APPENDIX A

Environmental

Annex 1 Southwest Pass NEPA Documentation

SW Pass NEPA DOCUMENTATION	FONSI	PUBLIC NOTICE	WATER QUALITY CERTIFICATION		404 Evaluation
FEIS 40-Foot Channel	19-Jul -74	18-Oct -74		13-Dec-78	5 Jan 82
FEIS Supplement I	19-Mar-76				
FEIS Supplement II	1-Mar-85	14-Jun-84	840629-09	9-Aug-84	Oct 84
SIR #14 40-Foot Channel Advance Maint & Allow Overdepth	10-Dec-85				
FEIS Deep Draft Channel	2-Jul-82	31-May-84	840504-09	4-Jun-84	19 Oct 84 27 Jan 86
SIR #9 Deep Draft Channel Advance Maint & Allow Overdepth					19 Oct 84
EA #62	21-Apr-87	17-Sep-87	WQC 870917-06	24-Nov-87	19 Feb 87
EA #267 Dustpan Dredge	22-Apr-97	2-Dec-96	WQC 840629-09*	12-Mar-97	3 Apr 97
EA #268 Management HDDA Pass-á-Loutre	17-Apr-97	13-Nov-96	WQC 840504-09*	13-Nov-96	9 Mar 97
EA #268A Pass-a-Loutre Hopper Disposal Area Modification	4-Jun-02				27 Mar 02
EA #268B Pass-a-Loutre Hopper Disposal Area Additional Disposal Area	3-Oct-08	13-Nov-07	WQC 070620-04 AI 101235 CER 20070007	30-Aug-07	28 may 08
FEIS West Bay Sediment Diversion	18-Mar-02		WQC 900620-12 WQC 900620-12*	10-Aug-90 28-Jun-02	26 Oct 05
Dustpan Dredge Demonstration		15-May-96			
EA #393 Burrwood Bayou Flow Control Features	8-Dec-03	10-Apr-03 4-Sep-03	TR 030404-01 AI 101235 CER20030001	5-May-03 4-Nov-03*	1 Dec 03
EA #393-A Burrwood Bayou Flow Control Structure Repairs	28-Apr-05	10-Dec-04	WQC JP041201-01 AI126035 CER20040001	7-Mar-05	14 Jan 05
EA #393-B Burrwood Bayou Flow Control Structure			WW 080107-01/AI 101235/CER 20080001	11 Mar 08	4 Mar 08
EA #517 Additional Disposal Areas for Southwest Pass	22 Nov 13	12 Sep 12	WQC 121003-02/AI 101235/CER 20120007	1 Nov 12	8 Dec 12
		12 Jun 12	WQC 120521-03/AI 101235/CER 20120003	21 Jun 12	25 Jun 13

*WQC Revisions

Annex 2 1996-2015 Dredging totals for CEMVN.

Mississippi River Maintenance Dredging in New Orleans District

Fiscal Year	SDX Cubic Yards	DDX Cubic Yards	NO Harbor Cubic Yards	SWP Cubic Yards
2015	566,580	16,762,344	482,195	19,245,648
2014	0	11,199,110	883,373	13,798,960
2013	375,000	15,842,357	778,389	15,783,302
2012	1,926,194	24,523,153	669,469	17,672,605
2011	814,478	21,822,885	675,266	14,580,247
2010	348,180	22,994,560	1,106,763	23,065,397
2009	579,040	26,270,682	1,003,474	18,229,009
2008	325,695	28,123,851	731,611	13,348,156
2007	623,878	11,762,086	1,228,325	10,886,560
2006	441,035	9,953,606	858,673	6,427,429
2005	824,628	19,368,940	1,088,234	13,911,798
2004	452,464	8,656,512	884,503	12,233,284
2003	623,692	13,104,433	1,346,418	9,382,331
2002	489,182	14,130,524	940,843	18,068,221
2001	628,451	10,694,759	1,313,108	13,509,054
2000	0	5,918,539	385,500	3,847,413
1999	0	12,914,990	1,183,133	19,530,236
1998	1,153,179	19,104,278	1,790,892	15,554,911
1997	1,105,121	23,098,962	1,581,881	25,575,406
1996	3,636,800	11,819,079	1,753,542	17,178,571
Totals	**14,913,597**	**328,065,650**	**20,685,592**	**301,828,538**
Averages	**745,680**	**16,403,283**	**1,034,280**	**15,091,427**

SDX = shallow draft crossings
DDX = deep draft crossings
NO = New Orleans
SWP = Southwest Pass
SP = South Pass
HDDA = hopper dredge disposal area (located at Head of Passes)
FY = Fiscal Year

SP Cubic Yards	HDDA Cubic Yards	Total Miss River Cubic Yards	Total FY Contract Cost
0	9,646,404	46,703,171	
0	0	25,881,443	$89,718,364
0	7,235,381	40,014,429	$78,187,640
0	787,274	45,578,695	$107,023,588
0	1,805,022	39,697,898	$84,004,278
0	6,527,685	54,042,585	$130,672,533
0	0	46,082,205	$89,352,236
0	4,013,912	46,543,225	$98,288,840
4,488,377	4,266,078	33,255,304	$67,023,572
0	0	17,680,743	$33,294,675
0	0	35,193,600	$50,704,830
0	4,124,598	26,351,361	$38,900,768
0	0	24,456,874	$33,242,566
0	0	33,628,770	$47,672,109
0	0	26,145,372	$31,441,137
0	0	10,151,452	$12,040,486
6,126,300	0	39,754,659	$45,235,217
0	1,051,661	38,654,921	$45,210,572
0	0	51,361,370	$55,225,438
0	0	34,387,992	$33,690,368
10,614,677	**39,458,015**	**715,566,069**	**$1,170,929,217**
530,734	**1,972,901**	**35,778,303**	**$61,627,854**

Annex 3 NEPA documentation for ship channnel dimensions.

PROJECT		AUTHORIZED DIMENSIONS (Depth x Width)	ADVANCE MAINTENANCE	ALLOWABLE OVERDEPTH	NEPA COMPLIANCE DOCUMENT
Mississippi River	**Baton Rouge to New Orleans (Deep Draft Crossings)**	-55’ (-45’) **LWRP** x 500’	**2’**	**2’**	Miss River Deep Draft FEIS 1982 (55’ channel) EA # 68 Adv. Maint. & Overdepth (17 Dec 87)
	New Orleans to Mile 12 AHP (Southwest Pass)	-55’ (-45’) **LWRP** x 750’	**2’**	**2’**	Miss River Deep Draft FEIS 1982 (55’ channel) SIR #9 Deep Draft Adv. Maint. & Overdepth (23 Aug 85)
	Mile 12 AHP to Mile 18 BHP (Southwest Pass)	-55’ (-48’) **MLLW** x 750’	**6’**	**2’**	Miss River Deep Draft FEIS 1982 (55’ channel) SIR #9 Deep Draft Adv. Maint. & Overdepth (23 Aug 85) NEPA Categorical Exclusion SWP Adv. Maint. (13 Jan 16)

	Mile 18 BHP to Mile 22 BHP (Southwest Pass)		-55' (-48') **MLLW**x 600'	**6'**	**2'**	Miss River Deep Draft FEIS 1982 (55' channel) SIR #9 Deep Draft Adv. Maint. & Overdepth (23 Aug 85) NEPA Categorical Exclusion SWP Adv. Maint. (13 Jan 16)
	South Pass	**Inland**	-30'(-17') **MLLW** x 450' (300')	**-**	**-**	Miss River Baton Rouge to Gulf FEIS 1974 (40' channel) (Adv. Maint. & Overdepth not covered in any existing NEPA document)
		Bar	-30'(-17') **MLLW** x 600' (300')	**-**	**-**	
Mississippi River						
	New Orleans Harbor		-40' (-15' to -35') **LWRP** x 500'	**2'**	**2'**	Miss River Deep Draft FEIS 1982 (55' channel) EA #68 (17 Dec 87)

Annex 4 History of deep draft crossing dredging (1980-2015)

