FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

NORTHEAST DISTRICT
8800 BAYMEADOWS WAY WEST, SUITE 100
JACKSONVILLE, FLORIDA 32256

RICK SCOTT
GOVERNOR

CARLOS LOPEZ-CANTERA
LT. GOVERNOR

HERSCHEL T. VINYARD JR.
SECRETARY

February 13, 2014

SENT VIA EMAIL: David.Stubbs@jaxport.com

David C. Stubbs
Jacksonville Port Authority
2831 Talleyrand Avenue
Jacksonville, Florida 32206

RE: Modification of Permit No.: 16-255718-001-ES
Modification No.: 16-255718-004-EM

Dear Mr. Stubbs:

Your request to modify the above permit has been reviewed by Department staff in accordance with Section 62-343.100 and 62-343.120, Florida Administrative Code (F.A.C.). Your permit was issued under the authority of Part IV of Chapter 373, Florida Statutes (S.F.), and Title 62, F.A.C., Chapter 253 and Chapter 258, F. S., and Chapter 18-20, F.A.C., if located within an Aquatic Preserve, and Chapter 18-21, and Section 62-343.075, F.A.C., and the policies of the Board of Trustees and in accordance to Operating Agreements executed between the Department and the Water Management Districts, as referenced in Chapter 62-113, F.A.C., and a Coordination Agreement Between the U.S, Army Corps of Engineers, Jacksonville District, and the Department for a State Programmatic General Permit pursuant to Section 10 of the Rivers and Harbors Act of 1899 and Section 401 of the Clean Water Act. This permit contains a regulatory authorization for the construction and operation of the system, a proprietary authorization for the use of sovereignty submerged lands for private purposes, if applicable, and the Federal State Programmatic General Permit (SPGP) for activities in Wetlands and/or Waters of the United States, if applicable.

The requested modification is to:

1. Remove the construction of the previously authorized underdrain system in Cell B2 from the scope of work.

2. Add the construction of approximately 1,100 linear feet by approximately 21 feet of wave attenuation structure to the scope of work. The construction will permanently impact approximately 0.58 acres of jurisdictional saltmarsh wetlands at the project site.

3. To mitigate for the functional loss of the impacted wetlands a mitigation area shall be constructed on Bartram Island immediately east of Cell C. In accordance with the Uniform

Mitigation Assessment Method, the impact area has a Functional Loss of 0.33. The proposed creation has a Relative Functional Gain of 3.74, and would therefore require 0.88 acres of creation to offset the impact. 6.46 acres of creation is proposed. 5.58 acres shall provide mitigation for potential future impacts on Bartram Island.

4. Mitigation area construction and monitoring shall be done in accordance with the attached Bartram Island Mitigation Plan.

The requested modification(s) will affect these authorizations as listed:

REGULATORY AUTHORIZATION FOR CONSTRUCTION AND OPERATION

The above change(s) is/are not expected to adversely affect water quality and will not be contrary to public interest and not expected to result in any adverse environmental impact or water quality degradation. The authority sought under the provisions of Part IV of Chapter 373, F.S., and Title 62, F.A.C. to construct and operate the system is modified as described above.

PROPRIETARY REVIEW CHOOSE ONE

Your project does not occur on state-owned submerged lands and will not require authorization from the Department to use these lands for private purposes in accordance with Section 253.77, Florida statutes.

SPGP - STATE PROGRAMMATIC GENERAL PERMIT AUTHORIZATION -

Your proposed modification(s) has been reviewed in accordance with Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act. **The U.S. Army Corps of Engineers (Corps) State Programmatic General Permit (SPGP) was not granted in your original permit. Federal authorization for your project cannot be given in conjunction with this permit modification.** A copy of your permit application has been forwarded to the Corps for their review. The Corps will issue their authorization directly to you or contact you if additional information is needed. If you have not heard from the Corps within 30 days from the date your application was received at the local FDEP Office, contact the Corps at the Jacksonville Regulatory Field Office at (904-232-1681), for status and further information. **Failure to obtain Corps authorization prior to construction could subject you to federal enforcement action by that agency.**

Authority for review - an agreement with the U.S. Army Corps of Engineers entitled "Coordination Agreement Between the U. S. Army Corps of Engineers (Jacksonville District) and the Florida Department of Environmental Protection State Programmatic General Permit, Section 10 of the Rivers and Harbor Act of 1899 and Section 404 of the Clean Water Act.

NOTICE OF RIGHTS

This action is final and effective on the date filed with the Clerk of the Department unless a petition for an administrative hearing is timely filed under Sections 120.569 and 120.57, F.S., before the deadline for filing a petition. On the filing of a timely and sufficient petition, this action will not be final and effective until further order of the Department. Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice.

Petition for Administrative Hearing

A person whose substantial interests are affected by the Department's action may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57, F.S. Pursuant to Rule 28-106.201, F.A.C., a petition for an administrative hearing must contain the following information:

(a) The name and address of each agency affected and each agency's file or identification number, if known;

(b) The name, address, any email address, any facsimile number, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests are or will be affected by the agency determination;

(c) A statement of when and how the petitioner received notice of the agency decision;

(d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;

(e) A concise statement of the ultimate facts alleged, including the specific facts that the petitioner contends warrant reversal or modification of the agency's proposed action;

(f) A statement of the specific rules or statutes that the petitioner contends require reversal or modification of the agency's proposed action, including an explanation of how the alleged facts relate to the specific rules or statutes; and

(g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wishes the agency to take with respect to the agency's proposed action.

The petition must be filed (received by the Clerk) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000. Also, a copy of the petition shall be mailed to the applicant at the address indicated above at the time of filing.

Time Period for Filing a Petition

In accordance with Rule 62-110.106(3), F.A.C., petitions for an administrative hearing by the applicant must be filed within 21 days of receipt of this written notice. Petitions filed by any persons other than the applicant, and other than those entitled to written notice under Section 120.60(3), F.S. must be filed within 21 days of publication of the notice or within 21 days of receipt of the written notice, whichever occurs first. Under Section 120.60(3), F.S., however, any person who has asked the Department for notice of agency action may file a petition within 21days of receipt of such notice, regardless of the date of publication. The failure to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the discretion of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

Extension of Time

Under Rule 62-110.106(4), F.A.C., a person whose substantial interests are affected by the Department's action may also request an extension of time to file a petition for an administrative hearing. The Department may, for good cause shown, grant the request for an extension of time. Requests for extension of time must be filed with the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, before the applicable deadline for filing a petition for an administrative hearing. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon.

Mediation

Mediation is not available in this proceeding.

Judicial Review

Any party to this action has the right to seek judicial review pursuant to Section 120.68, F.S., by filing a Notice of Appeal pursuant to Rules 9.110 and 9.190, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, M.S. 35, Tallahassee, Florida 32399-3000; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this action is filed with the Clerk of the Department.

This letter of approval does not alter the original expiration date, conditions, or monitoring requirements of the regulatory, sovereign submerged lands or SPGP authorizations contained in the permit. This letter, accompanying drawings and/or documents **must be attached to the original permit**.

Thank you for applying to the Submerged Lands and Environmental Resource Permit Program. If you have any questions regarding this matter, please contact Aaron Sarchet at (904) 256-1654 or e-mail address at Aaron.Sarchet@dep.state.fl.us.

Executed in Duval, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Sincerely,

Melissa M. Long

Melissa M. Long, P.E.
Program Administrator
Water and Environmental Resources Permitting

Enclosures: Project Drawings, 8 pages
Mitigation Plan 11 pages

cc: U.S. Army Corps of Engineers Jacksonville Office (CorpsJaxReg@usace.army.mil)

NOTICE

YOUR PROJECT DID NOT QUALIFY FOR THE STATE AND FEDERAL COMBINED STATE PROGRAMMATIC GENERAL PERMIT (SPGP) PROGRAM. THE ATTACHED AUTHORIZATION(S) DOES NOT INCLUDE THE REQUIRED FEDERAL AUTHORIZATION FOR YOU TO CONSTRUCT YOUR PROJECT. A COPY OF YOUR APPLICATION HAS BEEN SENT TO THE US ARMY CORPS OF ENGINEERS (USACOE) FOR PROCESSING. THE FEDERAL AUTHORIZATION FOR YOUR PROJECT WILL BE SENT TO YOU SEPARATELY BY THE USACOE. YOU CAN NOT CONSTRUCT YOUR PROJECT WITHOUT THE APPROPRIATE FEDERAL AUTHORIZATION. THE USACOE CAN BE CONTACTED IN JACKSONVILLE AT 904-232-1679.

