iHGM Analysis

Sunoco Partners Marketing & Terminals L.P.

iHGM PEM Riverine Calculations USACE Galveston District

									iHGM Var	iables (P	re-Constru	uction)				FCL	J Pre-Constr	uction	FCU P	ost-Constr	uction		FCU Di	fferential	
Wetland ID	Cowardin Class	Proposed pipeline collocated with existing utility in this area?	Wetland Acreage w/in Project Footprint	8-digit USGS HUC Code	Watershed Name	Vdur	Vfreq	Vtopo	Vwood	Vmid	Vherb	Vdetritus	Vredox	Vsorpt	Vconnect	Temp. Storage of Water	Maintain Plant & Animal	Removal of Elements	Temp. Storage of Water	Maintain Plant & Animal	Removal of Elements	Temp. Storage of Water	Maintain Plant & Animal	Removal of Elements	Total FCU Value
				I					ı	1	I					1									1
Wetland 01	PEM	Yes	1.17	12020003	Lower Neches	0.75	0.25	0.10	0.10	0.25	1.00	0.30	0.10	0.50	0.50	0.60	0.68	0.43	0.00	0.00	0.00	0.60	0.68	0.43	1.72
Wetland 03	PEM	Yes	3.10	12020003	Lower Neches	1.00	1.00	0.10	0.10	0.10	1.00	0.30	0.10	1.00	0.25	2.35	1.40	1.84	0.00	0.00	0.00	2.35	1.40	1.84	5.59
Wetland 05	PEM	Yes	2.44	12020003	Lower Neches	0.50	0.25	0.10	0.10	0.25	1.00	0.30	0.10	1.00	0.25	1.14	1.22	0.86	0.00	0.00	0.00	1.14	1.22	0.86	3.22
Wetland 2	PEM	Yes	31.91	12020003	Lower Neches	1.00	1.00	1.00	0.10	0.25	1.00	1.00	0.10	1.00	0.50	32.89	18.61	22.66	0.00	0.00	0.00	32.89	18.61	22.66	74.16
Wetland 4	PEM	Yes	0.90	12020003	Lower	0.50	0.75	0.10	0.10	0.25	1.00	0.50	0.10	1.00	0.50	0.55	0.53	0.42	0.00	0.00	0.00	0.55	0.53	0.42	1.50
Wetland 6	PEM	Yes	2.29	12020003	Neches	0.75	0.75	0.40	0.25	0.25	1.00	0.30	0.10	1.00	0.75	1.73	1.53	1.27	0.00	0.00	0.00	1.73	1.53	1.27	4.53
					Neches Lower																				
WP1001_PEM	PEM	Yes	0.20	12020003	Neches	0.75	1.00	0.40	0.10	0.10	1.00	1.00	0.10	1.00	0.75	0.16	0.12	0.12	0.00	0.00	0.00	0.16	0.12	0.12	0.40
WP1001_PEM_B	PEM	Yes	0.002	12020003	Lower Neches	0.75	0.75	0.70	0.10	0.10	1.00	0.50	0.10	1.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.004
WP1001_PEM_C	PEM	Yes	0.23	12020003	Lower Neches	0.50	0.50	0.70	0.10	0.25	1.00	0.50	0.10	1.00	0.50	0.16	0.13	0.11	0.00	0.00	0.00	0.16	0.13	0.11	0.39
WP1001_PEM_H	PEM	Yes	0.18	12020003	Lower Neches	0.50	1.00	0.70	0.10	0.25	1.00	1.00	0.10	1.00	0.75	0.14	0.12	0.11	0.00	0.00	0.00	0.14	0.12	0.11	0.37
WP1001_PEM_I	PEM	Yes	0.16	12020003	Lower Neches	0.50	1.00	0.70	0.10	0.25	1.00	1.00	0.10	1.00	0.75	0.13	0.11	0.09	0.00	0.00	0.00	0.13	0.11	0.09	0.33
WP1001_PEM_N	PEM	Yes	2.73	12020003	Lower Neches	0.50	1.00	0.70	0.10	0.25	1.00	0.50	1.00	1.00	0.75	2.19	1.82	1.68	0.00	0.00	0.00	2.19	1.82	1.68	5.70
WP1001_PEM_P	PEM	Yes	0.42	12020003	Lower Neches	0.50	1.00	0.70	0.10	0.10	1.00	0.50	0.10	1.00	0.75	0.33	0.26	0.23	0.00	0.00	0.00	0.33	0.26	0.23	0.82
WP1005_PEM	PEM	Yes	0.003	12020002	Lower Neches	0.75	1.00	0.40	0.10	0.10	1.00	0.50	0.10	1.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
WP1005_PEM_B	PEM	Yes	0.004	12020002	Lower Neches	0.75	1.00	0.40	0.10	0.10	1.00	0.50	0.10	1.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
WP1005_PEM_C	PEM	Yes	0.004	12020002	Lower Neches	0.75	1.00	0.40	0.10	0.10	1.00	0.50	0.10	1.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
WP1006_PEM	PEM	Yes	2.56	12020002	Lower	0.75	0.75	0.40	0.10	0.10	1.00	0.50	0.10	1.00	0.75	1.89	1.58	1.35	0.00	0.00	0.00	1.89	1.58	1.35	4.81
WP1006_PEM_B	PEM	Yes	0.001	12020003	Neches	0.75	0.75	0.40	0.10	0.10	0.75	0.50	0.10	1.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.002
WP1006_PEM_C	PEM	Yes	0.76	12020003	Neches Lower Neches	0.75	0.75	0.40	0.10	0.10	0.75	0.50	0.10	1.00	0.50	0.51	0.34	0.39	0.00	0.00	0.00	0.51	0.34	0.39	1.24

									iHGM Vari	ables (Pi	e-Constru	ıction)				FCU	Pre-Constr	uction	FCU P	ost-Constr	uction		FCU Dif	ferential	
Wetland ID	Cowardin Class	Proposed pipeline collocated with existing utility in this area?	Wetland Acreage w/in Project Footprint	8-digit USGS HUC Code	Watershed Name	Vdur	Vfreq	Vtopo	Vwood	Vmid	Vherb	Vdetritus	Vredox	Vsorpt	Vconnect	Temp. Storage of Water	Maintain Plant & Animal	Removal of Elements	Temp. Storage of Water	Maintain Plant & Animal	Removal of Elements	Temp. Storage of Water	Maintain Plant & Animal	Removal of Elements	Total FCU Value
WP1007_PEM	PEM	Yes	0.001	12020002	Lower Neches	0.75	1.00	0.70	0.10	0.10	1.00	0.50	0.10	1.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.002
WP1007_PEM_B	PEM	Yes	0.002	12020003	Lower Neches	0.75	1.00	0.70	0.10	0.10	1.00	0.50	0.10	1.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.004
WP1007_PEM_C	PEM	Yes	0.002	12020003	Lower Neches	0.75	1.00	0.70	0.10	0.10	1.00	0.50	0.10	1.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.004
WP1009_PEM	PEM	Yes	0.10	12020003	Lower Neches	0.75	0.75	0.40	0.10	0.10	0.75	0.50	0.10	1.00	0.50	0.07	0.05	0.05	0.00	0.00	0.00	0.07	0.05	0.05	0.16
WP1009_PEM_B	PEM	Yes	1.01	12020003	Lower Neches	0.75	0.75	0.40	0.10	0.10	0.10	0.50	0.10	1.00	0.50	0.46	0.24	0.47	0.00	0.00	0.00	0.46	0.24	0.47	1.17
WP1010_PEM	PEM	Yes	0.02	12020003	Lower Neches	0.75	1.00	0.40	0.10	0.10	1.00	0.50	0.10	1.00	0.50	0.02	0.01	0.01	0.00	0.00	0.00	0.02	0.01	0.01	0.04
TOTAL AC	REAGE		50.20											iHGI	M TOTALS	45.33	28.75	32.10	0.00	0.00	0.00	45.33	28.75	32.10	106.18

	Nederland Terminal Buildout Project - iHGM Analysis Anticipated PEM Wetland Mitigation Credits per HUC - USACE Galveston District										
8-digit USGS HUC Code	Watershed Name	Wetland Acreage w/in Project Footprint		Maintain Plant & Animal (Differential)	Removal of Elements (Differential)	Service Area Multiplier	Temp. Storage of Water (Differential)	Maintain Plant & Animal (Differential)	Removal of Elements (Differential)	Total FCU Differential Value	
12020003	Lower Neches	50.20	45.33	28.75	32.10					106.18	
	Totals	50.20	45.33	28.75	32.10		45.33	28.75	32.10	106.18	

Compounds TOTALS

		Nederland Ter	minal Build	out Project - iH0	3M Analysis	
Wetland ID#	Wetland 01					
	INPUT	•	_			
	Pre-Project	Post-Project	. [Com	ments
				Information book	ed on iHGM provi	dod by AECOM
Vdur ¹	0.75	0.00		illioilliation base	sa on in IGIVI provi	ded by ALCOIVI
Vfreq ¹	0.25	0.00				
Vtopo ¹	0.10	0.00				
Vwood ²	0.10	0.00				
Vmid	0.10	0.00				
Vherb	1.00	0.00				
Vdetritus	0.30	0.00				
Vredox ¹	0.10	0.00				
Vsorpt ¹	0.50	0.00				
•						
Vconnect ¹	0.50	0.00				
Netland acreage	w/in construction footprin	t ³ =	1 17			
	e w/in construction footprin	ı	1.17 PUTS NEED	≣D		
_	ctional Capacity Unit (FCU)	Impact - NO INF	PUTS NEED	Pre-Project	Post Project	Difference in Pre- and Post-
Calculating Fund	·	ı	PUTS NEED		Post Project FCU's	
_	ctional Capacity Unit (FCU)	Impact - NO INF	PUTS NEED	Pre-Project	•	Pre- and Post-
Calculating Fund	ctional Capacity Unit (FCU)	Impact - NO INF	PUTS NEED	Pre-Project	•	Pre- and Post-
Calculating Fundamental Fundam	ctional Capacity Unit (FCU)	Impact - NO INF	FCI Difference	Pre-Project	•	Pre- and Post-
Calculating Fundamental Fundam	ctional Capacity Unit (FCU) Pre-Project	Impact - NO INF	FCI Difference	Pre-Project FCU's	FCU's	Pre- and Post- FCU's
Temporary Storage & Detention of Storage Water Maintain Plant & Animal	Pre-Project 0.51	Impact - NO INF Post Project 0.00	FCI Difference	Pre-Project FCU's	9.00	Pre- and Post- FCU's
Calculating Fund Temporary Storage & Detention of Storage Water Maintain Plant & Animal Community	ctional Capacity Unit (FCU) Pre-Project	Impact - NO INF	FCI Difference	Pre-Project FCU's	FCU's	Pre- and Post- FCU's
Calculating Fund Temporary Storage & Detention of Storage Water Maintain Plant & Animal Community Removal &	Pre-Project 0.51	Impact - NO INF Post Project 0.00	FCI Difference	Pre-Project FCU's	9.00	Pre- and Post- FCU's
Calculating Fund Femporary Storage & Detention of Storage Water Maintain Plant & Animal Community	Pre-Project 0.51	Impact - NO INF Post Project 0.00	FCI Difference	Pre-Project FCU's	9.00	Pre- and Post- FCU's