Fiscal Year	Alhambra	Belmont	Smoke Bend	Medora	Red Eye	Baton Rouge Front	Missouri Bend	Sardine Point	Philadelphia Point	Bayou Goula	Granada	81 Mile Point	Rich Bend	Fairview	Unknown		Total Cost
2015	1,462,302	3,031,803	253,740	1,729,408	5,529,321	971,116	0	685,694	0	1,015,955	2,083,005	0	0	0	0	16,762,344	
2014					2,065,000			1,653,920									
2014	764,030	1,720,110	330,120	368,506	1,352,769	1,494,797	294,074	397,978	259,140	205,533	293,133						
2014	764,030	1,720,110	330,120	368,506	3,417,769	1,494,797	294,074	2,051,898	259,140	205,533	293,133	0	0	0	0	11,199,110	$22,366,968
2013	964,860	2,755,000			1,124,073				288,620	106,900	377,026						
2013	1,381,383	151,000	782,420	653,478	2,886,549	470,263	287,489	1,083,656	289,144	688,195	1,552,301						
2013	2,346,243	2,906,000	782,420	653,478	4,010,622	470,263	287,489	1,083,656	577,764	795,095	1,929,327	0	0	0	0	15,842,357	$16,252,162
2012					1,474,743												
2012	1,829,880	1,589,050	489,600	899,620	477,195	1,748,144		1,448,116									
2012	2,565,039	158,088	266,045	1,792,265	3,365,894	2,863,034	477,196	1,207,490	238,436	873,253	647,175		112,890				
2012	4,394,919	1,747,138	755,645	2,691,885	5,317,832	4,611,178	477,196	2,655,606	238,436	873,253	647,175	0	112,890	0	0	24,523,153	$30,000,401
2011		293,668															
2011		481,120															
2011		177,715															
2011	3,356,680	1,374,522	598,040					2,002,605		1,147,363							
2011	235,051	796,377	182,932	1,360,873	5,992,014	1,485,331		198,333	572,510	410,984	1,156,767						
2011	3,591,731	3,123,402	780,972	1,360,873	5,992,014	1,485,331	0	2,200,938	572,510	1,558,347	1,156,767	0	0	0	0	21,822,885	$31,162,072
2010		1,796,658									1,218,951						
2010		995,879	477,095	1,182,938	1,368,260						225,290						
2010	2,839,155	392,049	949,291	794,089	5,247,949	2,390,678	577,308	620,065		621,614	1,297,291						
2010	2,839,155	3,184,586	1,426,386	1,977,027	6,616,209	2,390,678	577,308	620,065	0	621,614	2,741,532	0	0	0	0	22,994,560	$27,224,419
2009	882,645	1,362,580	1,151,743	860,648	7,492,725	4,094,395	96,467	448,794	571,176	893,004	454,794		127,763				
2009	2,861,971	156,541		524,808				1,095,205		301,316	976,444						
2009		704,328		274,272						939,063							
2009	3,744,616	2,223,449	1,151,743	1,659,728	7,492,725	4,094,395	96,467	1,543,999	571,176	2,133,383	1,431,238	0	127,763	0	0	26,270,682	$31,105,536
2008	2,862,616	1,750,716	432,795	447,366	3,117,293	2,695,046	414,709	596,074	867,248	214,793	320,297						
2008	2,516,019	229,932	711,662	579,265	3,359,384			1,132,462		1,950,574	1,238,552						
2008		874,328															
2008		693,639		496,305						102,006	117,747						
2008		349,604		53,419													
2008	5,378,635	3,898,219	1,144,457	1,576,355	6,476,677	2,695,046	414,709	1,728,536	867,248	2,267,373	1,676,596	0	0	0	0	28,123,851	$38,593,166
2007	1,144,748	976,862	187,730		3,804,170	222,703	1,060,694	950,476	104,859	249,846	392,768	588,755					
2007	784,096	901,885								392,494							
2007	1,928,844	1,878,747	187,730	0	3,804,170	222,703	1,060,694	950,476	104,859	642,340	392,768	588,755	0	0	0	11,762,086	$13,856,488
2006	1,349,945	655,931	191,918		355,195	1,212,909		1,131,372		407,667	542,390						
2006		739,782	197,733		1,441,994	296,773				184,899							
2006	1,349,945	1,395,713	389,651	1,245,098	1,797,189	1,509,682	0	1,131,372	0	592,566	542,390	0	0	0	0	9,953,606	$14,499,783
2005	1,547,799	1,371,671	210,434	1,680,784	5,156,586	2,791,086		637,173		1,659,015	746,114						
2005	962,687	1,130,864	206,066	330,612	517,576	265,903					154,570						
2005	2,510,486	2,502,535	416,500	2,011,396	5,674,162	3,056,989	0	637,173	0	1,659,015	900,684	0	0	0	0	19,368,940	$17,057,588
2004	759,375	609,517	42,889	590,039	1,426,494	1,168,591		698,241		322,983	630,547						
2004					1,404,112	1,003,724											
2004	759,375	609,517	42,889	590,039	2,830,606	2,172,315	0	698,241	0	322,983	630,547	0	0	0	0	8,656,512	$13,246,796
2003	1,286,452	792,433	62,144	759,914	1,064,350	1,445,393		483,605		371,777	904,933						
2003	976,969	612,098	87,248	302,654	2,367,533			482,098		555,802	465,422						
2003										83,608							
2003	2,263,421	1,404,531	149,392	1,062,568	3,431,883	1,445,393	0	965,703	0	1,011,187	1,370,355	0	0	0	0	13,104,433	$12,550,195
2002	1.152.876	1.325.671	410.537	380.340	203.973	210.414		994.873	165.728	316.631	1.466.208						
2002	1.179.907	190.616		371.620	1.867.064	1.331.221		360.184	297.287	369.205							
2002				80,033	517,774			144,148		678,757	115,457						
2002	2,332,783	1,516,287	410,537	831,993	2,588,811	1,541,635	0	1,499,205	463,015	1,364,593	1,581,665	0	0	0	0	14,130,524	$13,620,052
2001	356.623	362.920	79.994	161.724	1.764.615	493.897		161.334		513.441	308.641						
2001	1.168.865	641.713			1.567.964	46.133		517.803		410.316	805.790						
2001	483,445	342,967									506,624						
2001	2,008,933	1,347,600	79,994	161,724	3,332,579	540,030	0	679,137	0	923,757	1,621,055	0	0	0	0	10,694,809	$8,527,904
2000	1.445.296		246.206		996.229	410.212		224.822	370.500	253.941	315.119						
2000		293.008			68.822	690.835					272.399						
2000		331,150															
2000	1,445,296	624,158	246,206		1,065,051	1,101,047	0	224,822	370,500	253,941	587,518	0	0	0	0	5,918,539	$5,360,000
1999	1.182.992	748.001		417.366	2.939.777	496.999		228.525	75.765	151.025	456.799						
1999	864.656	702.315		73.986	2.957.375	197.703				174.670	481.362						
1999		82.088		137.084						342.999							
1999		203,593															
1999	2,047,648	1,735,997	0	628,436	5,897,152	694,702	0	228,525	75,765	668,694	938,161	0	0	0	0	12,915,080	$9,919,902
1998		2.140.748			398.730												
1998	1.393.855	1.218.601	1.085.595	2.264.693	726.810			410.902		638.495	1.376.178						
1998				119,907	4,922,703	1,145,227		506,189	226,950		528,695						
1998	1,393,855	3,359,349	1,085,595	2,384,600	6,048,243	1,145,227	0	917,091	226,950	638,495	1,904,873	0	0	0	0	19,104,278	
1997	3.842.318	727.767	429.772	726.070	3.207.051	1.846.031			218.967		1.145.961			196.445			
1997	502.833	1.229.665		921.239	1.965.344	114.152				2.058.733	601.922						
1997		712.065	440.759														
1997		373.700	217.442	134.812													
1997								477,076	218,066	509,885			234,473	46,414			
1997	4,345,151	3,043,197	1,087,973	1,782,121	5,172,395	1,960,183	0	477,076	437,033	2,568,618	1,747,883	0	234,473	242,859	0	23,098,962	
1996				378,619						1,075,012							
1996		256,879									209,414						
1996	1,064,381	643,286	309,263	447,932	1,120,990	926,756		752,348			571,724			260,544			
1996	811,799				2,759,761						230,371						
1996	1,876,180	900,165	309,263	826,551	3,880,751	926,756	0	752,348	0	1,075,012	1,011,509	0	0	260,544	0	11,819,079	
1995	3.132.359	357.739		496.417		1.557.954				620.608			165.492				
1995	1.828.487																
1995						1.289.678		700.154	343.556								
1995		1.340.033		565.581	3.337.181			1.135.522			1.855.452						
1995				546.530													
1995	4,960,846	1,697,772	0	1,608,528	3,337,181	2,847,632	0	1,835,676	343,556	620,608	1,855,452	0	165,492	0	0	19,272,743	
1994	967.830	4.048.338	723.043			766.118		638.943		1.208.459	831.821						
1994	1.097.393			979.010	7.433.797								107.911				
1994				1.150.661		388.186								446.501			
1994				866.311	203.683					504.381	566.693						
1994				1,787,396	2,403,203				302,851	469,743	808,399						
1994	2,065,223	4,048,338	723,043	4,783,378	10,040,683	1,154,304	0	638,943	302,851	2,182,583	2,206,913	0	107,911	446,501	0	28,700,671	
1993	819.556	384.883		716.461	5.484.789									180.638			
1993		2,432,109								737,697	436,685						
1993	819,556	2,816,992	0	716,461	5,484,789	0	0	0	0	737,697	436,685	0	0	180,638	0	11,192,818	
1992															82.478		
1992															485.195		
1992	611.811	1.099.332		667.851	3.220.068			672.482		294.259							
1992	1,188,260			774,064	2,543,042			399,777			224,498						
1992	1,800,071	1,099,332	0	1,441,915	5,763,110	0	0	1,072,259	0	294,259	224,498	0	0	0	567,673	12,263,117	
1991															1.343.196		
1991															1.034.151		
1991		1.293.568															
1991	757.881	1.126.164	248.760	1.132.573	6.438.378	2.696.569		720.271		496.223	450.333						
1991	1,582,143	2,615,569			2,620,229												
1991	2,340,024	5,035,301	248,760	1,132,573	9,058,607	2,696,569	0	720,271	0	496,223	450,333	0	0	0	2,377,347	24,556,008	
1990	770.536	606.926		603.814	7.512.477	1.325.980					243.315						
1990	968,818	3,005,967	415,886	324,490						1,057,609							
1990	1,739,354	3,612,893	415,886	928,304	7,512,477	1,325,980	0	0	0	1,057,609	243,315	0	0	0	0	16,835,818	
1989	1.091.334	1.948.656	188.222	729.830	3.198.502	853.278		737.592		666.038	249.277						
1989		1,936,225	360,557		1,260,960												
1989	1,091,334	3,884,881	548,779	729,830	4,459,462	853,278	0	737,592	0	666,038	249,277	0	0	0	0	13,220,471	
1988	956.168			415.202	1.648.500	48.356				462.388							
1988															376,492		
1988	956,168	0	0	415,202	1,648,500	48,356	0	0	0	462,388	0	0	0	0	376,492	3,907,106	
1987	610,407	0	0		3,629,483	0	0	0	0	360,370	532,518	0	0	0	0	5,132,778	
1986	1,346,300	1,901,646		2,309,791	3,268,881						891,487						
1986	1,132,074				1,012,666					240,721							
1986	2,478,374	1,901,646	0	2,309,791	4,281,547	0	0	0	0	240,721	891,487	0	0	0	0	12,103,566	
1985					1.018.112												
1985	805,346	1,641,535	543,589	914,665	5,407,139					203,049	200,260						
1985	805,346	1,641,535	543,589	914,665	6,425,251	0	0	0	0	203,049	200,260	0	0	0	0	10,733,695	
1984														631.000			
1984				578.303	957.234	59.432			196.000	238.500							
1984	240.000																
1984															716.816		
1984		248.945		185.910	136.902												
1984	316.750			643.073	844.237												
1984	2,219,552	1,221,134	111,871	1,515,509	2,053,476				141,555	858,084	419,221						
1984	2,776,302	1,470,079	0	2,922,795	3,991,849	59,432	0	0	337,555	1,096,584	419,221	0	0	631,000	716,816	14,421,633	
1983				343,052	624,830												
1983	773,628	692,429	192,371	695,075	2,779,158	458,630			150,630	174,482	273,648						
1983	773,628	692,429	192,371	1,038,127	3,403,988	458,630	0	0	150,630	174,482	273,648	0	0	0	0	7,157,933	
1982	436,848																
1982	196,091								73,147								
1982	634,927	383,315		1,245,609	2,661,835					822,165	481,445						
1982	1,267,866	383,315	0	1,245,609	2,661,835	0	0	0	73,147	822,165	481,445	0	0	0	0	6,935,382	
1981				503,094	623,777						379,945						
1981	287,831																
1981	287,831	0	0	503,094	623,777	0	0	0	0	0	379,945	0	0	0	0	1,794,647	
1980	67,644	126,351			748,992												
1980		285,909		483,777	2,842,376					361,797	308,270						
1980	67,644	412,260	0	483,777	3,591,368	0	0	0	0	361,797	308,270	0	0	0	0	5,225,116	
Sum Total	73.623.522	70.849.276	15.658.865	44.715.835	166.290.068	43.973.647	3.207.937	26.736.302	5.972.135	30.968.327	34.760.669	588.755	748.529	1.761.542	4.038.328	521.519.292	
Annual Average	2,045,098	1,968,035	434,968	1,242,107	4,619,169	1,221,490	89,109	742,675	165,893	860,231	965,574	16,354	20,792	48,931	112,176	14,486,647	

WHEELER: Belmont, Sardine Point, Baton Rouge Front, Granada

84-C-0085: Red Eye, Medora, and Alhambra

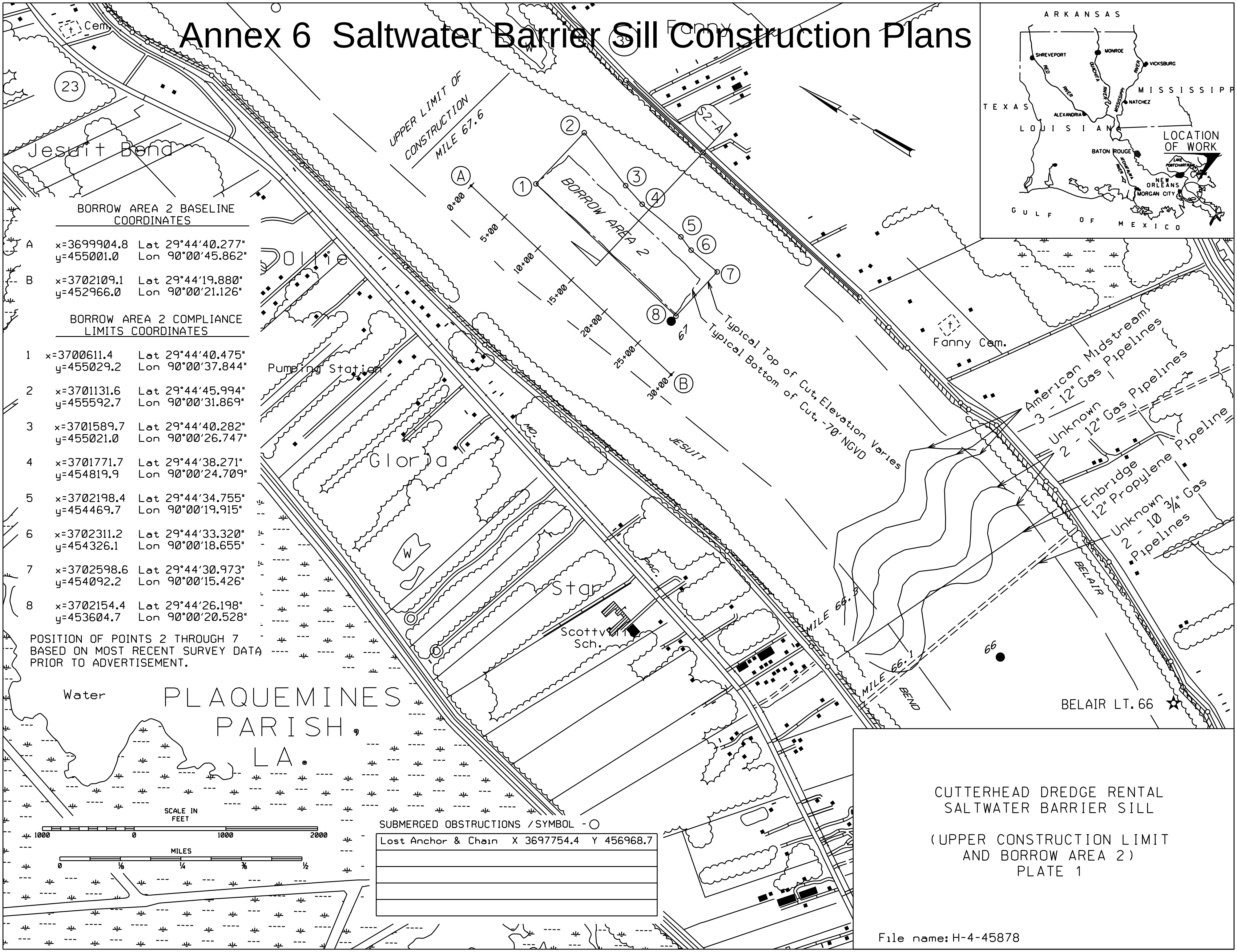
Annex 5 Southwest Pass Beneficial Use Acreages from 2009-2015.

