications are summarized here:

- TPWD made recommendations for HDR to correct labeling mistakes on the plan drawings.
 - o HDR responded they would provide corrected drawings for TPWD's permit application.
- HDR recommended TPWD communicate with the current property owner, Milagro Exploration to provide a contact for the bidders to set up their own arrangements for a work space on the adjacent land owner's property.

- o TPWD consulted our attorney and was advised not to pursue use of Milagro's property as a potential work space for the bidders in the construction contract.
- HDR recommended TPWD provide a contact from Galveston County Parks Department for their plan drawings so the bidders could arrange to use the HWY 146 bridge boat ramp parking lot as a potential a work space.
 - o TPWD contacted Galveston County Parks Department to obtain permission for the bidders to set up a work space at the HWY 146 Bridge parking lot.
 - o Ms. Julie Diaz, Galveston County's Park Department Director provided her contact information for the plan drawings so she could work directly with any bidder that planned on using this area. She indicated any contractor using the parking lot would need to comply with some basic maintenance of the lot once they were finished construction.
 - o The construction contractor selected for this project did not pursue this option and the County Park land and boat ramp were not impacted during construction phase of the project.
- HDR also recommended TPWD contact Milagro Exploration to get permission for the dredged fill material to flow over their property at the +2.0-foot elevation since the existing marsh along their shoreline would be part of the marsh containment area.
 - o TPWD contacted Milagro in September and provided a copy of HDR's revised 70% design plans for their concurrence.
 - o Milagro responded by email that they were in support of the revised plan design plans and were not concerned with any additional sediment flowing onto their property because it would only provide enhancement to the existing marsh.
- TPWD asked HDR why there was just one base bid and no alternate or additive bids.
 - o HDR responded that because market prices for the different types of work vary depending on many variables, the contractor's proposals might come in either below or above the engineer's OPCC (HDR generally aims to be in the middle of the proposal range).
 - o HDR said that to help ensure that a project can be awarded for construction, they generally recommend including a base bid with alternate/additive bid structure.
 - o HDR said removing the Type 2 living shoreline structure as an alternate/additive bid would only save the project \$10,000 and was not a significant cost savings.
 - o HDR also said they could look into potential alternate/additive bid scenarios and get back to TPWD on this issue.
 - o As a follow-up to this discussion on alternate/additive bids (Alt/Add) HDR emailed TPWD a proposal to break the construction into one base bid and three Alt/Add bids:
 - a. Base bid construct all of Marsh B the largest parcel including the Type 1 living shoreline protection.
 - b. Alt/Add construct Marsh A including the Type 1 living shoreline protection.
 - c. Alt/Add construct Type 1 living shoreline around Marsh A.
 - d. Alt/Add construct Type 2 living shoreline.
 - o TPWD concurred with HDR's revised Alt/Add strategy.

- o CEPRA and CMP did not concur that the project should be separated into different acreages that might not be constructed if funds were not available.
- o CEPRA and CMP requested the bid strategy utilize one base bid and not break the project into different Alt/Add bids.
- o However, prior to the bid solicitation, CEPRA and CMP agreed to allow the Type 2 living shoreline to be considered as an Alt/Add bid to the base bid for constructing all of Marsh A and B.
- o TPWD requested HDR include the creation of two 20-linear-foot tidal exchanges in each marsh containment area as an Alt/Add bid to the base bid.
- o HDR agreed to make these changes.
- o CEPRA/CMP agreed to include these additional tidal exchange features in an Alt/Add bid.

At the end of the August 28, 2016 conference call, HDR indicated they would move forward with the 100% Design Plans once they got confirmation from project partners that the fill elevation could be set at +2.0-foot elevation in addition to answers to their inquiries so they could make these changes prior to the 100% Review submittal date, scheduled for September 20, 2015.

Follow-up to Budget Discussion

As a follow-up to the conference call, CEPRA reviewed the total project budget (\$1,479,522.53) (as per CEPRA Project 1572, Amendment 1 for PCA 14-260-000-8371 also referenced as TPWD contract 472512). They informed TPWD and HDR by email that based on HDR's contract agreement and amendments for additional survey (\$196,856), the remaining funds for project construction was actually \$1,282,666.53 and the previous construction budget of \$1,200,000 discussed at the kick-off meeting was not accurate.

