Mangrove Mitigation and Permitting in South Florida

A Perspective from Industry

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Coastal Habitat Integrated Mapping and Monitoring Program (CHIMMP)
& Mangrove Working Group 2024 Workshop

Introduction to AECOM

- Global infrastructure consulting firm offering advisory services, planning, design and engineering, program management and construction management
- Projects spanning transportation, architecture, water, energy, and environment
- Over 51,000 employees worldwide in over 150 countries

Introduction to Me

- MS in Biology from Florida International University in 2021
- Thesis: Comparing Carbon Storage of Natural and Restored Mangrove Forests in Biscayne Bay, Florida
- With AECOM's Coral Gables, FL office since 2019
- Focus on natural resource impact assessments and permitting for linear transportation projects for state and county clients

Daniel Chomin-Virden
Environmental Permitting Specialist

Mangrove Regulation in Florida

Wetland Regulations in Florida – Agencies Involved

US Army Corps of Engineers®

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

MIAMI-DADE COUNTY

Wetland Regulations in Florida - Federal

- Section 404 of the federal Clean Water Act and Section 10 of the Rivers and Harbors Act
  - Need a federal permit to impact Waters of the United States, which includes connected (non-isolated) wetlands (“Section 404/10” or “Dredge and Fill” Permit) – permit type varies (impact thresholds)
  - Section 404/10 Permitting delegated to the US Army Corps of Engineers (USACE) from the Environmental Protection Agency (EPA)
    - Certain “interior” wetlands/surface waters delegated to Florida Department of Environmental Protection (FDEP)
  - Must consider avoidance and minimization of impacts (alternatives analysis)
  - May require mitigation to compensate for unavoidable impacts
  - Major commenting agencies include EPA, US Fish and Wildlife Service, State/Tribal Historic Preservation Offices, National Marine Fisheries Service

Wetland Regulations in Florida - State

- Environmental Resource Permit (ERP) Program
  - Established under Chapter 62-330, Florida Administrative Code (FAC)
  - Regulates stormwater management/drainage and flood protection; site grading/paving (increased impervious area); and work in, on or over wetlands/surface waters of the State
  - Jointly administered by FDEP and the water management districts (in Pinellas County – Southwest Florida Water Management District)
  - ERP issuance includes Coastal Zone Consistency and Water Quality Certification (both needed for the federal permit)
  - May require mitigation to compensate for unavoidable impacts
  - Major commenting agencies include Florida Fish and Wildlife Conservation Commission and Florida Division of Historical Resources

Mangrove Trimming and Preservation Act of 1996

- State law regulating “trimming and alteration” of red, black, and white mangroves in Florida (403.9321-403.9333, Florida Statutes)
  - Defines “trimming” as cutting branches, twigs, limbs, and foliage but does not include removal, defoliation, or destruction of mangroves
  - Defines any mangrove impacts other than trimming as “alteration”
- Requires a permit for trimming or alteration of mangroves, with some exemptions for some minor maintenance trimming
  - Requirement can be met by ERP if one is issued for the overall project
- Requires restoration or mitigation for alteration or trimming to below 6 feet in height, “to achieve within 5 years a canopy area equivalent to the area destroyed, removed, defoliated, or trimmed”

Quantification of Impacts

Quantification of Impacts: Wetland Delineation

- Wetlands are defined in Florida by Chapter 62-340, FAC
- To determine impact size, limits of on-site wetlands must be “delineated” by a trained wetland biologist
- Assessment areas evaluated in three categories:
  - Vegetation: Presence and relative abundance of hydrophytic plants
  - Aquatic Environment: Presence of water or hydrologic indicators
  - Soils: Presence of hydric soils
- Based on the criteria above and “reasonable scientific judgment,” the wetland limits are mapped and included in permit applications to state and federal regulators
- Additional information can be found in the *Florida Wetlands Delineation Manual* and the *1987 USACE Wetland Delineation Manual*

Quantification of Impacts: UMAM

- Wetland impacts (including mangrove impacts) in Florida are determined through assessment of ecological functions and values
    - Direct, indirect (secondary) and cumulative impacts are assessed
    - Uniform Mitigation Assessment Method (UMAM): functional assessment procedure established per Chapter 62-345, FAC
- Qualitative Assessment: habitat functions, uniqueness/special designations (OFW, Aquatic Preserve, etc.), anticipated and observed wildlife usage
- Quantitative Assessment – Assessor's score (1-10) of three factors under existing and proposed condition:
    - Location and Landscape Support (impact area's position relative to surrounding habitats)
    - Water Environment (hydrology, soil moisture, aquatic wildlife)
    - Community Structure (aquatic plants, appropriate species, refugia)
- Difference between existing and proposed conditions multiplied by impact area in acres to give "Functional Loss" for impact area