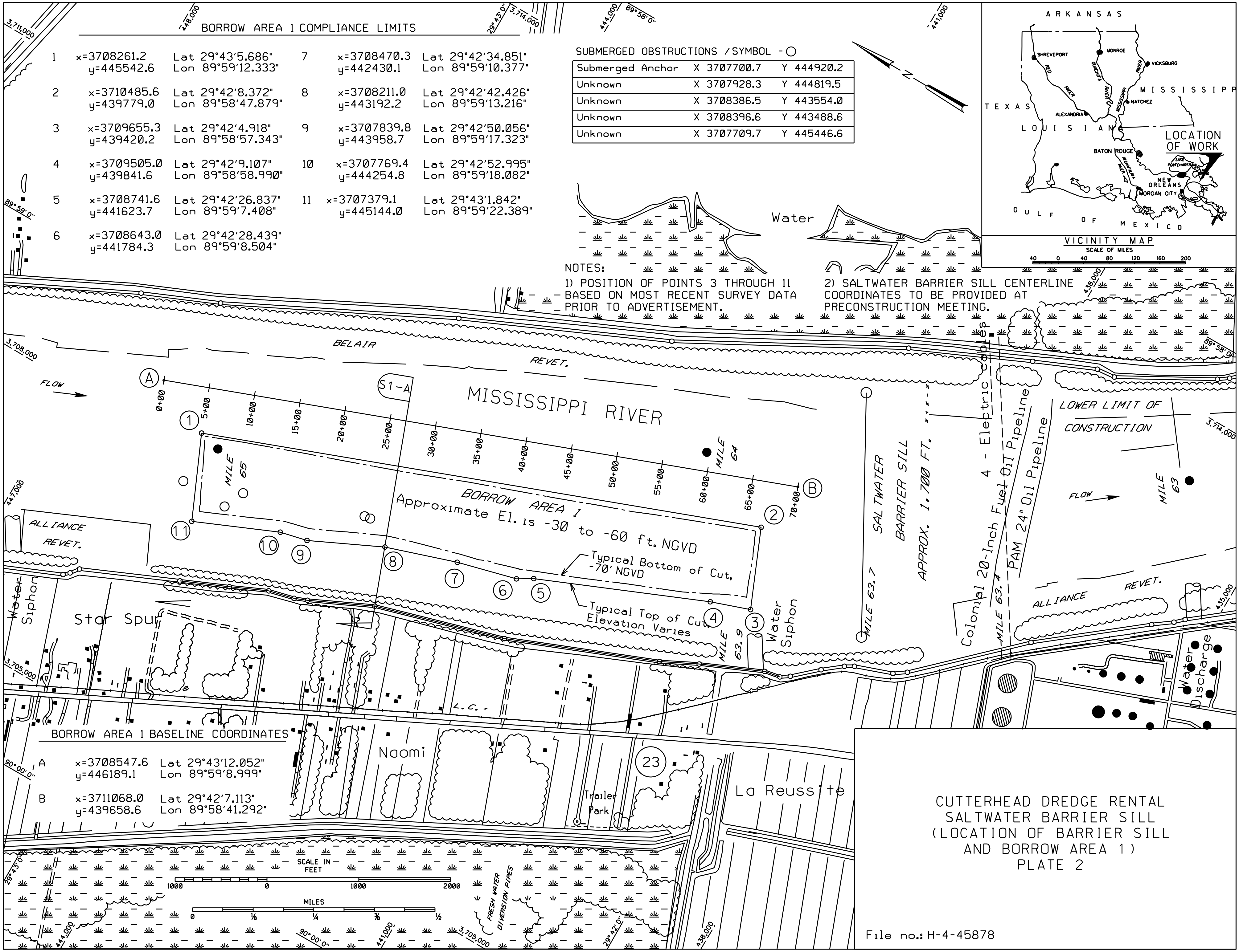
Year	BU Site	BU Type	Year 0 Acres	Year 1 Acres	Year 2 Acres	Year 3 Acres	Year 4 Acres	Year 5 Acres	Year 6 Acres	Total Acres Lost	% Land Lost
2009	12.7R BHP	WD	24	20	19	14	14	14	13	11	46
	10.2R BHP	WD	33	15	7	7	7	7	7	26	79
	7.9R BHP	WD	6	0.5	0	0	0	0	0	6	100
	6.5R BHP	WD	37	12	12	12	12	12	12	25	68
2010	15.5R BHP	WD	8	2	1	1	1	0.5		7.5	94
	14.3R BHP	WD	12	6	5	5	3	2		10	83
	13.0R BHP	WD	14	10	8	7	7	8		6	43
	11.2L BHP	WD	33	23	15	17	18	19		14	42
2011	2.0R BHP	WD	10	10	10	10	9			1	10
	3.4R BHP	BS	15	15	15	15	15			0	0
	5.3R BHP	BS	93	92.5	92.5	92	91			2	2
	6.2L BHP	BS	0.3	0.3	0.3	0.3	0.3			0	0
	6.5L BHP	BS	4	4	4	4	4			0	0
	8.2L BHP	BS	4	4	4	4	4			0	0
	9.9L BHP	BS	9	9	9	9	9			0	0
	11.2L BHP	BS	13	13	13	13	13			0	0
	11.8L BHP	BS	20	20	20	19.5	19			1	5
	14.2L BHP	BS	7	7	6.5	6.5	6.5			0.5	7
	14.6L BHP	BS	5	5	5	5	5			0	0
	16.5L BHP	BS	18	18	18	18	17.5			0.5	3
	17.6L BHP	BS	0.4	0	0	0	0			0.4	100
2012	17.3R BHP	WD	114	114	105	101				13	11
	14.3R BHP	WD	273	255	255	252				21	8
	10.7L BHP	WD	70	70	68	67				3	4
	10.5R BHP	WD	65	65	65	62				3	5
	4.1R AHP	WD	26	18	21	17				9	35
	2.9R AHP	WD	67	67	66	61				6	9
2013	8.0R BHP	BS	2	2	2					0	0
	8.0R BHP	WD	16	14	11					5	31
	10.8R BHP	WD	185	185	147					38	21
	12.0R BHP	WD	78	78	76					2	3
	14.1R BHP	WD	305	301	298					7	2
	16.6R BHP	WD	20	20	11					9	45
	17.1R BHP	WD	4	4	2					2	50
	17.5L BHP	BN	2	2	2					0	0

2014	17.8L BHP	WD	21	3						18	18
	15.7L BHP	WD	5	2						3	3
	14.0L BHP	WD	103	86						17	17
	12.6L BHP	WD	68	63						5	5
	11.1L BHP	WD/BN	129	123						6	6
	10.2R BHP	WD	61	19						42	42
	8.2L BHP	WD	116	97						19	19
	5.3R BHP	WD	69	53						16	16
2015	17.3R BHP	WD	49								
	12.7R BHP	WD	35								
	9.0L BHP	WD	17								
	8.04R BHP	WD	0								
	7.19R BHP	WD	9								
	3.8R BHP	WD	4								
	1.5R BHP	WD	73								
	4.0R AHP	WD	100								
	2.9R AHP	WD	45								
	1.5R AHP	WD	371								

WD = Wetlands Development
BS = Bank Stabilization
BN = Beach Nourishment

Annex 6 Saltwater Barrier Sill Construction Plans





BORROW AREA 1 COMPLIANCE LIMITS

Point	x / y	Lat / Lon
1	x=3708261.2 y=445542.6	Lat 29°43'5.686" Lon 89°59'12.333"
2	x=3710485.6 y=439779.0	Lat 29°42'8.372" Lon 89°58'47.879"
3	x=3709655.3 y=439420.2	Lat 29°42'4.918" Lon 89°58'57.343"
4	x=3709505.0 y=439841.6	Lat 29°42'9.107" Lon 89°58'58.990"
5	x=3708741.6 y=441623.7	Lat 29°42'26.837" Lon 89°59'7.408"
6	x=3708643.0 y=441784.3	Lat 29°42'28.439" Lon 89°59'8.504"
7	x=3708470.3 y=442430.1	Lat 29°42'34.851" Lon 89°59'10.377"
8	x=3708211.0 y=443192.2	Lat 29°42'42.426" Lon 89°59'13.216"
9	x=3707839.8 y=443958.7	Lat 29°42'50.056" Lon 89°59'17.323"
10	x=3707769.4 y=444254.8	Lat 29°42'52.995" Lon 89°59'18.082"
11	x=3707379.1 y=445144.0	Lat 29°43'1.842" Lon 89°59'22.389"

SUBMERGED OBSTRUCTIONS / SYMBOL - ○

Submerged Anchor	X 3707700.7	Y 444920.2
Unknown	X 3707928.3	Y 444819.5
Unknown	X 3708386.5	Y 443554.0
Unknown	X 3708396.6	Y 443488.6
Unknown	X 3707709.7	Y 445446.6

NOTES:

1) POSITION OF POINTS 3 THROUGH 11 BASED ON MOST RECENT SURVEY DATA PRIOR TO ADVERTISEMENT.

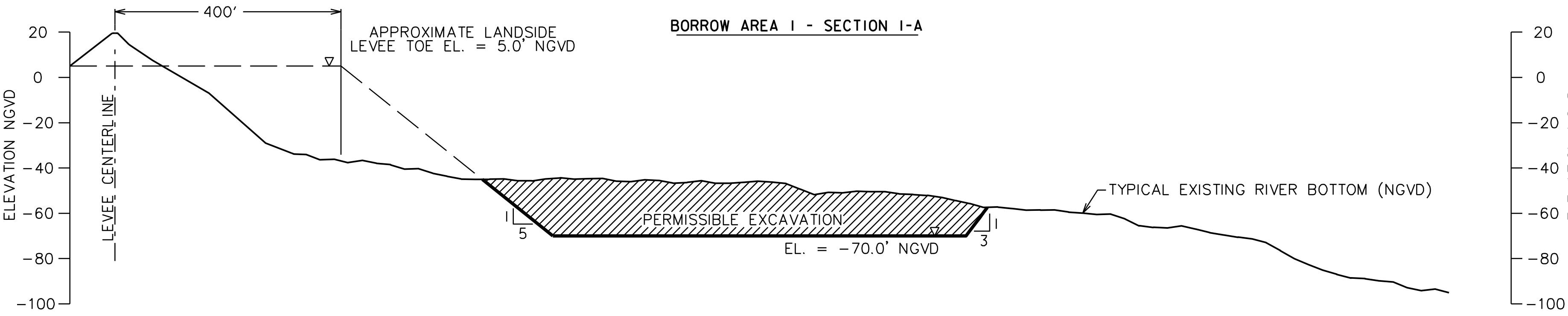
2) SALTWATER BARRIER SILL CENTERLINE COORDINATES TO BE PROVIDED AT PRECONSTRUCTION MEETING.

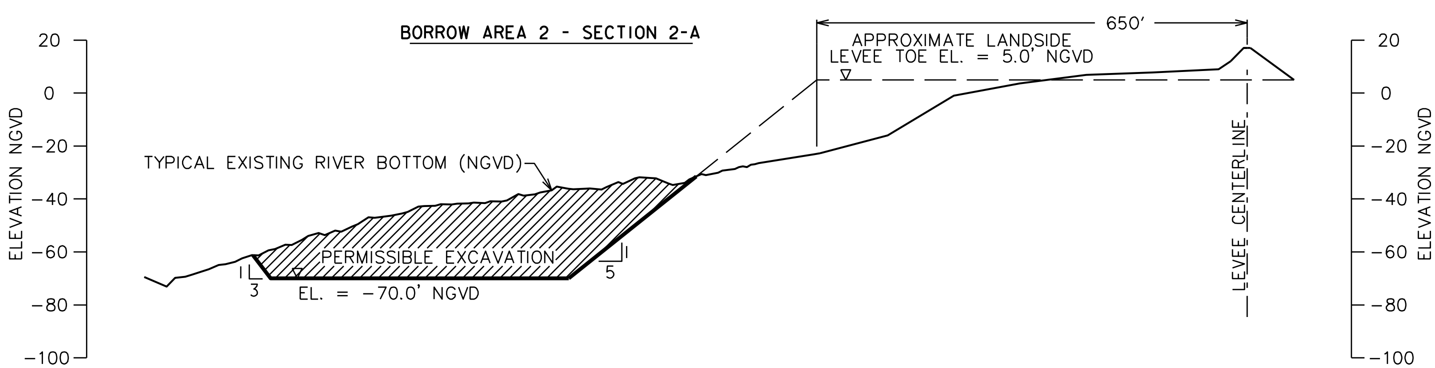
BORROW AREA 1 BASELINE COORDINATES

Point	x / y	Lat / Lon
A	x=3708547.6 y=446189.1	Lat 29°43'12.052" Lon 89°59'8.999"
B	x=3711068.0 y=439658.6	Lat 29°42'7.113" Lon 89°58'41.292"

CUTTERHEAD DREDGE RENTAL
SALTWATER BARRIER SILL
(LOCATION OF BARRIER SILL
AND BORROW AREA 1)
PLATE 2

File no.: H-4-45878





NOTES:

1. The gauge is in Alliance, La. and its location is LAT 29-41-04.36, LONG 89-58-11.64 on upstream end of coke dock of Alliance Refinery, right bank at Mile 62.5 (1962 survey) (Sta. 0139004.). The gauge is automatic wire weight and set at 0.0 Gage Datum and shall be used in lieu of benchmarks. 2011 datum relationships are as follows:
0.00' Gage = -0.14' NAVD88 (2004.65) = 0.52' NGVD29

