Mississippi Valley Division, Regional Planning
and Environment Division South

Reach A, Hurricane and Storm Damage Risk Reduction Project Morganza to the Gulf of Mexico, Terrebonne Parish, Louisiana

Draft
Appendix H –
WVA Model Results and Summary of Assumptions

February 2024

Mississippi Valley Division, Regional Planning
and Environment Division South

Project Information Sheet for Wetland Value Assessments

(USFWS)

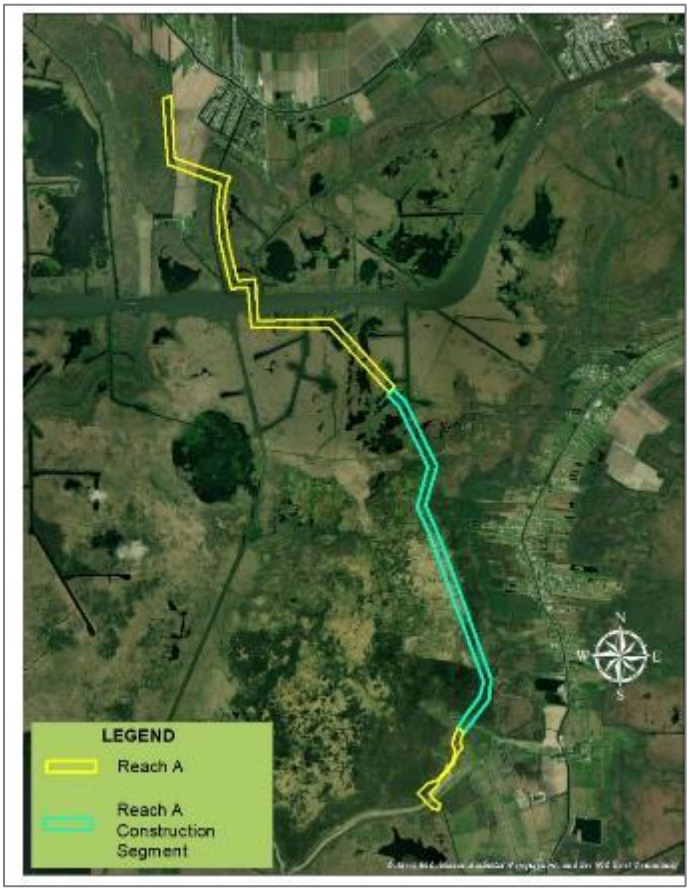
Morganza to the Gulf, Levee Reach A
First Construction Segment
WVA Project Information Sheet

25-September-2023

The shapefile of the 2013 Post Authorization Change Report (PACR) levee alignment (with modifications immediately to avoid impacts to swamps south of the GIWW, and with modifications north of the Marmande Ridge to convert levee to sheetpile wall) was imported into ArcMap. Using ArcMap base images dated January 2022 and March 2022, together the with field observations (March & April 2023) were used to determine project construction impacts by habitat type. According to the Corps, Reach A levee construction would begin in 2024, therefore, the TY0 (baseline yr) would be 2023, and the end of project life target year is 2084 (project life is 61 years). In this impact analysis, the following USACE certified WVA models were used: the BLH WVA version 1.2 and the Fresh/Intermediate Marsh WVA version 2.0.

