MILE POINT TRAINING WALL RECONFIGURATION

DREDGING SUMMIT & EXPO '18 PROCEEDINGS

ABOUT ME

My name is Kristina Simankova. I am a Production Engineer with Manson Construction Co.

ABOUT MANSON C0ONSTRUCTION CO.

Established in 1905, Manson is employee owned company. Manson specializes in a heavy marine construction as well as dredging and is the 3rd largest dredging company in USA.

OUTLINE

I will be discussing a Mile Point Training Wall Reconfiguration project. For Manson Construction this job was a unique opportunity that required:

- Combining efforts of both Dredging and Construction Divisions (in water and on land)
- Extensive planning
- Design of the project specific tools

AERIALS - BEFORE WORK & AFTER

Before Work Started

After Completion of Work

GOOGLE IMAGES - BEFORE / AFTER

Before (2008)

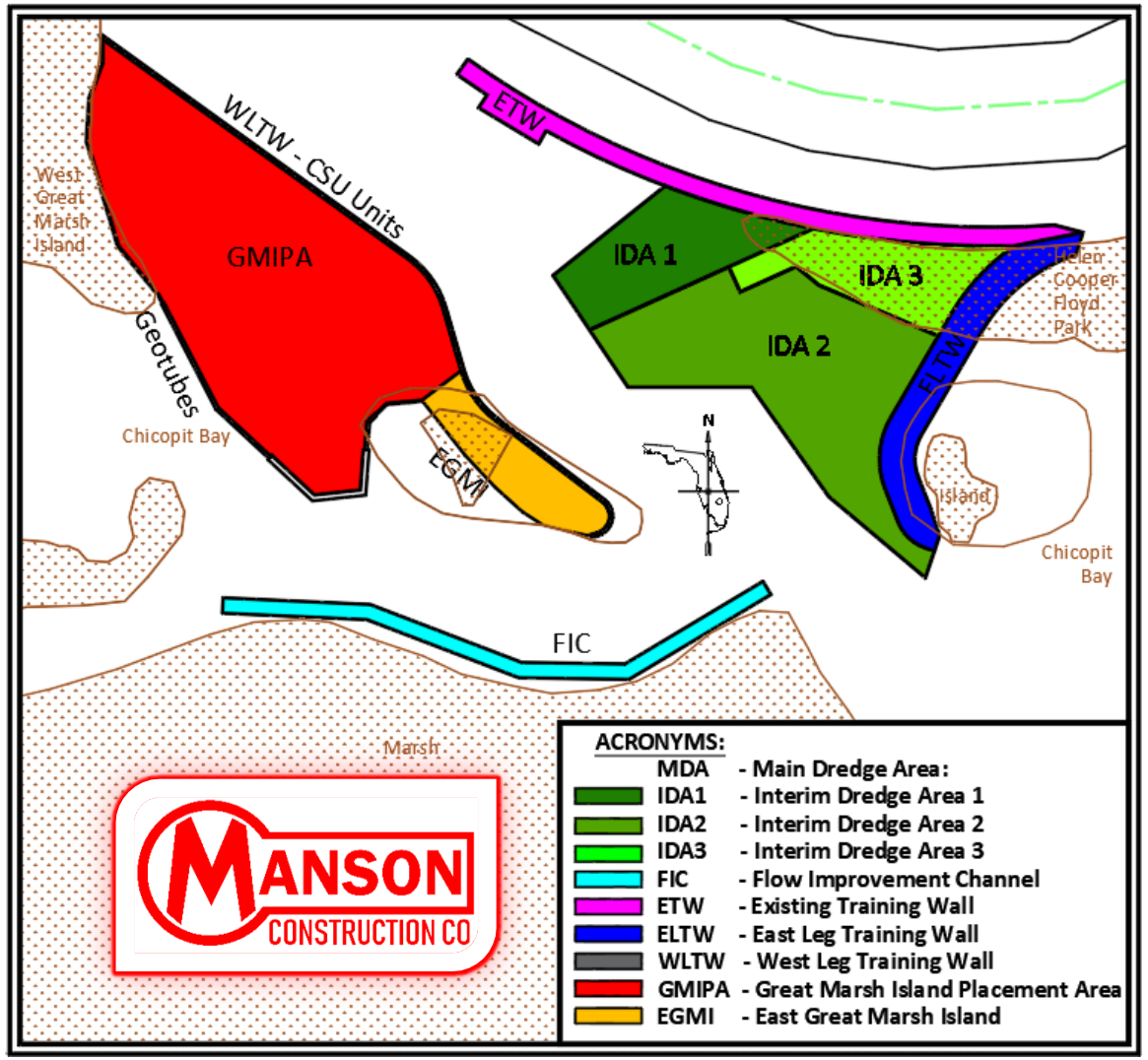
After (2018)

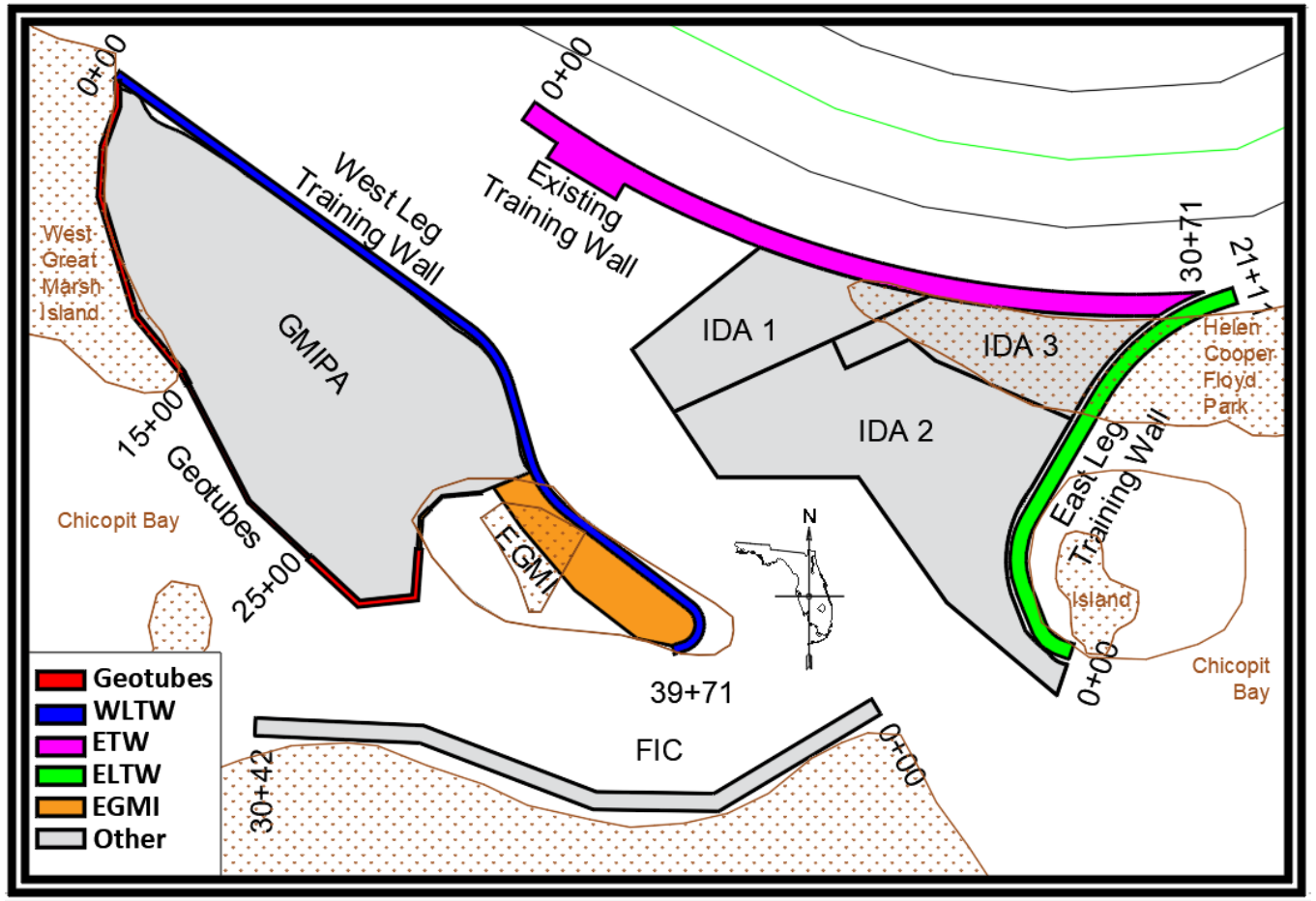
PROJECT WORK AREAS

WORK AREA - EQUIPMENT USED (Work Description)