2. All elevations are in N.G.V.D.

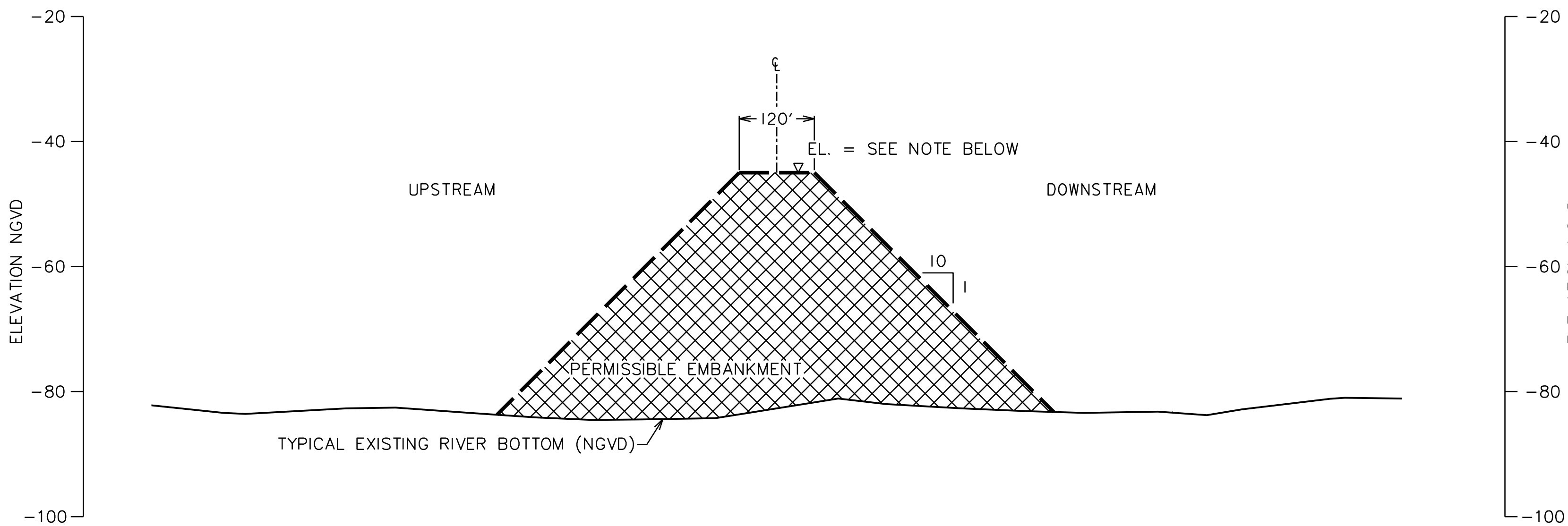
HORIZONTAL SCALE
200' 0' 200' 400'

VERTICAL SCALE
50' 0' 50' 100'

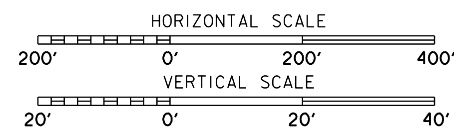
CUTTERHEAD DREDGE RENTAL
SALTWATER BARRIER SILL

(TYPICAL SECTIONS
FOR BORROW AREAS)
PLATE 3

File name: H-4-45878



NOTE:
Saltwater Barrier Sill height will range between −45.0' to −50.0' NGVD.
Final height of sill will be determined in the field by the Contracting Officer.



CUTTERHEAD DREDGE RENTAL
SALTWATER BARRIER SILL

(TYPICAL SECTION FOR
SALTWATER BARRIER SILL)
PLATE 4

File name: H-4-45878

WETLAND VALUE ASSESSMENT COMMUNITY MODEL V2.4

Fresh/Intermediate Marsh

Project: Area A-Delta

AAHUs = 190.10

FWOP

Project Area (ac)	365	365	365	365	365	365	365					
% Fresh	100	100	100	100	100	100	100					
% Intermediate												
Target Year (TY)	0	1	3	5	6	25	50					
V1: % Emergent	0	0	0	0	0	0	0					
V2: % Aquatic	25	25	25	25	25	25	8					
V3: Interspersion Class 1	0	0	0	0	0	0	0					
V3: Interspersion Class 2	0	0	0	0	0	0	0					
V3: Interspersion Class 3	30	30	30	30	30	35	40					
V3: Interspersion Class 4	70	70	70	70	70	65	60					
V3: Interspersion Class 5	0	0	0	0	0	0	0					
V4: %OW <= 1.5ft	19	19	19	19	19	19	19					
V5: Salinty (ppt) - Fresh	1.16	1.16	1.16	1.16	1.16	1.16	1.16					
V5: Salinty (ppt) - INT												
V6: Fish Access - Fresh	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
V6: Fish Access - INT												

FWP

Project Area (ac)	365	37	93	375	377	405	431					
% Fresh	100	100	100	100	100	100	100					
% Intermediate	0											
Target Year (TY)	0	1	3	5	6	25	50					
V1: % Emergent	0	10	25	100	100	100	100					
V2: % Aquatic	25	0	0	25	29	29	13					
V3: Interspersion Class 1	0	0	0	50	100	0	0					
V3: Interspersion Class 2	0	0	0	0	0	100	0					
V3: Interspersion Class 3	30	0	100	50	0	0	100					
V3: Interspersion Class 4	70	0	0	0	0	0	0					
V3: Interspersion Class 5	0	100	0	0	0	0	0					
V4: %OW <= 1.5ft	19	100	100	100	100	100	83					
V5: Salinty (ppt) - Fresh	1	1.16	1.16	1.16	1.16	1.16	1.16					
V5: Salinty (ppt) - INT	0											
V6: Fish Access - Fresh	1.00	0.00	0.00	1.00	1.00	1.00	1.00					
V6: Fish Access - INT	0.00											

Computed SIs - do not enter data here !

FWOP SIs

Target Year (TY)	0	1	3	5	6	25	50					
% Emergent	0.10	0.10	0.10	0.10	0.10	0.10	0.10					
% Aquatic	0.33	0.33	0.33	0.33	0.33	0.33	0.17					
Interspersion Class 1 Class 2 Class 3 Class 4 Class 5	0.26	0.26	0.26	0.26	0.26	0.27	0.28					
%OW <= 1.5ft	0.31	0.31	0.31	0.31	0.31	0.31	0.31					
Salinity (ppt) fresh intermediate	0.87	0.87	0.87	0.87	0.87	0.87	0.87					
Access Value fresh intermediate	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
Emergent Marsh HSI =	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**					
Open Water HSI =	**0.44**	**0.44**	**0.44**	**0.44**	**0.44**	**0.44**	**0.32**					

FWP SIs

Target Year (TY)	0	1	3	5	6	25	50					
% Emergent	0.10	0.19	0.33	1.00	1.00	1.00	1.00					
% Aquatic	0.33	0.10	0.10	0.33	0.36	0.36	0.21					
Interspersion Class 1 Class 2 Class 3 Class 4 Class 5	0.26	0.10	0.40	0.70	1.00	0.60	0.40					
%OW <= 1.5ft	0.31	0.60	0.60	0.60	0.60	0.60	1.00					
Salinity (ppt) fresh intermediate	0.87	0.87	0.87	0.87	0.87	0.87	0.87					
Access Value fresh intermediate	1.00	0.30	0.30	1.00	1.00	1.00	1.00					
Emergent Marsh HSI =	**0.24**	**0.27**	**0.39**	**0.95**	**0.99**	**0.94**	**0.92**					
Open Water HSI =	**0.44**	**0.22**	**0.24**	**0.50**	**0.55**	**0.52**	**0.41**					

AAHU CALCULATION - EMERGENT MARSH

Project: Area A-Delta

	FWOP Project Area (ac)	TY	Marsh Acres	x HSI	Total HUs	Cum. HUs
1	365	0	0	0.24	0.00	
2	365	1	0	0.24	0.00	0.00
3	365	3	0	0.24	0.00	0.00
4	365	5	0	0.24	0.00	0.00
5	365	6	0	0.24	0.00	0.00
6	365	25	0	0.24	0.00	0.00
7	365	50	0	0.24	0.00	0.00
8						
9						
10						
11						
12						
		Max=	50		AAHUs =	0.00

FWP Project Area (ac)	TY	Marsh Acres	x HSI	Total HUs	Cum. HUs
365	0	0	0.24	0.00	
37	1	3.7	0.27	0.99	0.48
93	3	23.25	0.39	9.08	9.26
375	5	375	0.95	357.00	300.22
377	6	377	0.99	371.47	364.22
405	25	405	0.94	381.06	7152.98
431	50	431	0.92	395.95	9714.97
	Max=	50		AAHUs	350.84

NET CHANGE IN AAHUs DUE TO PROJECT

A. Future With Project Emergent Marsh AAHUs =	350.84
B. Future Without Project Emergent Marsh AAHUs =	0.00
Net Change (FWP - FWOP) =	350.84

AAHU CALCULATION - OPEN WATER

Project: Area A-Delta

FWOP Project Area (ac)	TY	Water Acres	x HSI	Total HUs	Cum. HUs
365	0	365	0.44	161.18	
365	1	365	0.44	161.18	161.18
365	3	365	0.44	161.18	322.36
365	5	365	0.44	161.18	322.36
365	6	365	0.44	161.18	161.18
365	25	365	0.44	161.45	3064.95
365	50	365	0.32	115.34	3459.89
	Max=	50		AAHUs =	149.84

FWP Project Area (ac)	TY	Water Acres	x HSI	Total HUs	Cum. HUs
365	0	365	0.44	161.18	
37	1	33.3	0.22	7.28	71.90
93	3	69.75	0.24	16.79	23.80
375	5	0	0.50	0.00	22.71
377	6	0	0.55	0.00	0.00
405	25	0	0.52	0.00	0.00
431	50	0	0.41	0.00	0.00
	Max=	50		AAHUs	2.37

NET CHANGE IN AAHUs DUE TO PROJECT

A. Future With Project Open Water AAHUs =	2.37
B. Future Without Project Open Water AAHUs =	149.84
Net Change (FWP - FWOP) =	-147.47

TOTAL BENEFITS IN AAHUs DUE TO PROJECT

A. Emergent Marsh Habitat Net AAHUs =	350.84
B. Open Water Habitat Net AAHUs =	-147.47
Net Benefits=(2.1xEMAAHUs+OWAAHUs)/3.1	190.10

WETLAND VALUE ASSESSMENT COMMUNITY MODEL V2.4

Fresh/Intermediate Marsh

Project: Area A-Delta With Maintenance

AAHUs = 1549.67

FWOP

Project Area (ac)	130	130	130	130	130	130	130					
% Fresh	100	100	100	100	100	100	100					
% Intermediate												
Target Year (TY)	0	1	3	5	6	25	50					
V1: % Emergent	0	0	0	0	0	0	0					
V2: % Aquatic	25	25	25	25	25	25	8					
V3: Interspersion Class 1	0	0	0	0	0	0	0					
V3: Interspersion Class 2	0	0	0	0	0	0	0					
V3: Interspersion Class 3	30	30	30	30	30	35	40					
V3: Interspersion Class 4	70	70	70	70	70	65	60					
V3: Interspersion Class 5	0	0	0	0	0	0	0					
V4: %OW <= 1.5ft	19	19	19	19	19	19	19					
V5: Salinty (ppt) - Fresh	1.16	1.16	1.16	1.16	1.16	1.16	1.16					
V5: Salinty (ppt) - INT												
V6: Fish Access - Fresh	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
V6: Fish Access - INT												

FWP

Project Area (ac)	130	13	165	265	398	2916	6226					
% Fresh	100	100	100	100	100	100	100					
% Intermediate	0											
Target Year (TY)	0	1	3	5	6	25	50					
V1: % Emergent	0	10	42	40	50	88	94					
V2: % Aquatic	25	0	0	25	29	29	13					
V3: Interspersion Class 1	0	0	0	50	100	0	0					
V3: Interspersion Class 2	0	0	0	0	0	100	0					
V3: Interspersion Class 3	30	0	100	50	0	0	100					
V3: Interspersion Class 4	70	0	0	0	0	0	0					
V3: Interspersion Class 5	0	100	0	0	0	0	0					
V4: %OW <= 1.5ft	19	100	100	100	100	100	83					
V5: Salinty (ppt) - Fresh	1	1.16	1.16	1.16	1.16	1.16	1.16					
V5: Salinty (ppt) - INT	0											
V6: Fish Access - Fresh	1.00	0.00	0.00	0.38	0.48	0.87	0.94					
V6: Fish Access - INT	0.00											

Computed SIs - do not enter data here !