0.37

0.00

0.37

0.43

0.00

0.43 1.72

		Nederland Ter	minal Builde	out Project - iHC	GM Analysis	
Wetland ID#	Wetland 03					
_	INPUT		ī			
	Pre-Project	Post-Project	ī		Con	nments
				Information base	ed on iHGM provi	ded by AECOM
Vdur ¹	1.00	0.00				
Vfreq ¹	1.00	0.00				
Vtopo ¹	0.10	0.00				
Vwood ²	0.10	0.00				
Vmid	0.10	0.00				
Vherb	1.00	0.00				
Vdetritus	0.30	0.00				
Vredox ¹	0.10	0.00				
Vsorpt ¹	1.00	0.00				
Vconnect ¹	0.25	0.00				
Wetland acreage v	w/in construction footprint	i ³ =	3.10]		
	w/in construction footprint			J		
	·			J	Post Project FCU's	Difference in Pre- and Post- FCU's
Calculating Funct	ional Capacity Unit (FCU)	Impact - NO INF	PUTS NEEDE	ED Pre-Project		Pre- and Post-
Calculating Funct Temporary Storage &	ional Capacity Unit (FCU)	Impact - NO INF	PUTS NEEDE	ED Pre-Project		Pre- and Post-
Calculating Funct Temporary Storage & Detention of	ional Capacity Unit (FCU) Pre-Project	Impact - NO INF	FCI Difference	Pre-Project FCU's	FCU's	Pre- and Post- FCU's
Calculating Funct Temporary Storage & Detention of Storage Water	ional Capacity Unit (FCU)	Impact - NO INF	PUTS NEEDE	ED Pre-Project		Pre- and Post- FCU's
Calculating Funct Temporary Storage & Detention of Storage Water Maintain Plant	ional Capacity Unit (FCU) Pre-Project	Impact - NO INF	FCI Difference	Pre-Project FCU's	FCU's	Pre- and Post- FCU's
Temporary Storage & Detention of Storage Water Maintain Plant & Animal	Pre-Project	Post Project	FCI Difference	Pre-Project FCU's	FCU's	Pre- and Post- FCU's
Calculating Funct	ional Capacity Unit (FCU) Pre-Project	Impact - NO INF	FCI Difference	Pre-Project FCU's	FCU's	Pre- and Post- FCU's
Temporary Storage & Detention of Storage Water Maintain Plant & Animal Community Removal & Sequestrian of	Pre-Project	Post Project	FCI Difference	Pre-Project FCU's	FCU's	Pre- and Post- FCU's
Temporary Storage & Detention of Storage Water Maintain Plant & Animal Community Removal & Sequestrian of Elements &	Pre-Project 0.76	Post Project 0.00 0.00	FCI Difference 0.76	Pre-Project FCU's	0.00 0.00	Pre- and Post- FCU's 2.35
Calculating Funct Temporary Storage & Detention of Storage Water Maintain Plant & Animal Community Removal & Sequestrian of	Pre-Project	Post Project	FCI Difference 0.76	Pre-Project FCU's	FCU's	Pre- and Post- FCU's 2.35

		Nederland Ter	minai buliu	out Project - iHC	SM Analysis	
Wetland ID#	Wetland 05					
	INPUT	="	-			
	Pre-Project	Post-Project	,		Com	ments
Vdur ¹	0.50	0.00		Information base	ed on iHGM provi	ded by AECOM
	0.50					
Vfreq ¹	0.25	0.00				
Vtopo ¹	0.10	0.00				
Vwood ²	0.10					
Vwood Vmid	0.10	0.00				
Vherb	1.00	0.00				
Vdetritus	0.30					
Vredox ¹	0.10					
Vsorpt ¹	1.00	0.00				
vsorpt	1.00	0.00				
_						
	0.25 w/in construction footprin	_	2.44			
Wetland acreage		t ³ =	2.44	Į.		
Calculating Fund	w/in construction footprin	t ³ =	2.44	Į.	Post Project FCU's	Difference in Pre- and Post- FCU's
Wetland acreage Calculating Fund Temporary	e w/in construction footprin	t ³ = Impact - NO INF	2.44 PUTS NEED!	ED Pre-Project		Pre- and Post-
Wetland acreage Calculating Fund Temporary Storage &	e w/in construction footprin	t ³ = Impact - NO INF	2.44 PUTS NEED!	ED Pre-Project		Pre- and Post-
Wetland acreage Calculating Fund Temporary Storage & Detention of	e w/in construction footprin ctional Capacity Unit (FCU) Pre-Project	t³ = Impact - NO INF Post Project	2.44 PUTS NEEDI FCI Difference	Pre-Project FCU's	FCU's	Pre- and Post- FCU's
Wetland acreage Calculating Fund Temporary Storage & Detention of Storage Water	e w/in construction footprin	t ³ = Impact - NO INF	2.44 PUTS NEEDI FCI Difference	ED Pre-Project		Pre- and Post-
Wetland acreage Calculating Fund Temporary Storage & Detention of Storage Water Maintain Plant	e w/in construction footprin ctional Capacity Unit (FCU) Pre-Project	t³ = Impact - NO INF Post Project	2.44 PUTS NEEDI FCI Difference	Pre-Project FCU's	FCU's	Pre- and Post- FCU's
Wetland acreage Calculating Fund Temporary Storage & Detention of Storage Water Maintain Plant & Animal	e w/in construction footprin ctional Capacity Unit (FCU) Pre-Project	t³ = Impact - NO INF Post Project 0.00	2.44 PUTS NEEDI FCI Difference 0.47	Pre-Project FCU's	FCU's	Pre- and Post- FCU's
Wetland acreage Calculating Fund Temporary Storage & Detention of Storage Water Maintain Plant & Animal Community	e w/in construction footprin ctional Capacity Unit (FCU) Pre-Project	t³ = Impact - NO INF Post Project	2.44 PUTS NEEDI FCI Difference 0.47	Pre-Project FCU's	FCU's	Pre- and Post- FCU's
Wetland acreage Calculating Fund Temporary Storage & Detention of Storage Water Maintain Plant & Animal Community Removal &	e w/in construction footprin ctional Capacity Unit (FCU) Pre-Project	t³ = Impact - NO INF Post Project 0.00	2.44 PUTS NEEDI FCI Difference 0.47	Pre-Project FCU's	FCU's	Pre- and Post- FCU's
Temporary Storage & Detention of Storage Water Maintain Plant & Animal Community Removal & Sequestrian of	e w/in construction footprin ctional Capacity Unit (FCU) Pre-Project	t³ = Impact - NO INF Post Project 0.00	2.44 PUTS NEEDI FCI Difference 0.47	Pre-Project FCU's	FCU's	Pre- and Post- FCU's
Calculating Fund Temporary Storage & Detention of Storage Water Maintain Plant & Animal Community Removal &	e w/in construction footprin ctional Capacity Unit (FCU) Pre-Project	t³ = Impact - NO INF Post Project 0.00	PUTS NEEDI FCI Difference	Pre-Project FCU's	FCU's	Pre- and Post- FCU's 1.14 1.22

		Nederland Ter	minal Builde	out Project - iHC	3M Analysis		
Wetland ID#	Wetland 2						
_	INPUT	•					
-	Pre-Project	Post-Project	.		Com	ments	
1				Information base	ed on iHGM provi	ded by Whitenton	
Vdur ¹	1.00	0.00					
Vfreq ¹	1.00	0.00					
Vtopo ¹	1.00	0.00					
Vwood ²	0.10	0.00					
Vwood Vmid	0.10	0.00					
Vherb	1.00	0.00					
Vdetritus	1.00	0.00					
Vredox ¹	0.10	0.00					
Vsorpt ¹	1.00	0.00					
VSOIPE	1.00	0.00					
Vconnect ¹	0.50	0.00					
Wetland acreage	w/in construction footprin	t ³ =	31.91				
J	w/in construction footprin		PUTS NEEDI	ED	Post Project	Difference in	
J	•	Impact - NO INF		<u>l</u>	Post Project FCU's	Difference in Pre- and Post- FCU's	
Calculating Funct	ional Capacity Unit (FCU)	Impact - NO INF	PUTS NEEDI	ED Pre-Project		Pre- and Post-	
Calculating Funct Temporary Storage &	ional Capacity Unit (FCU)	Impact - NO INF	PUTS NEEDI	ED Pre-Project		Pre- and Post-	
Calculating Funct Temporary Storage & Detention of	ional Capacity Unit (FCU) Pre-Project	Impact - NO INF	FCI Difference	Pre-Project FCU's	FCU's	Pre- and Post- FCU's	
Calculating Funct Temporary Storage & Detention of Storage Water	ional Capacity Unit (FCU)	Impact - NO INF	PUTS NEEDI	ED Pre-Project		Pre- and Post-	
Calculating Funct Temporary Storage & Detention of Storage Water Maintain Plant	ional Capacity Unit (FCU) Pre-Project	Impact - NO INF	FCI Difference	Pre-Project FCU's	FCU's	Pre- and Post- FCU's	
Temporary Storage & Detention of Storage Water Maintain Plant & Animal	Pre-Project	Impact - NO INF Post Project 0.00	FCI Difference	Pre-Project FCU's	FCU's 0.00	Pre- and Post- FCU's	
Calculating Funct Temporary Storage & Detention of Storage Water Maintain Plant	ional Capacity Unit (FCU) Pre-Project	Impact - NO INF	FCI Difference	Pre-Project FCU's	FCU's	Pre- and Post- FCU's	
Temporary Storage & Detention of Storage Water Maintain Plant & Animal Community	Pre-Project	Impact - NO INF Post Project 0.00	FCI Difference	Pre-Project FCU's	FCU's 0.00	Pre- and Post- FCU's	
Temporary Storage & Detention of Storage Water Maintain Plant & Animal Community Removal &	Pre-Project	Impact - NO INF Post Project 0.00	FCI Difference	Pre-Project FCU's	FCU's 0.00	Pre- and Post- FCU's	
Temporary Storage & Detention of Storage Water Maintain Plant & Animal Community Removal & Sequestrian of	Pre-Project	Impact - NO INF Post Project 0.00	FCI Difference	Pre-Project FCU's	FCU's 0.00	Pre- and Post- FCU's	

TOTALS

		Nederland Ter	minal Buildo	out Project - iHG	M Analysis	
Wetland ID#	Wetland 4					
·	INPUT	-	-			
	Pre-Project	Post-Project	.		Com	ments
				Information hase	ed on iHGM provi	ded by Whitenton
Vdur ¹	0.50	0.00		morridae Daoc	a on in town provi	dod by William
Vfreq ¹	0.75	0.00				
Vtopo ¹	0.10	0.00				
Vwood ²	0.10	0.00				
Vmid	0.25	0.00				
Vherb	1.00	0.00				
Vdetritus	0.50	0.00				
Vredox ¹	0.10	0.00				
Vsorpt ¹	1.00	0.00				
Vconnect ¹	0.50	0.00				
VCOIIIIeCt	0.50	0.00	<u> </u>			
Notland acrosco w	/in construction footprin	• ³ _	0.90			
venana aoreage v	m construction recipini		0.90			
Calculating Function	onal Capacity Unit (FCU)	Impact - NO INF	UTS NEEDE	D		
						Difference in
	Des Desires	Deed Deeler	FCI	Pre-Project	Post Project	Pre- and Post-
Temporary	Pre-Project	Post Project	FCI Difference	Pre-Project FCU's	Post Project FCU's	Pre- and Post- FCU's
	Pre-Project	Post Project				
Storage &	Pre-Project	Post Project				
Storage & Detention of	Pre-Project	Post Project				
Storage & Detention of Storage Water	·		Difference	FCU's	FCU's	FCU's
Storage & Detention of Storage Water Maintain Plant & Animal	0.61		Difference 0.61	FCU's 0.55	FCU's 0.00	FCU's 0.55
Storage & Detention of Storage Water Maintain Plant & Animal Community	·		Difference	FCU's	FCU's	FCU's
Storage & Detention of Storage Water Maintain Plant & Animal Community Removal &	0.61	0.00	Difference 0.61	FCU's 0.55	FCU's 0.00	FCU's 0.55
Temporary Storage & Detention of Storage Water Maintain Plant & Animal Community Removal & Sequestrian of	0.61	0.00	Difference 0.61	FCU's 0.55	FCU's 0.00	FCU's 0.55
Storage & Detention of Storage Water Maintain Plant & Animal Community Removal &	0.61	0.00	Difference 0.61	FCU's 0.55	FCU's 0.00	FCU's 0.55