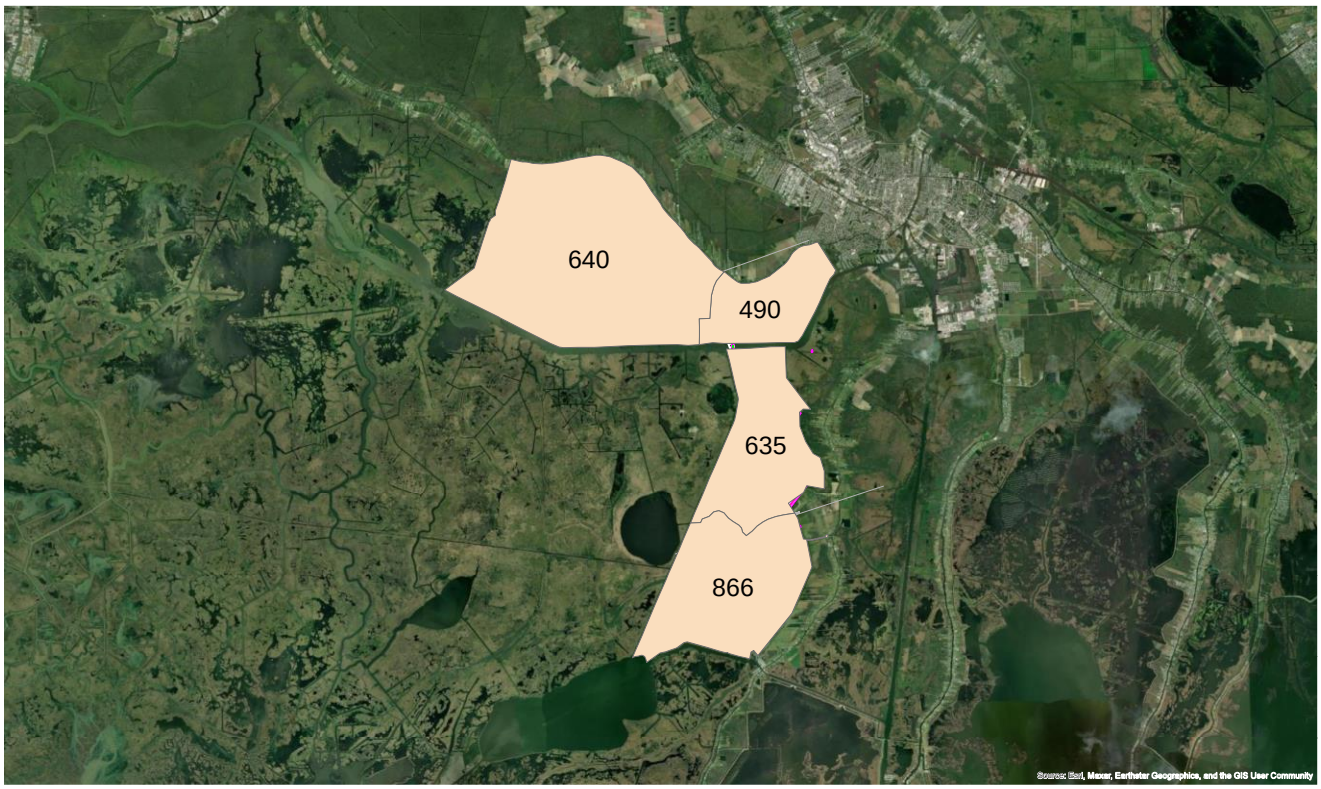
Within the modified PACR alignment, one reach will be subject to a first construction contract. WVAs were conducted on only that construction segment. For the remaining portion of Reach A, estimates of habitat impacts by acres is presented. For a summary of WVA Results, see page 15.

Morganza to Gulf, Reach A.

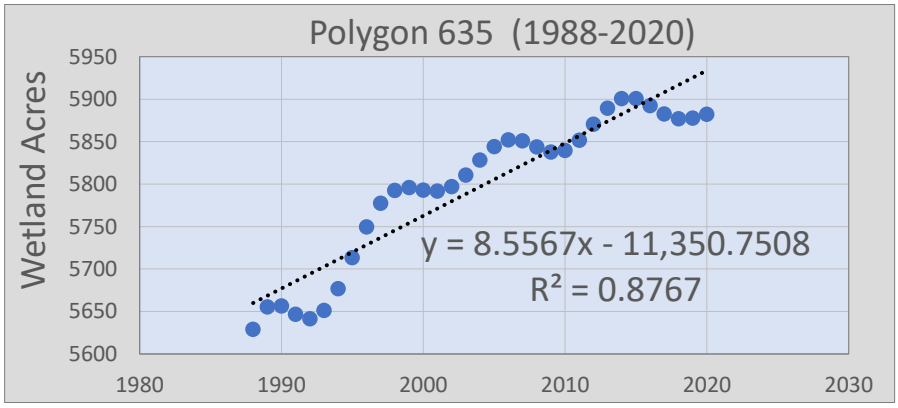


Marsh Impact WVAs for Reach A - First Construction Segment

Below is a map showing the Master Plan Hydro Unit polygons from which land acreage data were obtained from the USGS.



Using 2022 imagery, it was determined that the construction segment of levee would impact 139.828 acres of marsh and 5.872 acres of ponds (oil field canals and the waters of the GIWW were not included). The total area = 145.70. The USGS wetland acreage data shows an increasing acreage trend (1988-2020), yielded a change rate of 0.151%/yr.