HDR also reviewed their OPCC estimate again, and found they had overestimated their construction costs presented during the meeting. HDR indicated they generally round up when reporting quantities to keep their estimates conservative. In the case of Dickinson Bayou Wetland Restoration Project, the quantity of material for the earthen berm construction was rounded up from 11,000 cubic yards to 12,000 cubic yards. By rounding to the nearest hundred cubic yards instead of thousand cubic yards, the total construction cost would be reduced by \$5,000 (i.e., from \$1,285,000 to \$1,280,000). HDR indicated they would make corrections to the OPCC for the 100% Plan deliverable. CEPRA notified HDR that as the OPCC for the 70% design plans to create 10 acres of marsh complex were within the actual construction budget (\$1,282,666.53) and that layout changes would not be required.

Design Plans (100%) Completion

HDR completed the 100% Design Plans with the marsh fill set at +2.0 foot elevation (NAVD88); and submitted the bid specifications on September 23, 2015 for TPWD's and GLO's final review. TPWD requested HDR submit these plans to CMP, USFWS and GBF for their input. The 100% plan drawings and bid solicitation package were provided to CMP (Carly Vaughn) on September 24, 2015 by HDR's Philip Blackmar.

TPWD submitted comments on the 100% plans on September 28, 2015. At that time, HDR reported back that they would not be able to meet their deadline to have all revisions completed and submitted to CEPRA for solicitation on the state contract web site by October 5, 2015 due to some internal administrative issues within GLO. According to CEPRA (Carla Kartman) a review from Construction Services is required prior to the GLO Legal Department providing the Request for Proposals (RFP) and Pre-Construction Conference Agenda (PCC) to be posted on the state web site. Unfortunately there was a delay in GLO Construction Services reviewing these documents due to staff reductions. Based on these delays HDR was unable to submit the Final Procurement Package until they received the RFP and PCC from GLO Construction Services. HDR indicated that upon receipt of the RFP and PCC, they would immediately begin finalizing the signed/sealed Final Procurement Package.

USACE Permit Amended

In anticipation of needing a revised USACE permit before the bid solicitation process was completed, TPWD submitted revised permit drawings to the USACE for review and authorization on October 2, 2015. The revised permit (SWG-2013-00148) was authorized on November 5, 2015 following a five-day Preconstruction Notification to EPA, NMFS, USFWS, and GLO. Revisions to the existing permit (previously provided to CMP) include increasing dredge depth to -9.0 feet (NAVD88). The total length of the two earthen berms for the two marsh creation areas were revised to 3,000 linear-feet, with 2,010 linear-feet of rock/riprap slope protection on the outer containment walls (Type 1 Living Shoreline). An additional 100 linear-foot rock/riprap Type 2 Living Shoreline was also authorized to protect the existing marsh along the south shoreline of the project area. This permit was included in the HDR's Project Manual and the Final Procurement Package provided directly to CMP by HDR.

General Land Office Surface Lease Amended

TPWD also submitted a revised surface lease application to GLO Assets Division on October 28, 2015 that was consistent with plan revisions authorized under the Nationwide Permit 27 USACE permit. GLO authorized the surface lease amendment on December 15, 2015 (previously submitted to CMP).

CMP Work Plan Task 1: (Bid Solicitation and Contractor Selection)

Following approval by GLO Construction Services, HDR submitted the Final Procurement Package including Project Manual to GLO (CEPRA and CMP) and TPWD on Friday, October 30, 2015. Although GLO Construction Services submitted a "schedule for events" for the Bid Manual indicating solicitations for proposals would be issued on October 30, 2015, there were three other projects posted that same day. Construction Services stated that due to GLO staffing issues, they would not be able to post the Dickinson Project on the state purchasing contract web site until they had adequate staffing for the contract negotiation period. Following this delay, GLO Construction Services (Joelynn Barclay) submitted a revised "schedule of events" to CEPRA and TPWD on Monday, December 7, 2015 that the bid solicitation would be posted on the state purchasing contract web site on December 10, 2015 at the following link:
RFP X0008150-CD - Dickinson Bayou Wetland Restoration, Galveston County, TX

http://esbd.cpa.state.tx.us/bid_show.cfm?bidid=121646

Prior to the RFP posting, TPWD contacted Milagro Exploration to advise them of the schedule of events for the RFP posting on December 10, 2015 and the Pre-proposal meeting to be held on January 12, 2016. During this exchange TPWD learned that Milagro Exploration was filing for bankruptcy and had sold their property and mineral assets to White Oak Energy. They indicated the new company was aware of Milagro's agreements with TPWD and one of their former employees Ms. Lacy Hudson would be transferred to White Oak Energy during the transition as our contact as the project moved forward towards construction. TPWD informed the project partners, and contacted the new owners of the adjacent property to this restoration project. White Oak Energy provided a letter of support for the project on December 15, 2015 (previously submitted to CMP).