X=465,000
X=470,000
X=475,000
X=480,000
X=485,000
Y=2,210,000
Y=2,205,000
Y=2,200,000

HECKSCHER DRIVE

CRUISE SHIP TERMINAL
JAX PORT

ST JOHNS RIVER

CELL B
CELL B2
CELL A

APPROXIMATE SHORELINE

AREA OF EROSION CONTROL WAVE ATTENUATION STRUCTURE (SEE PLATE C-02)

APPROXIMATE SHORELINE

MOL TRAPAC CONTAINER TERMINAL

INTERSTATE 295

CITY OF JACKSONVILLE

BLOUNT ISLAND

OLD RIVER

DAMES POINT TERMINAL

ST JOHNS RIVER

MILL COVE

BARTRAM ISLAND

APPROXIMATE SHORELINE

CELL C

APPROXIMATE SHORELINE

DAMES POINT BRIDGE

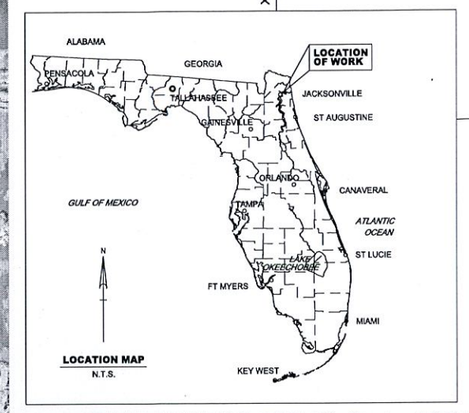
AREA OF PROPOSED WETLAND MITIGATION (SEE PLATE C-04)

BARTRAM ISLAND

CELL F

MILL COVE

GRAPHIC SCALE
1500' 0 1500'



LEGEND

- W — LIMITS OF JURISDICTIONAL WETLANDS
- TREE LINE
- JURISDICTIONAL WETLANDS
- PROPOSED WETLAND IMPACT AREA
- PROPOSED REVETMENT FOOTPRINT
- MHW (1.16' NAVD88)

DEPARTMENT OF ENVIRONMENTAL PROTECTION
PERMIT
STATE OF FLORIDA

US Army Corps of Engineers
Jacksonville District

WQC PERMIT PLATE
NOT FOR CONSTRUCTION

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

Dsn by:	JDB
Dwn by:	MR2
Ckd by:	LRP
Dated:	NOVEMBER 2013

12/16/13

WQC PLATES

NOT FOR CONSTRUCTION

JACKSONVILLE HARBOR, FLORIDA
BARTRAM ISLAND CELL A,
SHORE PROTECTION AND WETLAND RESTORATION

BARTRAM ISLAND OVERALL

PLATE
C-01

EROSION CONTROL WAVE ATTENUATION STRUCTURE AND HAUL ROAD

1,100 FEET

STA 247+00

STA 236+00

EDGE OF EXISTING HERBACEOUS MARSH

LIMITS OF JURISDICTIONAL WETLANDS

MHW (1.16' NAVD88)

EXISTING TREE LINE

PROPOSED ACCESS ROAD, TYP.

PROPOSED ROCK WAVE DEFLECTOR, TYP.

24' X 40' TEMPORARY IMPACT AREA (TRUCK TURN-A-ROUND)

WETLAND IMPACT AREA
960 SF
0.022 ACRES

WETLAND IMPACT AREA
24,317 SF
0.56 ACRES

DIKE TOE

21 FOOT WIDTH

NO WETLAND IMPACT

NO WETLAND IMPACT

DIKE CREST

CELL A WEIRS

TOTAL WETLAND IMPACT AREA:
25,277 SF
0.58 ACRES

1
C-03

1
C-03

GRAPHIC SCALE

100' 0 100'

DEPARTMENT OF ENVIRONMENTAL PROTECTION
PERMIT
STATE OF FLORIDA

US Army Corps of Engineers
Jacksonville District

WQC PERMIT PLATE
NOT FOR CONSTRUCTION

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

Dsn by:	JDB
Dwn by:	MR2
Ckd by:	LRP
Dated:	NOVEMBER 2013

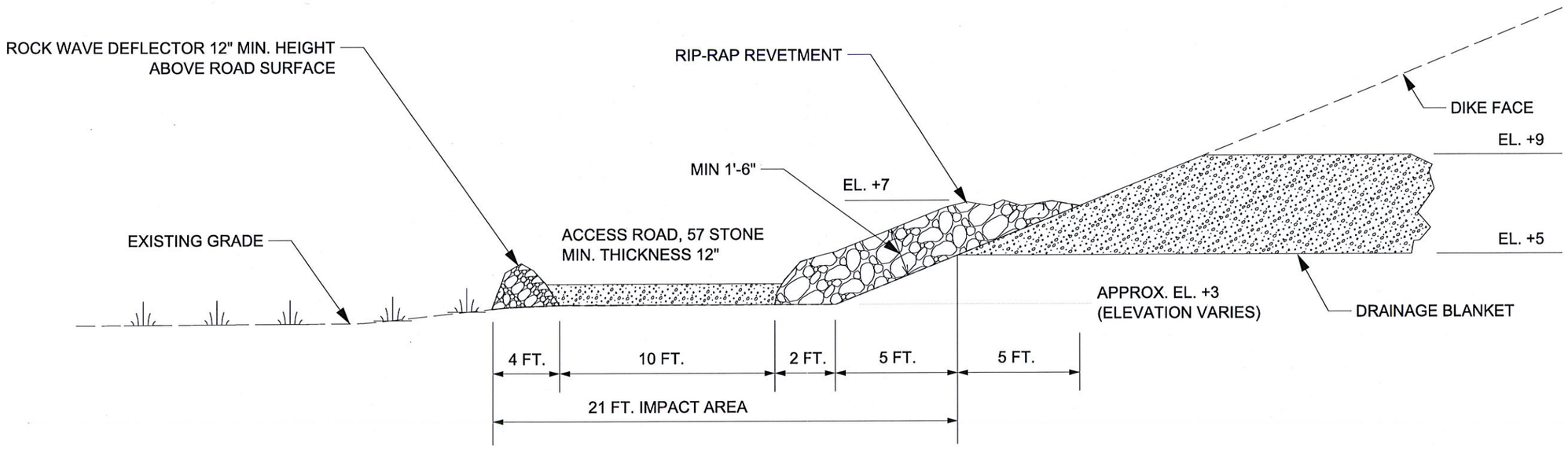
12/16/13

WQC PLATES
NOT FOR CONSTRUCTION

JACKSONVILLE HARBOR, FLORIDA
BARTRAM ISLAND CELL A,
SHORE PROTECTION AND WETLAND RESTORATION

CELL A EROSION CONTROL WAVE ATTENUATION STRUCTURE AND HAUL ROAD PLAN

PLATE
C-02



1
C-02

EROSION CONTROL WAVE ATTENUATION STRUCTURE AND ACCESS ROAD DETAIL

(NOT TO SCALE)

DEPARTMENT OF ENVIRONMENTAL PROTECTION
PERMIT
STATE OF FLORIDA

US Army Corps of Engineers
Jacksonville District

WQC PERMIT PLATE
NOT FOR CONSTRUCTION

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

Dsn by: JDB
Dwn by: MR2
Ckd by: LRP
Dated: NOVEMBER 2013

12/16/13

WQC PLATES
NOT FOR CONSTRUCTION

JACKSONVILLE HARBOR, FLORIDA
BARTRAM ISLAND CELL A,
SHORE PROTECTION AND WETLAND RESTORATION
EROSION CONTROL WAVE ATTENUAION STRUCTURE AND ACCESS ROAD DETAIL