Per Corps protocols, environmental forecasts are made under the Intermediate SLR scenario. Per Corps protocols when projecting water levels under the intermediate and high SLR scenarios, 1992 is the year when the SLR scenarios diverge from the low SLR scenario. However, when 1992 is used as the SLR divergence year, the predicted 2022 condition shows more open water than observed in 2022 imagery (predicted marsh acres from FWS's MIMs spreadsheet which gives marsh acres under each SLR scenario). To avoid this problem, the

imagery year (2022) was used as the SLR divergence year (SLR TY0) so that the predicted baseline marsh acreage matches that observed via imagery. When this is done, the Intermediate RSLR scenario shows that the percent marsh initially increases before RSLR effects (marsh loss) overwhelm the increasing marsh trend toward the end of project life. TYs were established to capture switches in marsh interspersion (V3) from Class 1 to Class 3 (TY9), and from Class3 to Class 1 (TY41).

V1 Percent Marsh – Under the Intermediate SLR scenario, the following marsh percentages were determined.

Target Year	FWOP Percent Marsh	FWP Percent March
0	96%	96%
1	96%	0%
9	97%	0%
41	97%	0%
61	94%	0%

V2- Percent Submerged Aquatic Vegetation – Observations made during late March 2023 revealed SAV was very abundant in one pond, but not others. The average baseline SAV is 5% and is assumed to drop to 2% at TY61 (due to increased water depth).

Target Year	FWOP Percent SAV	FWP Percent SAV
0	5%	5%
1	5%	0%
9	5%	0%
41	3%	0%
61	2%	0%

V3 – Interspersion – Interspersion is shown below.

Target Year	FWOP	FWP
0	Class 1 - 100%	Class 1 - 100%
1	Class 1 - 100%	Class5 - 100%
9	Class 3 - 100%	Class5 - 100%
41	Class 1 - 100%	Class5 - 100%
61	Class 1 - 100%	Class5 - 100%

V4 Percent Shallow Open Water – No shallow water areas were observed. None is expected to develop over the project life. Therefore, V4 is 0% for all FWOP TYs.

V5 Average Growing Season Salinity – Project area marsh ponds occur along the northern most portion of this reach. During periods of low Atchafalaya River discharge and very strong southerly winds, brackish water from the HNC may be pushed up the HNC and into the GIWW. As there are no CRMS gages within the project area, CRMS 2939 is assumed to be susceptible to similar rare brackish water intrusions. Hence, the CRMS 2939 mean growing season salinity (2012-2022) of 0.24 ppt is assumed to represent conditions within the project area. Although there is increasing Atchafalaya River influence within the project area (via GIWW), marsh loss and deepening of barrier island tidal passes will increase flushing of bays resulting in higher salinities periodically intruding northward up the HNC during periods of low Atchafalaya River discharge. Consequently, it is expected that project area salinities will increase by TY61. Based on USACE Hydraulics Modelling, it appears that baseline

salinities increase 0.22 ppt from 2035 to 2085. When this rate is applied to the 61 year project life, the salinity would increase by 0.27 ppt, to 0.51 ppt at TY61 (0.24 + 0.27). Salinities at intermediate TYs were determined via interpolation. For FWP no marsh exists within the construction footprint. FWP salinity of zero was entered.

Target Year	FWOP	FWP
0	0.24	0.24
1	0.24	0.0
9	0.28	0.0
41	0.42	0.0
61	0.51	0.0

V6 Access Value – The evaluation site is an open system with no impediments to water and materials exchange. Thus V6 is 1.0 for all TYs under both FWOP and FWP.

WVA Results:

TOTAL BENEFITS IN AAHUs DUE TO PROJECT

A. Emergent Marsh Habitat Net AAHUs =	-106.18
B. Open Water Habitat Net AAHUs =	-1.68
Net Benefits=(2.1xEMAAHUs+OWAAHUs)/3.1	-72.47

BLH impact WVAs for Construction Segment of Reach A

Construction for the Morganza to the Gulf levee system Reach A (Reach A) is scheduled to begin in 2024, with 2023 considered the TY0 year. This PIS only covers the construction segment of Reach A and not the entirety of the reach. The project life is projected out through 2084 providing a 61 year lifespan. Field data was collected in the spring of 2023. In total 1.762 acres of Bottom Land Hardwood (BLH) are in the proposed levee footprint and, therefore, are expected to be affected.