FWOP SIs

Target Year (TY)	0	1	3	5	6	25	50					
% Emergent	0.10	0.10	0.10	0.10	0.10	0.10	0.10					
% Aquatic	0.33	0.33	0.33	0.33	0.33	0.33	0.17					
Interspersion Class 1 Class 2 Class 3 Class 4 Class 5	0.26	0.26	0.26	0.26	0.26	0.27	0.28					
%OW <= 1.5ft	0.31	0.31	0.31	0.31	0.31	0.31	0.31					
Salinity (ppt) fresh intermediate	0.87	0.87	0.87	0.87	0.87	0.87	0.87					
Access Value fresh intermediate	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
Emergent Marsh HSI =	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**					
Open Water HSI =	**0.44**	**0.44**	**0.44**	**0.44**	**0.44**	**0.44**	**0.32**					

FWP SIs

Target Year (TY)	0	1	3	5	6	25	50					
% Emergent	0.10	0.19	0.48	0.46	0.55	0.89	0.95					
% Aquatic	0.33	0.10	0.10	0.33	0.36	0.36	0.21					
Interspersion Class 1 Class 2 Class 3 Class 4 Class 5	0.26	0.10	0.40	0.70	1.00	0.60	0.40					
%OW <= 1.5ft	0.31	0.60	0.60	0.60	0.60	0.60	1.00					
Salinity (ppt) fresh intermediate	0.87	0.87	0.87	0.87	0.87	0.87	0.87					
Access Value fresh intermediate	1.00	0.30	0.30	0.57	0.64	0.91	0.96					
Emergent Marsh HSI =	**0.24**	**0.27**	**0.48**	**0.54**	**0.65**	**0.86**	**0.88**					
Open Water HSI =	**0.44**	**0.22**	**0.24**	**0.45**	**0.51**	**0.51**	**0.41**					

AAHU CALCULATION - EMERGENT MARSH

Project: Area A-Delta With Maintenance

	FWOP Project Area (ac)	TY	Marsh Acres	x HSI	Total HUs	Cum. HUs
1	130	0	0	0.24	0.00	
2	130	1	0	0.24	0.00	0.00
3	130	3	0	0.24	0.00	0.00
4	130	5	0	0.24	0.00	0.00
5	130	6	0	0.24	0.00	0.00
6	130	25	0	0.24	0.00	0.00
7	130	50	0	0.24	0.00	0.00
8						
9						
10						
11						
12						
		Max=	50		AAHUs =	0.00

FWP Project Area (ac)	TY	Marsh Acres	x HSI	Total HUs	Cum. HUs
130	0	0	0.24	0.00	
13	1	1.3	0.27	0.35	0.17
165	3	69.3	0.48	33.60	29.01
265	5	106	0.54	57.73	90.60
398	6	199	0.65	128.52	91.55
2916	25	2566.08	0.86	2204.46	#######
6226	50	5852.44	0.88	5139.70	#######
	Max=	50		AAHUs	2246.32

NET CHANGE IN AAHUs DUE TO PROJECT

A. Future With Project Emergent Marsh AAHUs =	2246.32
B. Future Without Project Emergent Marsh AAHUs =	0.00
Net Change (FWP - FWOP) =	2246.32

AAHU CALCULATION - OPEN WATER

Project: Area A-Delta With Maintenance

FWOP Project Area (ac)	TY	Water Acres	x HSI	Total HUs	Cum. HUs
130	0	130	0.44	57.41	
130	1	130	0.44	57.41	57.41
130	3	130	0.44	57.41	114.81
130	5	130	0.44	57.41	114.81
130	6	130	0.44	57.41	57.41
130	25	130	0.44	57.50	1091.62
130	50	130	0.32	41.08	1232.29
	Max=	50		AAHUs =	53.37

FWP Project Area (ac)	TY	Water Acres	x HSI	Total HUs	Cum. HUs
130	0	130	0.44	57.41	
13	1	11.7	0.22	2.56	25.58
165	3	95.7	0.24	23.04	24.97
265	5	159	0.45	71.71	90.31
398	6	199	0.51	100.75	85.86
2916	25	349.92	0.51	177.37	2641.86
6226	50	373.56	0.41	152.72	4135.79
	Max=	50		AAHUs	140.09

NET CHANGE IN AAHUs DUE TO PROJECT

A. Future With Project Open Water AAHUs =	140.09
B. Future Without Project Open Water AAHUs =	53.37
Net Change (FWP - FWOP) =	86.72

TOTAL BENEFITS IN AAHUs DUE TO PROJECT

A. Emergent Marsh Habitat Net AAHUs =	2246.32
B. Open Water Habitat Net AAHUs =	86.72
Net Benefits=(2.1xEMAAHUs+OWAAHUs)/3.1	1549.67

WETLAND VALUE ASSESSMENT COMMUNITY MODEL V2.4
Fresh/Intermediate Marsh

Project: Area B-PAL

AAHUs = 99.30

FWOP

Project Area (ac)	365	365	365	365	365	365	365					
% Fresh	100	100	100	100	100	100	100					
% Intermediate												
Target Year (TY)	0	1	3	5	6	25	50					
V1: % Emergent	0	0	0	0	0	0	0					
V2: % Aquatic	25	25	25	25	25	25	8					
V3: Interspersion Class 1	0	0	0	0	0	0	0					
V3: Interspersion Class 2	0	0	0	0	0	0	0					
V3: Interspersion Class 3	30	30	30	30	30	35	40					
V3: Interspersion Class 4	70	70	70	70	70	65	60					
V3: Interspersion Class 5	0	0	0	0	0	0	0					
V4: %OW <= 1.5ft	19	19	19	19	19	19	19					
V5: Salinty (ppt) - Fresh	1.03	1.03	1.03	1.03	1.03	1.03	1.03					
V5: Salinty (ppt) - INT												
V6: Fish Access - Fresh	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
V6: Fish Access - INT												

FWP

Project Area (ac)	365	36	90	358	356	320	229					
% Fresh	100	100	100	100	100	100	100					
% Intermediate	0											
Target Year (TY)	0	1	3	5	6	25	50					
V1: % Emergent	0	10	25	98	98	88	63					
V2: % Aquatic	25	0	0	25	29	29	13					
V3: Interspersion Class 1	0	0	0	50	100	0	0					
V3: Interspersion Class 2	0	0	0	0	0	100	0					
V3: Interspersion Class 3	30	0	100	50	0	0	100					
V3: Interspersion Class 4	70	0	0	0	0	0	0					
V3: Interspersion Class 5	0	100	0	0	0	0	0					
V4: %OW <= 1.5ft	19	100	100	100	100	100	83					
V5: Salinty (ppt) - Fresh	1	1.03	1.03	1.03	1.03	1.03	1.03					
V5: Salinty (ppt) - INT	0											
V6: Fish Access - Fresh	1.00	0.00	0.00	1.00	1.00	1.00	1.00					
V6: Fish Access - INT	0.00											

Computed SIs - do not enter data here !

FWOP SIs

Target Year (TY)	0	1	3	5	6	25	50				
% Emergent	0.10	0.10	0.10	0.10	0.10	0.10	0.10				
% Aquatic	0.33	0.33	0.33	0.33	0.33	0.33	0.17				
Interspersion											
Class 1	0.26	0.26	0.26	0.26	0.26	0.27	0.28				
Class 2											
Class 3											
Class 4											
Class 5											
%OW <= 1.5ft	0.31	0.31	0.31	0.31	0.31	0.31	0.31				
Salinity (ppt)											
fresh	0.89	0.89	0.89	0.89	0.89	0.89	0.89				
intermediate											
Access Value											
fresh	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
intermediate											
Emergent Marsh HSI =	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**				
Open Water HSI =	**0.44**	**0.44**	**0.44**	**0.44**	**0.44**	**0.44**	**0.32**				

FWP SIs

Target Year (TY)	0	1	3	5	6	25	50				
% Emergent	0.10	0.19	0.33	0.98	0.98	0.89	0.67				
% Aquatic	0.33	0.10	0.10	0.33	0.36	0.36	0.21				
Interspersion											
Class 1	0.26	0.10	0.40	0.70	1.00	0.60	0.40				
Class 2											
Class 3											
Class 4											
Class 5											
%OW <= 1.5ft	0.31	0.60	0.60	0.60	0.60	0.60	1.00				
Salinity (ppt)											
fresh	0.89	0.89	0.89	0.89	0.89	0.89	0.89				
intermediate											
Access Value											
fresh	1.00	0.30	0.30	1.00	1.00	1.00	1.00				
intermediate											
Emergent Marsh HSI =	**0.24**	**0.27**	**0.39**	**0.94**	**0.98**	**0.87**	**0.70**				
Open Water HSI =	**0.44**	**0.22**	**0.24**	**0.50**	**0.55**	**0.52**	**0.41**				

AAHU CALCULATION - EMERGENT MARSH

Project: Area B-PAL

	FWOP Project Area (ac)	TY	Marsh Acres	x HSI	Total HUs	Cum. HUs
1	365	0	0	0.24	0.00	
2	365	1	0	0.24	0.00	0.00
3	365	3	0	0.24	0.00	0.00
4	365	5	0	0.24	0.00	0.00
5	365	6	0	0.24	0.00	0.00
6	365	25	0	0.24	0.00	0.00
7	365	50	0	0.24	0.00	0.00
8						
9						
10						
11						
12						
		Max=	50		AAHUs =	0.00

FWP Project Area (ac)	TY	Marsh Acres	x HSI	Total HUs	Cum. HUs
365	0	0	0.24	0.00	
36	1	3.6	0.27	0.97	0.47
90	3	22.5	0.39	8.85	9.04
358	5	350.84	0.94	330.91	279.57
356	6	348.88	0.98	340.69	335.82
320	25	281.6	0.87	245.87	5550.33
229	50	144.27	0.70	100.81	4233.78
	Max=	50		AAHUs	208.18

NET CHANGE IN AAHUs DUE TO PROJECT

A. Future With Project Emergent Marsh AAHUs =	208.18
B. Future Without Project Emergent Marsh AAHUs =	0.00
Net Change (FWP - FWOP) =	208.18

AAHU CALCULATION - OPEN WATER

Project: **Area B-PAL**

FWOP Project Area (ac)	TY	Water Acres	x HSI	Total HUs	Cum. HUs
365	0	365	0.44	161.88	
365	1	365	0.44	161.88	161.88
365	3	365	0.44	161.88	323.76
365	5	365	0.44	161.88	323.76
365	6	365	0.44	161.88	161.88
365	25	365	0.44	162.15	3078.30
365	50	365	0.32	116.05	3477.47
	Max=	50		AAHUs =	150.54

FWP Project Area (ac)	TY	Water Acres	x HSI	Total HUs	Cum. HUs
365	0	365	0.44	161.88	
36	1	32.4	0.22	7.14	72.15
90	3	67.5	0.24	16.38	23.26
358	5	7.16	0.50	3.56	25.06
356	6	7.12	0.55	3.89	3.73
320	25	38.4	0.52	19.87	228.66
229	50	84.73	0.41	35.02	706.19
	Max=	50		AAHUs	21.18

NET CHANGE IN AAHUs DUE TO PROJECT

A. Future With Project Open Water AAHUs =	21.18
B. Future Without Project Open Water AAHUs =	150.54
Net Change (FWP - FWOP) =	-129.36

TOTAL BENEFITS IN AAHUs DUE TO PROJECT

A. Emergent Marsh Habitat Net AAHUs =	208.18
B. Open Water Habitat Net AAHUs =	-129.36
Net Benefits=(2.1xEMAAHUs+OWAAHUs)/3.1	99.30

WETLAND VALUE ASSESSMENT COMMUNITY MODEL V2.4

Fresh/Intermediate Marsh

Project: Area B-PAL With Maintenance

AAHUs = 1525.81

FWOP

Project Area (ac)	130	130	130	130	130	130	130					
% Fresh	100	100	100	100	100	100	100					
% Intermediate												
Target Year (TY)	0	1	3	5	6	25	50					
V1: % Emergent	0	0	0	0	0	0	0					
V2: % Aquatic	25	25	25	25	25	25	8					
V3: Interspersion Class 1	0	0	0	0	0	0	0					
V3: Interspersion Class 2	0	0	0	0	0	0	0					
V3: Interspersion Class 3	30	30	30	30	30	35	40					
V3: Interspersion Class 4	70	70	70	70	70	65	60					
V3: Interspersion Class 5	0	0	0	0	0	0	0					
V4: %OW <= 1.5ft	19	19	19	19	19	19	19					
V5: Salinty (ppt) - Fresh	1.03	1.03	1.03	1.03	1.03	1.03	1.03					
V5: Salinty (ppt) - INT												
V6: Fish Access - Fresh	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
V6: Fish Access - INT												

FWP

Project Area (ac)	130	13	164	259	390	2886	6154					
% Fresh	100	100	100	100	100	100	100					
% Intermediate	0											
Target Year (TY)	0	1	3	5	6	25	50					
V1: % Emergent	0	10	42	39	50	88	93					
V2: % Aquatic	25	0	0	25	29	29	13					
V3: Interspersion Class 1	0	0	0	50	100	0	0					
V3: Interspersion Class 2	0	0	0	0	0	100	0					
V3: Interspersion Class 3	30	0	100	50	0	0	100					
V3: Interspersion Class 4	70	0	0	0	0	0	0					
V3: Interspersion Class 5	0	100	0	0	0	0	0					
V4: %OW <= 1.5ft	19	100	100	100	100	100	83					
V5: Salinty (ppt) - Fresh	1	1.03	1.03	1.03	1.03	1.03	1.03					
V5: Salinty (ppt) - INT	0											
V6: Fish Access - Fresh	1.00	0.00	0.00	0.38	0.48	0.87	0.94					
V6: Fish Access - INT	0.00											

Computed SIs - do not enter data here !