Mitigation

Types of Mitigation

- Mitigation can be accomplished in one of three ways:
  - Purchase of credit from a mitigation bank
  - In-Lieu-Fee program (ILF)
  - Permittee-Responsible Mitigation Area (PROMA) (on- or off-site)
- USACE “Mitigation Hierarchy” prefers mitigation bank credit purchase over ILF, and ILF over PROMA; state does not have a similar preference
- Mitigation must typically be located within the same overall basin or watershed as the impact or a cumulative assessment will need to be performed (typically increases required mitigation amount)

Mitigation Banks

- Bank credits can be certified as federal, state, or “joint” credit
- Bank credits are classified by wetland type; usually herbaceous or forested and tidal or freshwater, can be even more specific
- Advantages
  - Enable larger restoration areas in more advantageous areas
  - Concentrate design, monitoring, adaptive maintenance with experts
  - Better long-term success
- Disadvantages
  - Credits are expensive (can be >$200,000/credit) and sell out quickly
  - Disincentivize protection of smaller, unique ecosystems

Example:
SR 5/US 1 at Sea Oats Beach
Monroe County, FL

SR 5/US 1/Overseas Highway at Sea Oats Beach

- FDOT project raising SR 5/US 1 to reduce roadway washout and tie in to earlier work installing shoreline protection at US 1
- Raised roadway required widened support slopes; extended into adjacent mangrove wetlands
- Direct and indirect impacts totaling 1.93 acres
- Total of 0.28 UMAM Functional Loss Units
- Mitigation involved mix of state-certified permittee-responsible mitigation and federal-only credit purchased from Keys Restoration Fund

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

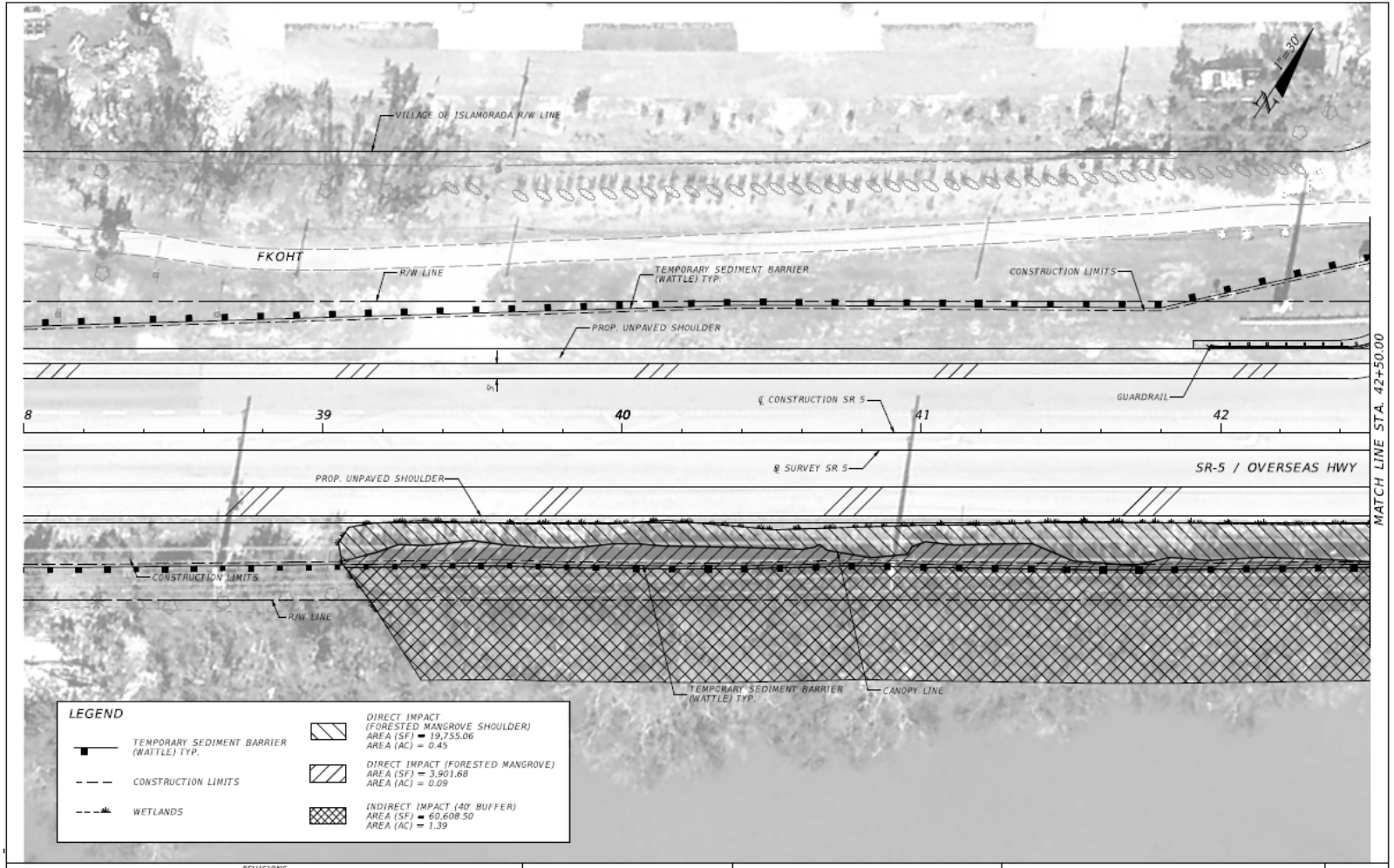
AYLIN COSTA, P.E.
P.E. LICENSE NUMBER 69865
RS&H, INC.
6303 BLUE LAGOON DRIVE, SUITE 325
MIAMI, FL 33126