PLATE
C-03

US Army Corps of Engineers
Jacksonville District

WQC PERMIT PLATE
NOT FOR CONSTRUCTION

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

Dsn by:	JDB
Dwn by:	MR2
Ckd by:	LRP
Dated:	NOVEMBER 2013

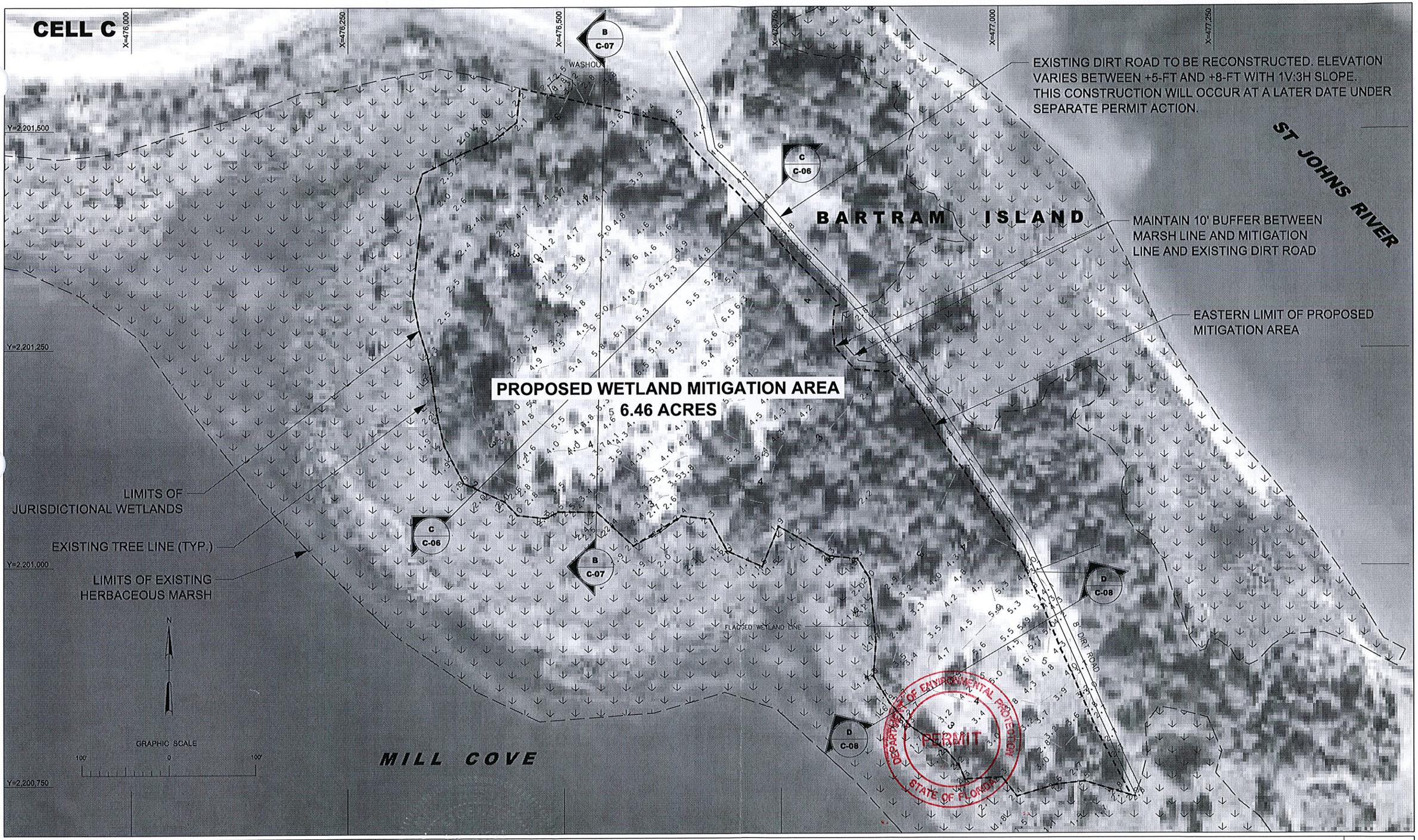
12/16/13

WQC PLATES
NOT FOR CONSTRUCTION

JACKSONVILLE HARBOR, FLORIDA
BARTRAM ISLAND CELL A,
SHORE PROTECTION AND WETLAND RESTORATION

WETLAND MITIGATION AREA - OVERALL

PLATE
C-04



US Army Corps of Engineers
Jacksonville District

WQC PERMIT PLATE
NOT FOR CONSTRUCTION

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

Dsn by:	JDB
Dwn by:	MR2
Ckd by:	LRP
Dated:	NOVEMBER 2013

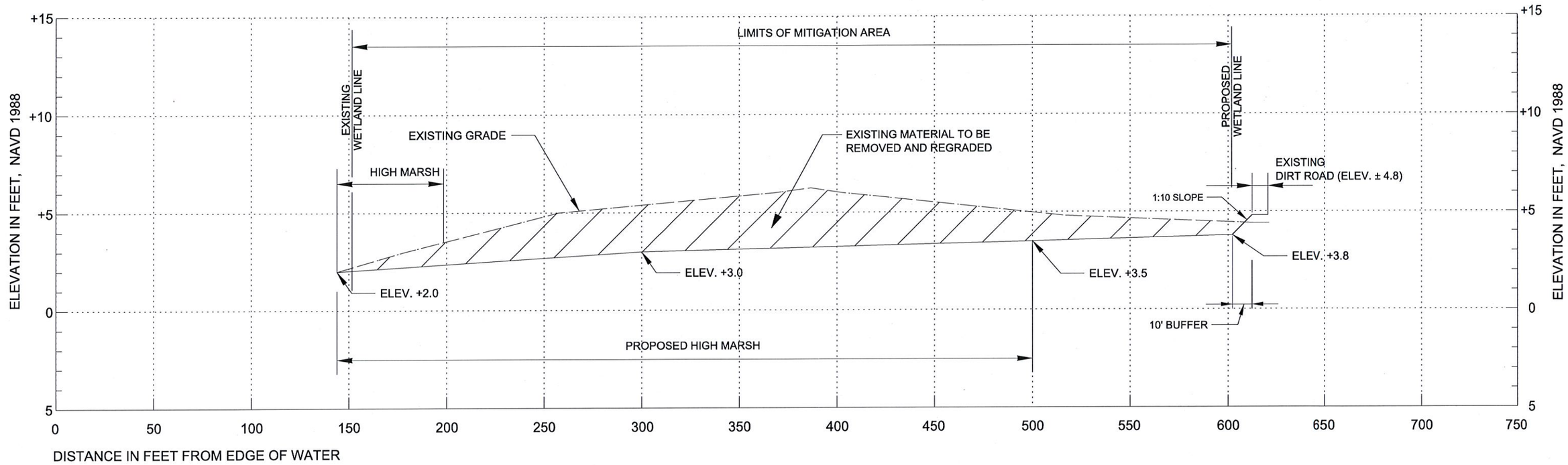
12/16/13

WQC PLATES
NOT FOR CONSTRUCTION

JACKSONVILLE HARBOR, FLORIDA
BARTRAM ISLAND CELL A,
SHORE PROTECTION AND WETLAND RESTORATION

WETLAND MITIGATION - PLAN VIEW

PLATE
C-05



C
C-05

CROSS SECTION - CELL C WETLAND MITIGATION

HORZ. = SCALE "A"
VERT. = SCALE "B"

DEPARTMENT OF ENVIRONMENTAL PROTECTION
PERMIT
STATE OF FLORIDA

"A" 50' 0 50'

GRAPHIC SCALE

"B" 5' 0 5'

US Army Corps of Engineers
Jacksonville District

WQC PERMIT PLATE
NOT FOR CONSTRUCTION

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

Dsn by:	JDB
Dwn by:	MR2
Ckd by:	LRP
Dated:	NOVEMBER 2013

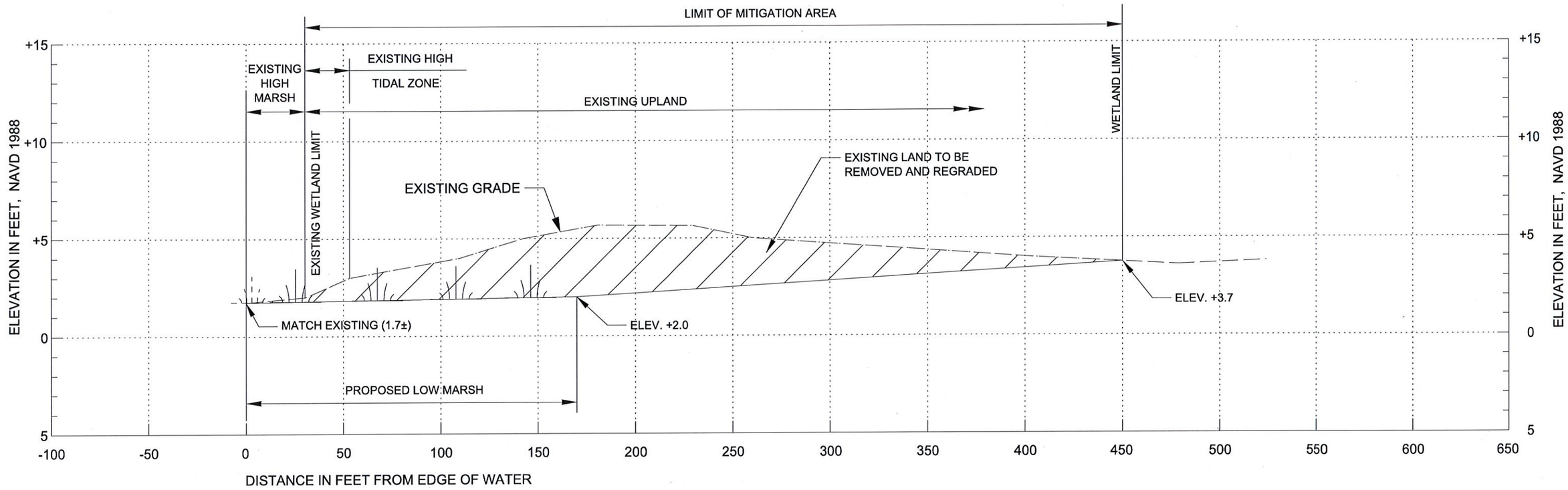
12/16/13

WQC PLATES
NOT FOR CONSTRUCTION

JACKSONVILLE HARBOR, FLORIDA
BARTRAM ISLAND CELL A,
SHORE PROTECTION AND WETLAND RESTORATION

WETLAND MITIGATION AREA - CROSS SECTION

PLATE
C-06



B
C-05

CROSS SECTION - CELL C WETLAND MITIGATION

HORZ. = SCALE "A"
VERT. = SCALE "B"

DEPARTMENT OF ENVIRONMENTAL PROTECTION
PERMIT
STATE OF FLORIDA

"A" 50' 0 50'