As per RFP posting, the pre-proposal meeting was held on January 12, at 1:30 pm at TPWD's Dickinson Marine Lab. This meeting was well attended. A summary of the meeting and attendee list was included in the first amendment to the pre-bid package posted on the state ESD web site and has previously been submitted to CMP. A second amendment was posted on the ESD web site following that pre-proposal meeting which documented any questions and responses between the bidders and the engineer (also previously submitted to CMP).

Several Bids were received by GLO on January 28, 2016. These bid packages were reviewed by GLO and TPWD during the week of February 1-5, and the final bid proposal review meeting was attended by GLO Construction Services and CEPRA representatives (Joelynn Barclay and Carla Kartman), HDR (Philip Blackmar and Dan Heilman) and TPWD (Jan Culbertson) on February 8, 2016. Based on the scoring, one contractor (Apollo Environmental Strategies, Inc.) was selected that had the best value proposal and also the lowest bid. GLO Construction Services, HDR, and TPWD completed the bid matrix and evaluation process on February 8, 2016. Apollo Environmental Strategies, Inc. was awarded the construction contract, and an executed contract was signed on March 15, 2016 (GLO 900:16-270-000-9783).

List the deliverable(s)/milestone(s) for the task and provide the date completed/submitted to the GLO.

Deliverable Name	Date Due	Date submitted
Project Manual	December 31, 2015	Completed on October 30, 2015. Submitted directly to GLO on December 10, 2015 by HDR Engineering
Bid Advertisement	December 31, 2015.	Submitted to ESBD state contract web site on December 10, 2015 and previously attached to monthly reports submitted by TPWD.
Bid Matrix	March 31, 2016	Bid Matrix and Evaluation of all Bids was completed on February 8, 2016. Documents were signed and approved by GLO Construction Services on March 15, 2016. Document was submitted to CMP from CEPRA directly.
Copy of executed construction contract	March 31, 2016	Executed construction contract 16-270-000-9783 was completed on March 21, 2016. Document was submitted to CMP from CEPRA directly.

Task 2. (Construction)

All project partners were informed of the bid results on March 21, 2016 during the pre-construction and notice to proceed meeting held at the Dickinson Marine Lab. The construction of both marsh creation areas, the living shorelines, and tidal exchanges were covered under the current construction contract with Apollo Environmental (\$876,344). A preliminary schedule of construction dates and events were provided by Apollo Environmental at the meeting. TPWD requested updated project partner signage from CMP during this meeting.

TPWD took pre-construction photos of the two marsh creation areas using a GO Pro camera on April 7, 2016 and posted those two pictures and project partner logos on Friday April 8, 2016 at <https://www.facebook.com/TPWDCoastal/>. This media coverage was approved by GLO prior to publication. TPWD (Jan Culbertson) visited the project site at least once a week with HDR representatives. TPWD has included pre-construction (Photographs 1 – 4), during construction (Photographs 5-8), and post-construction photographs of the living shoreline II (Photograph 9) and Marsh A and B at the end of this report.

Apollo conducted land and magnetometer surveying after the pre-construction meeting. Survey elevation markers for Marsh A berm construction were reviewed by HDR during a site visit on April 14, 2016. TPWD also installed updated project partner signs at the project site with HDR's assistance on April 14, 2016.

HDR Engineers and Service Technicians provided bi-weekly field visits during construction, and bi-monthly progress meetings with CEPRA, Apollo and TPWD at TPWD Dickinson Headquarters. HDR's weekly construction progress reports and photos were provided directly to CEPRA and CMP representatives. Copies of all HDR's weekly progress reports were also provided to Tammy Brooks, TPWD's federal liaison.

A summary of construction events is included here.