0.42 1.50

		Nederland Ter	minal Builde	out Project - iHC	3M Analysis	
Wetland ID#	Wetland 6			•	-	
•	INPUT	•	ī			
,	Pre-Project	Post-Project			Com	ments
4				Information base	ed on iHGM provi	ded by Whitenton
Vdur ¹	0.75	0.00				
Vfreq ¹	0.75	0.00				
1						
Vtopo ¹	0.40					
Vwood ²	0.25					
Vmid	0.25	0.00				
Vherb Vdetritus	1.00	0.00				
Vredox ¹	0.30	0.00				
Vsorpt ¹	1.00	0.00				
Vconnect ¹	0.75	0.00				
wetiana acreage	w/in construction footprin	t ³ =	2.29			
	w/in construction footprinctional Capacity Unit (FCU)			E D		
Calculating Fund	•			ED Pre-Project FCU's	Post Project FCU's	Difference in Pre- and Post- FCU's
Calculating Fund	ctional Capacity Unit (FCU)	Impact - NO INF	PUTS NEEDE	Pre-Project	•	Pre- and Post-
Calculating Fund Temporary Storage &	ctional Capacity Unit (FCU)	Impact - NO INF	PUTS NEEDE	Pre-Project	•	Pre- and Post-
Calculating Fund Temporary Storage & Detention of	etional Capacity Unit (FCU) Pre-Project	Impact - NO INF	FCI Difference	Pre-Project FCU's	FCU's	Pre- and Post- FCU's
Calculating Fund Temporary Storage & Detention of Storage Water	ctional Capacity Unit (FCU)	Impact - NO INF	FCI Difference	Pre-Project	•	Pre- and Post-
Calculating Fund Temporary Storage & Detention of Storage Water Maintain Plant	etional Capacity Unit (FCU) Pre-Project	Impact - NO INF	FCI Difference	Pre-Project FCU's	FCU's	Pre- and Post- FCU's
Temporary Storage & Detention of Storage Water Maintain Plant & Animal	etional Capacity Unit (FCU) Pre-Project	Impact - NO INF	FCI Difference	Pre-Project FCU's	FCU's	Pre- and Post- FCU's
Temporary Storage & Detention of Storage Water Maintain Plant & Animal Community Removal &	Pre-Project 0.76	Impact - NO INF Post Project 0.00	FCI Difference	Pre-Project FCU's	FCU's	Pre- and Post- FCU's
Temporary Storage & Detention of Storage Water Maintain Plant & Animal Community Removal & Sequestrian of	Pre-Project 0.76	Impact - NO INF Post Project 0.00	FCI Difference	Pre-Project FCU's	FCU's	Pre- and Post- FCU's
Temporary Storage & Detention of Storage Water Maintain Plant & Animal Community Removal & Sequestrian of Elements &	Pre-Project 0.76	Post Project 0.00	FCI Difference	Pre-Project FCU's 1.73	0.00 0.00	Pre- and Post- FCU's 1.73
Temporary Storage & Detention of Storage Water Maintain Plant & Animal Community Removal & Sequestrian of	Pre-Project 0.76	Impact - NO INF Post Project 0.00	FCI Difference	Pre-Project FCU's	FCU's	Pre- and Post- FCU's

Nederland Terminal Buildout Project - iHGM Analysis Wetland ID# WP1001_PEM INPUT Pre-Project Post-Project Vdur¹ 0.75 0.00 Vfreq¹ 1.00 0.00 Vtopo¹ 0.40 0.00 Vwood² 0.10 0.00 Vmid 0.10 0.00 Vherb 1.00 0.00 Vdetritus 1.00 0.00 Vredox¹ 0.10 0.00 Vsorpt¹ 1.00 0.00 Vconnect¹ 0.75 0.00

Comments
Approximately 85% of the WAA floods or ponds for 7 to 14 days.
WAA receive hydrology from direct runoff
WAA contains approximately 10% dips and hummocks
No woody cover observed in field
No midstory cover observed in field
100% herbaceous cover observed in field
Approximately 95% of WAA possesses an A or O horizon
Based on data sheet
Based on data sheet
based on data sheet, photos, aerial photography. Habitat types:
PFO wetlands; however, the area is immediately adjacent to
industrial area.

Wetland acreage w/in construction footprint³ =

0.20

			FCI	Pre-Project	Post Project	Difference in Pre- and Post-
	Pre-Project	Post Project	Difference	FCU's	FCU's	FCU's
Temporary	-	-				
Storage &						
Detention of						
Storage Water	0.79	0.00	0.79	0.16	0.00	0.16
Maintain Plant						
& Animal						
Community	0.62	0.00	0.62	0.12	0.00	0.12
Removal &						
Sequestrian of						
Elements &						
Compounds	0.61	0.00	0.61	0.12	0.00	0.12
TOTALS			•	·		0.40

Nederland Terminal Buildout Project - iHGM Analysis Wetland ID# WP1001_PEM_B Pre-Project Post-Project Vdur¹ 0.75 0.00 Vfreq¹ 0.75 0.00 Vtopo¹ 0.70 0.00 Vwood² 0.00 0.10 Vmid 0.10 0.00 Vherb 1.00 0.00 Vdetritus 0.50 0.00 Vredox¹ 0.10 0.00 Vsorpt¹ 1.00 0.00 Vconnect¹ 0.25 0.00

Comments
Approximately 60% of the WAA floods or ponds for 7 to 14 days.
WAA receive hydrology from direct runoff and possessed cracked
WAA contains approximately 15% dips and hummocks
No woody cover observed in field
No midstory cover observed in field
80% herbaceous cover observed in field
Approximately 75% of WAA possesses an A or O horizon
Based on data sheet
Based on data sheet
based on data sheet, photos, aeriai photography. Habitat types:
PFO wetlands; however, the area is immediately adjacent to
industrial area.

Wetland acreage w/in construction footprint³ =

0.00

			FCI	Pre-Project	Post Project	Difference in Pre- and Post-
	Pre-Project	Post Project	Difference	FCU's	FCU's	FCU's
Temporary			2			
Storage &						
Detention of						
Storage Water	0.81	0.00	0.81	0.00	0.00	0.00
Maintain Plant						
& Animal						
Community	0.45	0.00	0.45	0.00	0.00	0.00
Removal &						
Sequestrian of						
Elements &						
Compounds	0.55	0.00	0.55	0.00	0.00	0.00
TOTALS						0.00

Nederland Terminal Buildout Project - iHGM Analysis Wetland ID# WP1001_PEM_C Pre-Project Post-Project Vdur¹ 0.50 0.00 Vfreq¹ 0.50 0.00 Vtopo¹ 0.70 0.00 Vwood² 0.10 0.00 Vmid 0.25 0.00 Vherb 1.00 0.00 Vdetritus 0.50 0.00 Vredox¹ 0.10 0.00 Vsorpt¹ 1.00 0.00 Vconnect¹ 0.50 0.00

Comments
Approximately 60% of the WAA floods or ponds for 7 to 14 days.
WAA receive hydrology from direct runoff and possessed cracked
WAA contains approximately 15% dips and hummocks
No woody cover observed in field
No midstory cover observed in field
Over 90% herbaceous cover observed in field
Approximately 30% of WAA possesses an A or O horizon
Based on data sheet
Based on data sheet
based on data sneet, pnotos, aerial pnotography. Habitat types: PFO wetlands and upland; however, the area is immediately
adjacent to industrial area.

Wetland acreage w/in construction footprint³ =

0.23

			FCI	Pre-Project	Post Project	Difference in Pre- and Post-
	Pre-Project	Post Project	Difference	FCU's	FCU's	FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.68	0.00	0.68	0.16	0.00	0.16
Maintain Plant						
& Animal						
Community	0.58	0.00	0.58	0.13	0.00	0.13
Removal &						
Sequestrian of						
Elements &						
Compounds	0.46	0.00	0.46	0.11	0.00	0.11
TOTALS						0.39

Nederland Terminal Buildout Project - iHGM Analysis Wetland ID# WP1001_PEM_H Pre-Project Post-Project Vdur¹ 0.50 0.00 Vfreq¹ 1.00 0.00 Vtopo¹ 0.70 0.00 Vwood² 0.10 0.00 Vmid 0.25 0.00 Vherb 1.00 0.00 Vdetritus 1.00 0.00 Vredox¹ 0.10 0.00 Vsorpt¹ 1.00 0.00 Vconnect¹ 0.75 0.00

Comments					
approximately 60% of the WAA floods or ponds for 7 to 14 days.					
VAA receive hydrology from direct runoff and possessed standing					
VAA contains approximately 15% dips and hummocks					
lo woody cover observed in field					
0% midstory cover observed in field					
5% herbaceous cover observed in field					
Approximately 85% of WAA possesses an A or O horizon					
Based on data sheet					
Based on data sheet					
eased on data sneet, photos, aerial photography. Habitat types: PFO wetlands and upland; however, the area is immediately					
djacent to industrial area.					

Wetland acreage w/in construction footprint³ =

0.18

			FCI	Pre-Project	Post Project	Difference in Pre- and Post-
	Pre-Project	Post Project	Difference	FCU's	FCU's	FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.80	0.00	0.80	0.14	0.00	0.14
Maintain Plant						
& Animal						
Community	0.67	0.00	0.67	0.12	0.00	0.12
Removal &						
Sequestrian of						
Elements &						
Compounds	0.59	0.00	0.59	0.11	0.00	0.11
TOTALS			·			0.37

		Nederland Ter	minal Buildout Project - iHGM Analysis
Wetland ID#	WP1001_PEM_I		
	INPUT	•	
	Pre-Project	Post-Project	С
Vdur ¹	0.50	0.00	Approximately 60% of the WA
Vfreq ¹	1.00	0.00	WAA receive hydrology from d
Vtopo ¹	0.70	0.00	WAA contains approximately 1
Vwood ²	0.10	0.00	No woody cover observed in fi
Vmid	0.25	0.00	10% midstory cover observed
Vherb	1.00	0.00	100% herbaceous cover obser
Vdetritus	1.00	0.00	Approximately 90% of WAA po
Vredox ¹	0.10	0.00	Based on data sheet
Vsorpt ¹	1.00	0.00	Based on data sheet
			based on data sheet, photos, a PFO wetlands; however, the a
Vconnect ¹	0.75	0.00	industrial area.

Comments
Approximately 60% of the WAA floods or ponds for 7 to 14 days.
WAA receive hydrology from direct runoff and possessed saturation,
WAA contains approximately 15% dips and hummocks
No woody cover observed in field
10% midstory cover observed in field
100% herbaceous cover observed in field
Approximately 90% of WAA possesses an A or O horizon
Based on data sheet
Based on data sheet
pased on data sneet, pnotos, aerial pnotography. Habitat types: PFO wetlands; however, the area is immediately adjacent to
industrial area.

0.16

			FCI	Pre-Project	Post Project	Difference in Pre- and Post-
	Pre-Project	Post Project	Difference	FCU's	FCU's	FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.80	0.00	0.80	0.13	0.00	0.13
Maintain Plant						
& Animal						
Community	0.67	0.00	0.67	0.11	0.00	0.11
Removal &						
Sequestrian of						
Elements &						
Compounds	0.59	0.00	0.59	0.09	0.00	0.09
TOTALS			·			0.33

		Nederland Ter	minal Buildout Project - iHGM Analysis
Wetland ID#	WP1001_PEM_N		
	INPUT	_	
	Pre-Project	Post-Project	С
Vdur ¹	0.50	0.00	Approximately 60% of the WA
Vfreq ¹	1.00	0.00	WAA receive hydrology from d
Vtopo ¹	0.70	0.00	WAA contains approximately 1
Vwood ²	0.10	0.00	No woody cover observed in fi
Vmid	0.25	0.00	Approximately 20% midstory c
Vherb	1.00	0.00	100% herbaceous cover obser
Vdetritus	0.50	0.00	Approximately 80% of WAA po
Vredox ¹	1.00	0.00	Based on data sheet
Vsorpt ¹	1.00	0.00	Based on data sheet
			based on data sheet, photos, a PFO wetlands; however, the a
Vconnect ¹	0.75	0.00	industrial area.

Comments	
Approximately 60% of the WAA floods or ponds for 7 to 14 da	ays.
WAA receive hydrology from direct runoff and possessed sat	uration
WAA contains approximately 15% dips and hummocks	
No woody cover observed in field	
Approximately 20% midstory cover observed in field	
100% herbaceous cover observed in field	
Approximately 80% of WAA possesses an A or O horizon	
Based on data sheet	
Based on data sheet	
pased on data sneet, photos, aerial photography. Habitat typ PFO wetlands; however, the area is immediately adjacent to	es:
industrial area.	