GRAPHIC SCALE

"B" 5' 0 5'

US Army Corps of Engineers
Jacksonville District

WQC PERMIT PLATE
NOT FOR CONSTRUCTION

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

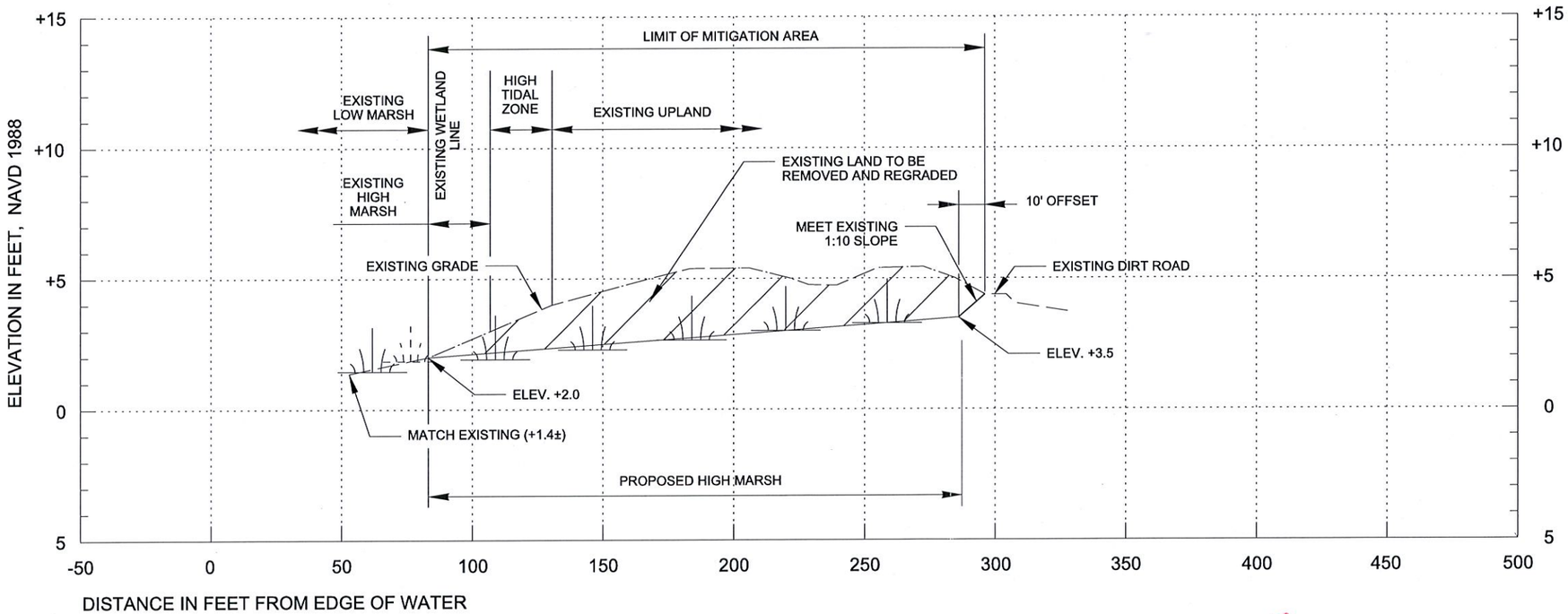
Dsn by: JDB
Dwn by: MR2
Ckd by: LRP
Dated: NOVEMBER 2013

12/16/13

WQC PLATES
NOT FOR CONSTRUCTION

JACKSONVILLE HARBOR, FLORIDA
BARTRAM ISLAND CELL A,
SHORE PROTECTION AND WETLAND RESTORATION
WETLAND MITIGATION AREA - CROSS SECTION

PLATE
C-07



D
C-05

CROSS SECTION - CELL C WETLAND MITIGATION

HORZ. = SCALE "A"
VERT. = SCALE "B"

GRAPHIC SCALE

DEPARTMENT OF ENVIRONMENTAL PROTECTION
PERMIT
STATE OF FLORIDA

US Army Corps of Engineers
Jacksonville District

WQC PERMIT PLATE
NOT FOR CONSTRUCTION

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

Dsn by: JDB
Dwn by: MR2
Ckd by: LRP
Dated: NOVEMBER 2013

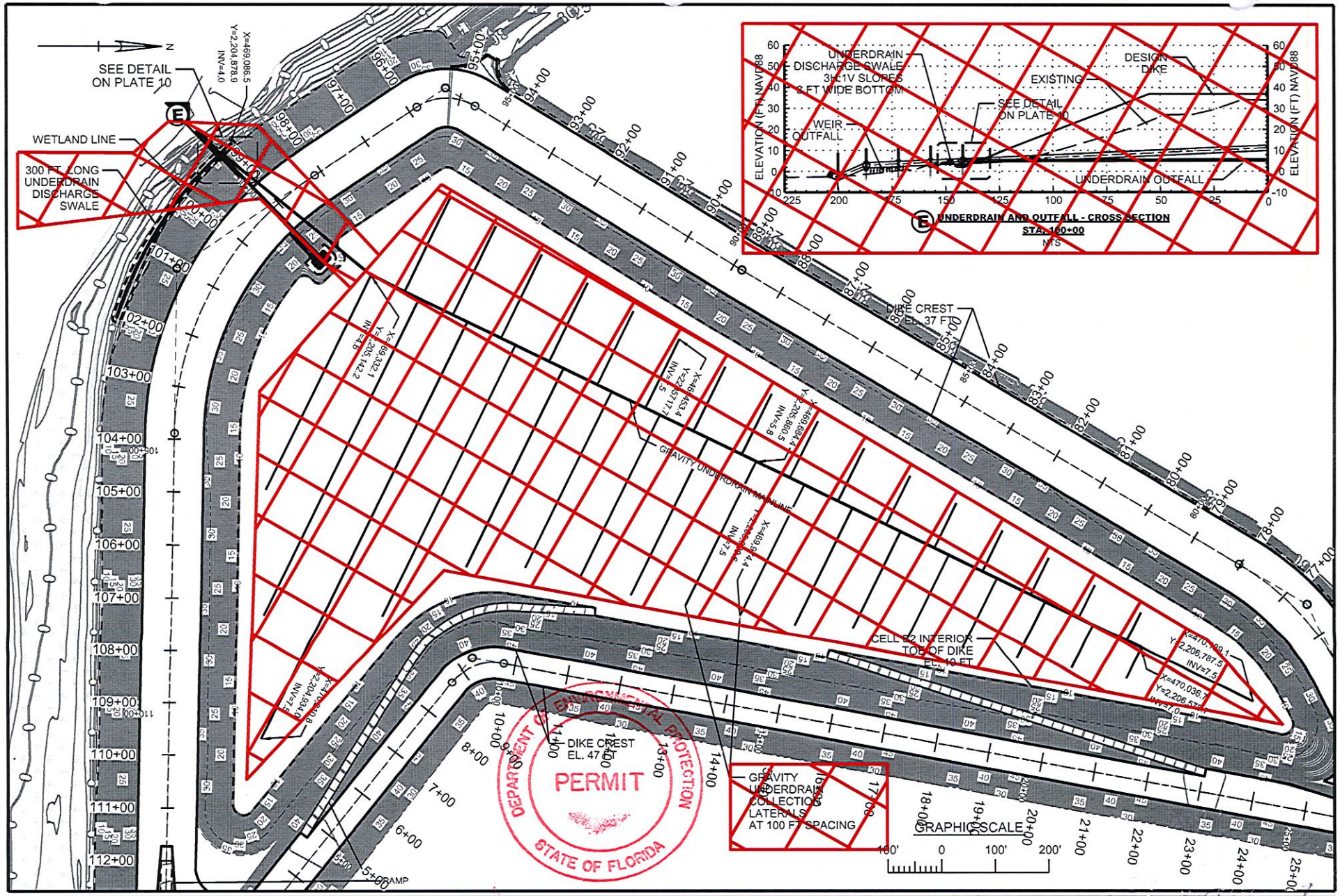
12/16/13

WQC PLATES
NOT FOR CONSTRUCTION

JACKSONVILLE HARBOR, FLORIDA
BARTRAM ISLAND CELL A,
SHORE PROTECTION AND WETLAND RESTORATION

WETLAND MITIGATION AREA - CROSS SECTION

PLATE
C-08



US Army Corps of Engineers Jacksonville District

PERMIT DRAWINGS
(NOT FOR CONSTRUCTION)

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

FILE NAME:

DATED:

SCALE: AS SHOWN

DWN BY: MLC

GENERAL NOTES:
ALL SLOPES SHOWN ARE TYPICAL.

