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Applicant Name:	Application Title:
DEERFIELD BEACH	DBGMM04 - Deerfield Beach Sand Loss
Period of Performance Start:	Period of Performance End:
	04-08-2018

Bundle Reference # (Amendment #)	Date Awarded

Subgrant Application - FEMA Form 90-91

FEDERAL EMERGENCY MANAGEMENT AGENCY PROJECT WORKSHEET								
DISASTER				PROJECT NO.	PA ID NO.	DATE	CATEGORY	
FEMA	4283	-	DR	-FL	DBGMM04	011-16725-00	09-28-2017	G
APPLICANT: DEERFIELD BEACH					WORK COMPLETE AS OF: 09-20-2017 : 0 %			
Site 1 of 1								
DAMAGED FACILITY:					COUNTY: Broward			
Deerfield Beach Interim Beach Nourishment Project								
LOCATION:					LATITUDE:	LONGITUDE:		
Current Version: The Hillsboro Beach/Deerfield Beach Interim Beach Nourishment Project is located on the Atlantic Coast of Florida in Broward County. The 2015 nourishment project starts 295 Linear Feet (LF) north of Florida Department of Environmental Protection (FDEP) reference monument R-6 and extends south to 300 LF north of R-8. Note that this project is a joint project with the Town of Hillsboro Beach which lies immediately south of Deerfield Beach. The Hillsboro Beach section of shoreline is the subject of another sand loss Project Worksheet (HBGMM01). (See Project Note below for the rationale for separating these projects.) This PW refers to the subject stretch of shoreline as The Deerfield Beach Project. The Deerfield Beach portion of the project that is the subject of this PW starts at a point 295 LF north of R-6 and extends south to the border between the Towns of Hillsboro Beach and Deerfield Beach which is 750 LF south of R-6 (see Attachment 1. Deerfield Beach Project Map). North end at GPS: 26.308217, -80.075913 South end at GPS: 26.305354, -80.076330 Project length = 1,050 LF					26.305354 26.308217	-80.07633 -80.075913		
DAMAGE DESCRIPTION AND DIMENSIONS:								
Current Version: During the declared incident period from October 3, 2016, to October 19, 2016, Hurricane Matthew generated storm surge and wave action that caused beach and dune erosion in Broward County, Florida. Aerial photos that show this damage are shown in Attachment 2. Deerfield Beach Pre and Post Matthew Aerial Photos. Surface photos are provided in Attachment 2A. Deerfield Pre and Post Matthew Photos A major disaster, DR-4283-FL, was declared on October 8, 2016. PROJECT HISTORY / MAINTENANCE: As can be seen in Attachment 1, a series of rock groins was placed along the beach to control erosion. These rock groins were constructed in 1963. The first beach nourishment project was completed in 1998 with approximately 550,000 cubic yards of sand along the Deerfield Beach/Hillsboro Beach shoreline between FDEP Broward County monuments R-5 and R-12+400. Maintenance fill projects were completed in 2011 and 2015. The locations of the 1998, 2011 and 2015 are shown in Attachment 3. Deerfield-Hillsboro Nourishment Projs Map. The 2015 Project placed approximately 50,000 cubic yards of sand along the Deerfield								

Beach/Hillsboro Beach shoreline between 295 feet north of R-6 to 300 feet north of R-8, with 24,400 cubic yards placed in the City of Deerfield Beach.

The construction template along Deerfield Beach for the 2015 Project was designed with a uniform berm elevation of +6.0 FT NAVD from the landward limit of fill to the construction berm crest as shown in Attachment 4. Typical Design Cross-Section. The beach was constructed by the placement of sand to a designed elevation, width, grain size, and slope. Additional design information is provided in Attachment 5. Deerfield Beach Matthew Damage Report.

Sand for the project was obtained from a permitted upland source, the E.R. Jahna Ortona Mine (Ortona) near LaBelle in Glades County, Florida. The QA/QC plan, including specifications for the sand that was placed, is shown in Attachment 6. Beach Sediment QAQC Plan.