Methods

Field data was collected in tenth-acre plots. These plots were subsections of forest which were determined to be contained within the proposed footprint through the use of Google Earth Pro. Data collected in plots included DBH (collected using a forester's tape), tree species, percent midstory and understory (using plant cramming method), and observance of site condition and hydrology. GIS lab work, in ArcGIS Pro, was used to determine surrounding land cover and disturbance (based on the NLCD 2016 dataset), and contiguous forest size. Tree growth was determined through calculations and relative sea level rise was determined using LiDAR and the GIWW at Houma USACE gauge Relative sea level rise tables were used to pick target years between 1 and 61. TY0, TY1, and TY61 were always included. TYs in between TY1 and the final TY for each site were chosen either due to large impact from RSLR or as relatively even breaks between TYs. Due to changes in the levee alignment some of the original plots were altered. Due to only minimal differences for H6&7 and M3 pre and post revisions, and time constraints, field data was not recollected for these sites but GIS and tabular analyses were redone.

Seven variables were used to determine habitat quality of each BLH site.

V1- Tree Species Composition: This variable considers the proportion of mast bearing trees in the canopy, as well as hard and soft mast bearing separately. Habitat quality is considered to increase with amount of mast and amount of hard mast specifically in the canopy.

V2 – Maturity: This variable uses average DBH as a proxy for average tree age at each site. Tree growth and mortality is determined through calculation.

V3 – Understory/Midstory: This metric is important for determining stand resiliency and heterogeneity. Midstory and understory percentages were determined by field visit observations.

V4 – Hydrology: Temporary flooding and good flow from tidal and riverine sources is important for BLH to prosper. Too much or too little flooding, or poor flow exchange will negatively affect BLH habitat quality. Hydrology was determined through observation at the site, knowledge of area hydrology, satellite imagery in Google Earth Pro and LiDAR.

V5 – Size of Contiguous Forest: Wildlife richness and abundance have been tied to the amount of quality, contiguous habitat they can inhabit. For many species such as migratory birds BLH is vital habitat. For this reason, as contagious forest size increases so does habitat quality. Area of contiguous forest was determined through drawing polygons around the contiguous forest area of sites.

V6 – Suitability and Traversability of Surrounding Habitat: The types of land cover surrounding BLH forest patches are important for determining wildlife's ability to move from one forest patch to another. Suitability and Traversability were determined through the classification of landcover (from the NLCD) into five groups, weighted based on traversability for wildlife.

Open Water	Developed, Open Space	Developed, Low Intensity	Developed, Medium Intensity	Developed, High Intensity	Barren Land	Deciduous Forest	Mixed Forest	Shrub/ Scrub	Herbaceous	Hay/ Pasture	Cultivated Crops	Woody Wetlands	Emergent Herbaceous Wetlands

Figure 1. V6 Landcover Groupings

V7 – Disturbance: This variable quantifies the changes to home range, behavior, movement patterns, etc. for wildlife based on anthropogenic disturbances including traffic, noise and light pollution. This variable was determined using NLCD data and Google Earth Pro.

Open Water	Developed, Open Space	Developed, Low Intensity	Developed, Medium Intensity	Developed, High Intensity	Barren Land	Deciduous Forest	Mixed Forest	Shrub/ Scrub	Herbaceous	Hay/ Pasture	Cultivated Crops	Woody Wetlands	Emergent Herbaceous Wetlands

Figure 2. V7 Landcover Groupings

Assumptions

V1 – The assumption that forms the basis for this V1 is the tree composition of the tenth acre plot is representative of the entire site.

V2 – For V2 we assume three things. First, DBH is an accurate proxy for stand maturity. Second, the formulas we use accurately predict the growth rates of the trees. Third, there will be no major event (storm, fire, etc.) that will substantially affect the average DBH of the stand.

V3 – We assume for V3 that midstory and understory decrease as canopy coverage increases because the midstory and understory species are shaded out, in combination with RSLR related increased flooding. Additionally, we assume that if the canopy dies off (due to relative sea level rise), midstory will follow suit but understory will persist because the understory is assumed to be made up of more generalist species that could survive flooding and inundation. These understory plants would then thrive due to a lack of shading from the canopy and midstory.

V4 – The only assumption for V4 is that we can accurately predict flooding duration and flow/exchange from observation and elevation.

V5 – V5, contiguous forest size, is determined via GIS and satellite imagery. Due to the trade off between spatial and temporal resolution in aerial and satellite imagery, and the subsequent mosaic nature of high spatial resolution imagery, we assume that the imagery is reflective of real-world conditions.

V6 – Due to the relatively coarse spatial and temporal resolution of land cover data, for V6 we assume that land cover areas are reasonably accurate and representative of real-world conditions. The NLCD data was checked against imagery which we also assume to be reasonably representative of real-world conditions.