- HDR requested a Conference Call meeting with GLO and TPWD on April 20, 2016 to discuss contractor's magnetometer survey.
 - o Magnetometer survey showed metallic response in shallow water areas of Marsh Cell A that were not covered in previous magnetometer survey performed by TPWD in 2009, most likely because water depths were too shallow for the vessel to cover certain areas. These areas were exposed during low tides and no metals were detected.
 - o TPWD responded they had performed a thorough pipeline investigation in early phases of the project before HDR and GLO were involved. This investigation included a magnetometer survey and thorough research with the Texas Railroad Commission. Based on the results of this investigation TPWD indicated they were confident there are no active lines in the project area and there would not be concerns by the resource agencies for placing material over any inactive pipelines.
 - o Apollo completed their own pipeline survey and provided the results to HDR.
 - o Apollo submitted a plan to avoid the pipeline areas when excavating clay material for the berm, which was subsequently approved by HDR.

- o Based on this new information, the project continued to move forward with the current design plans.
- Apollo initiated construction on Marsh A's earthen berm on Thursday (4/21/2016).
- HDR and TPWD conducted a site visit on 4/21/2016 to review mobilization of equipment.
- First Project Progress Meeting was held by conference call on April 29, 2016.
- HDR and TPWD conducted a site visit on the May 3, 2016.
 - o Contractor used three barges, and two excavators to construct Marsh A berm in order to maintain construction schedule despite weather delays. One excavator removes clay from the center of site, relocates it to the center barge, where second excavator on another barge is moving it to the staked berm alignment area. A gap in the containment berm is being left open to allow the barges to exit prior to dredge material placement begins.
 - o The contractor initially stacked material along the containment berm alignment (using Gap at A9 to A10 for barge access) and allowed material to consolidate. Once the berm was stabilized enough the contractor shaped this material to specified lines and grades.
 - o Apollo and HDR also discussed location and construction of decant structures during site visit.
- HDR submitted a map and picture of decant structure to GLO and TPWD following the May 3, 2016 site visit.
- TPWD visited the project site by state boat on May 8, 2017. Berms were being graded to design specifications.
- HDR and TPWD conducted site visit on May 10, 2016. Containment Berm for Marsh A was completed.
- Apollo submitted plans for installation of water control structures and dredging to HDR for approval. (HDR Submittal 8 to GLO).
- TPWD attended a conference call on May 16, 2016 with GLO's Carla Kartman and Joelynn Barclay, and HDR's Philip Blackmar and Dan Heilman to discuss the construction contract requirements regarding the water control structure and determined it could remain in place rather than be removed by Apollo after they completed construction.
- Progress meeting and site visit was conducted by HDR, GLO, and TPWD on May 17, 2016. One water control structure was installed in Marsh A, and construction of Marsh B containment berm had started. Clay material excavated from within each marsh containment area appeared to be stacking well, drying out, and settling.
- Progress meeting and site visit was conducted by HDR, GLO, and TPWD on May 31, 2016.
 - o Weather delays resulted in the dredge pipes not being welded together until May 29 and dredging started on May 30 during the holiday weekend.
 - o Construction of Marsh B containment berm was underway during this site visit.
 - o Issues with safety and warning signs for the dredge and pipeline that occurred during the Memorial Day holiday were discussed during the progress meeting and the site visit.
 - o After the meeting, TPWD contacted local law enforcement, a local boating organization, and provided social media information about avoidance of the construction area on TPWD facebook page.