- IDA 1,2&3 - CSD (Dredge)
- FIC - CSD (Dredge)
- ETW - CSD/Crane (Dredge)
- ELTW - Excavator/Cranes (Dredge/Backfill/*Protect)
- WLTW - Excavator/Cranes (Dredge/Backfill/*Protect)
- GMIPA - All Rigs (Dredge/Backfill/*Protect)
- EGMI - Excavator/Cranes (Grade/*Protect)

*Protect – areas were protected from erosion by placing loose rock, marine mattresses, geotextile fabric, concrete structural units, geo tubes, core stone and armor stone.





ACRONYMS:

WLTW	– West Leg Training Wall
ELTW	– East Leg Training Wall
ETW	– Existing Training Wall
EGMA	– East Great Marsh Island

MARINE CONSTRUCTION DIVISION

Schedule of the Marine Construction Division was dictated by the contract and parallel work of the Dredging Division and the work of the sub-contractor (Geo Tube placement).

MANSON CONSTRUCTION CO

WEST LEG TRAINING WALL (WLTW)

Design Goals

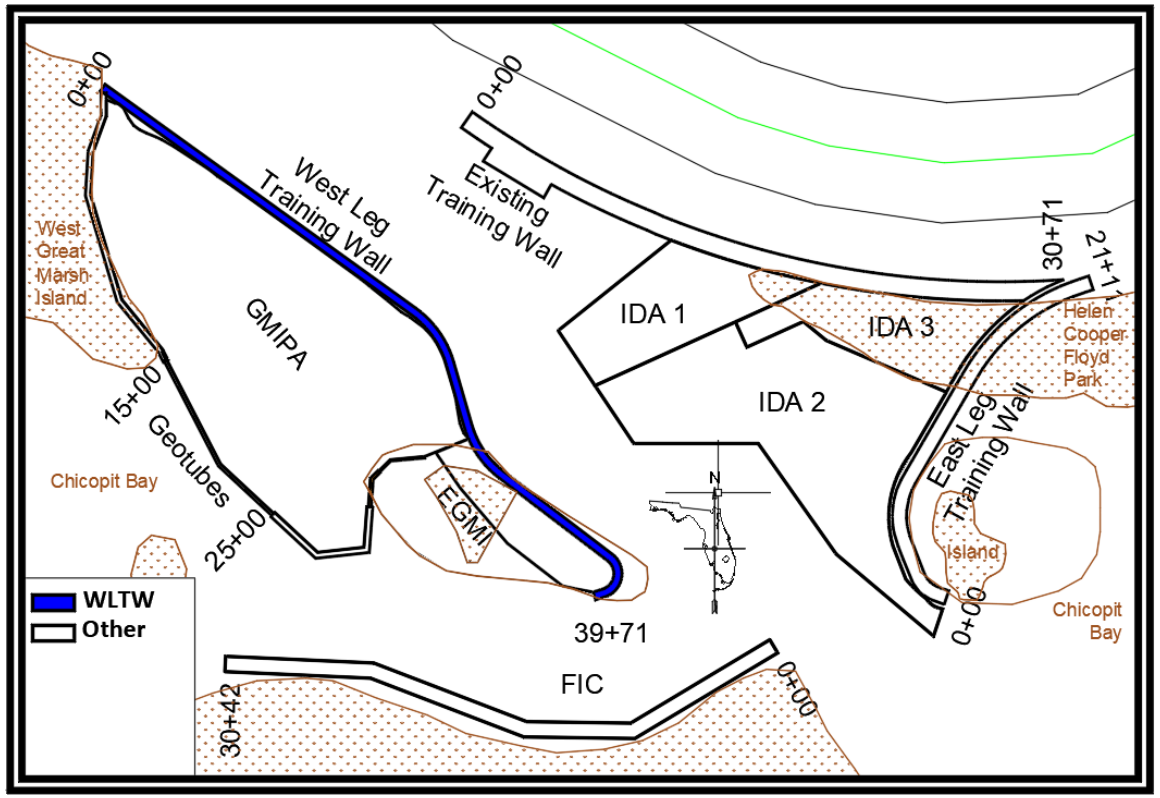
- WLTW was designed to protect both GMIPA & EGMI from erosion.

Means and Methods

- 4,000LF (1,219m) of retaining wall was composed of 504 interlocking CSUs (Concrete Structural Units).
- Manson was required to guarantee that material will be contained for 50 years. To meet the requirement the back side of the Concrete Structural Units was outfitted with the panels of reinforced geotextile fabric.

Procedure (Overview)

- Existing bottom was graded (cut and fill) to a design template.
- Marine mattresses were placed in water, over the template. Mattresses serve as a base for CSUs and are designed to prevent material migration.
- Marine mattresses were covered by panels of geotextile fabric (to further prevent material migration).
- Interlocking CSUs were placed over the geotextile.
- Containment was completed by dressing back side of CSUs with panels of the additional geotextile fabric.



EAST LEG TRAINING WALL (ELTW)

Design Goals

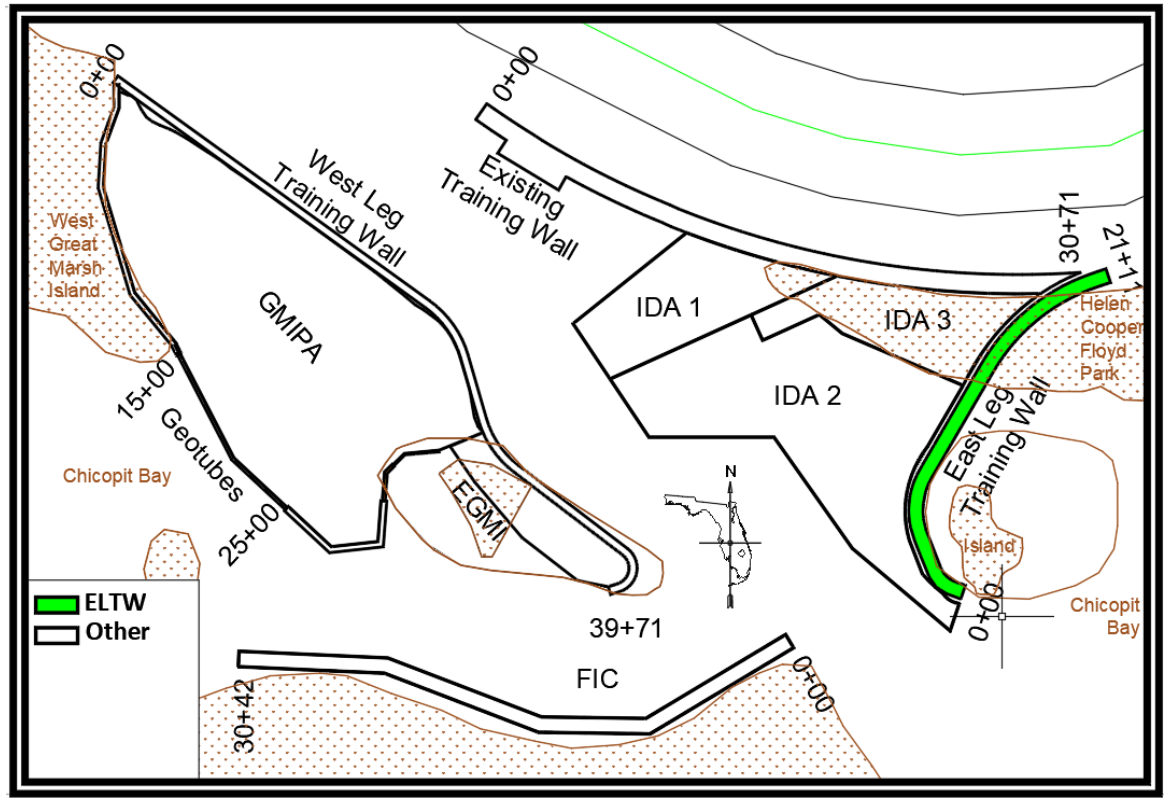
- ELTW was designed to protects land from erosion.