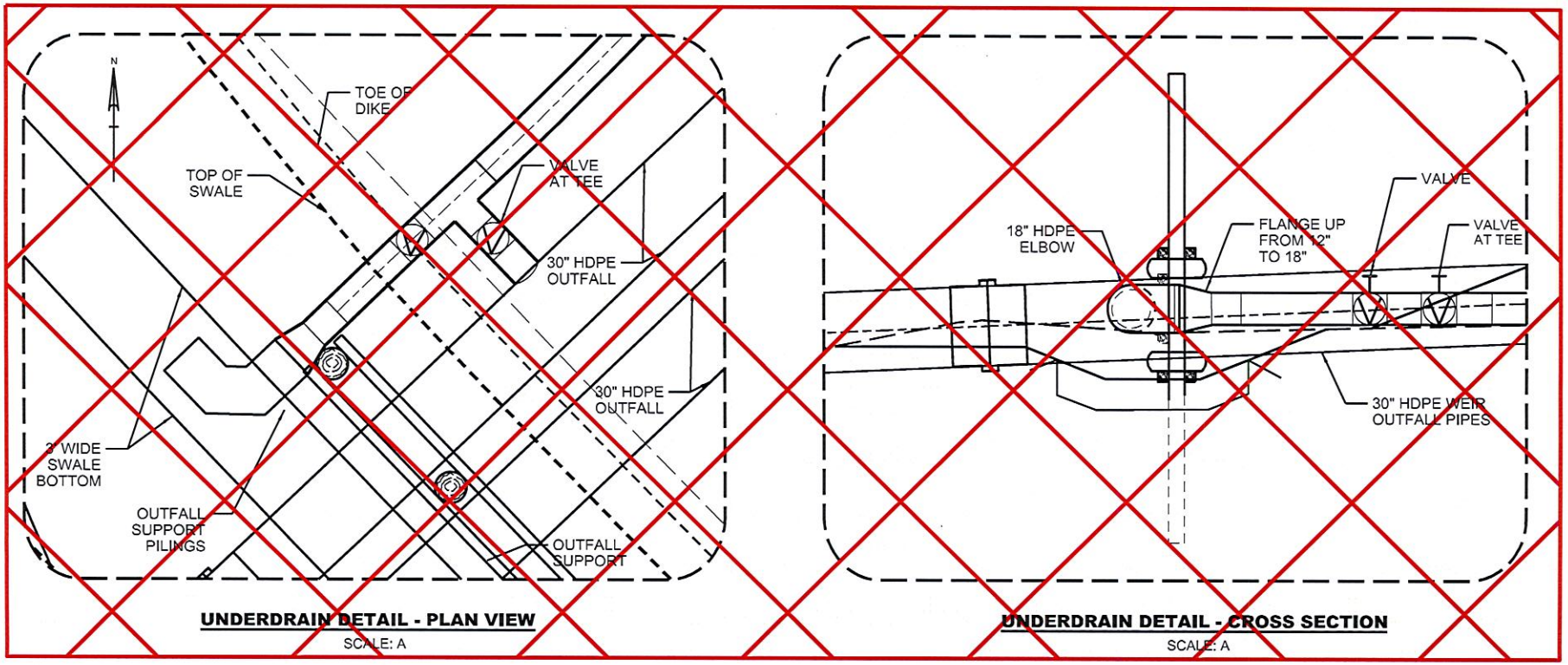
THE VERTICAL DATUM ON ALL ELEVATION INFORMATION SHOWN IS NGVD 1988.

UNDERDRAIN COLLECTION SYSTEM, DISCHARGE OUTFALL, AND 300' RECEIVING SWALE
THE THE EXTERIOR DIKE TOE ARE DELETED FROM CONSTRUCTION PLANS AS OF 29 JULY 2013.

JACKSONVILLE HARBOR
DUVAL COUNTY, FLORIDA
DMMA BARTRAM ISLAND CELL A DIKE RAISING
~~CELL B2 UNDERDRAIN MANIFOLD SYSTEM~~

PLATE: 9

12/16/13



UNDERDRAIN DETAIL - PLAN VIEW
SCALE: A

UNDERDRAIN DETAIL - CROSS SECTION
SCALE: A

NOTE:

UNDERDRAIN COLLECTION SYSTEM, DISCHARGE OUTFALL, AND 300' RECEIVING SWALE AT EXTERIOR DIKE TOE ARE DELETED FROM CONSTRUCTION PLANS AS OF 29 JULY 2013.

DEPARTMENT OF ENVIRONMENTAL PROTECTION
PERMIT
STATE OF FLORIDA

GRAPHIC SCALE
SCALE A: 2' 0 2' 4'

US Army Corps of Engineers Jacksonville District	**PERMIT DRAWINGS** (NOT FOR CONSTRUCTION)	FILE NAME:	DWN BY: MLC	GENERAL NOTES:	JACKSONVILLE HARBOR DUVAL COUNTY, FLORIDA **DMMA BARTRAM ISLAND CELL A DIKE RAISING**	PLATE: **10**
	DEPARTMENT OF THE ARMY JACKSONVILLE DISTRICT, CORPS OF ENGINEERS JACKSONVILLE, FLORIDA	DATED: APRIL 2013			**UNDERDRAIN DETAILS**	
		SCALE: AS SHOWN				

Bartram Island Mitigation Plan

The following mitigation plan complies with the requirements of Section 2036 of the Water Resources Development Act of 2007 (WRDA 2007) and "complies with the mitigation standards and policies established pursuant to the regulatory programs". Also the mitigation plan is proposed to address the loss of jurisdictional wetlands consisting of salt marsh to remain in compliance with the Section 404 of the U.S. Clean Water Act. The functions provided by the creation of new salt marsh in a disturbed upland area on-site will be similar to those lost from the permanent impact by removal of a high marsh system.

Introduction

Bartram Island is located in the lower St. Johns River (LSJR) of the Jacksonville Harbor District; **Figure 1**. It is an active construction site that receives dredge materials from routine maintenance of the River. The material is contained in several Dredged Material Management Area (DMMA) cells constructed from previously dredged material on site. Currently, two DMMA cells (A and B2) are being expanded vertically to accommodate additional dredged material that is anticipated for placement in the near future. A third cell, Cell B, is being used for dry storage of materials excavated from Cells A and B2 to accommodate construction. These activities demonstrate the dynamic nature of the routinely disturbed island. Due to location in the LSJR, Bartram Island is subjected to off-site influences that affect the fringing salt marsh that circumnavigates its perimeter. Specifically, abnormally large, impact-inducing waves are caused by several sources:

- Astronomically high seasonal tides;
- Storm surge;
- Wind generated high energy waves; and
- Vessel wakes (Cargo/cruise ships, pilot tug boats, etc).

Tides within the Dames Point region can vary significantly in height, with ranges from 0.1-ft at low tide to 4.1-ft at high tide during a full moon, and 0.5-ft to 3.8-ft when less than 5% of the moon is visible (http://www.saltwatertides.com/cgi-local/seatlantic.cgi). This variation can push tidal waters against the adjacent dike or into the uplands on-site.

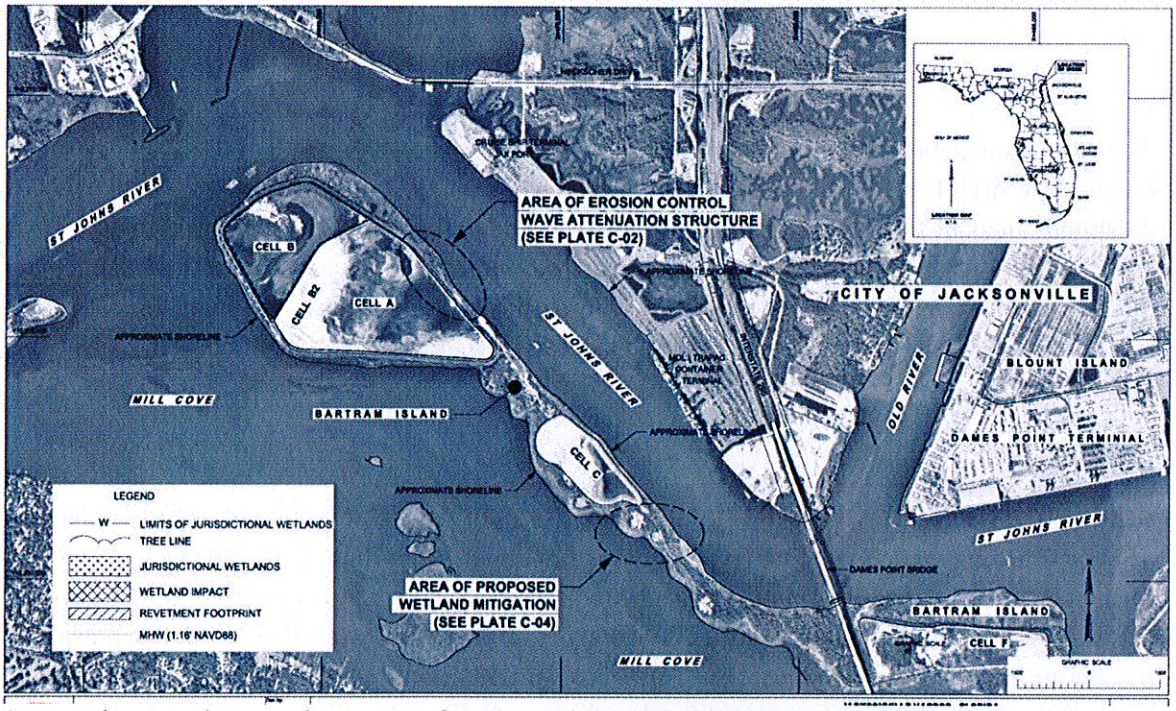


Figure 1. (Permit Plate C-01) Location of Bartram Island in the Lower St. Johns River

Attempts to control erosion of DMMA Cell A/B side-slope on the north side of the island is an on-going activity. Long term stability includes vertical grading along with the placement of topsoil and seeding with herbaceous (grass) species which will occur within a few weeks. However, due to an extraordinarily active wet season from April, 2013 to the present, onsite managers have observed isolated erosional events that have resulted in deposition of fill at the foot of the dike. Activities are underway to restore the fringing salt marsh to pre-event condition; additionally, new erosion control silt fencing has been installed and is monitored regularly to address concerns before they result in adverse impact. It is for this reason a permanent structure is proposed for construction along the cell dike toe of slope at the location where damage is most likely to occur. The wave attenuation structure will provide protection to the fringing salt marsh by dissipating high wave energy and releasing the water back to the River without causing adverse impact of erosion and deposition of material into the estuary system.