V7 – Similar to V5 and V6 we assume that land cover and imagery data are reasonably representative of real-world conditions. For this project we assumed that the Gulf Intercoastal Water Way (GIWW) has "constant/major" traffic and usage, Miner's Canal, has "frequent/moderate" traffic and usage, and former oil field canals have "insignificant" traffic and usage.

FWP

We make several additional assumptions for future with project conditions. We assume that the building of the levee will permanently eliminate BLH habitat and cause the area to be permanently dewatered with no meaningful flow/exchange. These assumptions are expressed in the data as Class 1 for V1 and V5 and zeros for average DBH, midstory percentage and understory percentage. Finally, it is assumed that all impacts will occur at their full capacity beginning TY1.

Analysis and Findings

H6&7

Sites H6 and H7 are on opposite sides of a corridor of developed open space connected to agricultural lands. Due to their proximity and similarity, H6 and H7 were combined into a single site for analysis purposes. The combined site has a minimum elevation of about 1.7 ft. and a maximum elevation of about 3.5 ft. According to the USDA Web Soil Survey, the north end of the combined site is almost entirely composed of cancienne silt loam, while the southern end is made up mostly of Schriever clay with some cancienne silt loam present. The combined site is adjacent to marsh but is not directly adjacent to any waterways. The site contained Ash, Elm, Locust, Maple, Oak, Tallow and Willow trees. The majority of trees at the site were Maple followed by Oak, then by Tallow and Elm. The majority of trees with a DBH of 6 in or greater were Maples followed by Elms.

Acreages (under FWP the BLH acreage is zero for TYs 1 and beyond)

TY	0	1	16	32	39	61
Acreage	1.0962	1.0962	1.090	0.185	0	0

V1	TY0	TY1	TY16	TY32	TY39	TY61
FWOP	4	4	4	4	1	1
FWP	4	1	1	1	1	1

V2 – from DBH Growth-CRMS BLH spreadsheet

V2	TY0	TY1	TY16	TY32	TY39	TY61
FWOP	8.4	8.53	8.5	9.7	0	0
FWP	8.4	0	0	0	0	0

V3	TY0	TY1	TY16	TY32	TY39	TY61
FWOP Understory%	75	75	71	65	100	100
FWOP Midstory%	75	75	70	60	0	0
FWP Understory%	75	0	0	0	0	0
FWP Midstory%	75	0	0	0	0	0

V4	TY0	TY1	TY16	TY32	TY39	TY61
FWOP Flow/Exchange	Low	Low	Low	Low	None	None
FWOP Flood Duration	Seasonal	Seasonal	Seasonal	Seasonal	Seasonal	Permanent
FWP Flow/Exchange	Low	None	None	None	None	None
FWP Flood Duration	Seasonal	Permanent	Permanent	Permanent	Permanent	Permanent

V5	TY0	TY1	TY16	TY32	TY39	TY61
FWOP	4	4	4	4	1	1
FWP	4	1	1	1	1	1

V6	TY0	TY1	TY16	TY32	TY39	TY61
Forest / marsh	80	80	80	80	80	80
Abandoned Ag	0	0	0	0	0	0
Pasture / Hay	0	0	0	0	0	0
Active Ag	18	18	18	18	18	18
Development	2	2	2	2	2	2

V7-

H6&7					
50ft buffer					
	Class	Disturbance	Acres	SI	SI*Acres
	1	Constant/Major	0	0.01	0
	2	Frequent/Moderate	0.850941	0.26	0.221245
	3	Seasonal/Intermittent	0	0.41	0
	4	Insignificant	1.548738	1	1.548738
		Total	2.399679		1.769983
450ft buffer					
	Class	Disturbance	Acres	SI	SI*Acres
	1	Constant/Major	0	0.26	0
	2	Frequent/Moderate	3.660598	0.5	1.830299
	3	Seasonal/Intermittent	0	0.65	0
	4	Insignificant	28.71701	1	28.71701
		Total	32.37761		30.54731
				WT. Ave SI	0.929264

V7	TY0	TY1	TY16	TY32	TY39	TY61
SI	0.93	0.93	0.93	0.93	0.93	0.93

WVA Results for H6andH7:

Site	**Acres**	**ΔAAHUs**
H6&7	1.0962	-0.23

M3

Site M3 is a spoil bank of an abandoned oil canal which connects to the GIWW. The site elevation ranges from approximately 1.7 ft. to approximately 6.1 ft. According to the USDA Webs Soils Survey the majority of the site is composed of aquents dredge with some kenner muck present. Tree species at the site included Dogwood, Elm, Maple, Oak, Sugarberry and Tallow. The majority of trees were Maples, followed by Sugarberry, then Tallow. The majority of trees with a DBH of 6 in. or greater were Oak, followed by Sugarberry and Tallow.