Means and Methods

- Hydraulic Excavator “CAT 385C L” and Manitowoc Crane “4600” placed rock in water as well as upland to create the East Leg Training Wall (ELTW).

Procedure (Overview)

- Existing bottom was graded (cut and fill) to a design template.
- Marine mattresses were placed in water (to create a solid base for core/armor stone and to prevent material migration).
- Marine mattresses were covered by a panels of a geotextile fabric (to prevent material migration).
- Geotextile fabric was covered with the core rock and by the armor stone (land protection).



CONSTRUCTION EQUIPMENT (ELTW)

Excavator “CAT 385C L” – Placing Rock

Manitowoc Crane “4600”

EXISTING TRAINING WALL (ETW)

Design Goals

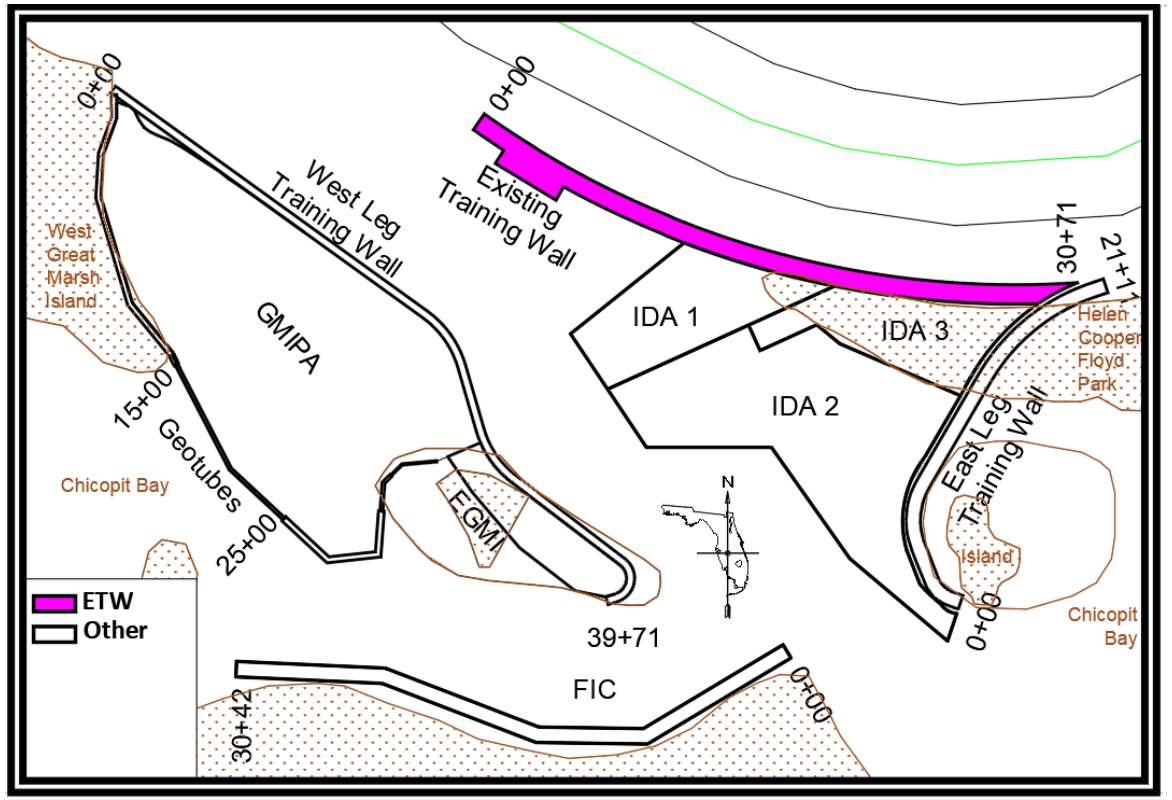
- Existing Training Wall was removed to aid navigation. Suitable rock was repurposed for ELTW.

Means and Methods

- Existing Training Wall was removed to aid navigation. Suitable rock was repurposed for ELTW.

Procedure (Overview)

- Existing bottom was cut to grade. Material loaded to barge.
- Material unloaded and stockpiled on IDA3
- Suitable rock repurposed for ELTW.



CONSTRUCTION EQUIPMENT (ETW)

Derrick “Vasa”

Derrick “Haakon

EAST GREAT MARSH ISLAND(EGMI)

Design Goals

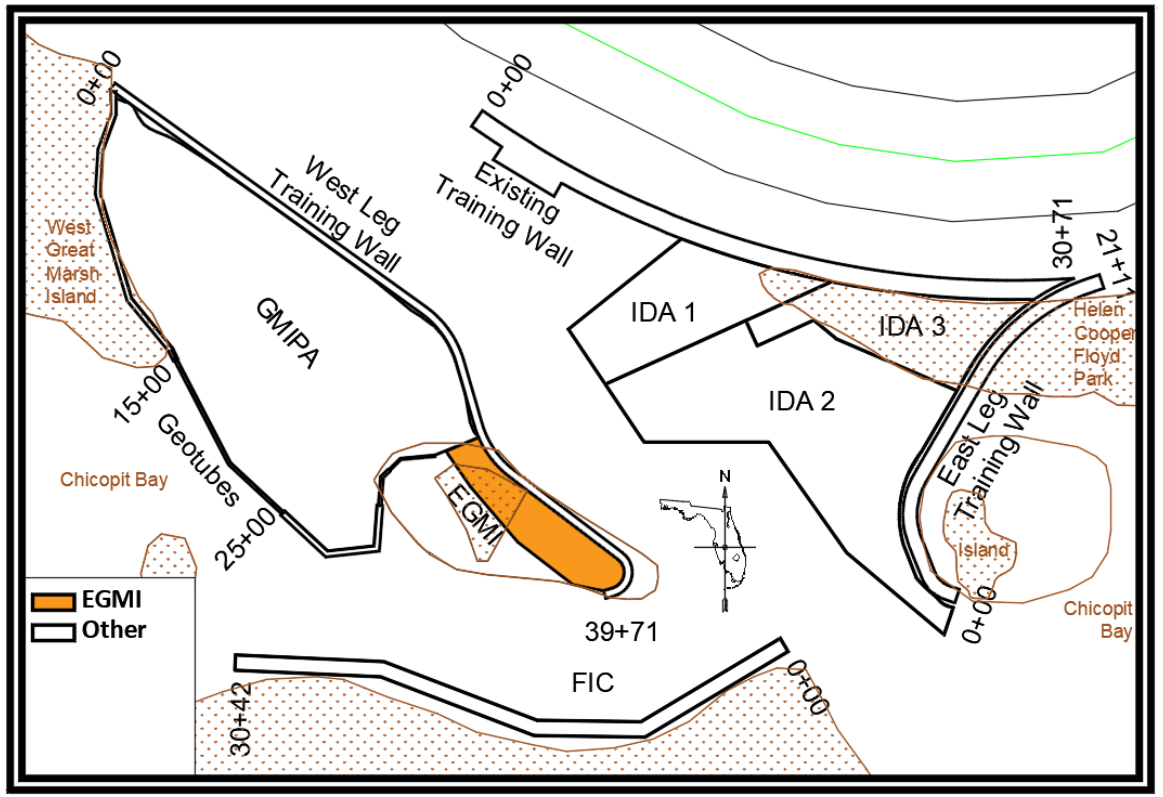
- Existing Training Wall was removed to aid navigation. Suitable rock was repurposed for ELTW.