The proposed construction of a wave attenuation structure at the toe of the existing dike will result in direct (permanent) impact to salt marsh wetland that exists between the dike and the open water edge of the St. Johns River. Further described herein, the portion of the salt marsh that will be displaced is the high marsh sub-community of the fringing estuary along the base of the dike.

Purpose of Mitigation

The importance of salt marsh ecosystem to the coastal environment can be presented as five ecological roles: primary production, food sources, habitats, stabilization of sediments, and filtration (Dawes, 1998). The purpose of the mitigation is to compensate for the functional loss of high marsh within the footprint of the wave attenuation structure by replacing this community at another location on Bartram

Island between active DMMA cells. Creation of a wetland mitigation site is proposed for a previously disturbed, fallow upland area (FLUCFCS Code 743) which will restore the function of a salt marsh estuarine system.

Description of Impact Area

An estuary consisting of a high and low salt marsh (FLUCFCS Code 642) occurs along the base of the DMMA dike side slope. The estuary was formed from disturbance as a result of on-going construction and maintenance activities over many years. The wetland jurisdictional determination (JD) line is located at the structure base, with the dike built out to the interface delineation line; **Figure 2**. An erosion gravel blanket is at the foot of the dike, which consists of aggregate limestone rock with pore spaces that collect shifting sand. As the pore spaces fill and the material settle, the aggregate and sand form a conglomerate that anchors the dike at its toe. A silt fence is present a few feet from the dike. No upland buffer is present between the dike and JD boundary.

The high marsh grades into a low marsh beyond the project limit and extends to open water of the LSJR. The salt marsh is brackish within a mesohaline (average salinity of 14.5 parts per thousand (ppt)) riverine zone, and is subjected to daily tidal influence (SRRLSJR, 2013). As previously described, the marsh is frequently subjected to high wave energy which often overtops the erosion control silt fence, the first line of defense from the adverse effect of erosion from the side slope depositing material into the marsh. The footprint of the 0.58-acre impact area is a mostly herbaceous high marsh dominated by *Spartina patens* with a small population of *Juncus roemerianus*. Shrubs (*Bachharis halimifolia* and *Myrica cerifera*) are present along the upland margin. A new weir outfall system is located midway along the linear footprint. The HDPE plastic 30-inch pipes extend outward from the dike side wall and are placed on pilings to the water edge of the St. Johns River. The recently installed outfall pipes were included under DEP permit 16-255718-001-ES issued on January 13, 2011.

Wildlife observed in the impact area consists mostly of small crustaceans and minnows when tide is present. Wading birds have been observed roosting on pilings or foraging in or adjacent to the impact zone marsh; osprey are observed foraging overhead. Medium-sized mammals that could utilize the area include raccoons, feral hogs, and armadillo. Sign of scat and tracks indicate that raccoons are frequent visitors.

Description of Proposed Structure

The proposed permanent wave attenuation structure will start at STA 236+00, and will extend around 1,100 feet in length, ending at STA 247+00 at a palm tree hammock. The anticipated area that will be permanently impacted is 0.58 acre, as depicted on the project plan view (**Figure 2**). The width of footprint will be around 21-ft wide along the outer-most edge at the wetland interface. A profile view, **Figure 3,** depicts the tie-in of the dike erosion blanket to the existing wave attenuation structure. The design incorporates features to accept a high energy wave reaching the erosion blanket at the toe of the dike side wall and dissipate the energy so that as water enters and exits the structure it no longer has the ability to cause erosion. This design provides long-term protection to the adjacent marsh from deposition of fill material. Please see the engineering plates included in the DEP permit modification

application submittal (for existing DEP modification #16-259637-003) for further details of the wave attenuation structure design and construction methodology.

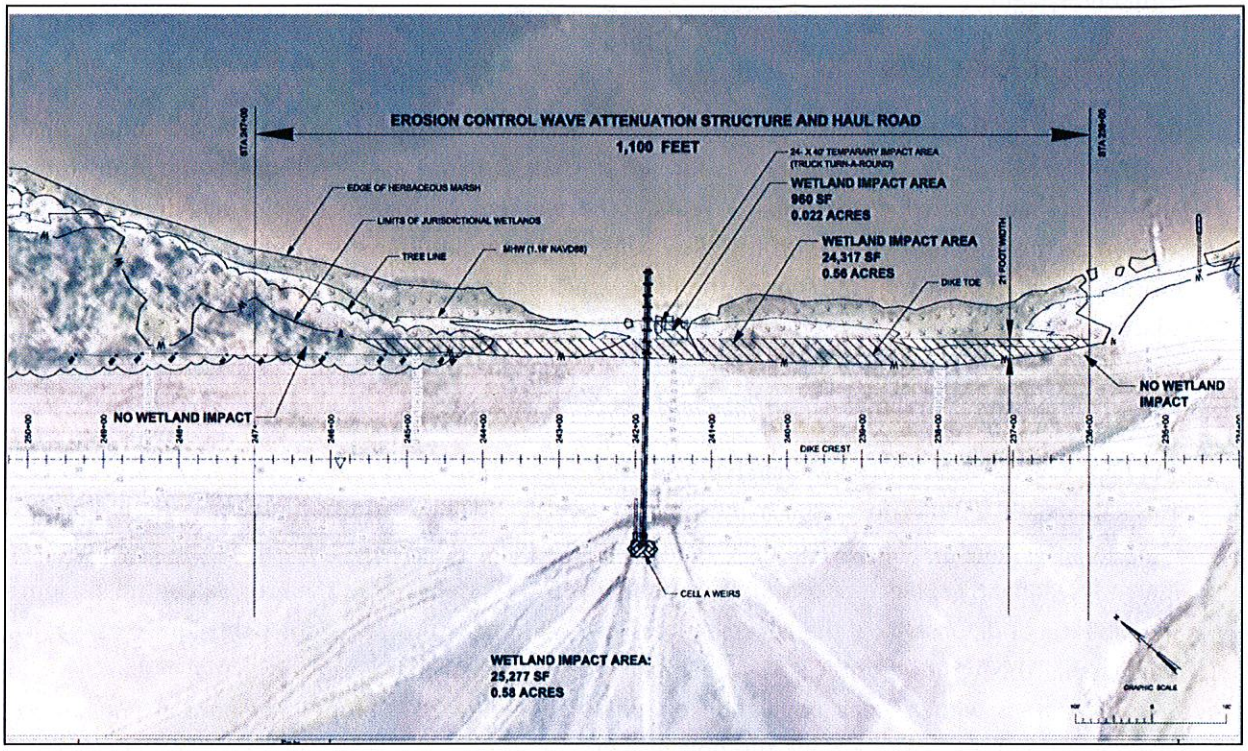


Figure 2. (Permit Plate C-02). Plan view of impact area from footprint of wave attenuation structure.