- o Apollo provided an additional danger marker to warn boaters on site between island and shoreline.
 - o Apollo indicated that although initial dredge material pumped from the north section of Borrow Area 1 was more liquid than solid, as the dredge moved further south along the channel, the material was thicker and appeared to be settling into shelf areas within Marsh A containment area.
- TPWD and HDR conducted weekly site visits on June 14, 20, 24 and 28, and July 5, 2016.
- Progress meetings were also conducted along with June 14 and 28 site visits. HDR's progress meeting summaries and site visit reports were submitted directly to GLO and TPWD.
- Dredging was completed for Marsh A on June 21, and two week settlement period was completed on July 5, 2016.
- Apollo, HDR, and TPWD reviewed Naismith's elevation survey of the stakes set in Marsh A on July 5, 2016.
- Apollo submitted a geoscience testing of the concrete/rocks gradation to HDR which was approved without exception (Submittal 10R1 - No Exceptions on 07-08-2016)
- Apollo submitted the completed survey of Marsh A on July 7th for review and approval. After additional information was re-submitted on July 11, 2016, HDR approved the survey as settlement requirements were met in Marsh A (Submittal 15, No Exceptions).
- Apollo waited to grade the berms down to final elevations, or place rock on outer slopes until the Final Survey of Marsh A was approved by HDR.
- Apollo completed dredge material placement in Marsh B on July 8, 2016. The two week settlement period was completed on July 22, 2016.
- Apollo, HDR, and TPWD observed and took readings when Naismith performed their final survey of the elevation stakes set in Marsh B on July 22, 2016. HDR approved Apollo's final survey for settlement requirements in Marsh B on July 29, 2016.
- Apollo completed grading all earthen berms down to final elevations; and completed placing rock on outer slopes in Marsh A and B by the July 28, 2016 Progress meeting and site visit.
 - o Construction of tidal exchange channels were underway at Marsh A and B.
 - o Construction of Living Shoreline Type 2 was underway.
- Apollo was requested to submit additional geoscience testing reports of the concrete/rocks gradation to HDR which were approved without exception (provided to GLO Construction Services).
- Apollo gave notification to HDR they had "Substantial Completion at Dickinson Bayou Project" on August 9th, 2016. HDR sent an email to GLO and TPWD to notify them on August 10, 2016.
- Final inspection of the project site was conducted by HDR, GLO, Apollo, TPWD and USFWS on August 15, 2016. All equipment had been removed from site, and the project area was clean of debris.
- Final Aerial Survey Photograph was conducted by Naismith and submitted by Apollo for approval to HDR on August 29, 2016.
- Final surveys of Marsh A and B, Borrow Areas and Living shore Type II structure were approved by HDR on August 22, 2016 (submitted directly to GLO)

- Final As-Built CAD files and Georectified Aerial Survey photos (Figure 1) were submitted by HDR to TPWD on September 12, 2016 (submitted directly to GLO).
- Final extent of both Type I and II Living Shorelines into Dickinson Bayou were calculated by HDR and submitted to TPWD in form of shape files derived from survey points taken by Naismith on September 15, 2016.
- TPWD verified 10 acres of marsh creation and living shoreline acreage was completed from final survey information submitted by HDR, in addition to enhancement and protection of 18.7 acres of existing marsh for this report (Figure 2).
- During the August 15, 2016 final site inspection USFWS verified many migratory bird species not normally found in this bayou were feeding in the wet mudflats of the project site: Stilt Sandpiper, Black-bellied Plover, Least Sandpiper, Semipalmated Sandpiper, Dunlin, Lesser Yellowlegs, Mottled Duck (more than 30 pairs), Western Willet.

Task 3. (Planting Activities)

TPWD staff harvested 600 plugs (average of 3 stems per plug) in mud bound roots from NRG Ecocenter on July 27, 2016. TPWD staff planted the majority of these plants in the unconsolidated wet areas of Marsh A with voluntary airboat assistance from Apollo Environmental and by using a kayak as a platform to get further away from the edge of the marsh. The remaining plugs were separated into individual stems and planted along the outer side slopes of Marsh A to stabilize the unvegetated intersection between rock and earthen berm.

TPWD, NRG and GBF held a volunteer culling event (harvesting) at the NRG Ecocenter with eight Houston Sail and Power Squadron skippers and four ships of sea scouts (22) on August 6, 2016. TPWD media services (Tom Harvey) interviewed GBF Education Director (Rani Henderson) and several Power Squadron skippers who participated in the event. Pictures were taken by TPWD, previously submitted to CMP with our August 10, 2016 progress report and a few are documented here in this report (Photograph 10-14). The flyer, previously advertised and posted at a major Sea Scout conference in Houston, Texas (advertisement) was submitted with our July 10, 2016 progress report).

These enthusiastic sea scouts pulled approximately 3,300 plugs (3 stems per plug) of plants within 45 minutes following a wetland education seminar and instructions on how to harvest the plants for optimum survival and relocation to the project area, in addition to instructions on safety procedures entering the ponds and working in the ponds. The plants harvested during this youth oriented event were specifically removed with the mud still attached to the roots of each plug. The purpose of this type of harvest was to preserve the organic content of the soils, and also to maintain the additional weight at the base of the plants so they would stand up-right in wetter than normal conditions for planting in unsettled materials in Marsh A and B. The plants harvested during this event were donated by NRG for the Dickinson Wetland Restoration Project and are non-federal in-kind match for CWCGP funds. During this event the sea scouts were taught the value of wetland functions and economic values of the wetlands created specifically for this restoration project site equal to over \$2.1 million dollars per year for the 27.7 acres created and enhanced. GBF provided T-shirts for this event. Wetland harvest and classroom exercises were

provided by TPWD (Jan Culbertson) and GBF (Rani Hederon). Guidance for becoming a plant team leader for future planting event scheduled for April 2017 was also encouraged. TPWD also provided Junior Coastal Ecologist Certificates for all sea scouts participating in this educational event.