2.73

			FCI	Pre-Project	Post Project	Difference in Pre- and Post-
	Pre-Project	Post Project	Difference	FCU's	FCU's	FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.80	0.00	0.80	2.19	0.00	2.19
Maintain Plant						
& Animal						
Community	0.67	0.00	0.67	1.82	0.00	1.82
Removal &						
Sequestrian of						
Elements &						
Compounds	0.62	0.00	0.62	1.68	0.00	1.68
TOTALS						5.70

		Nederland Ter	minal Buildout Project - iHGM Analysis
Wetland ID#	WP1001_PEM_P]	
	INPUT		
	Pre-Project	Post-Project	С
Vdur ¹	0.50	0.00	Approximately 60% of the WA
Vfreq ¹	1.00	0.00	WAA receive hydrology from d
Vtopo ¹	0.70	0.00	WAA contains approximately 1
Vwood ²	0.10	0.00	No woody cover observed in fi
Vmid	0.10	0.00	No midstory cover observed in
Vherb	1.00	0.00	100% herbaceous cover obser
Vdetritus	0.50	0.00	Approximately 67% of WAA po
Vredox ¹	0.10	0.00	Based on data sheet
Vsorpt ¹	1.00	0.00	Based on data sheet
			pased on data sneet, photos, a PFO wetlands and uplands; ho
Vconnect ¹	0.75	0.00	adjacent to industrial area.

Comments
Approximately 60% of the WAA floods or ponds for 7 to 14 days.
WAA receive hydrology from direct runoff and possessed standing
WAA contains approximately 15% dips and hummocks
No woody cover observed in field
No midstory cover observed in field
100% herbaceous cover observed in field
Approximately 67% of WAA possesses an A or O horizon
Based on data sheet
Based on data sheet
pased on data sneet, pnotos, aerial pnotography. Habitat types: PFO wetlands and uplands; however, the area is immediately
adjacent to industrial area.

0.42

			FCI	Pre-Project	Post Project	Difference in Pre- and Post-
	Pre-Project	Post Project	Difference	FCU's	FCU's	FCU's
Temporary	1 Te-1 Toject	1 OSCI TOJECC	Difference	1003	1003	1003
Storage &						
Detention of						
Storage Water	0.79	0.00	0.79	0.33	0.00	0.33
Maintain Plant						
& Animal						
Community	0.62	0.00	0.62	0.26	0.00	0.26
Removal &						
Sequestrian of						
Elements &						
Compounds	0.55	0.00	0.55	0.23	0.00	0.23
TOTALS	-		•			0.82

Vsorpt¹

Vconnect1

Nederland Terminal Buildout Project - iHGM Analysis

Wetland ID# WP1005_PEM Pre-Project Post-Project Vdur¹ 0.75 0.00 Vfreq¹ 1.00 0.00 0.00 Vtopo¹ 0.40 Vwood² 0.10 0.00 Vmid 0.10 0.00 Vherb 1.00 0.00 Vdetritus 0.50 0.00 Vredox¹ 0.10 0.00

Comments
Approximately 85% of the WAA contained approximately 1 inch of standing water.
WAA receive hydrology from direct runoff.
WAA contains approximately 10% dips and hummocks (ruts)
No woody cover observed in field
No midstory cover observed in field
90% herbaceous cover observed in field

Based on data sheet

Based on data sheet

based on data sheet, photos, aerial photography. Habitat types: PEM wetlands, forest, and shrub/sapling; however, the area is immediately adjacent to industrial area.

Approximately 45% of WAA possesses an A or O horizon

Wetland acreage w/in construction footprir

1.00

0.50

0.003

Calculating Functional Capacity Unit (FCU) Impact - NO INPUTS NEEDED

0.00

	Pre-Project	Post Project	FCI Difference	Pre-Project FCU's	Post Project FCU's	Difference in Pre- and Post- FCU's
Temporary	,	Í				
Storage &						
Detention of						
Storage						
Water	0.79	0.00	0.79	0.00	0.00	0.00
Maintain						
Plant &						
Animal						
Community	0.53	0.00	0.53	0.00	0.00	0.00
Removal &						
Sequestrian						
of Elements						
&						
Compounds	0.58	0.00	0.58	0.00	0.00	0.00
TOTALS						0.01

Wetland ID#

Nederland Terminal Buildout Project - iHGM Analysis

Pre-Project Post-Project Vdur¹ 0.75 0.00 Vfreq¹ 0.00 1.00 Vtopo¹ 0.00 0.40 Vwood² 0.10 0.00 Vmid 0.10 0.00 Vherb 1.00 0.00 Vdetritus 0.50 0.00 Vredox¹ 0.10 0.00 Vsorpt¹ 0.00 1.00 Vconnect¹ 0.50 0.00

WP1005_PEM_B

Comments
Approximately 85% of the WAA contained approximately 1 inch
of standing water.
WAA receive hydrology from direct runoff, ~2" of standing
water and algal mat were observed.
WAA contains approximately 10% dips and hummocks (ruts)
No woody cover observed in field
No midstory cover observed in field
85% herbaceous cover observed in field
Approximately 60% of WAA possesses an A or O horizon
Based on data sheet

Based on data sheet

Based on data sheet

based on data sheet, photos, aerial photography. Habitat types: PEM wetlands, forest, and shrub/sapling; however, the area is immediately adjacent to industrial area.

Wetland acreage w/in construction footprint³ =

0.004

	Pre-Project	Post Project	FCI Difference	Pre-Project FCU's	Post Project FCU's	Difference in Pre- and Post- FCU's
Temporary		•				
Storage &						
Detention of						
Storage Water	0.79	0.00	0.79	0.00	0.00	0.00
Maintain Plant &						
Animal						
Community	0.53	0.00	0.53	0.00	0.00	0.00
Removal &						
Sequestrian of						
Elements &						
Compounds	0.58	0.00	0.58	0.00	0.00	0.00
TOTALS						0.01

Vconnect1

Nederland Terminal Buildout Project - iHGM Analysis

Wetland ID# WP1005_PEM_C **Pre-Project** Post-Project Vdur¹ 0.75 0.00 Vfreq¹ 1.00 0.00 Vtopo¹ 0.40 0.00 Vwood² 0.10 0.00 Vmid 0.10 0.00 Vherb 1.00 0.00 Vdetritus 0.50 0.00 Vredox¹ 0.00 0.10 Vsorpt¹ 1.00 0.00

Comments
Approximately 85% of the WAA contained approximately 1 inch of
standing water.
WAA receive hydrology from direct runoff, ~2" of standing water

WAA receive hydrology from direct runoff, ~2" of standing water and algal mat were observed.

WAA contains approximately 10% dips and hummocks (ruts)

No woody cover observed in field

No midstory cover observed in field

85% herbaceous cover observed in field

Approximately 60% of WAA possesses an A or O horizon

Based on data sheet

Based on data sheet

based on data sheet, photos, aerial photography. Habitat types: PEM wetlands, forest, and shrub/sapling; however, the area is immediately adjacent to industrial area.

Wetland acreage w/in construction footprint³ =

0.50

0.004

Calculating Functional Capacity Unit (FCU) Impact - NO INPUTS NEEDED

	Pre-Project	Post Project	FCI Difference	Pre-Project FCU's	Post Project FCU's	Difference in Pre- and Post- FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.79	0.00	0.79	0.00	0.00	0.00
Maintain Plant						
& Animal						
Community	0.53	0.00	0.53	0.00	0.00	0.00
Removal &						
Sequestrian of						
Elements &						
Compounds	0.58	0.00	0.58	0.00	0.00	0.00
TOTALS				•		0.01

Nederland Terminal Buildout Project - iHGM Analysis

Wetland ID#	WP1006_PEM]
	INPU	Ť
	Pre-Project	Post-Project
Vdur ¹	0.75	0.00
Vfreq ¹	0.75	0.00
Vtopo ¹	0.40	0.00
Vwood ²	0.10	0.00
Vmid	0.10	0.00
Vherb	1.00	0.00
Vdetritus	0.50	0.00
Vredox ¹	0.10	0.00
Vsorpt ¹	1.00	0.00
Vconnect ¹	0.75	0.00
	0.75	0.00

Comments
Approximately 85% of the WAA contained approximately 1
inch of standing water.
WAA receive hydrology from direct runoff of gravel road and
overflow from drainage ditches.
WAA contains approximately 10% dips and hummocks (ruts)
No woody cover observed in field
No midstory cover observed in field
85% herbaceous cover observed in field
Approximately 80% of WAA possesses an A or O horizon
Based on data sheet
Based on data sheet
based on data sheet, photos, aerial photography. Habitat
types: PEM wetlands, forest, and shrub/sapling; however, the
area is immediately adjacent to industrial area.

Wetland acreage w/in construction footprint³ =

2.56

Calculating Functional Capacity Unit (FCU) Impact - NO INPUTS NEEDED

	Pre-Project	Post Project	FCI Difference	Pre-Project FCU's	Post Project FCU's	Difference in Pre- and Post- FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.74	0.00	0.74	1.89	0.00	1.89
Maintain Plant &						
Animal						
Community	0.62	0.00	0.62	1.58	0.00	1.58
Removal &						
Sequestrian of						
Elements &						
Compounds	0.53	0.00	0.53	1.35	0.00	1.35
TOTALS	·		•			4.81

Nederland Terminal Buildout Project - iHGM Analysis Wetland ID# WP1006_PEM_B Pre-Project Post-Project Vdur¹ 0.75 0.00 Vfreq¹ 0.75 0.00 Vtopo¹ 0.40 0.00 Vwood² 0.10 0.00 0.00 Vmid 0.10 Vherb 0.75 Vdetritus 0.00 0.50 Vredox¹ 0.10 0.00 Vsorpt¹ 1.00 0.00 Vconnect¹ 0.50 0.00

	Comments
	ximately 85% of the WAA contained approximately 1 inch of ng water.
	eceive hydrology from direct runoff of gravel road and by from drainage ditches.
WAA c	contains approximately 10% dips and hummocks (ruts)
No woo	ody cover observed in field
No mic	dstory cover observed in field
70% h	erbaceous cover observed in field
Approx	ximately 80% of WAA possesses an A or O horizon
Based	on data sheet
Based	on data sheet
	on data sheet, photos, aeriai photography. Habitat types:
PFM w	vetlands, forest, and shrub/sapling, however, the area is

immediately adjacent to industrial area.

Wetland acreage w/in construction footprint³ =

0.001

						Difference in
			FCI	Pre-Project	Post Project	Pre- and Post-
	Pre-Project	Post Project	Difference	FCU's	FCU's	FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.67	0.00	0.67	0.00	0.00	0.00
Maintain Plant						
& Animal						
Community	0.45	0.00	0.45	0.00	0.00	0.00
Removal &						
Sequestrian of						
Elements &						
Compounds	0.51	0.00	0.51	0.00	0.00	0.00
TOTALS						0.00

Nederland Terminal Buildout Project - iHGM Analysis Wetland ID# WP1006_PEM_C Pre-Project Post-Project Vdur¹ 0.75 0.00 Vfreq¹ 0.75 0.00 Vtopo¹ 0.40 0.00 Vwood² 0.10 0.00 Vmid 0.10 0.00 Vherb 0.75 0.00 Vdetritus 0.00 0.50 Vredox¹ 0.10 0.00 Vsorpt¹ 1.00 0.00 Vconnect¹ 0.50 0.00

Comments
Approximately 85% of the WAA contained approximately 1 inch of standing water.
VAA receive hydrology from direct runoff of gravel road and overflow from drainage ditches.
VAA contains approximately 10% dips and hummocks (ruts)
No woody cover observed in field
No midstory cover observed in field
'0% herbaceous cover observed in field
Approximately 80% of WAA possesses an A or O horizon
Based on data sheet
Based on data sheet
based on data sneet, photos, aeriai photography. Habitat types:
PEM wetlands, forest, and shrub/sapling; however, the area is

immediately adjacent to industrial area.