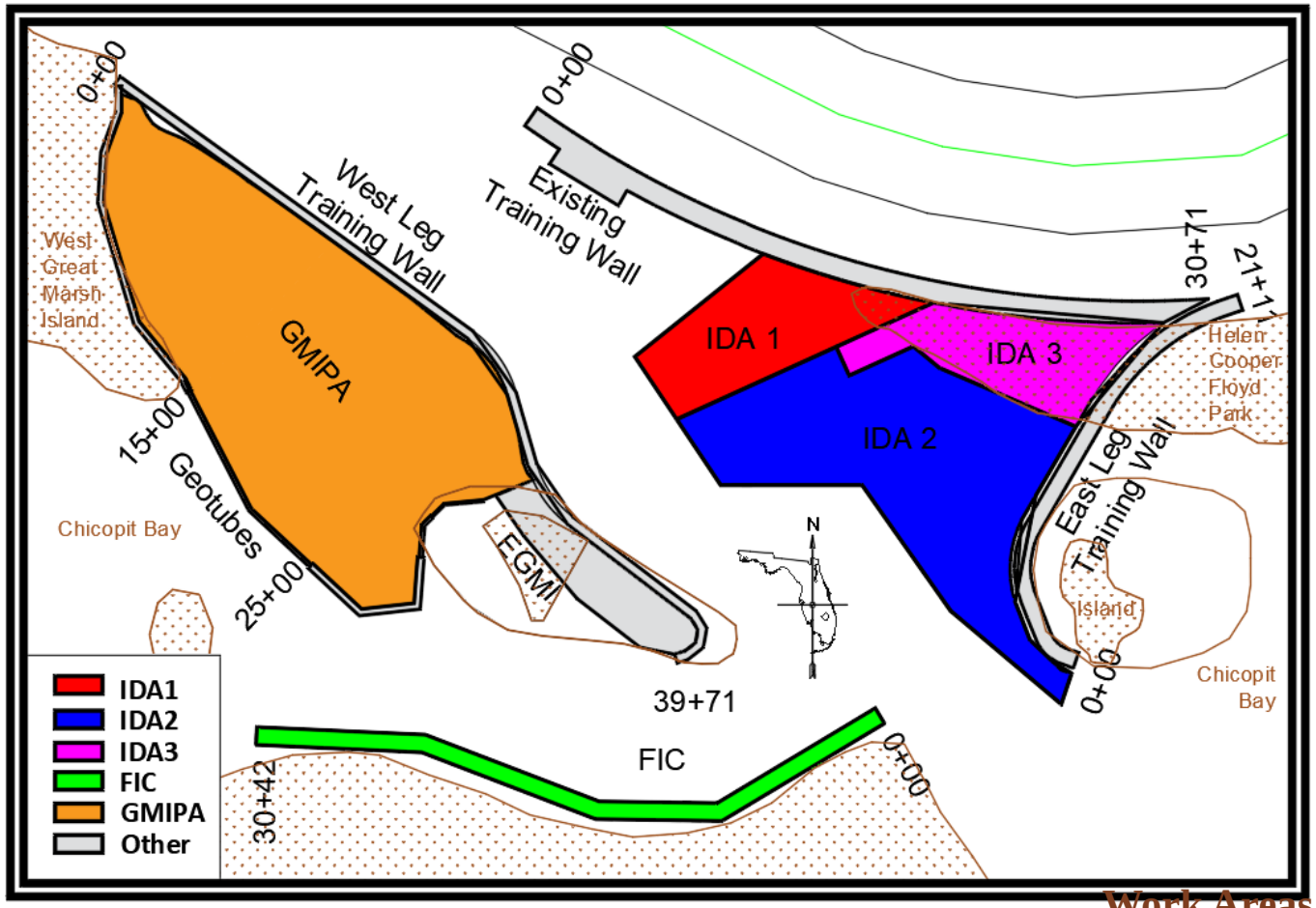
Means and Methods

- 1,000LF (304.8m) of the CSU wall was installed to protect East Great Marsh Island from tidal erosion. Area of EGMI adjacent to the CSUs was cleared of trees and graded.

Procedure (Overview)

- Area cleared of trees and trash
- Area was enclosed by interlocking CSUs
- Land was graded





Work Areas

ACRONYMS:

IDA	– Interim Dredge Area
FIC	– Flow Improvement Channel
GMIPA	– Great Marsh Island Placement Area (GMIPA)

DREDGING DIVISION

Dredging stages were dictated by the contract and by the parallel work of Marine Construction Division. All material removed hydraulically was pumped direct in to the GMIPA.

MANSON CONSTRUCTION CO.

MAIN DREDGE AREA(MDA)

Design Goals

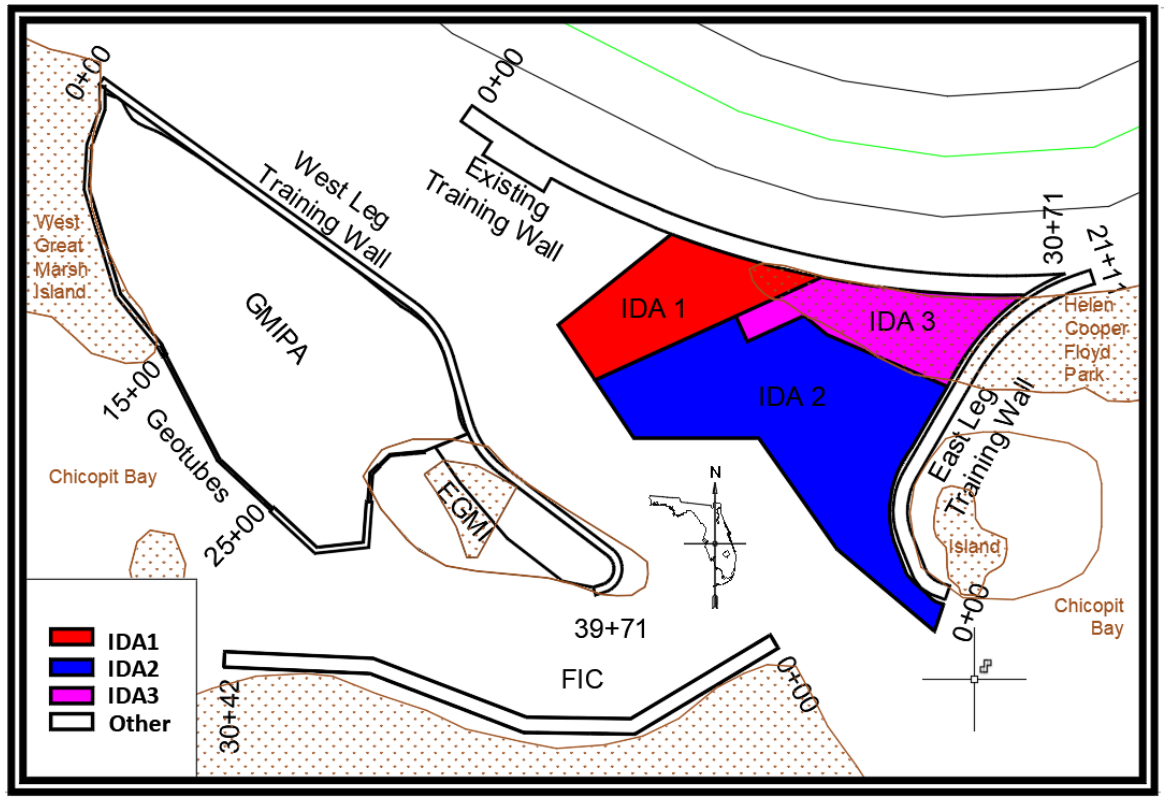
- Improved Navigation for big container ships.