TPWD Interactive Services posted a news release on August 12, 2016 of the volunteer event titled "The Sea Scouts Help Move Dickinson Bayou Wetland Restoration Project to Next Phase" at the following link: <http://tpwd.texas.gov/newsmedia/releases/?req=20160812b>

Images of the volunteers for this event were also posted at TPWD web site:
http://tpwd.texas.gov/newsmedia/news_images/?q=dickinson_bayou_marsh_restoration

The Baytown Sun article by Mark Fleming ran on August 15, 2016 at this web site:
http://baytownsun.com/lifestyle/article_0e743f76-622d-11e6-8bb9-b7c36459088d.html

Following this youth oriented volunteer harvest event, TPWD was assisted by project partners (USDA, NMFS, NRG, GLO and Apollo Environmental Strategies) in planting over 3,300 plugs (3 stems per plug) at the project site on August 8, 2016 using unconventional methods including using a kayak as a planting platform along the interior edge of the Marsh A (Photograph 15), using an airboat to plant the central areas of both Marsh A and B (Photograph 16), and manually pushing plugs into the wet soils along the edges of interior and exterior side slopes of the earthen berms in Marsh A and B.

TPWD staff pulled an additional 600 individual stems and 300 plugs with mud bound roots from NRG Ecocenter on August 11, 2016. These plants were manually planted at a pre-arranged CCA project partner sponsored planting event with TPWD staff, NMFS and USDA at the project site on August 12, 2016. Pictures of the CCA planting event were submitted with the August 10, 2016 progress report. Following this planting event, CCA produced a social media youtube video which was posted on their web site at the following link: <https://youtu.be/peD5pAj-Mis>. In this video CCA indicated their funds were non-federal match for the CMP grant funds for this project. CCA also published an article on their partnership with TPWD and CMP on this project in the October Texas Saltwater Fishing Magazine. The article has been forwarded to CMP and CEPRA by email.

Post-construction planting pictures of Marsh A and B are shown in Photographs 17-20. Project signage and danger signs posted at the end of construction are shown in Photographs 21 and 22.

Task 4: (Project Monitoring and Reporting)

Project monitoring of survival and success of each planting method will be conducted 60 days after the initial planting effort on October 12, 2016. TPWD will provide future monitoring reports to CEPRA and CMP after the CMP contract ends.

TPWD will be collecting seed from the existing marsh in the project area in November 2016. The seed will be separated from the stems and germinated in refrigerator at NRG Ecocenter. The sprouts from these seeds will be dispersed into the wet areas of Marsh A and B in March 2017.

Future planting opportunities will be provided to the public on Earth Day April 24, 2017 at a GBF sponsored Marsh Mania Event when sediments are more consolidated. During this event volunteers can enjoy conservation and education activities at this valuable watershed restoration project site.

Budget

The first reimbursement request was received today September 30, 2016 from GLO. Through prior agreement CEPRA will be directly submitting reimbursement requests to CMP (\$166,610) with appropriate invoices from Apollo for partial construction of the project, and with records of TPWD reimbursement from CCA match (\$42,662.53) and GLO CEPRA match (\$68,410.80) for a total \$111,073.33 expended of non-federal match funds for CMP, as shown in attached CEPRA Reimbursement Request #1.

Any remaining funds after construction invoices are processed are proposed to be used for hiring Student Conservation Service workers to finish planting Marsh A and B in the Spring of 2017. Also a portion of the remaining funds will also be used to hire a contractor to remove the three water control structures to serve as permanent tidal channels for fish access to the project area.

Please provide a current budget breakdown. (Double Click on budget tables to activate Excel.)