Wetland acreage w/in construction footprint³ =

0.76

			FCI	Pre-Project	Post Project	Difference in Pre- and Post-
	Pre-Project	Post Project	Difference	FCU's	FCU's	FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.67	0.00	0.67	0.51	0.00	0.51
Maintain Plant						
& Animal						
Community	0.45	0.00	0.45	0.34	0.00	0.34
Removal &						
Sequestrian of						
Elements &						
Compounds	0.51	0.00	0.51	0.39	0.00	0.39
TOTALS						1.24

Nederland Terminal Buildout Project - iHGM Analysis

Wetland ID#	WP1007_PEM] T
	Pre-Project	Post-Project
Vdur ¹	0.75	0.00
Vfreq ¹	1.00	0.00
Vtopo ¹ Vwood ² Vmid Vherb	0.70 0.10 0.10 1.00	0.00 0.00 0.00 0.00
Vdetritus Vredox ¹	0.50 0.10	0.00
Vsorpt ¹	1.00	0.00
Vconnect ¹	0.50	0.00

Comments
Approximately 80% of the WAA contained approximately
1 inch of standing water.

WAA receive hydrology from direct runoff, ~2" of standing water observed.

WAA contains approximately 15% dips and hummocks

No woody cover observed in field

No midstory cover observed in field 85% herbaceous cover observed in field

Approximately 25% of WAA possesses an A or O horizon

Based on data sheet

Based on data sheet

based on data sheet, photos, aerial photography. Habitat types: PEM wetlands, forest, and shrub/sapling; however, the area is immediately adjacent to industrial area.

Wetland acreage w/in construction footprint³ = 0.001

					Post	Difference in
			FCI	Pre-Project	Project	Pre- and Post-
	Pre-Project	Post Project	Difference	FCU's	FCU's	FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.87	0.00	0.87	0.00	0.00	0.00
Maintain Plant						
& Animal						
Community	0.53	0.00	0.53	0.00	0.00	0.00
Removal &						
Sequestrian of						
Elements &						
Compounds	0.60	0.00	0.60	0.00	0.00	0.00
TOTALS	-	•	•	•	·	0.00

Wetland ID#

Nederland Terminal Buildout Project - iHGM Analysis

	INPU	ŤΤ
	Pre-Project	Post-Project
Vdur ¹	0.75	0.00
Vfreq ¹	1.00	0.00
Vtopo ¹	0.70	0.00
Vwood ²	0.10	0.00
Vmid	0.10	0.00
Vherb	1.00	0.00
Vdetritus	0.50	0.00
Vredox ¹	0.10	0.00
Vsorpt ¹	1.00	0.00
Vconnect ¹	0.50	0.00

WP1007_PEM_B

Comments	
Approximately 80% of the WAA contained approximatel nch of standing water.	y 1
NAA receive hydrology from direct runoff, ~2" of standinater observed	ng
WAA contains approximately 15% dips and hummocks	(ruts)
No woody cover observed in field	
No midstory cover observed in field	
35% herbaceous cover observed in field	
Approximately 25% of WAA possesses an A or O horizon	on

Based on data sheet

Based on data sheet

based on data sheet, photos, aerial photography. Habitat types: PEM wetlands, forest, and shrub/sapling; however, the area is immediately adjacent to industrial area.

Wetland acreage w/in construction footprint³ =

0.002

			FCI	Pre-Project	Post Project	Difference in Pre- and
	Pre-Project	Post Project	Difference	FCU's	FCU's	Post- FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.87	0.00	0.87	0.00	0.00	0.00
Maintain Plant & Animal						
Community	0.53	0.00	0.53	0.00	0.00	0.00
Removal & Sequestrian of						
Elements &						
Compounds	0.60	0.00	0.60	0.00	0.00	0.00
TOTALS						0.00

Nederland Terminal Buildout Project - iHGM Analysis

Wetland ID# WP1007_PEM_C Pre-Project Post-Project Vdur¹ 0.75 0.00 Vfreq¹ 1.00 0.00 Vtopo¹ 0.70 0.00 Vwood² 0.10 0.00 Vmid 0.10 0.00 Vherb 1.00 0.00 Vdetritus 0.50 0.00 Vredox¹ 0.10 0.00 Vsorpt¹ 1.00 0.00

Comments
Approximately 80% of the WAA contained approximately 1 inch
of standing water.
WAA receive hydrology from direct runoff, ~2" of standing water
observed
WAA contains approximately 15% dins and hummocks (ruts)

WAA contains approximately 15% dips and hummocks (ruts)

No woody cover observed in field

No midstory cover observed in field

85% herbaceous cover observed in field

Approximately 25% of WAA possesses an A or O horizon

Based on data sheet

Based on data sheet

based on data sheet, photos, aerial photography. Habitat types: PEM wetlands, forest, and shrub/sapling; however, the area is immediately adjacent to industrial area.

Wetland acreage w/in construction footprint³ =

Vconnect1

0.002

Calculating Functional Capacity Unit (FCU) Impact - NO INPUTS NEEDED

0.00

	Pre-Project	Post Project	FCI Difference	Pre-Project FCU's	Post Project FCU's	Difference in Pre- and Post- FCU's
_						
Temporary						
Storage &						
Detention of						
Storage Water	0.87	0.00	0.87	0.00	0.00	0.00
Maintain Plant						
& Animal						
Community	0.53	0.00	0.53	0.00	0.00	0.00
Damas al 9						
Removal &						
Sequestrian						
of Elements &						
Compounds	0.60	0.00	0.60	0.00	0.00	0.00
TOTALS						0.00

Nederland Terminal Buildout Project - iHGM Analysis Wetland ID# WP1009_PEM INPUT Pre-Project Post-Project Vdur¹ 0.75 0.00 0.75 Vfreq¹ 0.00 Vtopo¹ 0.40 0.00 0.00 Vwood² 0.10 Vmid 0.10 Vherb 0.75 0.00 Vdetritus 0.00 0.50 Vredox¹ 0.10 0.00 Vsorpt¹ 1.00 0.00 Vconnect¹ 0.00 0.50

	Comments
	imately 85% of the WAA contained approximately 1 inch of g water.
	eceive hydrology from direct runoff of gravel road and w from drainage ditches.
WAA c	ontains approximately 10% dips and hummocks (ruts)
No woo	ody cover observed in field
No mid	story cover observed in field
70% he	erbaceous cover observed in field
Approx	imately 80% of WAA possesses an A or O horizon
Based	on data sheet
Based	on data sheet
based (on data sneet, photos, aeriai photography. Habitat types:
PEM w	etlands and forest; however, the area is immediately adjace

Wetland acreage w/in construction footprint³ =

0.10

to industrial area.

			FCI	Pre-Project	Post Project	Difference in Pre- and Post-
	Pre-Project	Post Project	Difference	FCU's	FCU's	FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.67	0.00	0.67	0.07	0.00	0.07
Maintain Plant						
& Animal						
Community	0.45	0.00	0.45	0.05	0.00	0.05
Removal &						
Sequestrian of						
Elements &						
Compounds	0.51	0.00	0.51	0.05	0.00	0.05
TOTALS						0.16

Nederland Terminal Buildout Project - iHGM Analysis

Wetland ID#	WP1009_PEM_B	
	INPL	JT
	Pre-Project	Post-Project
Vdur ¹	0.75	0.00
V6===1	0.75	0.00
Vfreq ¹	0.75	0.00
Vtopo ¹	0.40	0.00
Vwood ²	0.10	0.00
Vmid	0.10	0.00
Vherb	0.10	0.00
Vdetritus	0.50	0.00
Vredox ¹	0.10	0.00
Vsorpt ¹	1.00	0.00
Vconnect ¹	0.50	0.00

Comments
Approximately 85% of the WAA contained approximately 1 inch of standing water.
WAA receive hydrology from direct runoff of gravel road and overflow from drainage ditches.
WAA contains approximately 10% dips and hummocks (ruts)
No woody cover observed in field
No midstory cover observed in field
70% herbaceous cover observed in field
Approximately 80% of WAA possesses an A or O horizon
Based on data sheet
Based on data sheet
based on data sheet, photos, aerial photography. Habitat types: PEM wetlands and forest (PFO); however, the area is immediately adjacent to industrial area.

Wetland acreage w/in construction footprint³ =

1.01

			FCI	Pre-Project	Post Project	Difference in Pre- and Post-
	Pre-Project	Post Project	Difference	FCU's	FCU's	FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.45	0.00	0.45	0.46	0.00	0.46
Maintain Plant						
& Animal						
Community	0.23	0.00	0.23	0.24	0.00	0.24
Removal &						
Sequestrian of						
Elements &						
Compounds	0.47	0.00	0.47	0.47	0.00	0.47
TOTALS						1.17

Wetland ID# WP1010 PEM

Nederland Terminal Buildout Project - iHGM Analysis

	*** 1010_1 2111	
	INPL	ĴΤ
	Pre-Project	Post-Project
Vdur ¹	0.75	0.00
Vfreq ¹	1.00	0.00
Vtopo ¹	0.40	0.00
Vwood ²	0.10	0.00
Vmid	0.10	0.00
Vherb	1.00	0.00
Vdetritus	0.50	0.00
Vredox ¹	0.10	0.00
Vsorpt ¹	1.00	0.00
Vconnect ¹	0.50	0.00

Comments
Approximately 85% of the WAA contained approximately 1 inch of
standing water.
WAA receive hydrology from direct rupoff of grayel road and

AA receive hydrology from direct runoff of gravel road and overflow from drainage ditches.

WAA contains approximately 10% dips and hummocks (ruts)

No woody cover observed in field

No midstory cover observed in field

100% herbaceous cover observed in field

Approximately 20% of WAA possesses an A or O horizon

Based on data sheet

Based on data sheet

based on data sheet, photos, aerial photography. Habitat types: PEM wetlands and forest (PFO); however, the area is immediately adjacent to industrial area.

Wetland acreage w/in construction footprint³

0.02

Calculating Functional Capacity Unit (FCU) Impact - NO INPUTS NEEDED

			FCI	Pre-Project	Post Project	Difference in Pre-
	Pre-Project	Post Project	Difference	FCU's	FCU's	and Post- FCU's
Temporary						
Storage &						
Detention of						
Storage						
Water	0.79	0.00	0.79	0.02	0.00	0.02
Maintain						
Plant &						
Animal						
Community	0.53	0.00	0.53	0.01	0.00	0.01
Removal &						
Sequestrian						
of Elements						
&						
Compounds	0.58	0.00	0.58	0.01	0.00	0.01
TOTALS						0.04

Nederland Terminal Buildout Project Sunoco Partners Marketing Terminals L.P. iHGM PSS Riverine Calculations USACE Galveston District

								iHGM Vari	ables (Pi	re-Constru	uction)				FCU	Pre-Consti	ruction	FCU P	ost-Constr	uction		FCU Dif	ferential	
Wetland ID	Cowardin Class	Wetland Acreage w/in Project Footprint	8-digit USGS HUC Code	Watershed Name	Vdur	Vfreq	Vtopo	Vwood	Vmid	Vherb	Vdetritus	Vredox	Vsorpt	Vconnect	Temp. Storage of Water	Maintain Plant & Animal	Removal of Elements	Temp. Storage of Water	Maintain Plant & Animal	Removal of Elements	Temp. Storage of Water	Maintain Plant & Animal	Removal of Elements	Total FCU Value
Wetland 5 (Permanent)	PSS	0.001	12020003	Lower Neches	0.75	0.75	0.40	0.50	0.75	1.00	0.30	0.10	1.00	0.50	0.001	0.001	0.001	0.00	0.00	0.00	0.001	0.001	0.001	0.002
Wetland 5 (Temporary)	PSS	0.66	12020003	Lower Neches	0.75	0.75	0.40	0.50	0.75	1.00	0.30	0.10	1.00	0.50	0.54	0.50	0.42	0.49	0.26	0.34	0.05	0.23	0.08	0.36
Wetland 7	PSS	2.25	12020003	Lower Neches	0.50	0.75	0.10	0.50	0.50	0.50	0.50	0.10	1.00	0.50	1.15	1.13	1.19	0.00	0.00	0.00	1.15	1.13	1.19	3.47
Wetland 10	PSS	0.38	12020003	Lower Neches	0.25	0.75	0.70	0.50	0.50	0.75	0.30	0.10	1.00	1.00	0.23	0.29	0.20	0.00	0.00	0.00	0.23	0.29	0.20	0.71
WP1006_PSS	PSS	0.11	12020003	Lower Neches	0.75	1.00	0.40	0.25	0.50	1.00	0.50	0.10	1.00	0.75	0.09	0.08	0.07	0.00	0.00	0.00	0.09	0.08	0.07	0.25
ACREAGE TOTAL	.S	3.40					iH	GM TOTAL	.S						2.01	1.99	1.88	0.49	0.26	0.34	1.52	1.72	1.54	4.79