FWOP SIs

Target Year (TY)	0	1	3	5	6	25	50					
% Emergent	0.10	0.10	0.10	0.10	0.10	0.10	0.10					
% Aquatic	0.33	0.33	0.33	0.33	0.33	0.33	0.17					
Interspersion Class 1 Class 2 Class 3 Class 4 Class 5	0.26	0.26	0.26	0.26	0.26	0.27	0.28					
%OW <= 1.5ft	0.31	0.31	0.31	0.31	0.31	0.31	0.31					
Salinity (ppt) fresh intermediate	0.89	0.89	0.89	0.89	0.89	0.89	0.89					
Access Value fresh intermediate	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
Emergent Marsh HSI =	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**					
Open Water HSI =	**0.44**	**0.44**	**0.44**	**0.44**	**0.44**	**0.44**	**0.32**					

FWP SIs

Target Year (TY)	0	1	3	5	6	25	50					
% Emergent	0.10	0.19	0.48	0.45	0.55	0.89	0.94					
% Aquatic	0.33	0.10	0.10	0.33	0.36	0.36	0.21					
Interspersion Class 1 Class 2 Class 3 Class 4 Class 5	0.26	0.10	0.40	0.70	1.00	0.60	0.40					
%OW <= 1.5ft	0.31	0.60	0.60	0.60	0.60	0.60	1.00					
Salinity (ppt) fresh intermediate	0.89	0.89	0.89	0.89	0.89	0.89	0.89					
Access Value fresh intermediate	1.00	0.30	0.30	0.57	0.64	0.91	0.96					
Emergent Marsh HSI =	**0.24**	**0.27**	**0.49**	**0.54**	**0.65**	**0.86**	**0.88**					
Open Water HSI =	**0.44**	**0.22**	**0.24**	**0.45**	**0.51**	**0.51**	**0.41**					

AAHU CALCULATION - EMERGENT MARSH

Project: Area B-PAL With Maintenance

	FWOP Project Area (ac)	TY	Marsh Acres	x HSI	Total HUs	Cum. HUs
1	130	0	0	0.24	0.00	
2	130	1	0	0.24	0.00	0.00
3	130	3	0	0.24	0.00	0.00
4	130	5	0	0.24	0.00	0.00
5	130	6	0	0.24	0.00	0.00
6	130	25	0	0.24	0.00	0.00
7	130	50	0	0.24	0.00	0.00
8						
9						
10						
11						
12						
		Max=	50		AAHUs =	0.00

FWP Project Area (ac)	TY	Marsh Acres	x HSI	Total HUs	Cum. HUs
130	0	0	0.24	0.00	
13	1	1.3	0.27	0.35	0.17
164	3	68.88	0.49	33.60	29.04
259	5	101.01	0.54	54.69	87.71
390	6	195	0.65	126.50	88.91
2886	25	2539.68	0.86	2189.11	#######
6154	50	5723.22	0.88	5009.26	#######
	Max=	50		AAHUs	2208.48

NET CHANGE IN AAHUs DUE TO PROJECT

A. Future With Project Emergent Marsh AAHUs =	2208.48
B. Future Without Project Emergent Marsh AAHUs =	0.00
Net Change (FWP - FWOP) =	2208.48

AAHU CALCULATION - OPEN WATER

Project: Area B-PAL With Maintenance

FWOP Project Area (ac)	TY	Water Acres	x HSI	Total HUs	Cum. HUs
130	0	130	0.44	57.66	
130	1	130	0.44	57.66	57.66
130	3	130	0.44	57.66	115.31
130	5	130	0.44	57.66	115.31
130	6	130	0.44	57.66	57.66
130	25	130	0.44	57.75	1096.38
130	50	130	0.32	41.33	1238.55
	Max=	50		AAHUs =	53.62

FWP Project Area (ac)	TY	Water Acres	x HSI	Total HUs	Cum. HUs
130	0	130	0.44	57.66	
13	1	11.7	0.22	2.58	25.72
164	3	95.12	0.24	23.08	25.04
259	5	157.99	0.45	71.55	90.23
390	6	195	0.51	99.10	84.99
2886	25	346.32	0.51	176.21	2615.19
6154	50	430.78	0.41	176.95	4448.95
	Max=	50		AAHUs	145.80

NET CHANGE IN AAHUs DUE TO PROJECT

A. Future With Project Open Water AAHUs =	145.80
B. Future Without Project Open Water AAHUs =	53.62
Net Change (FWP - FWOP) =	92.19

TOTAL BENEFITS IN AAHUs DUE TO PROJECT

A. Emergent Marsh Habitat Net AAHUs =	2208.48
B. Open Water Habitat Net AAHUs =	92.19
Net Benefits=(2.1xEMAAHUs+OWAAHUs)/3.1	1525.81

WETLAND VALUE ASSESSMENT COMMUNITY MODEL
V2.4

Fresh/Intermediate Marsh

Project: Area C-SWP

AAHUs = 180.35

FWOP

Project Area (ac)	365	365	365	365	365	365	365					
% Fresh	100	100	100	100	100	100	100					
% Intermediate												
Target Year (TY)	0	1	3	5	6	25	50					
V1: % Emergent	0	0	0	0	0	0	0					
V2: % Aquatic	8	8	8	8	8	8	2					
V3: Interspersion Class 1	0	0	0	0	0	0	0					
V3: Interspersion Class 2	0	0	0	0	0	0	0					
V3: Interspersion Class 3	100	100	100	100	100	50	0					
V3: Interspersion Class 4	0	0	0	0	0	50	100					
V3: Interspersion Class 5	0	0	0	0	0	0	0					
V4: %OW <= 1.5ft	15	15	15	15	15	15	10					
V5: Salinty (ppt) - Fresh	1.27	1.27	1.27	1.27	1.27	1.27	1.27					
V5: Salinty (ppt) - INT												
V6: Fish Access - Fresh	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
V6: Fish Access - INT												

FWP

Project Area (ac)	365	37	92	368	369	371	364					
% Fresh	100	100	100	100	100	100	100					
% Intermediate	0											
Target Year (TY)	0	1	3	5	6	25	50					
V1: % Emergent	0	10	25	100	100	100	99					
V2: % Aquatic	8	0	0	8	9	9	4					
V3: Interspersion Class 1	0	0	0	50	100	0	0					
V3: Interspersion Class 2	0	0	0	0	0	100	0					
V3: Interspersion Class 3	100	0	100	50	0	0	100					
V3: Interspersion Class 4	0	0	0	0	0	0	0					
V3: Interspersion Class 5	0	100	0	0	0	0	0					
V4: %OW <= 1.5ft	15	100	100	100	100	100	83					
V5: Salinty (ppt) - Fresh	1	1.27	1.27	1.27	1.27	1.27	1.27					
V5: Salinty (ppt) - INT	0											
V6: Fish Access - Fresh	1.00	0.00	0.00	1.00	1.00	1.00	1.00					
V6: Fish Access - INT	0.00											

Computed SIs - do not enter data here !

FWOP SIs

Target Year (TY)	0	1	3	5	6	25	50					
% Emergent	0.10	0.10	0.10	0.10	0.10	0.10	0.10					
% Aquatic	0.17	0.17	0.17	0.17	0.17	0.17	0.12					
Interspersion Class 1 Class 2 Class 3 Class 4 Class 5	0.40	0.40	0.40	0.40	0.40	0.30	0.20					
%OW <= 1.5ft	0.27	0.27	0.27	0.27	0.27	0.27	0.21					
Salinity (ppt) fresh intermediate	0.85	0.85	0.85	0.85	0.85	0.85	0.85					
Access Value fresh intermediate	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
Emergent Marsh HSI =	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**	**0.24**	**0.23**					
Open Water HSI =	**0.32**	**0.32**	**0.32**	**0.32**	**0.32**	**0.31**	**0.25**					

FWP SIs

Target Year (TY)	0	1	3	5	6	25	50					
% Emergent	0.10	0.19	0.33	1.00	1.00	1.00	0.99					
% Aquatic	0.17	0.10	0.10	0.17	0.18	0.18	0.14					
Interspersion Class 1 Class 2 Class 3 Class 4 Class 5	0.40	0.10	0.40	0.70	1.00	0.60	0.40					
%OW <= 1.5ft	0.27	0.60	0.60	0.60	0.60	0.60	1.00					
Salinity (ppt) fresh intermediate	0.85	0.85	0.85	0.85	0.85	0.85	0.85					
Access Value fresh intermediate	1.00	0.30	0.30	1.00	1.00	1.00	1.00					
Emergent Marsh HSI =	**0.25**	**0.26**	**0.39**	**0.95**	**0.98**	**0.94**	**0.91**					
Open Water HSI =	**0.32**	**0.22**	**0.24**	**0.37**	**0.40**	**0.37**	**0.34**					

AAHU CALCULATION - EMERGENT MARSH

Project: Area C-SWP

	FWOP Project Area (ac)	TY	Marsh Acres	x HSI	Total HUs	Cum. HUs
1	365	0	0	0.25	0.00	
2	365	1	0	0.25	0.00	0.00
3	365	3	0	0.25	0.00	0.00
4	365	5	0	0.25	0.00	0.00
5	365	6	0	0.25	0.00	0.00
6	365	25	0	0.24	0.00	0.00
7	365	50	0	0.23	0.00	0.00
8						
9						
10						
11						
12						
		Max=	50		AAHUs =	0.00

FWP Project Area (ac)	TY	Marsh Acres	x HSI	Total HUs	Cum. HUs
365	0	0	0.25	0.00	
37	1	3.7	0.26	0.98	0.48
92	3	23	0.39	8.92	9.11
368	5	368	0.95	349.44	293.77
369	6	369	0.98	362.69	356.06
371	25	371	0.94	348.16	6753.35
364	50	360.36	0.91	328.07	8451.62
	Max=	50		AAHUs	317.29

NET CHANGE IN AAHUs DUE TO PROJECT

A. Future With Project Emergent Marsh AAHUs =	317.29
B. Future Without Project Emergent Marsh AAHUs =	0.00
Net Change (FWP - FWOP) =	317.29

AAHU CALCULATION - OPEN WATER

Project: Area C-SWP

FWOP Project Area (ac)	TY	Water Acres	x HSI	Total HUs	Cum. HUs
365	0	365	0.32	116.78	
365	1	365	0.32	116.78	116.78
365	3	365	0.32	116.78	233.55
365	5	365	0.32	116.78	233.55
365	6	365	0.32	116.78	116.78
365	25	365	0.31	114.07	2193.06
365	50	365	0.25	92.48	2581.97
	Max=	50		AAHUs =	109.51

FWP Project Area (ac)	TY	Water Acres	x HSI	Total HUs	Cum. HUs
365	0	365	0.32	116.78	
37	1	33.3	0.22	7.22	56.30
92	3	69	0.24	16.50	23.46
368	5	0	0.37	0.00	19.43
369	6	0	0.40	0.00	0.00
371	25	0	0.37	0.00	0.00
364	50	3.64	0.34	1.24	15.90
	Max=	50		AAHUs	2.30

NET CHANGE IN AAHUs DUE TO PROJECT

A. Future With Project Open Water AAHUs =	2.30
B. Future Without Project Open Water AAHUs =	109.51
Net Change (FWP - FWOP) =	-107.21

TOTAL BENEFITS IN AAHUs DUE TO PROJECT

A. Emergent Marsh Habitat Net AAHUs =	317.29
B. Open Water Habitat Net AAHUs =	-107.21
Net Benefits=(2.1xEMAAHUs+OWAAHUs)/3.1	180.35

WETLAND VALUE ASSESSMENT COMMUNITY MODEL V2.4

Fresh/Intermediate Marsh

Project: Area C-SWP With Maintenance

AAHUs = 1532.43

FWOP

Project Area (ac)	130	130	130	130	130	130	130					
% Fresh	100	100	100	100	100	100	100					
% Intermediate												
Target Year (TY)	0	1	3	5	6	25	50					
V1: % Emergent	0	0	0	0	0	0	0					
V2: % Aquatic	8	8	8	8	8	8	2					
V3: Interspersion Class 1	0	0	0	0	0	0	0					
V3: Interspersion Class 2	0	0	0	0	0	0	0					
V3: Interspersion Class 3	30	30	30	30	30	35	40					
V3: Interspersion Class 4	70	70	70	70	70	65	60					
V3: Interspersion Class 5	0	0	0	0	0	0	0					
V4: %OW <= 1.5ft	19	19	19	19	19	19	19					
V5: Salinty (ppt) - Fresh	1.27	1.27	1.27	1.27	1.27	1.27	1.27					
V5: Salinty (ppt) - INT												
V6: Fish Access - Fresh	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
V6: Fish Access - INT												

FWP

Project Area (ac)	130	13	165	263	395	2904	6202					
% Fresh	100	100	100	100	100	100	100					
% Intermediate	0											
Target Year (TY)	0	1	3	5	6	25	50					
V1: % Emergent	0	10	42	40	50	88	94					
V2: % Aquatic	8	0	0	8	9	9	4					
V3: Interspersion Class 1	0	0	0	50	100	0	0					
V3: Interspersion Class 2	0	0	0	0	0	100	0					
V3: Interspersion Class 3	30	0	100	50	0	0	100					
V3: Interspersion Class 4	70	0	0	0	0	0	0					
V3: Interspersion Class 5	0	100	0	0	0	0	0					
V4: %OW <= 1.5ft	19	100	100	100	100	100	83					
V5: Salinty (ppt) - Fresh	1	1.27	1.27	1.27	1.27	1.27	1.27					
V5: Salinty (ppt) - INT	0											
V6: Fish Access - Fresh	1.00	0.00	0.00	0.38	0.48	0.87	0.94					
V6: Fish Access - INT	0.00											

Computed SIs - do not enter data here !