INCIDENT-RELATED THE DAMAGE TO THE DEERFIELD BEACH PROJECT: Pre and post incident surveys were assessed to estimate the volume of sand lost due to erosion caused by Hurricane Matthew within the approximately 1,050 FT section north of the Hillsboro Beach / Deerfield Beach town boundary.

A Storm Damage Assessment Report was submitted to FEMA in April 2017 (see Attachment 5) to document the sand losses using wading depth profiles. Attachment 7. Deerfield Beach Matthew Storm Damage Report Adden.1 includes beach profiles that extend offshore beyond the depth of closure, to further quantify incident-related sand losses. Depth of Closure is approximately -20 feet NAVD in the project area (See Attachment 8. Depth of Closure USACE Review FL Sand Study).

The Applicant's Engineer of Record (EOR), CB&I Environmental & Infrastructure, Inc., used pre and post-storm LiDAR surveys of the project area that were collected by the US Army Corps of Engineers Joint Airborne LiDAR Bathymetry Technical Center of Expertise (JALBTCX). The pre-storm survey was conducted on May 20 and May 22, 2016. The post-storm survey was conducted between November 12 and November 14, 2016.

The volumetric changes reported by the Applicant represent the change in the quantity of sediment measured through comparison of the pre-storm and post-storm beach surveys. The methodology used is detailed in Attachment 7.

The measured storm loss, without considering background erosion, was 4,102 cubic yards in the project area.

To adjust for background erosion, the EOR calculated the long term erosion rate by comparing the profile at R-6 from May 2011 (post-construction) to February 2015 (pre-construction). This time period includes 3.75 years without significant storm impacts or beach nourishment projects. Only one profile (R-6) with sufficient data was available within the project area (given its small scale). The background erosion rate was calculated to be +0.135 CY/FT/Month which is slightly accretional. Thus, for the 6 month period, the EOR determined the background erosion (accretion in this case) to be + 0.81 CY/FT over the effective length of the project as shown in Table 1 of Attachment 7.

The total quantity of background erosion for the project is the product of the effective length and the six month background erosion rate:

Background Erosion between Pre and Post Hurricane Matthew Surveys = $0.81 \text{ CY/FT} \times 1,312 \text{ FT} = + 1,063 \text{ CY} = \text{Approx. } 1,060 \text{ CY}$

*Background Erosion was computed using available data along a 1,312 FT section that has been historically nourished (1998, 2011 and 2015 nourishment projects).

(Note that small differences in the total background erosion shown in Table 1 of Attachment 7 are due to rounding.)

Total Incident-Related Erosion Adjusted for Background Erosion = $4,102 \text{ CY} + 1,060 \text{ CY}^* = 5,162 \text{ CY}$

*Background Erosion in this case is actually background accretion or the amount of sand that accumulated between the pre and post storm profiles. Therefore it is accounted for by adding it to the measured loss

SCOPE OF WORK:

Current Version:

The Applicant will return the beach to its pre-incident condition as follows:

WORK TO BE COMPLETED

The Applicant plans to repair the sand loss caused by Hurricane Matthew by replacing a total of 5,162 CY of sand between the southern boundary of Deerfield Beach and a point 295 LF north of FDEP Broward County marker R-6. Sand from a permitted onshore sand mine(s) will be placed to the design specifications of the EOR. The elevations, volume, sand grain size distribution, location and slopes of the restored beach and dune system will be equivalent to pre-Hurricane Matthew conditions consistent with the 2015 beach nourishment project. The Applicant will secure bids for the work necessary to complete this restoration. The EOR has provided a cost estimate for the work as follows (see Attachment 7):

Mobilization/Demobilization = \$15,000

Beach Fill (Includes Material Cost, Transportation and Placement) of 5,162 CY at \$50 / CY = \$258,100

Beach Surveys and Tilling = \$25,000

Environmental Protection = \$8,000

Bonds and Insurance = \$13,000

Subtotal for Construction Cost = \$319,100

Engineering, Design, Permitting, Supervision, & Administration (15%) = \$47,865

Total Project Costs = \$366,965.