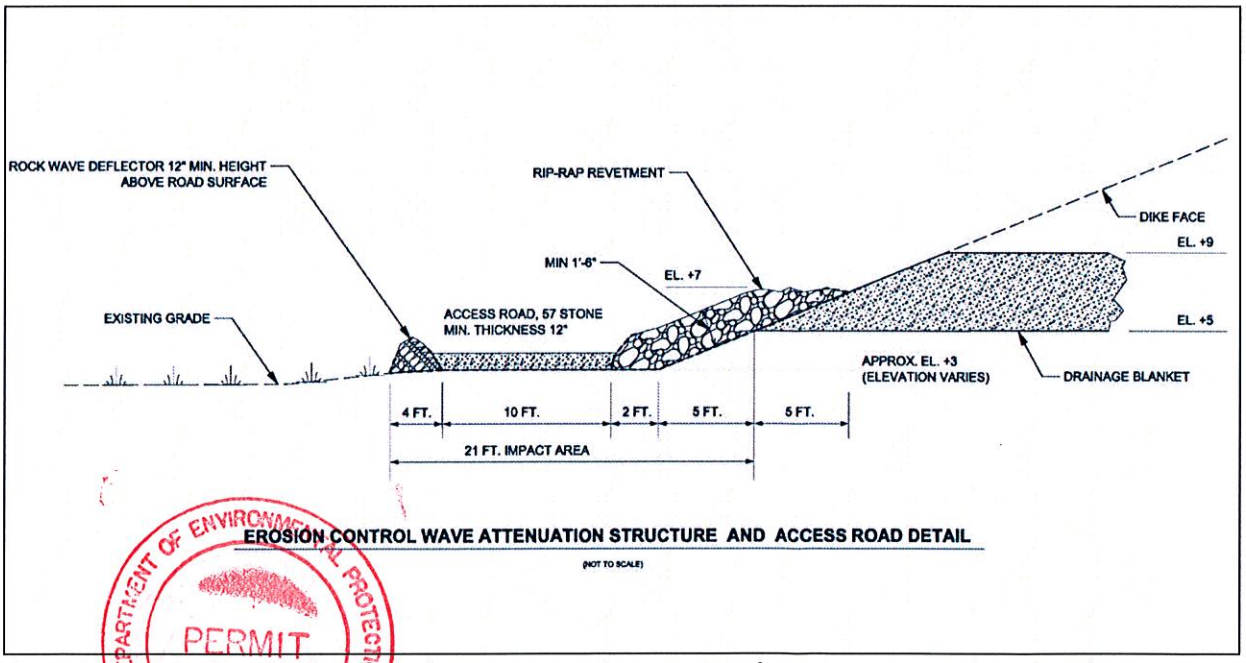


Figure 3. (Permit Plate C-03). Detail of wave attenuation structure for permanent erosion control.

Mitigation Area Existing Conditions

The proposed mitigation area is a fallow, disturbed upland (FLUCFCS Code 743) that is located between DMMA Cells C and F as depicted below in Figure 4. The area is a former dredged material disposal site.

Figure 4. (Permit Plate C-04). Location of mitigation area southeast of Cell C in dormant upland formed by dredged material.

The upland area abuts around 400 feet of a salt marsh on the south side of the island in a crescent shape of the existing landscape, and encompasses 6.46 acres; see plan view of the mitigation area depicted in Figure 5. Soils within the upland consist of medium to fine sand and shell hash derived from former dredged material placed many years ago. The general elevation of the area ranges from approximately 1.1-ft at the low marsh edge to 6.5-ft as shown on the permit plate C-05. The inner area is mostly open (<30% canopy coverage), with herbaceous grasses and forbs comprising ground cover. Vegetation includes predominantly FAC or FACU ruderal herbaceous species of *Schizachyrium scoparium, Eragrostis spectabilis* grasses, and *Melanthera nivea, Solidago sp., Euthamia caroliniana*, and *Erechtites heiractifolia.* Along the margins of the upland area, immature trees and shrubs form a small mesic hammock. Species include *Pinus elliottii, Quercus laurifolia*, *Juniperus virginiana,* and *Sabal palmetto* along with shrubs *Ilex vomitoria, Myrica cerifera,* and *Baccharis halimifolia.* Along the wetland boundary, the shrubs extend into the upper marsh as the system transitions into an herbaceous dominated high marsh (FLUCFCS Code 642). The high marsh has greater diversity, with a co-dominance of *Spartina patens* and *Juncus roemerianus*, along with non-dominant grasses *Distichlis spicata* and *Setaria corrugata.* As common throughout the fringing marsh along the island perimeter, *Spartina alterniflora* dominates the low marsh waterward near the LSJR edge. Few invasive species are present.

Soils in the adjoining salt marsh consist of saturated or inundated fine sand that are saturated to the mean high water line (MHW).

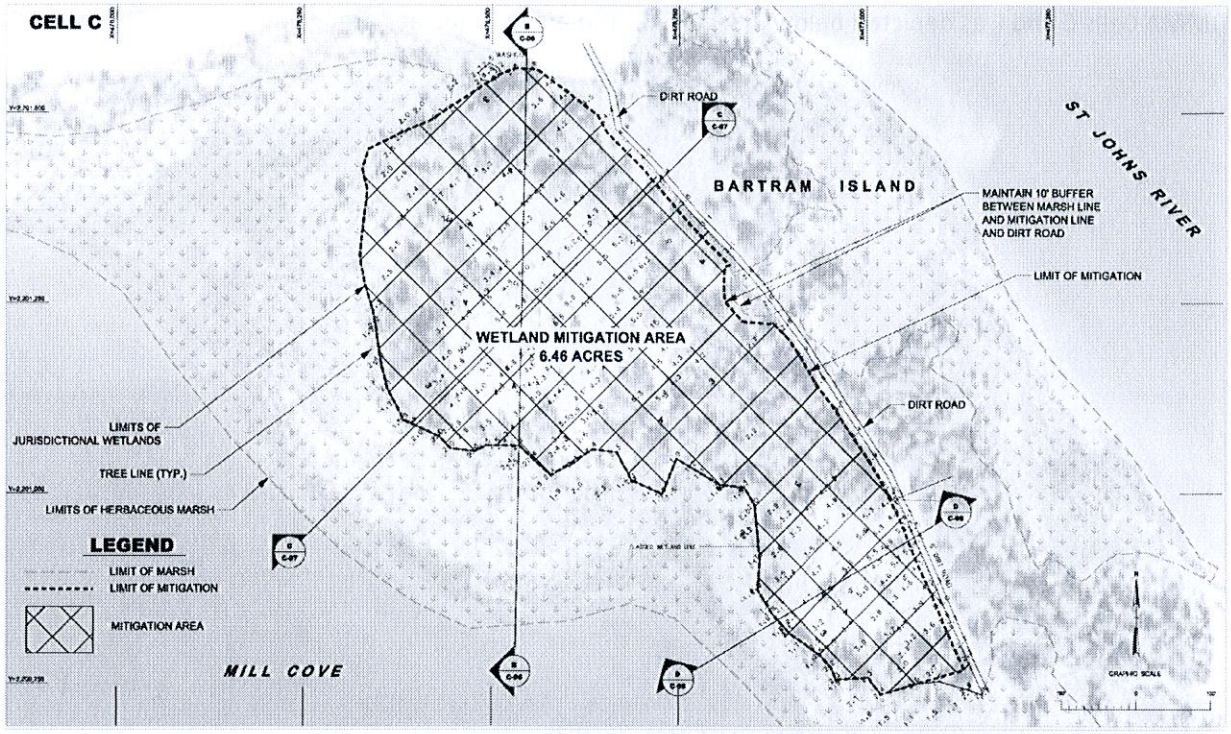


Figure 5. (Permit Plate C-05). Plan view of mitigation area to be created as a salt marsh from existing upland.

Hydrology in the adjoining salt marsh is provided by daily tide as well as runoff from the upland during storm events. In existing conditions, the low and high salt marsh experience inundation that even during low tide soils remain persistently saturated at or near the substrate surface. Extreme flood events occasionally force tidal waters into the upland at the wetland system boundary. Although infrequent, events of this nature have occurred during the current wet season this year. A small drainage channel is present to the west just offsite of the mitigation area. An access road abuts the area to the north, and is excluded from the mitigation. Also, adjacent upland north of the road will be used for staging equipment and storing material removed during the grading operation.

Studies show that restoration of tidal flow and associated habitat changes are important features that can influence bird populations (C. T. Roman and D. M. Burdick (ed), 2012). Wildlife usage in the upland mitigation assessment area is low. Feral pigs, raccoons, and armadillo tracks are present. Trees and shrubs provide cover and forage resources for songbirds. A black racer snake was observed on the access road. Wading birds are present in the adjacent salt marsh. Ospreys and red-shouldered hawks routinely fly overhead to forage for food.

Mitigation Area with Project

The upland area will undergo construction into a wetland by two main activity components: manipulation of the site topography, and introduction of salt marsh vegetation. Tidal marshes typically

have spatially structured vegetation and low diversity (Dawes, 1998). The lower edge of a salt marsh, as found in northern Florida, is drained more completely than inland zones (Dawes, 1998). Often times, this zonation is overlapping in vegetation. The proper elevation needed to sustain the hydrology for appropriate marsh vegetation per stratum will be based on that of the adjoining system so that the entire area will integrate seamlessly into a brackish water marsh found around the perimeter of Bartram Island.

First, upland vegetation will be removed by grubbing and cutting down of trees and woody vegetation. Some existing native species trees such as *Pinus elliottii* and *Sabal palmetto* may be left in isolated locations to become small upland tree islands within the created salt marsh, thus mimicking the habitat that occurs throughout the fringing estuary around the island.