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 5	MONROE	443893-1-52-01

PROJECT LAYOUT

SHEET NO. 2



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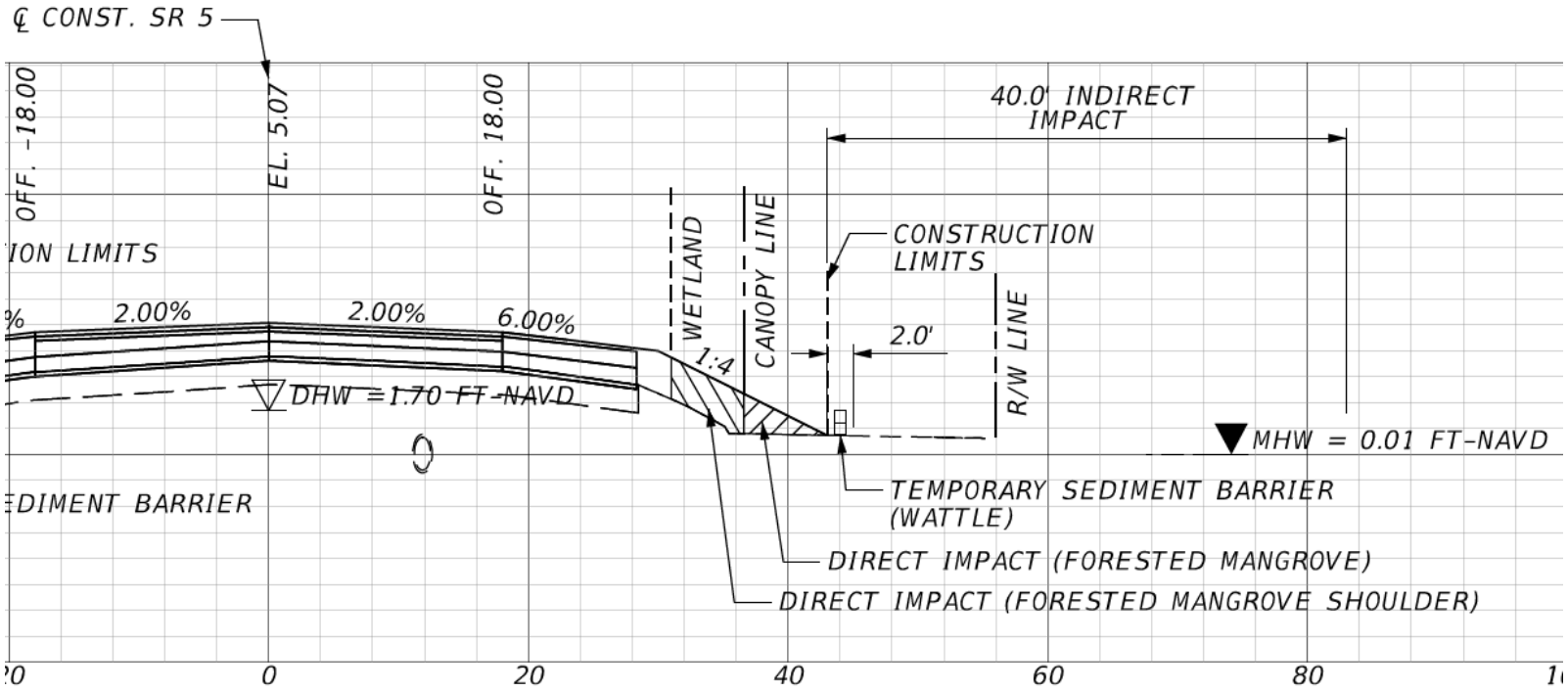
ROADWAY PLAN SHEET