Means and Methods

- Material was removed hydraulically via CSD "Frank Bechtolt".

Procedure (Overview)

- Main Dredge Area (MDA) was deepened to 13Ft MLLW.
- Main Dredge Area was dredged (and accepted) as 3 Interim Dredge Areas:
  - IDA1
  - IDA2
  - IDA3
- Dredged material was pumped direct in to the Great Marsh Island Placement Area (GMIPA).



FLOW IMPROVEMENT CHANNEL(FIC)

Design Goals

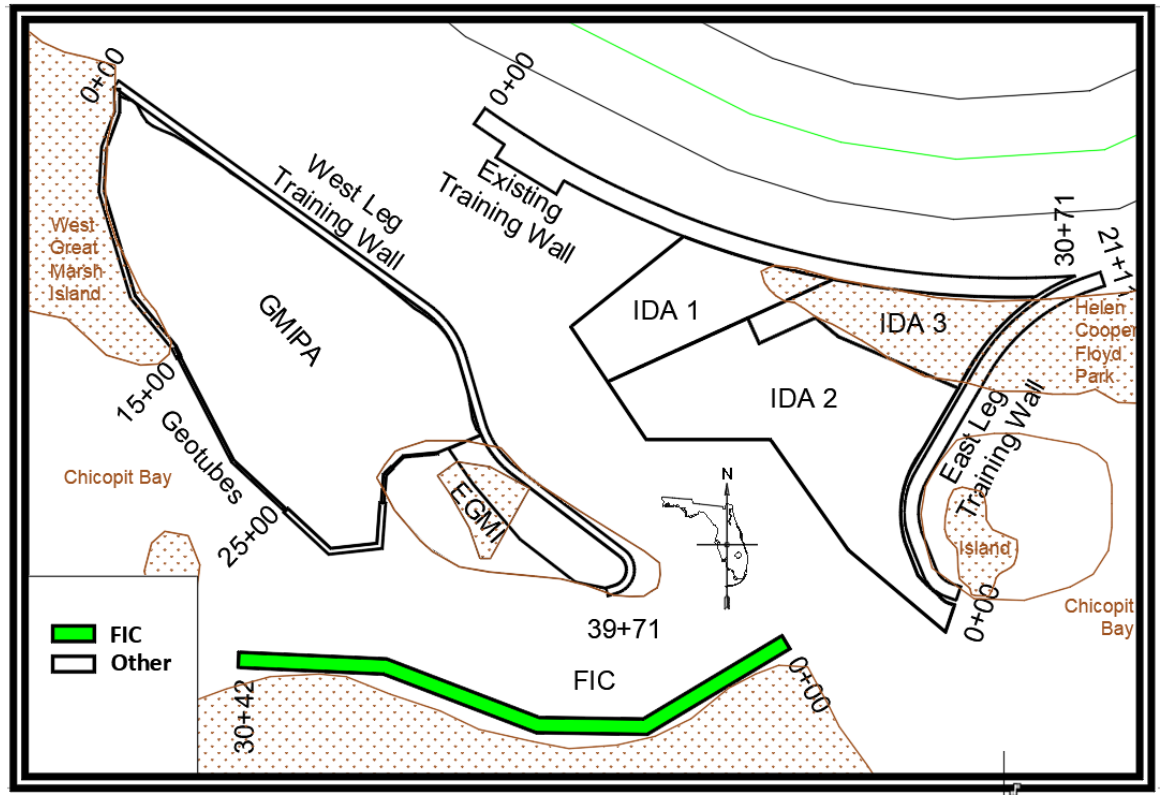
- Per the specification of the contract, Manson excavated a Flow Improvement Channel. The purpose of this excavation was to allow recreational vessels to get through to the ICW (Intercostal Water Way). Old egress was turned in to the GMIPA (marsh land).

Means and Methods

- Material was removed hydraulically via CSD "Frank Bechtolt".

Procedure (Overview)

- Flow Improvement Channel (FIC) was deepened to 7Ft MLLW.
- Dredged material was pumped direct in to the Great Marsh Island Placement Area (GMIPA).



GREAT MARSH ISLAND PLACEMENT AREA(GMIPA)

Design Goals

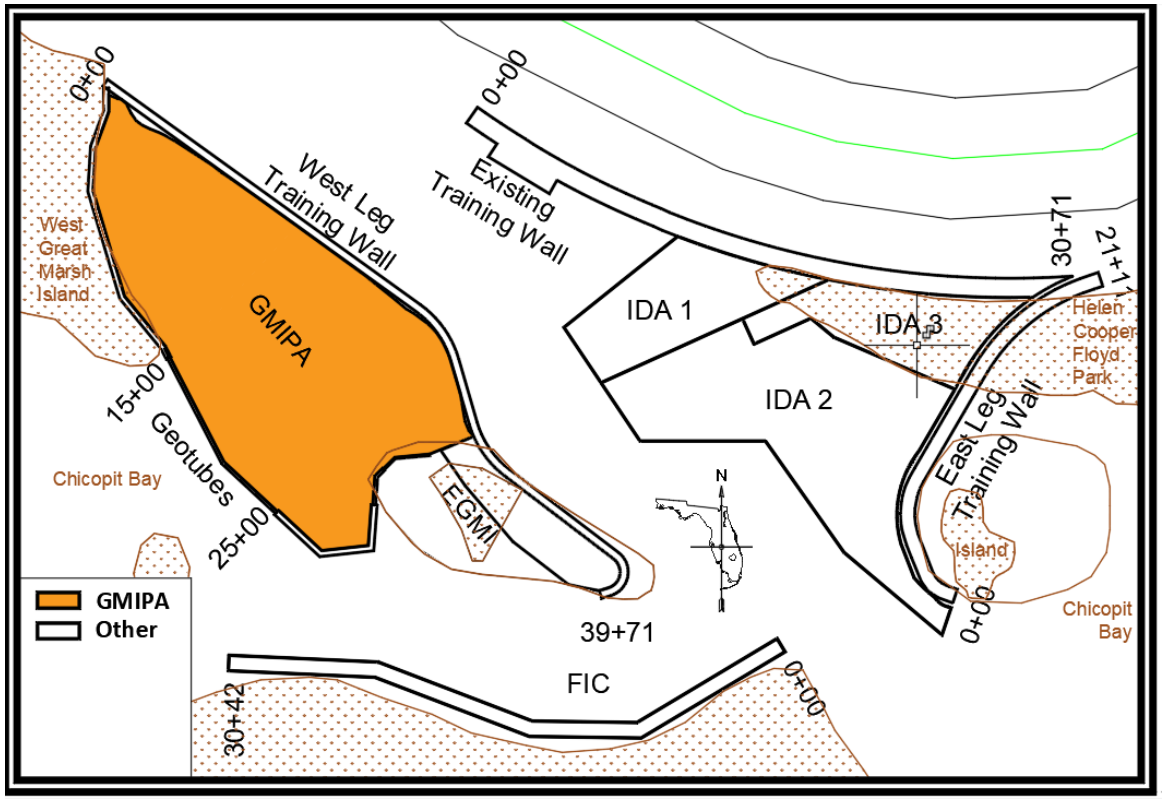
- Manson Construction was contracted to create close to 53 acres (214,483m^2) of salt marsh at GMIPA. Portion of restored marsh was to offset the loss of 8.15 acres (32,981m^2) of salt marsh at Helen Cooper Floyd Park.