FWOP SIs

Target Year (TY)	0	1	3	5	6	25	50					
% Emergent	0.10	0.10	0.10	0.10	0.10	0.10	0.10					
% Aquatic	0.17	0.17	0.17	0.17	0.17	0.17	0.12					
Interspersion Class 1 Class 2 Class 3 Class 4 Class 5	0.26	0.26	0.26	0.26	0.26	0.27	0.28					
%OW <= 1.5ft	0.31	0.31	0.31	0.31	0.31	0.31	0.31					
Salinity (ppt) fresh intermediate	0.85	0.85	0.85	0.85	0.85	0.85	0.85					
Access Value fresh intermediate	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
Emergent Marsh HSI =	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**					
Open Water HSI =	**0.31**	**0.31**	**0.31**	**0.31**	**0.31**	**0.31**	**0.27**					

FWP SIs

Target Year (TY)	0	1	3	5	6	25	50					
% Emergent	0.10	0.19	0.48	0.46	0.55	0.89	0.95					
% Aquatic	0.17	0.10	0.10	0.17	0.18	0.18	0.14					
Interspersion Class 1 Class 2 Class 3 Class 4 Class 5	0.26	0.10	0.40	0.70	1.00	0.60	0.40					
%OW <= 1.5ft	0.31	0.60	0.60	0.60	0.60	0.60	1.00					
Salinity (ppt) fresh intermediate	0.85	0.85	0.85	0.85	0.85	0.85	0.85					
Access Value fresh intermediate	1.00	0.30	0.30	0.57	0.64	0.91	0.96					
Emergent Marsh HSI =	**0.24**	**0.26**	**0.48**	**0.54**	**0.64**	**0.86**	**0.88**					
Open Water HSI =	**0.31**	**0.22**	**0.24**	**0.34**	**0.37**	**0.36**	**0.34**					

AAHU CALCULATION - EMERGENT MARSH

Project: Area C-SWP With Maintenance

	FWOP Project Area (ac)	TY	Marsh Acres	x HSI	Total HUs	Cum. HUs
1	130	0	0	0.24	0.00	
2	130	1	0	0.24	0.00	0.00
3	130	3	0	0.24	0.00	0.00
4	130	5	0	0.24	0.00	0.00
5	130	6	0	0.24	0.00	0.00
6	130	25	0	0.24	0.00	0.00
7	130	50	0	0.24	0.00	0.00
8						
9						
10						
11						
12						
		Max=	50		AAHUs =	0.00

FWP Project Area (ac)	TY	Marsh Acres	x HSI	Total HUs	Cum. HUs
130	0	0	0.24	0.00	
13	1	1.3	0.26	0.34	0.17
165	3	69.3	0.48	33.43	28.84
263	5	105.2	0.54	57.03	89.75
395	6	197.5	0.64	127.07	90.49
2904	25	2555.52	0.86	2189.14	#######
6202	50	5829.88	0.88	5105.63	#######
	Max=	50		AAHUs	2230.89

NET CHANGE IN AAHUs DUE TO PROJECT

A. Future With Project Emergent Marsh AAHUs =	2230.89
B. Future Without Project Emergent Marsh AAHUs =	0.00
Net Change (FWP - FWOP) =	2230.89

AAHU CALCULATION - OPEN WATER

Project: Area C-SWP With Maintenance

FWOP Project Area (ac)	TY	Water Acres	x HSI	Total HUs	Cum. HUs
130	0	130	0.31	40.68	
130	1	130	0.31	40.68	40.68
130	3	130	0.31	40.68	81.35
130	5	130	0.31	40.68	81.35
130	6	130	0.31	40.68	40.68
130	25	130	0.31	40.77	773.77
130	50	130	0.27	34.69	943.23
	Max=	50		AAHUs =	39.22

FWP Project Area (ac)	TY	Water Acres	x HSI	Total HUs	Cum. HUs
130	0	130	0.31	40.68	
13	1	11.7	0.22	2.54	19.71
165	3	95.7	0.24	22.88	24.80
263	5	157.8	0.34	53.52	74.33
395	6	197.5	0.37	73.85	63.45
2904	25	348.48	0.36	126.25	1906.56
6202	50	372.12	0.34	126.04	3155.95
	Max=	50		AAHUs	104.90

NET CHANGE IN AAHUs DUE TO PROJECT

A. Future With Project Open Water AAHUs =	104.90
B. Future Without Project Open Water AAHUs =	39.22
Net Change (FWP - FWOP) =	65.67

TOTAL BENEFITS IN AAHUs DUE TO PROJECT

A. Emergent Marsh Habitat Net AAHUs =	2230.89
B. Open Water Habitat Net AAHUs =	65.67
Net Benefits=(2.1xEMAAHUs+OWAAHUs)/3.1	1532.43

WETLAND VALUE ASSESSMENT COMMUNITY MODEL V2.4

Fresh/Intermediate Marsh

Project: Area D-West Bay

AAHUs = 106.78

FWOP

Project Area (ac)	365	365	365	365								
% Fresh	100	100	100	100								
% Intermediate												
Target Year (TY)	0	10	20	50								
V1: % Emergent	2	5	21	21								
V2: % Aquatic	32	32	34	34								
V3: Interspersion Class 1	0	0	0	0								
V3: Interspersion Class 2	0	0	50	50								
V3: Interspersion Class 3	0	50	50	50								
V3: Interspersion Class 4	100	50	0	0								
V3: Interspersion Class 5	0	0	0	0								
V4: %OW <= 1.5ft	10	15	25	25								
V5: Salinty (ppt) - Fresh	0.75	0.75	0.75	0.75								
V5: Salinty (ppt) - INT												
V6: Fish Access - Fresh	1.00	1.00	1.00	1.00								
V6: Fish Access - INT												

FWP

Project Area (ac)	365	36	91	362	361	340	286					
% Fresh	100	100	100	100	100	100	100					
% Intermediate	0											
Target Year (TY)	0	1	3	5	6	25	50					
V1: % Emergent	2	10	25	99	99	93	78					
V2: % Aquatic	32	0	0	32	37	37	16					
V3: Interspersion Class 1	0	0	0	50	100	0	0					
V3: Interspersion Class 2	0	0	0	0	0	100	0					
V3: Interspersion Class 3	0	0	100	50	0	0	100					
V3: Interspersion Class 4	100	0	0	0	0	0	0					
V3: Interspersion Class 5	0	100	0	0	0	0	0					
V4: %OW <= 1.5ft	10	100	100	100	100	100	83					
V5: Salinty (ppt) - Fresh	1	0.75	0.75	0.75	0.75	0.75	0.75					
V5: Salinty (ppt) - INT	0											
V6: Fish Access - Fresh	1.00	0.00	0.00	1.00	1.00	1.00	1.00					
V6: Fish Access - INT	0.00											

Computed SIs - do not enter data here !

FWOP SIs

Target Year (TY)	0	10	20	50								
% Emergent	0.12	0.15	0.29	0.29								
% Aquatic	0.39	0.39	0.41	0.41								
Interspersion Class 1 Class 2 Class 3 Class 4 Class 5	0.20	0.30	0.50	0.50								
%OW <= 1.5ft	0.21	0.27	0.38	0.38								
Salinity (ppt) fresh intermediate	0.95	0.95	0.95	0.95								
Access Value fresh intermediate	1.00	1.00	1.00	1.00								
Emergent Marsh HSI =	**0.26**	**0.29**	**0.44**	**0.44**								
Open Water HSI =	**0.48**	**0.49**	**0.53**	**0.53**								

FWP SIs

Target Year (TY)	0	1	3	5	6	25	50					
% Emergent	0.12	0.19	0.33	0.99	0.99	0.94	0.80					
% Aquatic	0.39	0.10	0.10	0.39	0.43	0.43	0.24					
Interspersion Class 1 Class 2 Class 3 Class 4 Class 5	0.20	0.10	0.40	0.70	1.00	0.60	0.40					
%OW <= 1.5ft	0.21	0.60	0.60	0.60	0.60	0.60	1.00					
Salinity (ppt) fresh intermediate	0.95	0.95	0.95	0.95	0.95	0.95	0.95					
Access Value fresh intermediate	1.00	0.30	0.30	1.00	1.00	1.00	1.00					
Emergent Marsh HSI =	**0.26**	**0.28**	**0.40**	**0.96**	**0.99**	**0.91**	**0.80**					
Open Water HSI =	**0.48**	**0.22**	**0.25**	**0.55**	**0.60**	**0.57**	**0.44**					

AAHU CALCULATION - EMERGENT MARSH

Project: Area D-West Bay

	FWOP Project Area (ac)	TY	Marsh Acres	x HSI	Total HUs	Cum. HUs
1	365	0	7.3	0.26	1.89	
2	365	10	18.25	0.29	5.37	35.67
3	365	20	76.65	0.44	33.54	180.64
4	365	50	76.65	0.44	33.54	1006.15
5						
6						
7						
8						
9						
10						
11						
12						
		Max=	50		AAHUs =	24.45

FWP Project Area (ac)	TY	Marsh Acres	x HSI	Total HUs	Cum. HUs
365	0	7.3	0.26	1.89	
36	1	3.6	0.28	0.99	1.45
91	3	22.75	0.40	9.09	9.29
362	5	358.38	0.96	342.35	289.25
361	6	357.39	0.99	353.32	347.84
340	25	316.2	0.91	287.41	6076.52
286	50	223.08	0.80	177.83	5772.07
	Max=	50		AAHUs	249.93

NET CHANGE IN AAHUs DUE TO PROJECT

A. Future With Project Emergent Marsh AAHUs =	249.93
B. Future Without Project Emergent Marsh AAHUs =	24.45
Net Change (FWP - FWOP) =	225.48

AAHU CALCULATION - OPEN WATER

Project: Area D-West Bay

FWOP Project Area (ac)	TY	Water Acres	x HSI	Total HUs	Cum. HUs
365	0	357.7	0.48	172.87	
365	10	346.75	0.49	171.59	1722.55
365	20	288.35	0.53	153.18	1627.43
365	50	288.35	0.53	153.18	4595.51
	Max=	50		AAHUs =	158.91

FWP Project Area (ac)	TY	Water Acres	x HSI	Total HUs	Cum. HUs
365	0	357.7	0.48	172.87	
36	1	32.4	0.22	7.28	76.05
91	3	68.25	0.25	16.84	23.86
362	5	3.62	0.55	1.99	25.34
361	6	3.61	0.60	2.18	2.08
340	25	23.8	0.57	13.67	152.49
286	50	62.92	0.44	27.94	541.42
	Max=	50		AAHUs	16.42

NET CHANGE IN AAHUs DUE TO PROJECT

A. Future With Project Open Water AAHUs =	16.42
B. Future Without Project Open Water AAHUs =	158.91
Net Change (FWP - FWOP) =	-142.49

TOTAL BENEFITS IN AAHUs DUE TO PROJECT

A. Emergent Marsh Habitat Net AAHUs =	225.48
B. Open Water Habitat Net AAHUs =	-142.49
Net Benefits=(2.1xEMAAHUs+OWAAHUs)/3.1	106.78

WETLAND VALUE ASSESSMENT COMMUNITY MODEL V2.4

Fresh/Intermediate Marsh

Project: Area D-WB With Maintenance

AAHUs = 1553.42

FWOP

Project Area (ac)	131	131	131	131	131	131	131					
% Fresh	100	100	100	100	100	100	100					
% Intermediate												
Target Year (TY)	0	1	3	5	6	25	50					
V1: % Emergent	0	0	0	0	0	0	0					
V2: % Aquatic	25	25	25	25	25	25	8					
V3: Interspersion Class 1	0	0	0	0	0	0	0					
V3: Interspersion Class 2	0	0	0	0	0	0	0					
V3: Interspersion Class 3	30	30	30	30	30	35	40					
V3: Interspersion Class 4	70	70	70	70	70	65	60					
V3: Interspersion Class 5	0	0	0	0	0	0	0					
V4: %OW <= 1.5ft	19	19	19	19	19	19	19					
V5: Salinty (ppt) - Fresh	0.75	0.75	0.75	0.75	0.75	0.75	0.75					
V5: Salinty (ppt) - INT												
V6: Fish Access - Fresh	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
V6: Fish Access - INT												

FWP

Project Area (ac)	131	13	165	262	394	2894	6174					
% Fresh	100	100	100	100	100	100	100					
% Intermediate	0											
Target Year (TY)	0	1	3	5	6	25	50					
V1: % Emergent	0	10	42	40	50	88	94					
V2: % Aquatic	25	0	0	25	29	29	13					
V3: Interspersion Class 1	0	0	0	50	100	0	0					
V3: Interspersion Class 2	0	0	0	0	0	100	0					
V3: Interspersion Class 3	30	0	100	50	0	0	100					
V3: Interspersion Class 4	70	0	0	0	0	0	0					
V3: Interspersion Class 5	0	100	0	0	0	0	0					
V4: %OW <= 1.5ft	19	100	100	100	100	100	83					
V5: Salinty (ppt) - Fresh	1	0.75	0.75	0.75	0.75	0.75	0.75					
V5: Salinty (ppt) - INT	0											
V6: Fish Access - Fresh	1.00	0.00	0.00	0.38	0.48	0.87	0.94					
V6: Fish Access - INT	0.00											

Computed SIs - do not enter data here !