	Current Federal/ CMP Budget	Billed to Date	Obligated* CMP Budget	Remaining CMP Budget
Personnel			\$ -	\$ -
Fringe			\$ -	\$ -
Travel			\$ -	\$ -
Supplies			\$ -	\$ -
Equipment	\$ -	\$ -	\$ -	\$ -
Contractual	\$ 166,610.00	\$ 166,610.00		\$ -
Other			\$ -	\$ -
Subtotal	\$ 166,610.00	\$ 166,610.00	\$ -	\$ -
Indirect Costs		\$ -	\$ -	\$ -
Totals	\$ 166,610.00	\$ 166,610.00	\$ -	\$ -

	Current Local Budget	Billed to Date	Obligated* Local Budget	Remaining Local Budget
Personnel		\$ -	\$ -	\$ -
Fringe		\$ -	\$ -	\$ -
Travel		\$ -	\$ -	\$ -
Supplies		\$ -	\$ -	\$ -
Equipment	\$ -	\$ -	\$ -	\$ -
Contractual	\$ 111,073.33	\$ 111,073.33		\$ -
Other		\$ -	\$ -	\$ -
Subtotal	\$ 111,073.33	\$ 111,073.33	\$ -	\$ -
Indirect Costs		\$ -	\$ -	\$ -
Totals	\$ 111,073.33	\$ 111,073.33	\$ -	\$ -

	Current 3rd Party Budget	Billed to Date	Obligated* 3rd Party Budget	Remaining 3rd Party Budget
Personnel	\$ -	\$ -	\$ -	\$ -
Fringe	\$ -	\$ -	\$ -	\$ -
Travel	\$ -	\$ -	\$ -	\$ -
Supplies	\$ -	\$ -	\$ -	\$ -
Equipment	\$ -	\$ -	\$ -	\$ -
Contractual	\$ -	\$ -	\$ -	\$ -
Other	\$ -	\$ -	\$ -	\$ -
Subtotal	\$ -	\$ -	\$ -	\$ -
Indirect Costs	\$ -	\$ -	\$ -	\$ -

*Obligated includes - funds that have been incurred by the recipient but have not been paid by the recipient, such as executed contract agreements or acquired supplies/materials/equipment.

TEXAS GENERAL LAND OFFICE CEPRA #1572 Dickinson Bayou Wetland Restoration
TPWD Reimbursement Request #1 Date 9/30/2016

HDR INVOICES		Match	GLO	TPWD REIMBURSABLE TO DATE			
Invoice#	Total Invoice	CEPRA	CMP	USFWS	CCA	TPWD STATE	Total REIMBURSEMENT
447865-H	\$3,512.25	\$1,872.61		\$1,337.58		\$302.06	\$1,639.64
450305-H	\$1,716.26	\$915.05		\$653.61		\$147.60	\$801.21
454176-H	\$11,378.72	\$6,066.74		\$4,333.39		\$978.59	\$5,311.98
457500 h	\$28,570.89	\$15,233.02		\$10,880.73		\$2,457.14	\$13,337.87
460821-H	\$35,384.29	\$18,865.69		\$13,475.49		\$3,043.11	\$16,518.60
464012-H	\$13,788.44	\$7,351.52		\$5,251.09		\$1,185.83	\$6,436.92
468191-H	\$1,718.18	\$916.07		\$654.34		\$147.77	\$802.11
41101-H	\$1,978.00	\$1,054.60		\$753.29		\$170.11	\$923.40
474739- H	\$5,440.06	\$2,900.45		\$2,071.75		\$467.86	\$2,539.61
477735-H	\$268.06	\$142.92		\$102.09		\$23.05	\$125.14
481981-H	\$5,629.42	\$3,001.41		\$2,143.87		\$484.14	\$2,628.01
484681-H	\$9,656.72	\$5,148.63		\$3,677.59		\$830.50	\$4,508.09
488295-H	\$19,810.29	\$10,562.17		\$7,544.41		\$1,703.71	\$9,248.12
1200002906	\$19,069.63	\$10,167.27		\$7,262.34		\$1,640.02	\$8,902.36
1200008395	\$20,852.73	\$11,117.96		\$7,941.40		\$1,793.37	\$9,734.77
TOTAL HDR INVOICES	\$178,773.94	\$95,316.11		\$68,082.97		\$15,374.86	\$83,457.83
\$178,773.94							
APOLLO INVOICES		Match	GLO	TPWD REIMBURSABLE TO DATE			Total REIMBURSEMENT
Invoice#	Total Invoice	CEPRA	CMP	USFWS	CCA	TPWD STATE	
27402617-01	\$66,880.00		\$66,880.00				\$0.00
27402617-02	\$74,361.25	\$39,646.87		\$28,319.19	\$6,395.19		\$34,714.38
27402617-03	\$313,709.00	\$167,258.89		\$119,470.64	\$26,979.47		\$146,450.11
27402617-04	\$160,839.75	\$65,459.09	\$38,065.37	\$46,756.50	\$3,545.04	\$7,013.75	\$57,315.29
27402617-05	\$216,737.75	\$82,679.68	\$61,664.63	\$59,056.92	\$5,742.83	\$7,593.69	\$72,393.44
TOTAL APOLLO	\$832,527.75	\$355,044.53	\$166,610.00	\$253,603.25	\$42,662.53	\$14,607.44	\$310,873.22
\$615,790.00							
GRAND TOTAL INVOICES	\$1,011,301.69	\$450,360.64	\$166,610.00	\$321,686.22	\$42,662.53	\$29,982.30	\$394,331.05
\$794,563.94							
PROJECT BUDGET	\$1,479,522.53	\$700,000.00	\$166,610.00	\$500,000.00	\$42,662.53	\$70,250.00	
\$1,479,522.53		CEPRA	CMP	USFWS	CCA	TPWD STATE	
REMAINING BALANCE	\$468,220.84	\$249,639.36	\$0.00	\$178,313.78	\$0.00	\$40,267.70	\$218,581.48
\$684,958.59							