		Anticipate				ct - iHGM Ana		District		
8-digit USGS HUC Code	Watershed Name	Wetland Acreage w/in Project Footprint	Temp. Storage of Water (Differential)	Maintain Plant & Animal (Differential)	Removal of Elements (Differential)	Multiplier	Temp. Storage of Water (Differential)	Maintain Plant & Animal (Differential)	Removal of Elements (Differential)	Total FCU Differential Value
12020003	Lower Neches	3.40	1.52	1.72	1.54					4.78
	Totals	3.40	1.52	1.72	1.54		1.52	1.72	1.54	4.78

		Nederland 1	Terminal Buildout Project - iHGM Analysis
Wetland ID#	Wetland 5 (Pe	ermanent)	
	INPU	T	
	Pre-Project	Post-Project	Comments
Vdur ¹	0.75	0.00	Information based on iHGM provided by Whitenton
Vfreq ¹	0.75	0.00	
Vtopo ¹	0.40	0.00	
Vwood ²	0.50	0.00	
Vmid	0.75		
Verb	1.00		
Detritus	0.30		
Vredox ¹	0.10		
Vsorpt ¹	1.00	0.00	
Vconnect ¹	0.50	0.00	
Wotland across	e w/in construction fo		0.001
wetiand acreage	e w/iii construction it		0.001
Calculating Fund	ctional Capacity Unit	(FCU) Impact - I	NO INPUTS NEEDED

						Difference in
			FCI	Pre-Project	Post Project	Pre- and Post-
	Pre-Project	Post Project	Difference	FCU's	FCU's	FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.82	0.00	0.82	0.001	0.00	0.001
Maintain Plant						
& Animal						
Community	0.75	0.00	0.75	0.001	0.00	0.001
Removal &						
Equestrian of						
Elements &						
Compounds	0.64	0.00	0.64	0.001	0.00	0.001
TOTALS						0.002

Nederland Terminal Buildout Project - iHGM Analysis

Wetland ID#	Wetland 5 (Temporary)	
	INPUT	-
	Pre-Project	Post-Project
Vdur ¹	0.75	0.75
Vfreq ¹	0.75	0.75
4		
Vtopo ¹	0.40	0.40
Vwood ²	0.50	0.10
Vmid	0.75	0.10
Vherb	1.00	1.00
Vdetritus	0.30	0.30
Vredox ¹	0.10	0.10
Vsorpt ¹	1.00	1.00
Vconnect ¹	0.50	0.10

Comments	
Information based on iHGM provided by Whitenton	

Wetland acreage w/in construction footprint³ =

0.66

	Pre-Project	Post Project	FCI Difference	Pre-Project FCU's	Post Project FCU's	Difference in Pre- and Post- FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.82	0.74	0.08	0.54	0.49	0.05
Maintain Plant &						
Animal						
Community	0.75	0.40	0.35	0.50	0.26	0.23
Removal &						
Sequestrian of						
Elements &						
Compounds	0.64	0.51	0.12	0.42	0.34	0.08
TOTALS						0.36

		Nederland Ter	minal Buildout Project - iHGM Analysis
Wetland ID#	Wetland 7		
	INPUT	<u>.</u>	
	Pre-Project	Post-Project	
4			Information based on iHGM p
Vdur ¹	0.50	0.00	illionnation based on illionip
Vfreq ¹	0.75	0.00	
Vtopo ¹	0.10	0.00	
$Vwood^2$	0.50	0.00	
Vmid	0.50	0.00	
Vherb	0.50	0.00	
Vdetritus	0.50	0.00	
Vredox ¹	0.10	0.00	
Vsorpt ¹	1.00	0.00	
Vconnect ¹	0.50	0.00	

Comments
Information based on iHGM provided by Whitenton

2.25

	Pre-Project	Post Project	FCI Difference	Pre-Project FCU's	Post Project FCU's	Difference in Pre- and Post- FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.51	0.00	0.51	1.15	0.00	1.15
Maintain Plant &						
Animal						
Community	0.50	0.00	0.50	1.13	0.00	1.13
Removal &						
Sequestrian of						
Elements &						
Compounds	0.53	0.00	0.53	1.19	0.00	1.19
TOTALS		·	·	·	·	3.47

	Nederland Terminal Buildout Project - iHGM Analysis							
Wetland ID#	Wetland 10							
	INPUT	!						
	Pre-Project	Post-Project	Comments					
1	0.05	2.00	Information based on iHGM provided by Whitenton					
Vdur ¹	0.25							
Vfreq ¹	0.75	0.00						
Vtopo ¹	0.70	0.00						
Vwood ²	0.50	0.00						
Vmid	0.50							
Vherb	0.75							
Vdetritus	0.30	0.00						
Vredox ¹	0.10	0.00						
Vsorpt ¹	1.00	0.00						
Vconnect ¹	1.00	0.00						

0.38

			FCI	Pre-Project	Post Project	Difference in Pre- and Post-
	Pre-Project	Post Project	Difference	•	FCU's	FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.61	0.00	0.61	0.23	0.00	0.23
Maintain Plant						
& Animal						
Community	0.75	0.00	0.75	0.29	0.00	0.29
Removal &						
Sequestrian of						
Elements &						
Compounds	0.52	0.00	0.52	0.20	0.00	0.20
TOTALS		<u> </u>		<u> </u>		0.71

Nederland Terminal Buildout Project - iHGM Analysis

INPUT Pre-Project Post-Project Vdur¹ 0.75 0.00 Vfreq¹ 1.00 0.00 0.40 0.00 Vtopo¹ Vwood² 0.25 0.00 Vmid 0.50 0.00 Vherb 1.00 0.00 Vdetritus 0.00 0.50 Vredox¹ 0.10 0.00 Vsorpt¹ 1.00 0.00 Vconnect¹

WP1006_PSS

Wetland ID#

<u> </u>
Comments
Approximately 85% of the WAA floods or ponds for 7 to 14 days.
WAA receive hydrology from direct runoff, ~1" of standing water observed.
WAA contains approximately 10% dips and hummocks
Approximately 20% woody cover observed in field
Approximately 45% midstory cover observed in field
Approximately 77% herbaceous cover observed in field
Approximately 15% of WAA possesses an A or O horizon
Based on data sheet
Based on data sheet
based on data sheet, photos, aerial photography. Habitat types: PFO wetlands; however, the area is immediately adjacent to industrial area.

Wetland acreage w/in construction footprint³ =

0.11

0.00

Calculating Functional Capacity Unit (FCU) Impact - NO INPUTS NEEDED

	Due Due inst	Doot Droingt	FCI	Pre-Project	Post Project	Difference in Pre- and Post-
T	Pre-Project	Post Project	Difference	FCU's	FCU's	FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.85	0.00	0.85	0.09	0.00	0.09
Maintain Plant						
& Animal						
Community	0.75	0.00	0.75	0.08	0.00	0.08
Removal &						
Sequestrian of						
Elements &						
Compounds	0.63	0.00	0.63	0.07	0.00	0.07
TOTALS						0.25

Nederland Terminal Buildout Project
Sunoco Partners Marketing Terminals L.P.
iHGM PFO Riverine Calculations
USACE Galveston District

										iH	GM Va	riables	(Pre-Con	structio	n)					FCU F	re-Const	ruction	FCU P	ost-Cons	truction		FCU Dif	ferential	
Wetland ID	Cowardin Class	Wetland Acreage w/in Project Footprint	8-digit USGS HUC Code	Watershed Name	Vdur	Vfreq	Vtopo	Vcwd	Vwood	Vtree	Vrich	Vbasal	Vdensity	/ Vmid	Vherb	Vdetritus	Vredox	Vsorpt	Vconnect	Temp. Storage of Water	Plant &	Removal of Elements	Storage	Plant &		Storage	Plant &		FCU
Wetland 04	PFO	39.15	12020003	Lower Neches	0.75	1.00	0.10	0.30	0.25	0.30	1.00	0.40	0.40	1.00	1.00	0.30	0.10	1.00	0.50	16.96	22.84	21.01	0.00	0.00	0.00	16.96	22.84	21.01	60.81
Wetland 1 (Perm)	PFO	61.52	12020003	Lower Neches	0.50	0.75	0.70	0.50	0.75	0.30	0.40	0.60	0.60	0.75	1.00	0.30	0.10	1.00	1.00	38.81	37.68	38.35	0.00	0.00	0.00	38.81	37.68	38.35	114.84
Wetland 1 (Temp)	PFO	0.47	12020003	Lower Neches	0.50	0.75	0.70	0.50	0.75	0.30	0.40	0.60	0.60	0.75	1.00	0.30	0.10	1.00	1.00	0.30	0.29	0.29	0.20	0.15	0.20	0.10	0.14	0.09	0.32
Wetland 3 (Perm)	PFO	26.02	12020003	Lower Neches	0.50	0.75	0.25	0.30	0.75	0.30	0.40	0.40	0.40	1.00	1.00	0.50	0.10	1.00	0.75	13.40	13.66	15.44	0.00	0.00	0.00	13.40	13.66	15.44	42.50
Wetland 3 (Temp)	PFO	0.81	12020003	Lower Neches	0.50	0.75	0.25	0.30	0.75	0.30	0.40	0.40	0.40	1.00	1.00	0.50	0.10	1.00	0.75	0.42	0.43	0.48	0.25	0.23	0.33	0.17	0.20	0.15	0.52
WP1001_PFO (Perm)	PFO	1.24	12020003	Lower Neches	0.50	1.00	0.70	0.30	0.25	0.30	0.40	0.40	0.60	1.00	0.30	0.50	0.10	1.00	0.75	0.67	0.60	0.67	0.00	0.00	0.00	0.67	0.60	0.67	1.94
WP1001_PFO (Temp)	PFO	0.13	12020003	Lower Neches	0.50	1.00	0.70	0.30	0.25	0.30	0.40	0.40	0.60	1.00	0.30	0.50	0.10	1.00	0.75	0.07	0.06	0.07	0.05	0.04	0.05	0.03	0.02	0.02	0.06
WP1001_PFO_B (Perm)	PFO	61.51	12020003	Lower Neches	0.50	1.00	0.70	0.30	0.50	0.30	0.40	0.40	0.60	1.00	0.30	0.50	0.10	1.00	0.75	36.57	29.73	37.32	0.00	0.00	0.00	36.57	29.73	37.32	103.62
WP1001_PFO_B (Temp)	PFO	1.92	12020003	Lower Neches	0.50	1.00	0.70	0.30	0.50	0.30	0.40	0.40	0.60	1.00	0.30	0.50	0.10	1.00	0.75	1.14	0.93	1.16	0.67	0.62	0.77	0.47	0.30	0.39	1.16
WP1006_PFO	PFO	0.47	12020003	Lower Neches	0.75	0.75	0.70	0.30	0.50	0.30	0.40	0.40	0.40	0.75	0.30	0.30	0.10	1.00	0.50	0.29	0.19	0.28	0.00	0.00	0.00	0.29	0.19	0.28	0.76
WP1009_PFO	PFO	0.52	12020003	Lower Neches	0.50	0.25	0.70	0.30	0.50	0.30	0.40	0.40	0.60	0.25	1.00	0.30	0.10	1.00	0.50	0.22	0.23	0.23	0.00	0.00	0.00	0.22	0.23	0.23	0.68
WP1009_PFO_B	PFO	0.002	12020003	Lower Neches	0.50	0.25	0.70	0.30	0.75	0.30	0.40	0.40	0.60	0.25	1.00	0.30	0.10	1.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP1009_PFO_C	PFO	0.004	12020003	Lower Neches	0.50	0.25	0.70	0.30	0.50	0.30	0.60	1.00	1.00	0.50	1.00	0.30	0.10	1.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
TOTAL	L ACREAGE	193.77																iHG	M TOTALS	108.86	106.63	115.30	1.16	1.05	1.36	107.69	105.58	113.95	327.23