Acreages (under FWP the BLH acreage is zero for TYs 1 and beyond)

TY	0	1	16	32	47	61
Acreage	0.666	0.666	0.666	0.513	0.348	0.079

V1	TY0	TY1	TY16	TY32	TY47	TY61
FWOP	5	5	5	5	5	5
FWP	5	1	1	1	1	1

V2 – from (DBH Growth-Sherb BLH spreadsheet

V2	TY0	TY1	TY16	TY32	TY47	TY61
FWOP	9.3	9.5	10.5	12.1	14.1	15.8
FWP	9.3	0	0	0	0	0

V3	TY0	TY1	TY16	TY32	TY47	TY61
FWOP Understory%	35	35	30	25	21	19
FWOP Midstory%	35	35	25	20	17	14
FWP Understory%	35	0	0	0	0	0
FWP Midstory%	35	0	0	0	0	0

V4	TY0	TY1	TY16	TY32	TY47	TY61
FWOP Flow/Exchange	Low	Low	Low	Low	Low	Low
FWOP Flood Duration	Temporary	Temporary	Temporary	Temporary	Temporary	Temporary
FWP Flow/Exchange	Low	None	None	None	None	None
FWP Flood Duration	Temporary	Permanent	Permanent	Permanent	Permanent	Permanent

V5	TY0	TY1	TY16	TY32	TY47	TY61
FWOP	2	2	2	2	2	2
FWP	2	1	1	1	1	1

V6- (There is no expected change in surrounding land use between FWOP and FWP)

V6	TY0	TY1	TY16	TY32	TY47	TY61
Forest / marsh	76	76	76	76	76	76
Abandoned Ag	0	0	0	0	0	0
Pasture / Hay	0	0	0	0	0	0
Active Ag	24	24	24	24	24	24
Development	0	0	0	0	0	0

V7- (There is no expected change in disturbance type or proximity between FWOP and FWP)

M3					
50ft buffer					
	Class	Disturbance	Acres	SI	SI*Acres
	1	Constant/Major	0	0.01	0
	2	Frequent/Moderate	0	0.26	0
	3	Seasonal/Intermittent	0	0.41	0
	4	Insignificant	1.254139	1	1.254139
		Total	1.254139		1.254139
450ft buffer					
	Class	Disturbance	Acres	SI	SI*Acres
	1	Constant/Major	0	0.26	0
	2	Frequent/Moderate	0	0.5	0
	3	Seasonal/Intermittent	0	0.65	0
	4	Insignificant	27.49799	1	27.49799
		Total	27.49799		27.49799
				WT. Ave SI	1

V7	TY0	TY1	TY16	TY32	TY47	TY61
SI	1	1	1	1	1	1

WVA Results for site M3:

Site	Acres	ΔAAHUs
M3	0.666	-0.32

Summary of Reach A BLH Impact AAHUs

Site	Acres	ΔAAHUs
H6&7	1.0962	-0.23
M3	0.666	-0.32

Relative Sea Level Rise

H6&7

Using the GIWW at Houma (Gage 76320), RSLR induced water levels (in feet) were obtained for the Intermediate SLR scenario from 2023 to 2085. Over the 62-year project life, a 4.9 ft water surface elevation increase would occur. LiDAR data from Atlas LiDAR (https://maps.ga.lsu.edu/lidar2000/#3009059ne) was used to determine elevations at each site. Assuming that RSLR induced flooding of 1.0 foot or more will cause BLH mortality, it was determined that the site (1.0962 acres) would be completely inundated by TY39.

TY	Growth Rate Reduction (%)
0	N/A
1	0
16	19.8
32	96.7
39	100
61	100

M3

Using the GIWW at Houma (Gage 76320), RSLR induced water levels (in feet) were obtained for the Intermediate SLR scenario from 2023 to 2085. Over the 62-year project life, a 4.9 ft water surface elevation increase would occur. LiDAR data from Atlas LiDAR (https://maps.ga.lsu.edu/lidar2000/#3009059ne) was used to determine elevations at each site. Assuming that RSLR induced flooding of 1.0 foot or more will cause BLH mortality, it was determined that the site area would be reduced by about 0.617 acres (beginning at 0.666).