FEMA CC 9001

Estimate of Total Work to be Completed = \$366,965.00

Estimate Notes:

The EOR based this cost estimate to replace sand lost due to Hurricane Matthew on obtaining fill material from the same upland mine used for the previous 2015 project. The Engineer's estimate is also based on actual historic costs for placing sand on Deerfield Beach and accounts for recent construction bid prices and increases due to inflation and increased fuel prices from the time of the previous project (completed in April 2015) to present. The cost includes engineering and design of the fill templates, geotechnical sampling to characterize the source and native area, permitting, NEPA compliance, plans and specifications, pre-construction surveys, construction administration, and post-construction survey and certification. The Engineering, Design, Permitting, Supervision and Administration is estimated at 15% of the construction cost, which is typical for this type of project. The FEMA Project Specialist assigned to this project has reviewed this estimate and finds it to be reasonable based on experience with bid prices and costs in the area.

Note that the FEMA Project Specialist reviewed the engineer's estimate and found the 10% contingency fee to be unreasonable since this Grant Application is a Large Project with cost reimbursement made on the Applicant's actual work invoices, as submitted.

DIRECT ADMINISTRATIVE COSTS (DAC): The Applicant estimated DAC as shown in Attachment 9. Deerfield Beach DAC. Rates for the personnel in DAC are shown in Attachment 10. DAC Personnel Rates. Fringe Benefit Rates for these personnel are shown in Attachment 11. Fringe Benefit Rates.

FEMA CC 9901 DAC = \$3,826.91

PROCUREMENT: The Applicant has followed and will continue to follow their procurement policy (see Attachment 12 Deerfield Procurement Policy) in completing this work.

ENVIRONMENTAL COMPLIANCE: The 2015 Project was constructed under Broward County Environmental Resource License No. DF14-1082 (Attachment 13. Broward County Renourishment License), FDEP Permit Modification No. 0289706-006-JN and the US Army Corps of Engineers permit for the original project, SAJ-1997-02355 (see Attachment 14. 2015 Post-Construction Monitoring Rpt for additional information).

Permits / modifications for the repair work that is the subject of this PW have not been obtained, but have been budgeted in the engineer's estimate (see above) and will be obtained prior to initiation of this renourishment project.

Sand sources for the repair work have not been finalized. The selected upland mine will depend on the contractor but will likely be a facility which has previously supplied beach compatible sand for beach nourishment projects in south Florida (e.g. Stewart Mining Industries' Immokalee Mine, Vulcan Materials' Witherspoon Mine, and/or the ER Jahna's Ortona Mine). The Sediment QA/QC plan used on the 2015 project is shown in Attachment 6.

TOTAL COST

Total Cost of this Project = Work to be Completed + Direct Administrative Costs

Total Cost of this Project = \$366,965.00 + \$3,826.91 = \$370,791.91

PROJECT NOTE

Although the original 1998 Project and the subsequent renourishment projects were completed jointly by the City of Deerfield Beach and Town of Hillsboro Beach, there is an ongoing lawsuit between these two entities involving beach erosion. For this reason, it was decided to complete a separate sand loss Project Worksheet for each Applicant (see Attachment 15. Lawsuit Update).

STANDARD COMMENTS:

--RECORD RETENTION: Complete records and cost documents for all approved work must be maintained for at least five years from the date of the Sub-recipient's Account Closeout. Project worksheets are subject to examination and audit by the State of Florida, and must reflect work related to disaster specific costs.

-- DIRECT ADMINISTRATIVE COSTS (ESTIMATED): Direct Administrative Costs (Subgrantee) 9901 have been estimated from the DAC Spreadsheet (Attached). These costs were calculated based on the total project value. The Subgrantee has been notified that back-up documentation will be requested at close-out which supports all costs incurred for assistance in formulating or administering this project assistance grant.

-- HAZARD MITIGATION PROPOSAL: Hazard Mitigation under section 406 has been considered for this project and due to the type of work or project, effective mitigation is not feasible within the requirements of 44 CFR 206.226(c).

-- PROCUREMENT: The Applicant was advised by FEMA PAC and/or Project Specialist that in the seeking of proposals and letting of contracts for eligible work, the Applicant must comply with its Local, State and/or Federal procurement laws, regulations, and procedures as required by 2 CFR 317-326.