	Nederland Terminal Buildout Project - iHGM Analysis Anticipated (Permanent Fill) PFO Wetland Mitigation Credits per HUC - USACE Galveston District									
8-digit USGS HUC Code	Watershed Name	Wetland Acreage w/in Project Footprint	Temp. Storage of Water (Differential)	Maintain Plant & Animal (Differential)	Removal of Elements (Differential)	Service Area Multiplier	Temp. Storage of Water (Differential)	Maintain Plant & Animal (Differential)	Removal of Elements (Differential)	Total FCU Differential Value
12020003	Lower Neches	193.77	107.69	105.58	113.95					327.23
	Totals	193.77	107.69	105.58	113.95		107.69	105.58	113.95	327.23

	Nec	derland Termina	l Buildout P	roject - iHGM Ar	nalysis	
Wetland ID#	Wetland 04					
	INPUT	•				
	Pre-Project	Post-Project	1 r		Comme	ents
				Information base	ed on iHGM provi	ided by AECOM
Vdur ¹	0.75	0.00		inionnation base	ea on ingivi provi	ided by AECOIVI
Vfreq ¹	1.00	0.00				
1	0.40	2.22				
Vtopo ¹	0.10	0.00				
Vcwd ²	0.30	0.00				
Vwood ²	0.25	0.00				
Vtree ²	0.30					
Vrich	1.00	0.00				
	1.00	0.00				
Vbasal	0.40	0.00				
Vdensity	0.40	0.00				
Vmid	1.00	0.00				
Vherb	1.00	0.00				
Vdetritus	0.30	0.00				
Vredox ¹	0.10	0.00				
Vsorpt ¹	1.00	0.00				
/connect ¹	0.50	0.00				
	0.00	0.00	J l			
Vetland acreage w/i	n construction footprint ³ =		39.15			
Calculating Function	nal Capacity Unit (FCU) Imp	oact - NO INPUT	S NEEDED			
						Difference in
			FCI	Pre-Project	Post Project	Pre- and Post-
	Pre-Project	Post Project	Difference	FCU's	FCU's	FCU's
Temporary Storage						
& Detention of						
Storage Water	0.43	0.00	0.43	16.96	0.00	16.96
Maintain Plant &						
Animal Community Removal &	0.58	0.00	0.58	22.84	0.00	22.84
Sequestrian of						
Elements &						
Compounds	0.54	0.00	0.54	21.01	0.00	
TOTALS						60.81

Wetland ID#	Wetland 1 (Perm)		
	INPUT Pre-Project	Post-Project	Comments
/dur ¹	0.50	0.00	Information based on iHGM provided by Whitenton
Vfreq ¹	0.75	0.00	
-			
Vtopo ¹ Vcwd ²	0.70	0.00	
	0.50	0.00	
Vwood ² Vtree ²	0.75	0.00	
Viree Vrich	0.30	0.00 0.00	
Vbasal	0.60	0.00	
Vdensity	0.60	0.00	
Vmid	0.75	0.00	
Vherb	1.00	0.00	
Vdetritus	0.30	0.00	
Vredox ¹	0.10	0.00	
Vsorpt ¹	1.00	0.00	
Vconnect ¹	1.00	0.00	

			FCI	Pre-Project	Post Project	Difference in Pre- and Post-
	Pre-Project	Post Project	Difference	FCU's	FCU's	FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.63	0.00	0.63	38.81	0.00	38.81
Maintain Plant						
& Animal						
Community	0.61	0.00	0.61	37.68	0.00	37.68
Removal &						
Sequestrian of						
Elements &						
Compounds	0.62	0.00	0.62	38.35	0.00	38.35
TOTALS			·	<u> </u>		114.84

	N	lederland Termii	nal Buildout Project - iHGM Analysis
Wetland ID#	Wetland 1 (Temp)		
	INPUT	•	
	Pre-Project	Post-Project	Comments
Vdur ¹	0.50	0.50	Information based on iHGM provided by Whitenton
Vfreq ¹	0.75	0.75	
Vtopo ¹	0.70	0.70	
Vcwd ²	0.50	0.10	
Vwood ²	0.75	0.10	
Vtree ²	0.30	0.10	
Vrich	0.40	0.10	
Vbasal	0.60	0.10	
Vdensity	0.60	0.10	
Vmid	0.75	0.10	
Vherb	1.00	1.00	
Vdetritus	0.30	0.30	
Vredox ¹	0.10	0.10	
Vsorpt ¹	1.00	1.00	
Vconnect ¹	1.00	1.00	

Wetland acreage w/in construction footprint³ =

0.47

			FCI	Pre-Project	Post Project	Difference in Pre-
	Pre-Project	Post Project	Difference	FCU's	FCU's	and Post- FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.63	0.43	0.20	0.30	0.20	0.10
Maintain Plant &						
Animal						
Community	0.61	0.33	0.29	0.29	0.15	0.14
Removal &						
Sequestrian of						
Elements &						
Compounds	0.62	0.42	0.20	0.29	0.20	0.09
TOTALS						0.32

Wetland ID#	Wetland 3 (Perm)		
	INPUT		
	Pre-Project	Post-Project	
	TTE-TTOJECT	1 OSt-1 TOJECT	
			Information based on iHGM provided by Whitento
dur ¹	0.50	0.00	information based on inform provided by writtened
req ¹	0.75	0.00	
topo ¹	0.25	0.00	
cwd ²	0.30	0.00	
vood ²	0.75	0.00	
ree ²	0.30	0.00	
rich	0.40	0.00	
basal	0.40	0.00	
density	0.40	0.00	
mid	1.00	0.00	
herb	1.00	0.00	
detritus	0.50	0.00	
redox ¹	0.30		
sorpt ¹	1.00		
connect ¹	0.75		

Wetland acreage w/in construction footprint³ =

26.02

	Pre-Project	Post Project	FCI Difference	Pre-Project FCU's	Post Project FCU's	Difference in Pre- and Post- FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.52	0.00	0.52	13.40	0.00	13.40
Maintain Plant &						
Animal						
Community	0.53	0.00	0.53	13.66	0.00	13.66
Removal &						
Sequestrian of						
Elements &						
Compounds	0.59	0.00	0.59	15.44	0.00	15.44
TOTALS				_		42.50

		Nederla	nd Terminal Bu	ildout Project - iHGM Analysis
Ī	Wetland 3			
Wetland ID#	(Temp)			
		IPUT		
	Pre-Project	Post-Project		
Vdur ¹	0.50	0.50		Information based on iHGM provided by Whitenton
Vfreq ¹	0.75	0.75		
Vtopo ¹	0.25	0.25		
Vcwd ²	0.30	0.10		
Vwood ²	0.75	0.10		
Vtree ²	0.30	0.10		
Vrich	0.40			
Vbasal	0.40	0.10		
Vdensity	0.40			
Vmid	1.00			
Vherb	1.00	1.00		
Vdetritus	0.50	0.50		
Vredox ¹	0.10	0.10		
Vsorpt ¹	1.00	1.00		
Vconnect ¹	0.75	0.75		

Wetland acreage w/in construction footprint³ {

0.81

				Pre-Project	Post Project	Difference in Pre-
	Pre-Project	Post Project	FCI Difference	FCU's	FCU's	and Post- FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.52	0.30	0.21	0.42	0.25	0.17
Maintain Plant						
& Animal						
Community	0.53	0.28	0.24	0.43	0.23	0.20
Removal &						
Sequestrian of						
Elements &						
Compounds	0.59	0.41	0.19	0.48	0.33	0.15
TOTALS						0.52

:-Project Comments

		• •
	Pre-Project	Post-Project
Vdur ¹	0.50	0.00
Vfreq ¹	1.00	0.00
Vtopo ¹	0.70	0.00
Vcwd ²	0.30	0.00
Vwood ²	0.25	0.00
Vtree ²	0.30	0.00
Vrich	0.40	0.00
Vbasal	0.40	0.00
Vdensity	0.60	0.00
Vmid	1.00	0.00
Vherb	0.30	0.00
Vdetritus	0.50	0.00
Vredox ¹	0.10	0.00
Vsorpt ¹	1.00	0.00
Vconnect ¹	0.75	0.00

WP1001_PFO

INPUT

Wetland ID#

Approximately 60% of the WAA floods or ponds for 7 to 14 days.

WAA receive hydrology from direct runoff and possessed water stained leaves.

WAA contains approximately 15% dips and hummocks

2 pieces observed along 100' transect.

30% tree cover observed.

Only tallayy trans absorpts of

Only tallow tree observed.

Only tallow tree observed. Extrapilated to acre.

Extrapilated to acre.

75% midstory cover observed in field

100% herbaceous cover observed in field

Approximately 20% of WAA possesses an A or O horizon

Based on data sheet

Based on data sheet

based on data sheet, photos, aerial photography. Habitat types: PFO wetlands and upland; however, the area is immediately adjacent to industrial area.

Wetland acreage w/in construction footprint³ =

1.24

Calculating Functional Capacity Unit (FCU) Impact - NO INPUTS NEEDED

	Dro Droject	Doot Drainet	FCI	Pre-Project FCU's	Post Project FCU's	Difference in Pre-
	Pre-Project	Post Project	Difference	FCUS	FCUS	and Post- FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.54	0.00	0.54	0.67	0.00	0.67
Maintain Plant &						
Animal						
Community	0.48	0.00	0.48	0.60	0.00	0.60
Removal &						
Sequestrian of						
Elements &						
Compounds	0.54	0.00	0.54	0.67	0.00	0.67
TOTALS						1.04

TOTALS 1.94

		Nederland	Terminal Build	lout Project - iHGM Analysis
Wetland ID#	WP1001_PF0			
	INP	UT		
	Pre-Project	Post-Project		Comme
			Α	pproximately 60% of the WAA
Vdur ¹	0.50	0.50	da	ays.
			W	VAA receive hydrology from dire
Vfreq ¹	1.00	0.75	W	ater stained leaves.
Vtopo ¹	0.70	0.40	W	VAA contains approximately 15°
Vcwd ²	0.30	0.10	2	pieces observed along 100' tra
Vwood ²	0.25	0.10	30	0% tree cover observed.
Vtree ²	0.30	0.10	О	only tallow tree observed.
Vrich	0.40	0.10	O	only tallow tree observed.
Vbasal	0.40	0.10	E	xtrapilated to acre.
Vdensity	0.60	0.10	E	xtrapilated to acre.
Vmid	1.00		7:	5% midstory cover observed in
Vherb	0.30		10	00% herbaceous cover observe
Vdetritus	0.50	0.30	Α	pproximately 20% of WAA poss
Vredox ¹	0.10	0.10	В	ased on data sheet
Vsorpt ¹	1.00	1.00	В	ased on data sheet
				ased on data sheet, photos, ae pes: PFO wetlands and upland
Vconnect ¹	0.75	1.00		nmediately adjacent to industria

Comments

Approximately 60% of the WAA floods or ponds for 7 to 14 days.
WAA receive hydrology from direct runoff and possessed water stained leaves.
WAA contains approximately 15% dips and hummocks
2 pieces observed along 100' transect.
30% tree cover observed.
Only tallow tree observed.
Only tallow tree observed.
Extrapilated to acre.
Extrapilated to acre.
75% midstory cover observed in field
100% herbaceous cover observed in field
Approximately 20% of WAA possesses an A or O horizon
Based on data sheet
Based on data sheet
based on data sheet, photos, aerial photography. Habitat types: PFO wetlands and upland; however, the area is immediately adjacent to industrial area.