TY	Growth Rate Reduction (%)
0	N/A
1	0
16	8.3
32	10.7
47	28.1
61	84.6

Gauge values for both sites

Gauge 76320: GIWW at Houma: Jan 1959 to Nov 2008 All values are in feet			
Year	TY	USACE Int	**USACE Int Diff**
2020			
2021			
2022			

2023	0	2.2	0
2024	1	2.3	0.1
2025	2	2.3	0.1
2026	3	2.4	0.2
2027	4	2.5	0.3
2028	5	2.5	0.3
2029	6	2.6	0.4
2030	7	2.7	0.5
2031	8	2.8	0.6
2032	9	2.8	0.6
2033	10	2.9	0.7
2034	11	3	0.8
2035	12	3.1	0.9
2036	13	3.1	0.9
2037	14	3.2	1
2038	15	3.3	1.1
2039	16	3.4	1.2
2040	17	3.4	1.2
2041	18	3.5	1.3
2042	19	3.6	1.4
2043	20	3.7	1.5
2044	21	3.8	1.6
2045	22	3.8	1.6
2046	23	3.9	1.7
2047	24	4	1.8
2048	25	4.1	1.9
2049	26	4.1	1.9
2050	27	4.2	2
2051	28	4.3	2.1
2052	29	4.4	2.2
2053	30	4.5	2.3
2054	31	4.5	2.3
2055	32	4.6	2.4
2056	33	4.7	2.5
2057	34	4.8	2.6
2058	35	4.8	2.6
2059	36	4.9	2.7

2060	37	5	2.8
2061	38	5.1	2.9
2062	39	5.2	3
2063	40	5.2	3
2064	41	5.3	3.1
2065	42	5.4	3.2
2066	43	5.5	3.3
2067	44	5.6	3.4
2068	45	5.7	3.5
2069	46	5.7	3.5
2070	47	5.8	3.6
2071	48	5.9	3.7
2072	49	6	3.8
2073	50	6.1	3.9
2074	51	6.1	3.9
2075	52	6.2	4
2076	53	6.3	4.1
2077	54	6.4	4.2
2078	55	6.5	4.3
2079	56	6.6	4.4
2080	57	6.6	4.4
2081	58	6.7	4.5
2082	59	6.8	4.6
2083	60	6.9	4.7
2084	61	7	4.8
2085	62	7.1	4.9

WVA Results - Reach A Construction Segment

Location	Acres	AAHUs
Marsh	145.70	-72.47
BLH	1.76	-0.55

Wetland Impacts by Habitat Type for all segments of Reach A

Reach A Segment		Swamp Impact Acres	Swamp Impact AAHUs	BLH Impact Acres	BLH Impact AAHUs	Marsh Impact Acres	Marsh Impact AAHUs
North of GIWW							
	West of Hansons Ridge	13.86	-7.25	0.86	-0.37	14.16	-7.30
	East of Hansons Ridge	4.28	-2.44	5.53	-1.11	56.27	-30.24
South of GIWW							
	On Mandalay National Wildlife Refuge	0.00	0.00	0.85	-0.15	51.32	-29.06
	From Refuge boundary southward to Constr Segment	0.00	0.00	0.69	-0.18	17.75	-9.93
	Construction Segment	0.00	0.00	1.76	-0.55	145.70	-72.47
	South of Constr segment to north of Marmande Ridge	0.00	0.00	4.10	-1.16	15.08	-7.14
	On Marmande Ridge*	0.00	0.00	0.49	0.00	0.00	0.00
	South of Marmande Ridge	0.00	0.00	0.10	-0.04	0.89	-0.44
TOTALs		**18.13**	**-9.69**	**14.39**	**-3.56**	**301.16**	**-156.58**

** BLH areas within the forced drainage agricultural levees*

Mississippi Valley Division, Regional Planning
and Environment Division South

Approval for Regional Use of WVA Models for Civil Works Projects (USACE)

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
441 G STREET, NW
WASHINGTON, DC 20314-1000

REPLY TO
ATTENTION OF

CECW-P 7 November 2017

MEMORANDUM FOR Director, National Ecosystem Restoration Planning Center of Expertise (ECO-PCX)

SUBJECT: Regional Certification for the Wetland Value Assessment, Coastal Marsh Models, Version 2.0

1. The HQUSACE Model Certification Panel has reviewed the Wetland Value Assessment (WVA) – Coastal Marsh Models Version 2.0 in accordance with EC 1105-2-412, and has determined that the model and its accompanying documentation are sufficient to approve the model for regional use in the Gulf Coast of Texas and Louisiana, as defined by USEPA Level IV Ecosystem Region. The HQUSACE panel considered the assessments of the ECO-PCX in making this determination.