Means and Methods

- 3,000LF (914m) of CSU units were tied in with 3,763LF (1,146m) of geotextile tubes to form a retaining basin. Retaining basin of GMIPA was filled in hydraulically.
- Material was placed hydraulically via CSD "Frank Bechtolt".

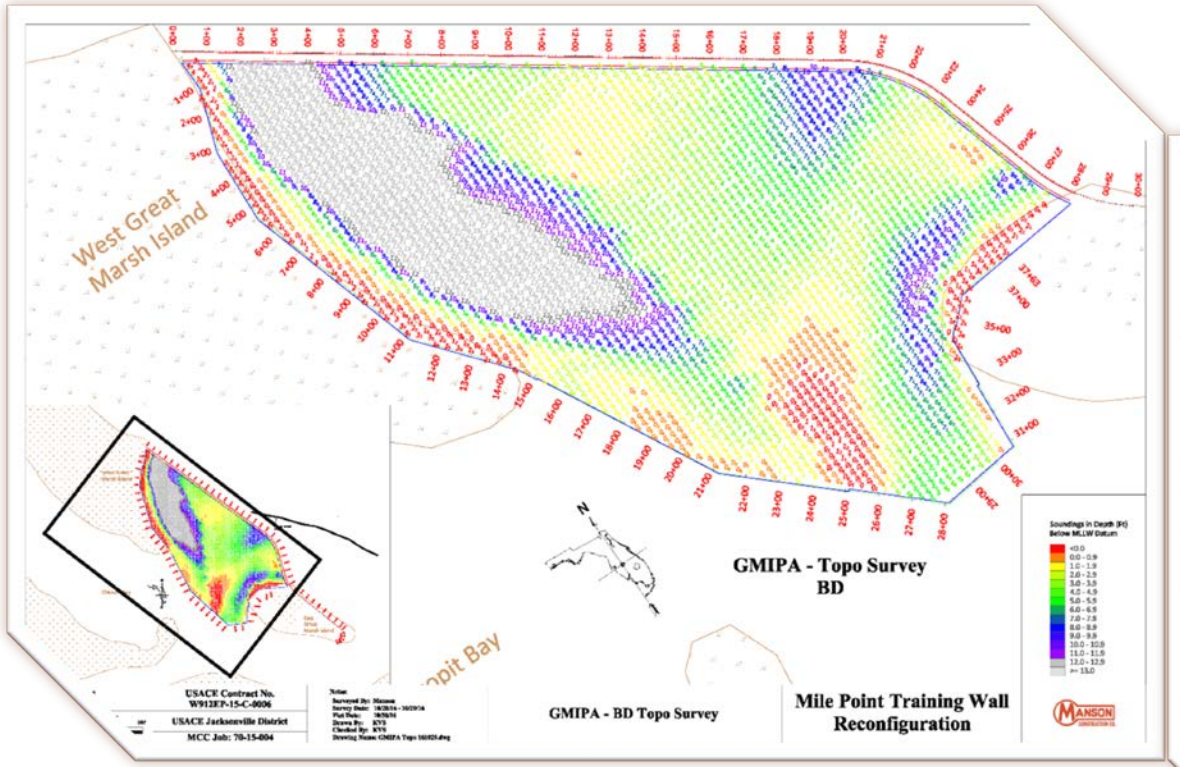
Procedure (Overview)

- Retaining walls (enclosing discharge) were put in place first
  - CSUs
  - Geotubes
  - Temporary dike
- Material was pumped direct from FIC and MDA.
- GMIPA was filled to 4Ft above MLLW. Fill was graded.