Preconstruction Photographs taken by TPWD.



Photograph 1. Marsh A - south direction from Project Partner sign on April 14, 2016.



Photograph 2 Marsh A -north direction towards Project Partner sign on April 14, 2016.



Photograph 3. Marsh B – east direction from Project Partner sign on April 14, 2016.



Photograph 4. Marsh B – west direction towards Project Partner sign on April 14, 2016.

During Construction Photographs taken by TPWD.



Photograph 5. Marsh A - south direction from Project Partner sign on June 28, 2016.



Photograph 6. Marsh B – east direction from Project Partner sign on July 12, 2016.



Photograph 7. Marsh A – south direction from Project Partner sign on July 22, 2016



Photograph 8. Marsh B – east direction from Project Partner sign on July 22, 2016

Post Construction Photographs of Living Shoreline II



Photograph 9. Post Construction of Living Shoreline II with HDR Engineer on August 3, 2016.

Plant Harvesting Public Outreach Photographs taken by TPWD.



Photograph 10. TPWD (Jan Culbertson) educating sea scouts on wetland harvesting and safety at NRG Ecocenter on August 6, 2016.



Photograph 11. GBF (Rani Henderson) educating sea scouts on wetland harvesting and safety at NRG Ecocenter on August 6, 2016.



Photograph 12. Sea scouts and Power Squadron skippers preparing to harvest wetland plants at NRG Ecocenter on August 6, 2016.



Photograph 13. Sea scouts harvesting wetland plants at NRG Ecocenter on August 6, 2016.



Photograph 14. Wetland plants harvested at NRG Ecocenter on August 6, 2016.

Photographs of Planting Methods Used in Unconsolidated sediments taken by TPWD.



Photograph 15. Marsh A - Kayak planting efforts by project partner NMFS on August 8, 2016.



Photograph 16. Marsh B – Airboat planting efforts by project partners on August 8, 2016.

Post Construction Planting Photographs taken by TPWD.



Photograph 17. Post construction planting from west side of Marsh A taken in north east direction from top of berm on August 12, 2016.



Photograph 18. Post construction planting from southwest side of Marsh A taken in east direction on top of berm on August 12, 2016.



Photograph 19. Post construction planting on north side of Marsh B taken from berm on Marsh A on August 12, 2016.



Photograph 20. Post construction planting on east side of Marsh B taken from boat on August 12, 2016.

Post Construction Signage Photographs taken by TPWD.



Photograph 21. Project Partner Signage taken north east side of Marsh B.



Photograph 22. Danger Signage taken east side of Marsh A.



Figure 1. Final Post Construction Aerial Photograph taken by Naismith Surveying August 2016.



Figure 2. Final Post Construction Aerial Photograph taken by Naismith Surveying August 2016, with GIS based overlay showing created Marsh A and B and associated Living shoreline acreage (10 acres) and enhanced north and south marshes associated with adjacent tributaries (17.8 acres). The three living shorelines footprints were calculated by HDR from Naismith Survey. The enhanced north and south marsh acreage is based on GLO Coastal Boundary Survey and TPWD's wetland survey conducted in 2009.