2. Version 2.0 of the WVA Coastal Marsh Models is based on multiple levels of review. The Battelle Memorial Institute conducted a review of all the WVA community models and associated spreadsheets to assess the technical quality, system quality, and usability of the models in 2010. The model review panel included six individuals with expertise in Habitat Evaluation Procedures, planning, hydraulic engineering, coastal wetland ecology, coastal ecosystems, and software programming/spreadsheet auditing. The recommendations provided during the Battelle review were adopted and incorporated into Version 2.0 of the WVA Coastal Marsh Models. That version underwent further review in 2017 and is the subject of this recommendation memorandum. A final independent review was managed by the ECO-PCX in accordance with the model approval review plan to evaluate the degree to which the WVA Coastal Marsh Models Version 2.0 incorporated the Battelle recommended changes appropriately within the model documentation and the application spreadsheets. The review concluded that the changes recommended by Batelle were incorporated appropriately into the model. The ECO-PCX has determined that the WVA Coastal Marsh Models Version 2.0 has sufficient technical quality, system quality and usability.

3. The model meets the certification criteria contained in EC 1105-2-412.

WILBERT V. PAYNES
Deputy Chief, Planning and Policy Division
Directorate of Civil Works

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, MISSISSIPPI VALLEY DIVISION
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VICKSBURG, MISSISSIPPI 39181-0080

CEMVD-PDP 06 December 2018

MEMORANDUM FOR

Commander, Fort Worth District, Regional Planning and Environmental Center, U.S. Army Corps of Engineers (Attn: Mr. Rob Newman, CESWF-PEC)

Commander, New Orleans District, Regional Planning and Environmental Division South, U.S. Army Corps of Engineers (Attn: Mr. Troy Constance, CEMVN-PD)

Commander, St Paul District, Regional Planning and Environmental Division North, U.S. Army Corps of Engineers (Attn: Mr. Terry Birkenstock, CEMVP-PD)

SUBJECT: Regional Use Re-approval of the Wetland Value Assessment (WVA) Coastal Barrier Headland, Barrier Island, Bottomland Hardwood, Coastal Chenier and Swamp Models

1. References:
   a. Engineer Circular 1105-2-412: Assuring Quality of Planning Models, 31 March 2011.

   b. Planning Bulletin 2013-02, Assuring Quality of Planning Models (EC 1105-2-412), 31 March 2013.

   c. Memorandum to Directors of National Planning Centers of Expertise – Subject: Modification of the Model Certification Process and Delegation of Model Approval for Use, 04 December 2017.

   d. Memorandum to Director of the National Ecosystem Restoration Planning Center of Expertise - Subject: Recommend Regional Use Re-approval of the Wetland Value Assessment (WVA) Coastal Barrier Headland, Barrier Island, Bottomland Hardwood, Coastal Chenier and Swamp Models, 03 December 2018. (Encl 1)

2. The National Ecosystem Restoration Planning Center of Expertise evaluated the results of an independent review managed by a team of experts from the New Orleans District for the subject models. The models are used to evaluate and compare alternatives for habitat restoration or other civil works project activities.

3. The models are re-approved for regional use within the range of applicability defined for each model. Independent technical review of the tools is complete and the models meet the criteria contained in References 1.a. and 1.b. There are no

unresolved issues stemming from the review. This re-approval will expire on 06 December 2025.

Gary L. Young
Chief, MVD Planning and Policy and
Director, National Ecosystem
Restoration Planning Center of
Expertise

Encl

CF
CEMVD-PDP (Lawton, Mallard, Miller)
CEMVP-PD (Birkenstock)
CEMVP-PD-F (Knollenberg, Mesko, Richards, Sparks)
CEMVP-PD-P (Creswell, McCain, Runyon)
CEMVP-PD-C (Johnson, Jordan)
CEMVN-PD (Constance)
CEMVN-PM-P (Inman)
CEMVN-PM-W (Broussard)
CEMVN-PD-P (Axtman)
CEMVN-PDN (Harper)
CEMVN-PDN-CEP (Klein, Smith)
CEMVN-PDN-UDP (Meden)
CELRH-PX-NC (Cade)
CENAD-PD-X (Cocchieri)
CESAM-PD-D (Otto)
CESPD-PDS-P (Thaut)