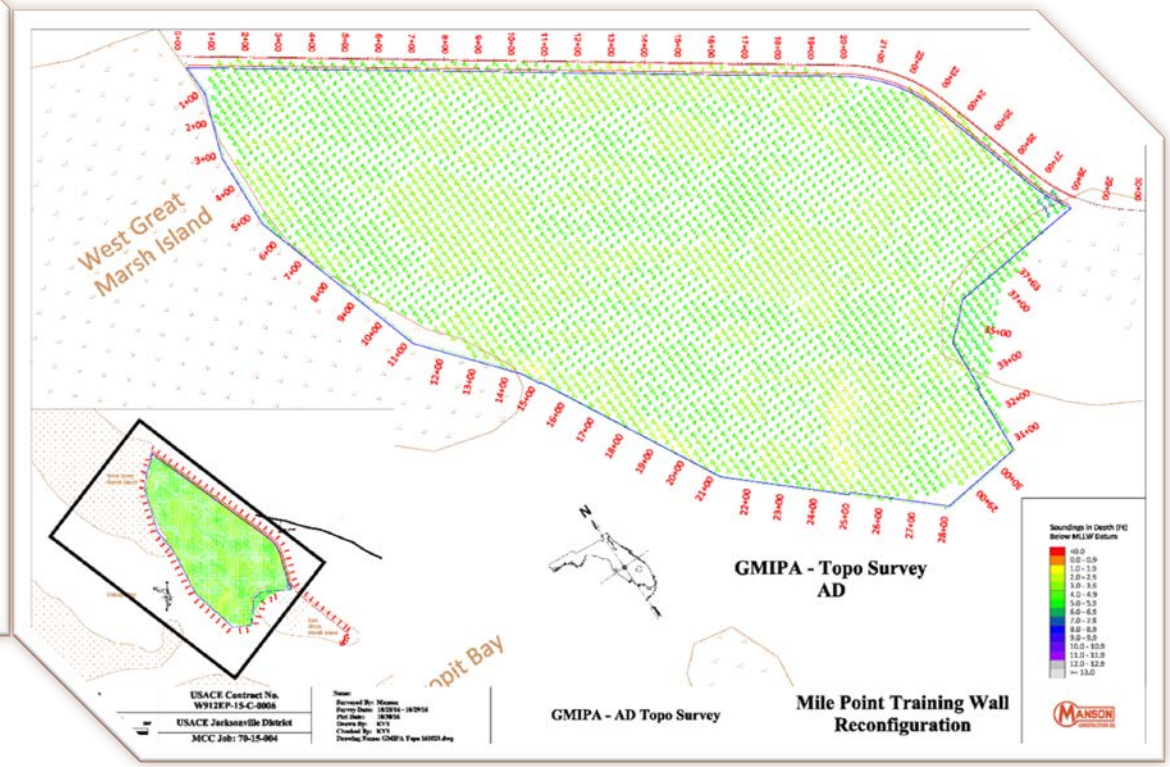


GMIPA FILL - BEFORE WORK & AFTER

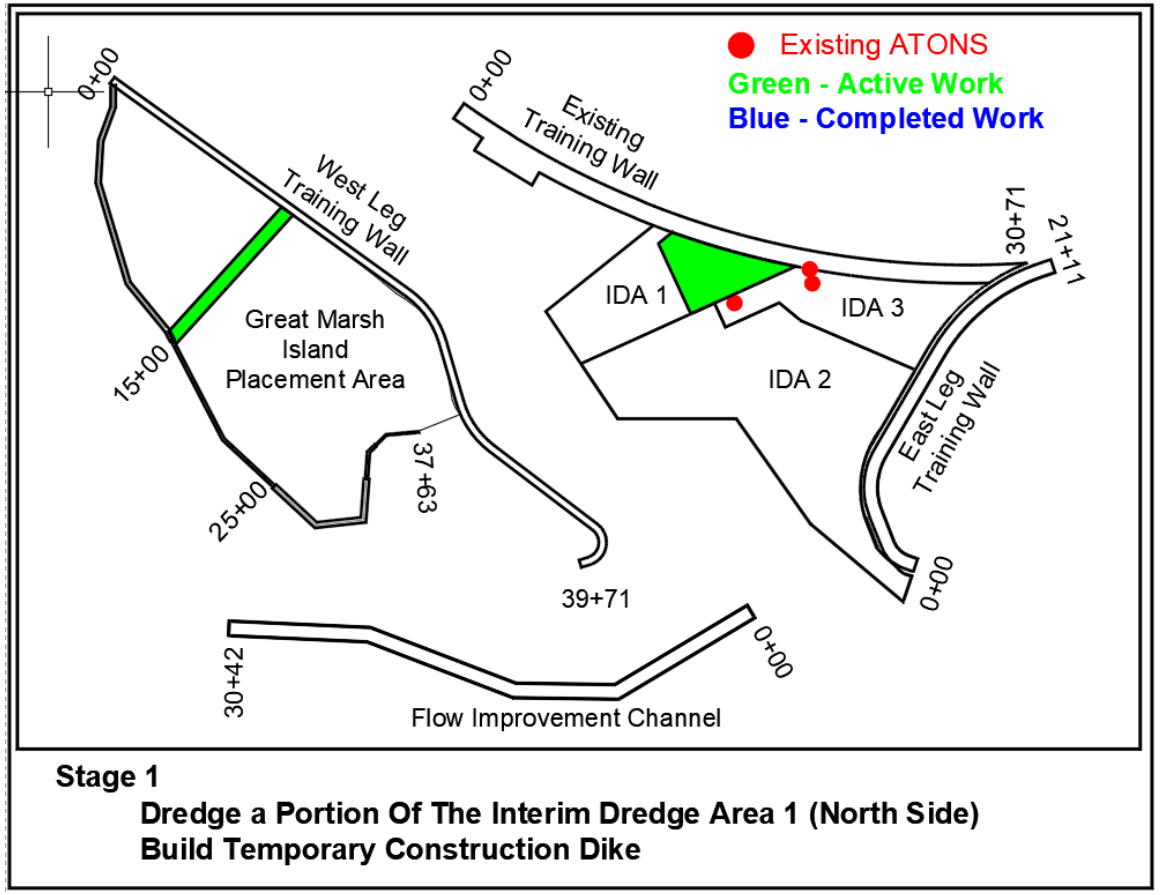
- Maximum design fill elevation - 4.0LF (1.22m) above MLLW.
- Total amount of material that was placed over 52+acres (210,437+m2) - 700,000CY (535,188m3).



Before Work Started



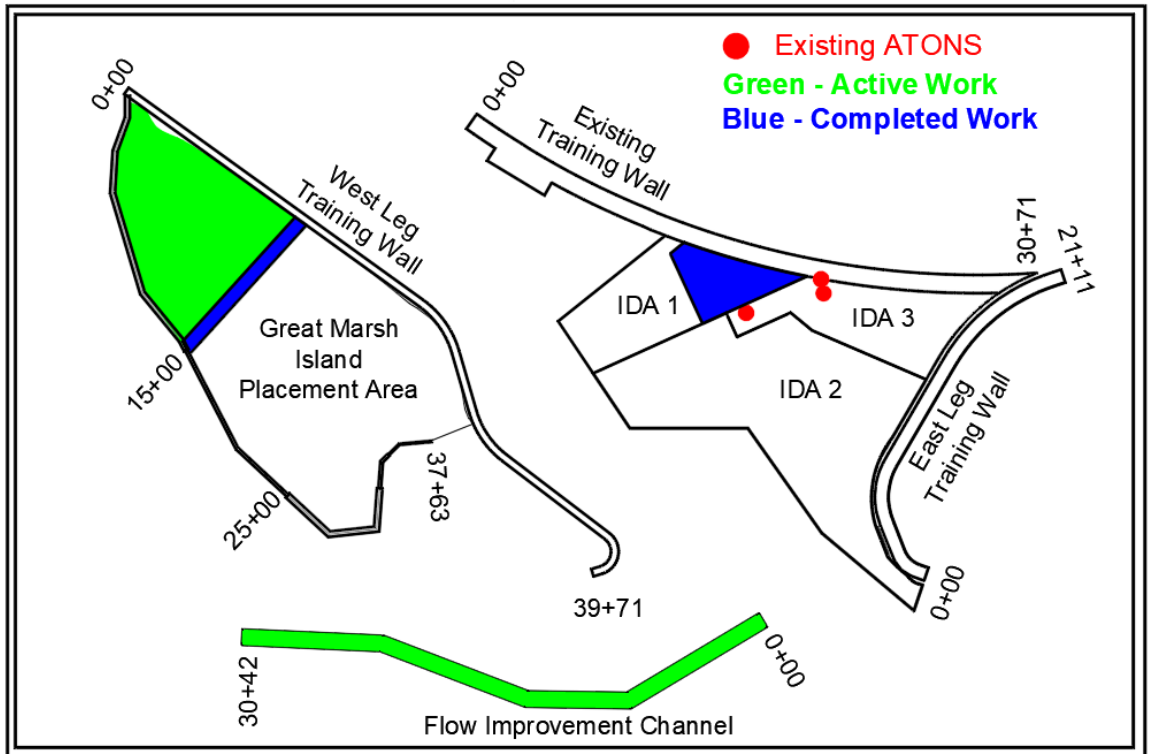
After Completion of Work



Stage 1

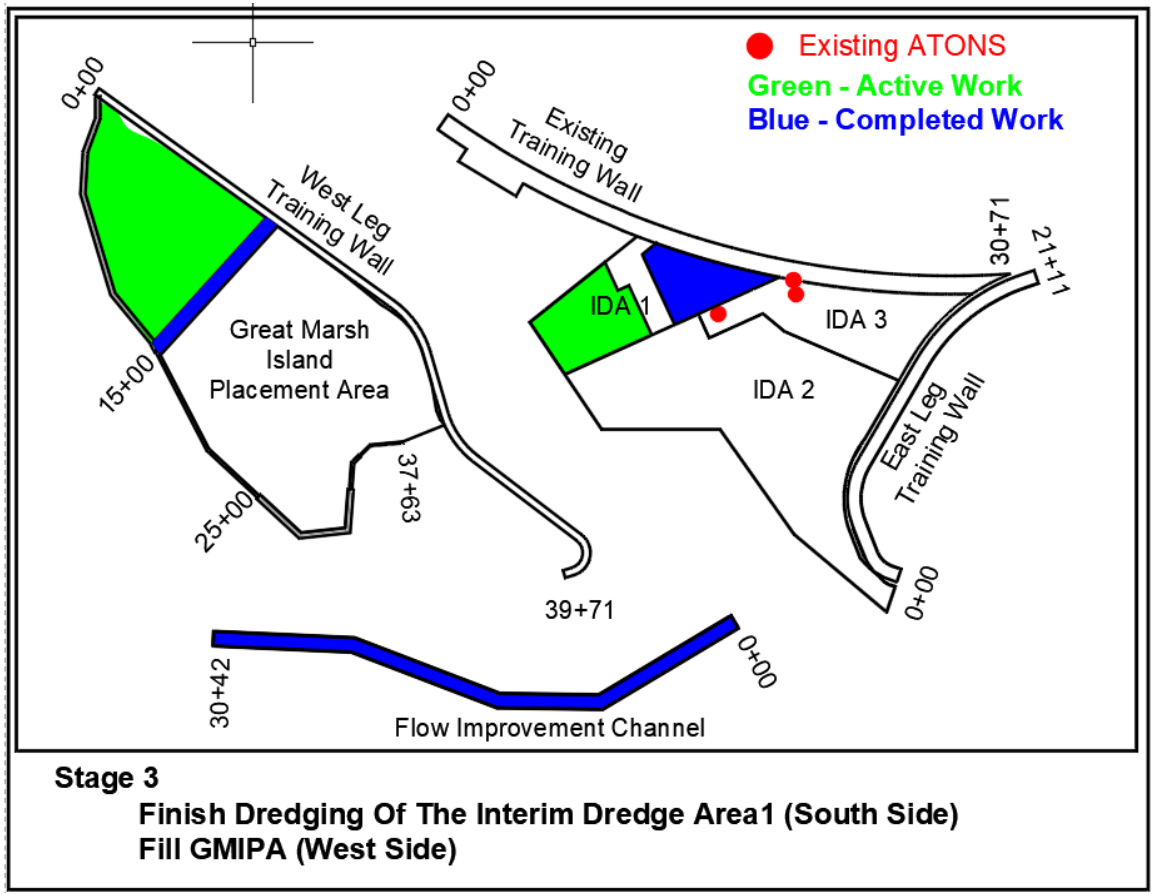
Dredge a Portion Of The Interim Dredge Area 1 (North Side)
Build Temporary Construction Dike