SHEET NO. 5


℄ CONST. SR 5
EL. 5.07
OFF. 18.00
OFF. -18.00
ION LIMITS
2.00%
2.00%
6.00%
DHW = 1.70 FT-NAVD
EDIMENT BARRIER
WETLAND
1:4
CANOPY LINE
40.0' INDIRECT IMPACT
CONSTRUCTION LIMITS
2.0'
R/W LINE
MHW = 0.01 FT-NAVD
TEMPORARY SEDIMENT BARRIER (WATTLE)
DIRECT IMPACT (FORESTED MANGROVE)
DIRECT IMPACT (FORESTED MANGROVE SHOULDER)
0
20
40
60
80

SR 5/US 1/Overseas Highway at Sea Oats Beach

SR 5/US 1/Overseas Highway at Sea Oats Beach – UMAM Scores

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

		Current	With Impact
.500(6)(a) Location and Landscape Support	a. Quality and quantity **of habitat support** outside of AA. (Location Scoring Guide)	X	X
	b. **Invasive plant species.**		
	c. **Wildlife access** to and from AA (proximity and barriers).	X	X
	d. **Downstream benefits** provided to fish and wildlife.		
	e. Adverse impacts to wildlife in AA from **land uses** outside of AA.		
	f. **Hydrologic connectivity** (impediments and flow restrictions).		
	g. **Dependency** of downstream habitats on quantity or quality of discharges.		
	h. Protection of wetland functions provided by uplands (**upland** AAs only).		

Current	With Impact	Notes:	
5	0		AA is a mangrove fringe forest between SR 5 and a residential boating channel. Mangrove area outside the AA is small anad limited to the waterward side. Total forest area too small to support substantial wildlife habitat, and aquatic species have access to AA only during high tides.

Place an "X" in the box above next to the two (2) most important criteria used in scoring this section

SR 5/US 1/Overseas Highway at Sea Oats Beach – UMAM Scores

.500(6)(b) Water Environment (n/a for uplands)	a. Appropriateness of **water levels and flows**.	X	X
	b. Reliability of **water level indicators**. (Water Envt Scoring Guide)		
	c. Appropriateness of **soil moisture**.		
	d. **Flow rates**/points of discharge.		
	e. **Fire frequency**/severity.		
	f. **Type of vegetation**.	X	X
	g. **Hydrologic stress** on vegetation.		
	h. **Use by animal**s with hydrologic requirements.		
	i. **Plant community composition** associated with water quality (i.e., plants tolerant of poor WQ).		
	j. **Water quality of standing water by observation** (I.e., discoloration, turbidity).		
Current: 7 / With Impact: 0	k. **Water quality data** for the type of community.		
	l. **Water depth, wave energy, and currents**.		
	Notes: Site was not submerged at time of assessment, but algal matting, water-stained leaves, dry and cracking mud, and the presence of black mangrove pneumatophores are reliable indicators of regular inundation. Mangroves, obligate wetland trees, were the dominant vegetation, which also implies a wetland water environment.	Place an "X" in the box above next to the two (2) most important criteria used in scoring this section	
.500(6)(c) Community Structure X Vegetation Benthic Both	I. Appropriate/desirable species	X	X
	II. Invasive/exotic plant species (Community Scoring Guide)		
	III. Regeneration/recruitment		
	IV. Age, size distribution.		
	V. Snags, dens, cavity, etc.		
	VI. Plants' condition.	X	X
	VII. Land management practices.		
	VIII. Topographic features (refugia, channels, hummocks).		
	IX. Submerged vegetation (only score if present).		
Current: 7 / With Impact: 0	X. Upland assessment area		
	Notes: All three of South Florida's mangrove species were observed within the AA, with Red Mangroves as the dominant species. Mangroves appear to be trimmed to avoid the overhead power lines but appear otherwise healthy.	Place an "X" in the box above next to the two (2) most important criteria used in scoring this section	

Conclusion

Conclusion

- Wetland and surface water impacts (including mangrove systems) are regulated by state and federal law (also some County laws)
    - Impacts allowable if proper permits are acquired and mitigation is provided
- Wetland delineations and functional assessments (UMAM, etc.) are prominent techniques within environmental consulting that researchers should be familiar with
- Mitigation banks provide opportunity for larger-scale restoration efforts
- Opportunities for research to support mangrove mitigation efforts:
    - Evaluation of wetland delineation and UMAM techniques
    - Evaluation of restoration success at mitigation banks and permittee-responsible mitigation areas
    - Opportunities for collaboration such as salvage of impacted vegetation

Questions?

Thank you.

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