Next, the exposed ground will be graded with heavy equipment, including the removal of excess sand material so that a target topographic elevation is achieved. High marsh is an irregularly flooded system that is not inundated on every daily high tide; rather, it is during exceptionally high tides such as spring or wind-driven tides (Lippson, R.J. and A.J. Lippson, 2009). Studies have shown that a gentle slope of 1 to 3% is recommended to maximize the intertidal areas in tidal marsh restoration, and to dissipate wave energy or a greater area, reducing the probability of erosion (S.W. Broome and C.B. Craft, 1997). Elevation requirements of vegetation to be planted at creation sites can be determined by observing the upper and lower elevation limits of the dominant plant species at the nearby natural marsh (S.W. Broome and C.B. Craft, 1997). The Bartram Island mitigation area will have a gradual drop from an elevation of 3.5 at the existing upland immediately outside of the project limit to an elevation of 2.0-ft found at the existing boundary along the marsh interface toward the River's edge; see profiles on permit plates C-06 to C-08.

The attached graphic illustration of the mitigation area represents the contrast of the existing condition to the with-project rendition. The final grade elevation will match that of the existing regularly flooded low marsh topography relevant to the LSJR water edge. It is anticipated that additional low marsh will require expansion into the existing upper marsh near the boundary of the disturbed wetland/upland interface. This expansion will accommodate the hydrology needed to sustain a newly established transition of wetland in the area of the former upland. Therefore, some alteration of the existing upper marsh will occur as an enhanced sub-community of low marsh. The removal of earthen material from the present wetland boundary to the edge of the created marsh will allow low marsh to extend into this area, but as the slope gradually increases, a vegetation sub-community will transition from low to high marsh, until reaching the upland buffer.

Upland material removed from the site will be stored in the adjacent upland outside of the mitigation project limits for use in maintenance of access roads or other activities associated with the DMMA. Also, a staging area will be located in this area. The existing access road may be maintained using the upland material. Best management practices such as erosion control fencing will be placed along the upland perimeter, and a turbidity curtain will be placed at the watered edge to collect any sediment that may migrate during construction activities.

Establishment of vegetation appropriate for the salt marsh will focus on dominant species that typically occur in a high (upper) marsh. However, as discussed above, the low marsh will be expanded into the area now occupied by a disturbed high marsh along the interface of the wetland boundary. Therefore, some low marsh vegetation will also be included in the planting scheme. One disadvantage of sandy material is its low nutrient capacity, but the problem is alleviated where tidal flooding deposits significant amounts of nutrient-rich particles (C. T. Roman and D. M. Burdick, 2012). Application of fertilizers containing nitrogen and phosphorus enhances plant growth and is usually beneficial during establishment (S.W. Broome and C.B. Craft, 1997). Prior to the plantings, the substrate soils may require some application of fertilizer in order to provide nutrients to newly establishing plants because the previously dredged material contains little nutritional value for vegetation (S.W. Broome and C.B. Craft, 1997). Conversely, overabundance of fertilizer could add unnecessary nutrient loading to the LSJR, which is already stressed from excessive nitrogen and phosphorus. Therefore, the newly exposed soil on site will be tested for residual nutrient and mineral content as a portion of the contracted activities. If the results of the testing determine that soil amendment is required, its use will be sparing and within product guidance. As the vegetation becomes established, sediment accumulation, supplied by tidal and wave action, longshore drift or upland erosion will provide beneficial nutrients that will build the soil over time. This accumulation of sediment allows marsh surfaces to keep pace with rising sea level (S.W. Broome and C.B. Craft, 1997).

Vegetation planting will occur in both the upper and lower marsh sub-communities with regionally available, locally grown materials. The existing lower marsh consisting of a monoculture of *Spartina alterniflora* will be extended landward due to the grading plan detailed above. Therefore, additional *Spartina alterniflora* will be planted into the newly exposed lower elevation toward the water edge. As the lower marsh transitions into a high marsh in the upper elevation area, two dominant vegetation species, *Spartina patens* and *Juncus roemerianus,* will be planted to compose the dominant coverage of the high marsh. Additionally, at the margin of the system, *Distichilis spicata* will be planted for a smooth transition into the upland buffer. These grasses will be supplied in 1-gallon containers and will be spaced on 3-ft centers. As the plants start to spread out during establishment, it is anticipated that natural recruitment of native high marsh species will eventually occupy the open spaces between the plantings adding to the overall diversity. Invasive species will be eradicated as necessary, determined through monitoring.

<u>UMAM Discussion</u>

Pursuant to Florida Chapter 62-345, the Uniform Mitigation Assessment Method (UMAM) was used to evaluate adequate compensation of both the impact zone and proposed mitigation area. The UMAM analysis determines the compensation to offset the functional loss of the existing wetland within the footprint of the pending construction zone. UMAM Worksheets, both Part I and Part II, describe in detail the scoring and supporting data used to calculate the functional loss (FL) from adverse permanent impact, and relative functional gain (RFG) of a proposed mitigation action. The completed and enclosed UMAM worksheets addressing 0.58 acre of impact determined a FL of 0.33 based on a delta of 0.57. The UMAM evaluation for the mitigation area determined a RFG of 0.304 based on a delta of 0.52, time lag of 1.14, and risk factor of 1.5. The time lag of 1.14 is based on similar type of salt marsh mitigation

projects in the area, notably the Mile Point Navigation Study Mitigation Assessment (USACE, 2012) in which several acres of salt marsh will be compensated nearby in the LSJR. For the Bartram Island site, a risk factor of 1.5 was chosen for the creation of an herbaceous wetland extending from an existing system. Unlike the Mile Point project, a smaller area will be included in the Bartram Island mitigation which represents less risk of herbaceous vegetation failure; therefore, a slightly lower risk factor was selected. Information regarding the Mile Point Navigation Study UMAM and mitigation plan can be accessed at the following link:

(http://www.saj.usace.army.mil/Portals/44/docs/Navigation/FINAL_Jacksonville_Harbor_Mile_Point_AppendicesB-F.pdf).

Based on the factors above, the calculated amount of acreage required to fully compensate for the adverse permanent impact to the site is 1.10 acres. However, the area that is proposed for mitigation is 6.46 acres. The Corps and Jacksonville Port Authority (Jaxport) propose to construct an on-site salt marsh for the entire 6.46 acre site, along with enhancement of the high salt marsh at the immediate wetland interface within the project limits. Although only 1.10 acre will be used to compensate for impact of this modified permit application, future construction projects associated with the operation and maintenance of the Bartram Island dredge material management facility will most likely result in expansion into the fringing salt marsh along its perimeter. Construction of 6.46 acres of salt marsh at this time will proactively address the current and future impacts, and will result in a significant cost-savings to both the tax-payer funded Federal government and Jaxport project. Additionally, in contrast to a mitigation bank, the mitigation area will only be used to compensate for onsite permanent impacts; no "credits" will be generated or sold to other interests or parties, and the site will be maintained and monitored as a permittee-built wetland mitigation.

Monitoring Plan

Monitoring will be conducted by qualified wetland scientist(s) that have demonstrated expertise in estuarine systems. Monitoring of the created salt marsh will be conducted initially twice a year for two years and once annually for three years until such time that the successfulness of the site is accomplished based on metric success criteria outlined herein. If monitoring is required beyond the initial five years, evaluation of conditions that are causing stress or other retardation of the site towards a general trend of success will be identified and addressed with employment of the mitigation contingency plan, also described herein.

Monitoring will include evaluation of the following parameters:

- Stability—Stability of the substrate and tidal or wave influence of the created site will be assessed to determine if erosion is occurring.
- Hydrology—A qualitative analysis shall be performed to determine whether the hydrology of the site continues to be suitable for low and high marsh habitats.
- Vegetation—Percent cover (including species type) of the created site and adjacent reference wetland will be ascertained using a sufficient number of randomly selected 1-meter^2 quadrants along transect lines. Each species within the quadrat will be identified and counted; their

abundance calculated as a percentage (to determine population and shoot density). The canopy height of the plants within the quadrat is measured and averaged to determine average canopy height for comparison to the reference site.

- Photography—High and low marsh and tidal streams will be photographed from assigned monument locations. One monument will be assigned to a representative location within the reference site.
- Annual Reports—Reports would include maps of the mitigation area, a description of marsh stability including observed erosion; a qualitative analysis of the site hydrology; an analysis of percent cover data including percentage of high marsh; photographs of the created area from assigned monuments and miscellaneous features, wildlife sightings or issues; copies of field collected data; and finally, recommendations.

Success Criteria provides the basis of established plant growth that is documented to have unassisted persistence for at least two consecutive years within the created site. The criteria for a successful basis of comparison include:

- Areal coverage of species composition within 15% of that in identified nearby reference site for the first year; within 90% by the third year so that less than 10% of exposed or eroded substrate is present.
- Dominance of plant community by target native species (*Spartina alterniflora, S. patens, Juncus roemerianus,* and *Distichlis spicata)* which is similar to the reference salt marsh site determined by plant cover analysis.
- High marsh comprises at least 60% of the total created (former upland) area.
- Hydrological conditions remain favorable for high and low marsh habitats.

Contingency Plan

Environmental monitoring over a period of five years will help ensure the sustainability of the restoration site. The Corps shall be ultimately responsible for ensuring that the final success criteria are met, and will take corrective actions as necessary. If deemed necessary, any corrective actions, such as re-planting or substrate manipulation (elevation or nutrient level adjustment), may be monitored for at least three additional years from the time they were implemented.

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