DREDGING SEQUENCE STEP 1& 2



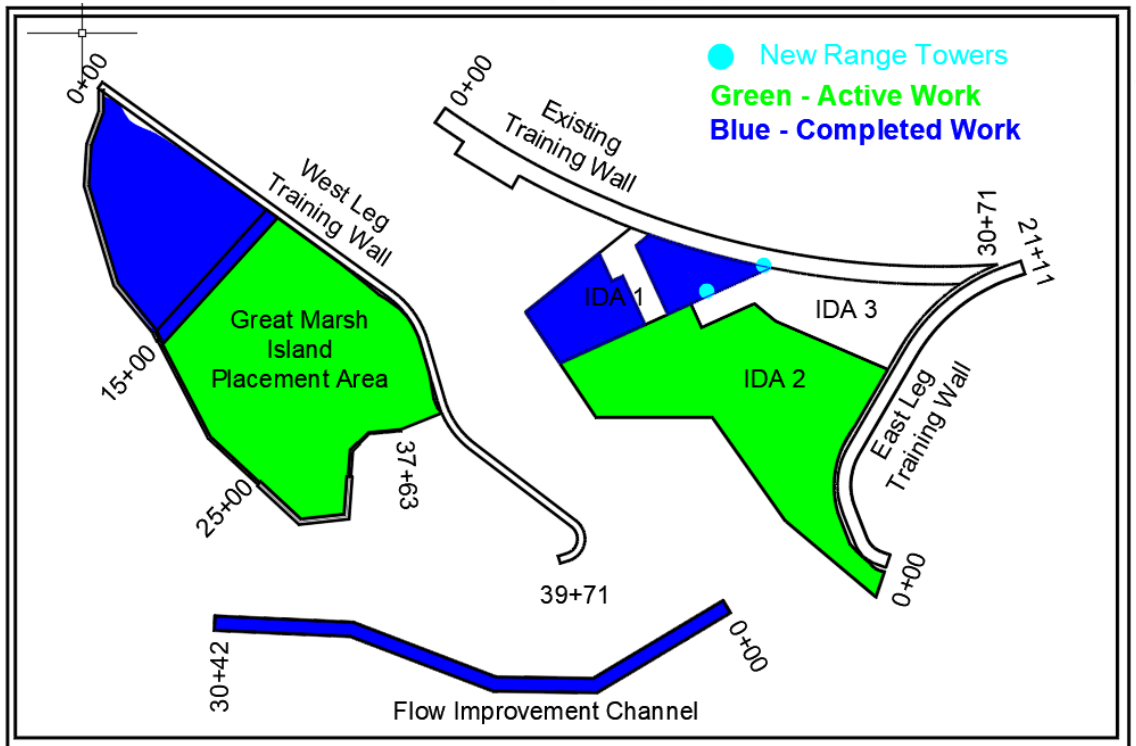
Stage 2

Dredge Flow Improvement Channel
Fill GMIPA (West Side)

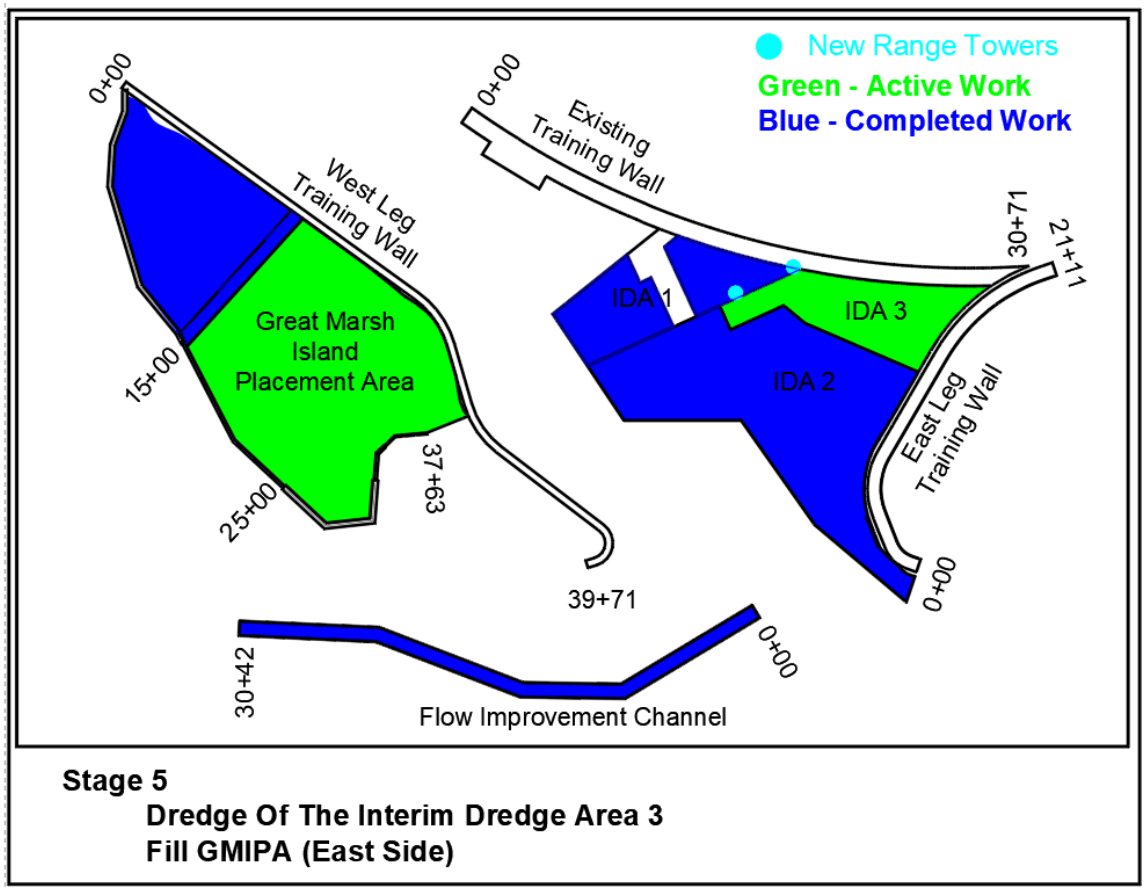


Stage 3
Finish Dredging Of The Interim Dredge Area1 (South Side)
Fill GMIPA (West Side)

DREDGING SEQUENCE STEP 3& 4



Stage 4
Dredge Interim Dredge Area 2
Fill GMIPA (East Side)



Stage 5
Dredge Of The Interim Dredge Area 3
Fill GMIPA (East Side)

DREDGING SEQUENCE STEP 5

EQUIPMENT

18in CSD "Frank Bechtolt"

CONCLUSIONS

BENEFITS FOR THE AREA

- Improved Navigation for a big container ships (deepened MDA and removed ETW).
- Improved navigation for the recreational boating (Dredged FIC).
- Created close to 53 acres of Marsh Land.
- Armored the existing land (protected land behind ELTW from erosion).

BENEFITS FOR THE INDUSTRY

- New material re-handle techniques will allow for a better utilization of natural resources and therefore will result in more environmentally conscious projects.

Work Completed - 53 acres of the new Marsh Land