-- RECORD RETENTION: As described in 2 CFR 200.33 Subgrantee must maintain all work-related records for a period of three (3) years from Subgrantee closure (final payment), all records relative this project worksheet are subject to examination and audit by the State, FEMA and the Comptroller General of the United States and must reflect work related to disaster specific costs.

-- PERMITS: Federal Funding is contingent upon acquiring all necessary Federal, State and Local permits. Noncompliance with this requirement may jeopardize the receipt of federal funds. The applicant is responsible for obtaining all required permits prior to the commencement of work.

-- ENVIRONMENTAL AND HISTORIC PRESERVATION: Applicant must comply with all applicable environmental and historic preservation laws. Federal funding is contingent upon acquiring all necessary Federal, State and Local permits. Noncompliance with this requirement may jeopardize the receipt of federal funds.

-- CHANGES TO SCOPE OF WORK DESCRIBED IN THIS PW/SA (SUBGRANT APPLICATION): The applicant shall comply with all applicable codes and standards in the completion of eligible work to repair or replace damaged public facilities. Any change to the approved scope of work on a Project Worksheet (PW/SA) must be reported and approved before work begins. Failure to report changes may jeopardize Federal and State funding. In the case of a change in scope of work, the applicant shall notify the Florida Division of Emergency Management program representative prior to starting work.

-- INSURANCE REVIEW: The applicant is aware that all projects are subject to an insurance review as stated in 44 C.F.R. Sections 206.252 and 206.253. If applicable, an insurance determination will be made either as anticipated proceeds or actual proceeds in accordance with the applicant's insurance policy which may affect the total amount of the project. Approval of this project may result in an obtain /maintain insurance requirement. The Subgrantee must comply with insurance reviewer terms and conditions upon receipt of sub-grant from the State.

-- COST BASIS FOR LABOR, EQUIPMENT AND MATERIALS: Costs used to formulate this project were based on:

- Unit Costs provided by Applicant
- Actual or Recent Contract costs
- Local material cost

-- AUDIT STATEMENT: All documentation related to this project worksheet is subject to audit and must reflect disaster – related work and project – specific cost. The applicant has been advised of responsibility to maintain supporting documentation (records). The type of records to be maintained is specified in FEMA policy 2 CFR Subpart F, Audit Requirements. Records must be maintained for three 3 years from the date the last project was completed or from the date final payment was received, whichever is later.

-- 75% FEDERAL FUNDING: In accordance with 44 CFR 206.47(a) and current disaster declaration determinations, this project worksheet will be funded with the Federal Cost share at 75% of all eligible costs.

-- By accepting this grant the Applicant to the best of their ability acknowledges that all damages described within this Sub-grant Application and all associated costs being claimed were a direct result of the declared event, and in connection with the incident period for DR-4283 with the exception of requests for alternate or improved projects.

-- LARGE PROJECT ADJUSTMENT, ANY CATEGORY: When Subgrant Applications for Assistance (Project Worksheets) are written as Large Projects (\$121,800.00 or greater) not participating in the SRIA Alternative Procedures Pilot Program for Permanent Work – fixed estimated cost, an adjustment must be made during the closeout process in order to match the actual eligible dollars spent. This will require a Change (Version) to be submitted in EMMIE to capture the over-run/under-run.

Does the Scope of Work change the pre-disaster conditions at the site? ☐ Yes ☒ No

Special Considerations included? ☒ Yes ☐ No

Hazard Mitigation proposal included? ☐ Yes ☒ No

Is there insurance coverage on this facility? ☐ Yes ☒ No

PROJECT COST

ITEM	CODE	NARRATIVE	QUANTITY/UNIT	UNIT PRICE	COST
		*** Version 0 ***			
		Work To Be Completed			
1	9001	Contract	1/LS	\$ 366,965.00	\$ 366,965.00
		Direct Subgrantee Admin Cost			
2	9901	Direct Administrative Costs (Subgrantee)	1/LS	\$ 3,826.91	\$ 3,826.91
				TOTAL COST	\$ 370,791.91
PREPARED BY ROBERT C GLASSEN			TITLE Project Specialist	SIGNATURE	
APPLICANT REP. Sophia H Taylor			TITLE Finance Division Chief	SIGNATURE	