Wetland acreage w/in construction footprint³ =

			FCI	Dua Dualast	Doot Droingt	Difference in Dre
			FCI	Pre-Project	-	Difference in Pre-
	Pre-Project	Post Project	Difference	FCU's	FCU's	and Post- FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.54	0.35	0.19	0.07	0.05	0.03
Maintain Plant &						
Animal						
Community	0.48	0.33	0.16	0.06	0.04	0.02
Removal &						
Sequestrian of						
Elements &						
Compounds	0.54	0.40	0.14	0.07	0.05	0.02
TOTALS					<u> </u>	0.06

	INPUT				
	Pre-Project	Post-Project			
Vdur ¹	0.50	0.00			
Vfreq ¹	1.00	0.00			
Vtopo ¹	0.70	0.00			
Vcwd ²	0.30	0.00			
Vwood ²	0.50	0.00			
Vtree ²	0.30	0.00			
Vrich	0.40	0.00			
Vbasal	0.40	0.00			
Vdensity	0.60	0.00			
Vmid	1.00	0.00			
Vherb	0.30	0.00			
Vdetritus	0.50	0.00			
Vredox ¹	0.10	0.00			
Vsorpt ¹	1.00	0.00			

WP1001_PFO_B

Wetland ID#

Vconnect¹

Comments

Approxi	mate	ly 6	60%	of	the \	NAA	floods	or p	onds	for 7	7 to 1	4
days.												
		-	-									

WAA receive hydrology from direct runoff and possessed water stained leaves and water marks.

WAA contains approximately 15% dips and hummocks

2 pieces observed along 100' transect.

Averages 63% tree cover observed.

Predominantly tallow tree observed. Three other species observed spread throughout nine soil stations.

Predominantly tallow tree observed. Three other species

Extrapilated to acre.

Extrapilated to acre.

Average of 80% midstory cover observed in field

Average of 62% herbaceous cover observed in field

Approximately 82% of WAA possesses an A or O horizon

Based on data sheet

Based on data sheet

based on data sheet, photos, aerial photography. Habitat types: PFO wetlands and upland; however, the area is immediately adjacent to industrial area.

Wetland acreage w/in construction footprint³ =

61.51

0.00

Calculating Functional Capacity Unit (FCU) Impact - NO INPUTS NEEDED

0.75

			FCI	Pre-Project	Post Project	Difference in Pre-
	Pre-Project	Post Project	Difference	FCU's	FCU's	and Post- FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.59	0.00	0.59	36.57	0.00	36.57
Maintain Plant &						
Animal						
Community	0.48	0.00	0.48	29.73	0.00	29.73
Removal &						
Sequestrian of						
Elements &						
Compounds	0.61	0.00	0.61	37.32	0.00	37.32
TOTALS			•		•	102.62

TOTALS 103.62

Nederland Terminal Buildout Project - iHGM Analysis Wetland ID# WP1001_PFO_B Pre-Project **Post-Project Comments** Approximately 60% of the WAA floods or ponds for 7 to Vdur¹ 0.50 0.50 14 days. WAA receive hydrology from direct runoff and possessed Vfreq¹ 1.00 0.75 water stained leaves and water marks. WAA contains approximately 15% dips and hummocks Vtopo¹ 0.70 0.40 0.10 Vcwd² 0.30 2 pieces observed along 100' transect. Averages 63% tree cover observed. Vwood² 0.50 0.10 Predominantly tallow tree observed. Three other species Vtree² 0.30 0.10 observed spread throughout nine soil stations. Vrich 0.40 0.10 Predominantly tallow tree observed. Three other species Vbasal 0.40 0.10 Extrapilated to acre. Vdensity 0.60 0.10 Extrapilated to acre. 1.00 0.10 Average of 80% midstory cover observed in field Vmid Vherb 0.30 1.00 Average of 62% herbaceous cover observed in field Vdetritus 0.50 0.30 Approximately 82% of WAA possesses an A or O horizon Vredox¹ 0.10 0.10 Based on data sheet Based on data sheet Vsorpt¹ 1.00 1.00 based on data sheet, photos, aerial photography. Habitat types: PFO wetlands and upland; however, the area is Vconnect¹ immediately adjacent to industrial area. 0.75 1.00

Wetland acreage w/in construction footprint³ =

1.92

			FCI	Pre-Project	Post Project	Difference in Pre-
	Pre-Project	Post Project	Difference	FCU's	FCU's	and Post- FCU's
Temporary	-					
Storage &						
Detention of						
Storage Water	0.59	0.35	0.24	1.14	0.67	0.47
Maintain Plant &						
Animal						
Community	0.48	0.33	0.16	0.93	0.62	0.30
Removal &						
Sequestrian of						
Elements &						
Compounds	0.61	0.40	0.20	1.16	0.77	0.39
TOTALS						1.16

Wetland ID#	WP1006_PFO	Ī	•
	INP	u UT	
	Pre-Project	Post-Project	Comments
			Approximately 80% of the WAA floods or po
Vdur ¹	0.75	0.00	days.
			WAA receive hydrology from direct runoff ar
Vfreq ¹	0.75	0.00	water stained leaves and saturation.
Vtopo ¹	0.70	0.00	WAA contains approximately 15% dips and
Vcwd ²	0.30	0.00	0 pieces observed along 100' transect.
Vwood ²	0.50	0.00	35% tree cover observed.
Vtree ²	0.30	0.00	Only tallow tree observed.
Vrich	0.40	0.00	Only tallow tree observed.
Vbasal	0.40	0.00	Extrapilated to acre.
Vdensity	0.40	0.00	Extrapilated to acre.
Vmid	0.75	0.00	45% midstory cover observed in field
Vherb	0.30	0.00	75% herbaceous cover observed in field
Vdetritus	0.30	0.00	10% of WAA possesses an A or O horizon
Vredox ¹	0.10	0.00	Based on data sheet

0.00

0.00

oods or ponds for 7 to 14 t runoff and possessed dips and hummocks sect.

Based on data sheet

based on data sheet, photos, aerial photography. Habitat types: PFO wetlands and upland; however, the area is immediately adjacent to industrial area.

Wetland acreage w/in construction footprint³ = 0.47

0.50

1.00

Vsorpt¹

Vconnect¹

			FCI	Pre-Project	Post Project	Difference in Pre-
	Pre-Project	Post Project	Difference	FCU's	FCU's	and Post- FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.61	0.00	0.61	0.29	0.00	0.29
Maintain Plant &						
Animal						
Community	0.40	0.00	0.40	0.19	0.00	0.19
Removal &						
Sequestrian of						
Elements &						
Compounds	0.59	0.00	0.59	0.28	0.00	0.28
TOTALS						0.76

	INPUI					
	Pre-Project	Post-Project				
Vdur ¹	0.50	0.00				
Vfreq ¹	0.25	0.00				
Vtopo ¹	0.70	0.00				
Vcwd ²	0.30	0.00				
Vwood ²	0.50	0.00				
Vtree ²	0.30	0.00				
Vrich	0.40	0.00				
Vbasal	0.40	0.00				
Vdensity	0.60	0.00				
Vmid	0.25	0.00				
Vherb	1.00	0.00				
Vdetritus	0.30	0.00				
Vredox ¹	0.10	0.00				
Vsorpt ¹	1.00	0.00				

WP1009_PFO

Wetland ID#

Vconnect¹

Comments

Comments
Approximately 60% of the WAA floods or ponds for 7 to 14
days.
WAA receive hydrology from direct runoff and possessed
water stained leaves and saturation.
WAA contains approximately 15% dips and hummocks
1 pieces observed along 100' transect.
40% tree cover observed.
Only willow tree observed.
Only willow tree observed.
Extrapilated to acre.
Extrapilated to acre.
10% midstory cover observed in field
10% herbaceous cover observed in field
10% of WAA possesses an A or O horizon
Based on data sheet
Based on data sheet
based on data sheet, photos, aerial photography. Habitat
types: PFO wetlands and upland; however, the area is
immediately adjacent to industrial area.

Wetland acreage w/in construction footprint

0.50

0.52

Calculating Functional Capacity Unit (FCU) Impact - NO INPUTS NEEDED

0.00

			FCI	Pre-Project	Post Project	Difference in Pre-
	Pre-Project	Post Project	Difference	FCU's	FCU's	and Post- FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.42	0.00	0.42	0.22	0.00	0.22
Maintain Plant						
& Animal						
Community	0.44	0.00	0.44	0.23	0.00	0.23
Removal &						
Sequestrian of						
Elements &						
Compounds	0.44	0.00	0.44	0.23	0.00	0.23
TOTALS		·		·	·	0.68

	Nederland Terminal Buildout Project - iHGM Analysis					
Wetland ID#	WP1009_PFO_B	•				
	INPUT	-				
	Pre-Project	Post-Project	Comments			
1			Approximately 60% of the WAA floods or ponds for 7 to 14			
Vdur ¹	0.50	0.00	days.			
ve1	0.05	0.00	WAA receive hydrology from direct runoff and possessed			
Vfreq ¹	0.25	0.00	water stained leaves and saturation.			
Vtopo ¹	0.70	0.00	WAA contains approximately 15% dips and hummocks			
Vcwd ²	0.30	0.00	1 pieces observed along 100' transect.			
Vwood ²	0.75	0.00	70% tree cover observed.			
Vtree ²	0.30	0.00	Only tallow and willow trees observed.			
Vrich	0.40	0.00	Only tallow and willow trees observed.			
Vbasal	0.40	0.00	Extrapilated to acre.			
Vdensity	0.60	0.00	Extrapilated to acre.			
Vmid	0.25	0.00	0% midstory cover observed in field			
Vherb	1.00	0.00	15% herbaceous cover observed in field			
Vdetritus	0.30	0.00	5% of WAA possesses an A or O horizon			
Vredox ¹	0.10	0.00	Based on data sheet			
Vsorpt ¹	1.00	0.00	Based on data sheet			
			based on data sheet, photos, aerial photography. Habitat			
			types: PFO wetlands and upland; however, the area is			
Vconnect¹	0.50	0.00	immediately adjacent to industrial area.			

Wetland acreage w/in construction footprint $^3 = 0.00$

			FCI	Pre-Project	Post Project	Difference in Pre-
	Pre-Project	Post Project	Difference	FCU's	FCU's	and Post- FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.45	0.00	0.45	0.00	0.00	0.00
Maintain Plant						
& Animal						
Community	0.44	0.00	0.44	0.00	0.00	0.00
Removal &						
Sequestrian of						
Elements &						
Compounds	0.51	0.00	0.51	0.00	0.00	0.00
TOTALS		·	·	-	-	0.00

	INPUT			
	Pre-Project	Post-Project		
Vdur ¹	0.50	0.00		
Vfreq ¹	0.25	0.00		
Vtopo ¹	0.70	0.00		
Vcwd ²	0.30	0.00		
Vwood ²	0.50	0.00		
Vtree ²	0.30	0.00		
Vrich	0.60	0.00		
Vbasal	1.00	0.00		
Vdensity	1.00	0.00		
Vmid	0.50	0.00		
Vherb	1.00	0.00		
Vdetritus	0.30	0.00		
Vredox ¹	0.10	0.00		
Vsorpt ¹	1.00	0.00		
Vconnect ¹	0.50	0.00		

WP1009_PFO_C

Wetland ID#

Comments

Approximately 60% of the WAA floods or ponds for 7 to 14
days.
WAA receive hydrology from direct runoff and possessed
water stained leaves and saturation.
WAA contains approximately 15% dips and hummocks
1 pieces observed along 100' transect.
50% tree cover observed.
Only ash, sugarberry, and willow trees observed.
Only ash, sugarberry, and willow trees observed.
Extrapilated to acre.
Extrapilated to acre.
15% midstory cover observed in field
8% herbaceous cover observed in field
2% of WAA possesses an A or O horizon
Based on data sheet

Based on data sheet

Based on data sheet

based on data sheet, photos, aerial photography. Habitat types: PFO wetlands and upland; however, the area is immediately adjacent to industrial area.

Wetland acreage w/in construction footprint³ =

0.00

			FCI	Pre-Project	Post Project	Difference in Pre-
	Pre-Project	Post Project	Difference	FCU's	FCU's	and Post- FCU's
Temporary						
Storage &						
Detention of						
Storage Water	0.42	0.00	0.42	0.00	0.00	0.00
Maintain Plant						
& Animal						
Community	0.58	0.00	0.58	0.00	0.00	0.00
Removal &						
Sequestrian of						
Elements &						
Compounds	0.44	0.00	0.44	0.00	0.00	0.00
TOTALS	·	-	-	-	-	0.01