FWOP SIs

Target Year (TY)	0	1	3	5	6	25	50				
% Emergent	0.10	0.10	0.10	0.10	0.10	0.10	0.10				
% Aquatic	0.33	0.33	0.33	0.33	0.33	0.33	0.17				
Interspersion Class 1 Class 2 Class 3 Class 4 Class 5	0.26	0.26	0.26	0.26	0.26	0.27	0.28				
%OW <= 1.5ft	0.31	0.31	0.31	0.31	0.31	0.31	0.31				
Salinity (ppt) fresh intermediate	0.95	0.95	0.95	0.95	0.95	0.95	0.95				
Access Value fresh intermediate	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Emergent Marsh HSI =	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**				
Open Water HSI =	**0.45**	**0.45**	**0.45**	**0.45**	**0.45**	**0.45**	**0.32**				

FWP SIs

Target Year (TY)	0	1	3	5	6	25	50				
% Emergent	0.10	0.19	0.48	0.46	0.55	0.89	0.95				
% Aquatic	0.33	0.10	0.10	0.33	0.36	0.36	0.21				
Interspersion Class 1 Class 2 Class 3 Class 4 Class 5	0.26	0.10	0.40	0.70	1.00	0.60	0.40				
%OW <= 1.5ft	0.31	0.60	0.60	0.60	0.60	0.60	1.00				
Salinity (ppt) fresh intermediate	0.95	0.95	0.95	0.95	0.95	0.95	0.95				
Access Value fresh intermediate	1.00	0.30	0.30	0.57	0.64	0.91	0.96				
Emergent Marsh HSI =	**0.25**	**0.28**	**0.49**	**0.55**	**0.65**	**0.87**	**0.89**				
Open Water HSI =	**0.45**	**0.22**	**0.25**	**0.46**	**0.51**	**0.51**	**0.41**				

AAHU CALCULATION - EMERGENT MARSH

Project: Area D-WB With Maintenance

	FWOP Project Area (ac)	TY	Marsh Acres	x HSI	Total HUs	Cum. HUs
1	131	0	0	0.25	0.00	
2	131	1	0	0.25	0.00	0.00
3	131	3	0	0.25	0.00	0.00
4	131	5	0	0.25	0.00	0.00
5	131	6	0	0.25	0.00	0.00
6	131	25	0	0.25	0.00	0.00
7	131	50	0	0.25	0.00	0.00
8						
9						
10						
11						
12						
		Max=	50		AAHUs =	0.00

FWP Project Area (ac)	TY	Marsh Acres	x HSI	Total HUs	Cum. HUs
131	0	0	0.25	0.00	
13	1	1.3	0.28	0.36	0.17
165	3	69.3	0.49	34.24	29.66
262	5	104.8	0.55	58.03	91.56
394	6	197	0.65	129.02	91.97
2894	25	2546.72	0.87	2211.03	#######
6174	50	5803.56	0.89	5149.64	#######
	Max=	50		AAHUs	2252.11

NET CHANGE IN AAHUs DUE TO PROJECT

A. Future With Project Emergent Marsh AAHUs =	2252.11
B. Future Without Project Emergent Marsh AAHUs =	0.00
Net Change (FWP - FWOP) =	2252.11

AAHU CALCULATION - OPEN WATER

Project: Area D-WB With Maintenance

FWOP Project Area (ac)	TY	Water Acres	x HSI	Total HUs	Cum. HUs
131	0	131	0.45	58.64	
131	1	131	0.45	58.64	58.64
131	3	131	0.45	58.64	117.29
131	5	131	0.45	58.64	117.29
131	6	131	0.45	58.64	58.64
131	25	131	0.45	58.74	1115.14
131	50	131	0.32	42.19	1261.66
	Max=	50		AAHUs =	54.57

FWP Project Area (ac)	TY	Water Acres	x HSI	Total HUs	Cum. HUs
131	0	131	0.45	58.64	
13	1	11.7	0.22	2.63	26.20
165	3	95.7	0.25	23.62	25.63
262	5	157.2	0.46	71.85	91.16
394	6	197	0.51	100.94	86.03
2894	25	347.28	0.51	178.14	2650.94
6174	50	370.44	0.41	153.70	4157.42
	Max=	50		AAHUs	140.75

NET CHANGE IN AAHUs DUE TO PROJECT

A. Future With Project Open Water AAHUs =	140.75
B. Future Without Project Open Water AAHUs =	54.57
Net Change (FWP - FWOP) =	86.17

TOTAL BENEFITS IN AAHUs DUE TO PROJECT

A. Emergent Marsh Habitat Net AAHUs =	2252.11
B. Open Water Habitat Net AAHUs =	86.17
Net Benefits=(2.1xEMAAHUs+OWAAHUs)/3.1	1553.42

Wetland Value Assessment Project Information Sheet

September 26, 2016

Prepared for:
Mississippi River Deepening PDT

Prepared by
U.S. Fish and Wildlife Service

Project Name: Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project

Project Type(s): Marsh Creation

Project Area: Plaquemines Parish, Louisiana (Figure 1).

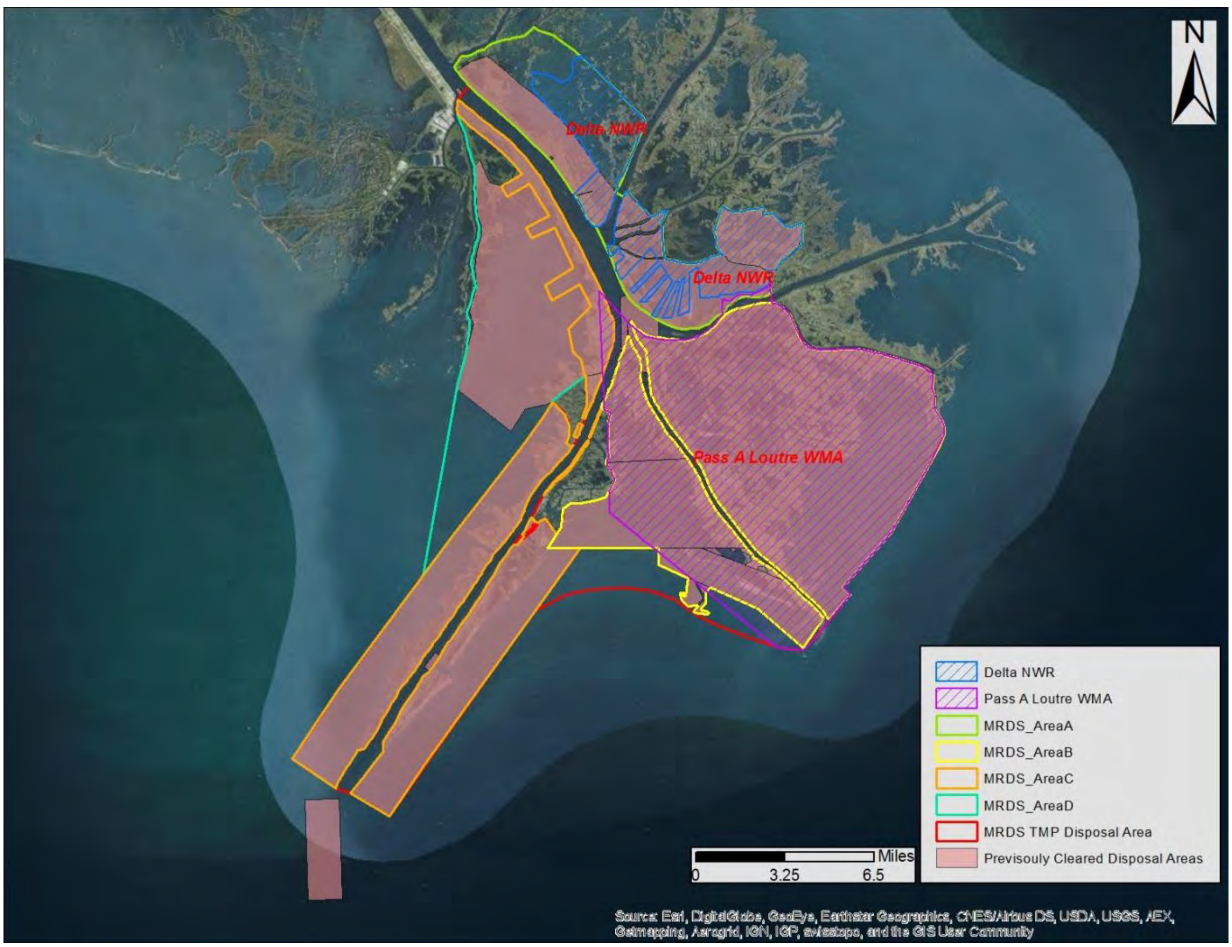


Figure 1. Mississippi River Deepening Project Area.

Project Goal:
This Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project is intended deepen the Mississippi River Ship Channel up to a 50 foot depth from Baton Rouge to the Gulf of Mexico and to create tidal freshwater marsh in the Mississippi River Delta with material dredged during construction and annual maintenance. Existing survey data shows that the proposed marsh creation sites in the delta have existing bottom elevations of approximately -2.5 feet NAVD88. The initial target elevation for dredge fill is between +4.0 and +4.5 feet NAVD88 which is expected to settle to an elevation between +2.5 and +3.0 feet NAVD88. Existing average marsh elevation, in the immediate vicinity is approximately +1.85 feet NAVD88.

Habitat Assessment Method
The WVA operates under the assumption that optimal conditions for general fish and wildlife habitat within a given coastal wetland type can be characterized, and that existing or predicted conditions can be compared to that optimum to provide an index of habitat quality. Habitat quality is estimated or expressed through the use of a mathematical model developed specifically for each wetland type. Each model consists of 1) a list of variables that are considered important in characterizing fish and wildlife habitat, 2) a Suitability Index graph for each variable, which defines the assumed relationship between habitat quality (Suitability Index) and different variable values, and 3) a mathematical formula that combines Suitability Index for each variable into a single value for wetland habitat quality; that single value is referred to as the Habitat Suitability Index, or HSI.

The WVA model for marsh habitat attempts to assess the suitability of each habitat type for providing resting, foraging, breeding, and nursery habitat to a diverse assemblage of fish and wildlife species. While the model does not specifically assess other wetland functions and values such as storm-surge protection, floodwater storage, water quality improvement, nutrient import/export, and aesthetics, it can be generally assumed that these functions and values are positively correlated with fish and wildlife habitat quality.

The procedure for evaluating project benefits on fish and wildlife habitats, the WVA model, uses a series of variables that are intended to capture the most important conditions and functional values of a particular habitat. Values for these variables are derived for existing conditions and are estimated for conditions projected into the future if no project efforts are applied (i.e., future-without-project), and for conditions projected into the future if the proposed project is implemented (i.e., future-with-project), providing an index of quality or habitat suitability of the habitat for the given time period. The habitat suitability index (HSI) is combined with the acres of habitat to get a number that is referred to as “habitat units”.

Expected project benefits are estimated as the difference in habitat units between the future-with-project (FWP) and future-without project (FWOP). To allow comparison of WVA benefits to costs for overall project evaluation, total benefits are averaged over a 50-year period, with the result reported as Average Annual Habitat Units (AAHUs).

Existing – The project area is the open water and surrounding fresh marsh of the Lower Mississippi River Delta. The vegetation is classified as fresh marsh and receives continuous riverine input. Emergent plant species include: smooth cordgrass (*Spartina alterniflora*), Walter’s millet (*Echinochloa walteri*), *Schoenoplectus pungens*, *Nelumbo lutea*. Submerged aquatic vegetation, such *as Myriophyllum spicatum*, *Heteranthera dubia*, *Ceratophyllum demersum*, *Najas guadalupensis*, and *Potamogeton nodosus* are also common in the lower elevation intertidal and shallow subtidal portions of the project area. The two major soil types in the project area are commonly found together and are classified as Balize and Larose soils (BA). Both soil types are level and very poorly drained. They are flooded by Mississippi River water most of the time and support freshwater marshes.

Land Loss/Gain*

- USGS calculated a historical loss rate for the disposal polygons (Figure 2) using a hyper-temporal analysis for the period 1984 to 2016. That analysis utilized TM satellite scenes and OLI imagery. The Fish and Wildlife Service calculated land loss rate using the same USGS Land/Water data, but with a different regression (land acres: time). That rate was used to calculate land/water values over the life of the project.

<u>Area A-Delta NWR Disposal Area (Delta)</u>

- FWOP gain rate: 0.54 %
- FWP loss rate: 0.54% (Gain rate is assumed to stay the same as FWOP for the life of the project).

<u>Area B-Pass a Loutre WMA Disposal Area (PAL)</u>

Area B subunits (B1 and B2) were combined for the land loss analysis and the WVA.

- FWOP loss rate: -0.78 %
- FWP loss rate: -0.39% (resumes to background loss rate at TY27).

<u>Area C-Southwest Pass Disposal Area (SWP)</u>

Area C subunits (C1, C2, and C3) were combined for the land loss analysis and the WVA.

- FWOP gain rate: 0.17 %
- FWP gain rate: 0.17% (Gain rate is assumed to stay the same as FWOP for the life of the project).

<u>Area D-West Bay Disposal Area (West Bay)</u>

- FWOP loss rate: -0.35 %
- FWP loss rate: -0.175% (resumes to background loss rate at TY27).

<u>All Areas</u>

For FWP we used the standard Civil Works WVA assumption of a 50% loss rate reduction for created marsh (but rate reverts back to FWOP rate when accretion equals 10 inches). Land loss rates were adjusted by the projected effects of three Relative Sea Level Rise (RSLR) scenarios. The medium RSLR scenario was chosen for these analyses. Additionally, FWP with Maintenance (FWPWM) accounts for an additional 132 acres added to each disposal site annually throughout the project life with respective loss/gain rates applied.

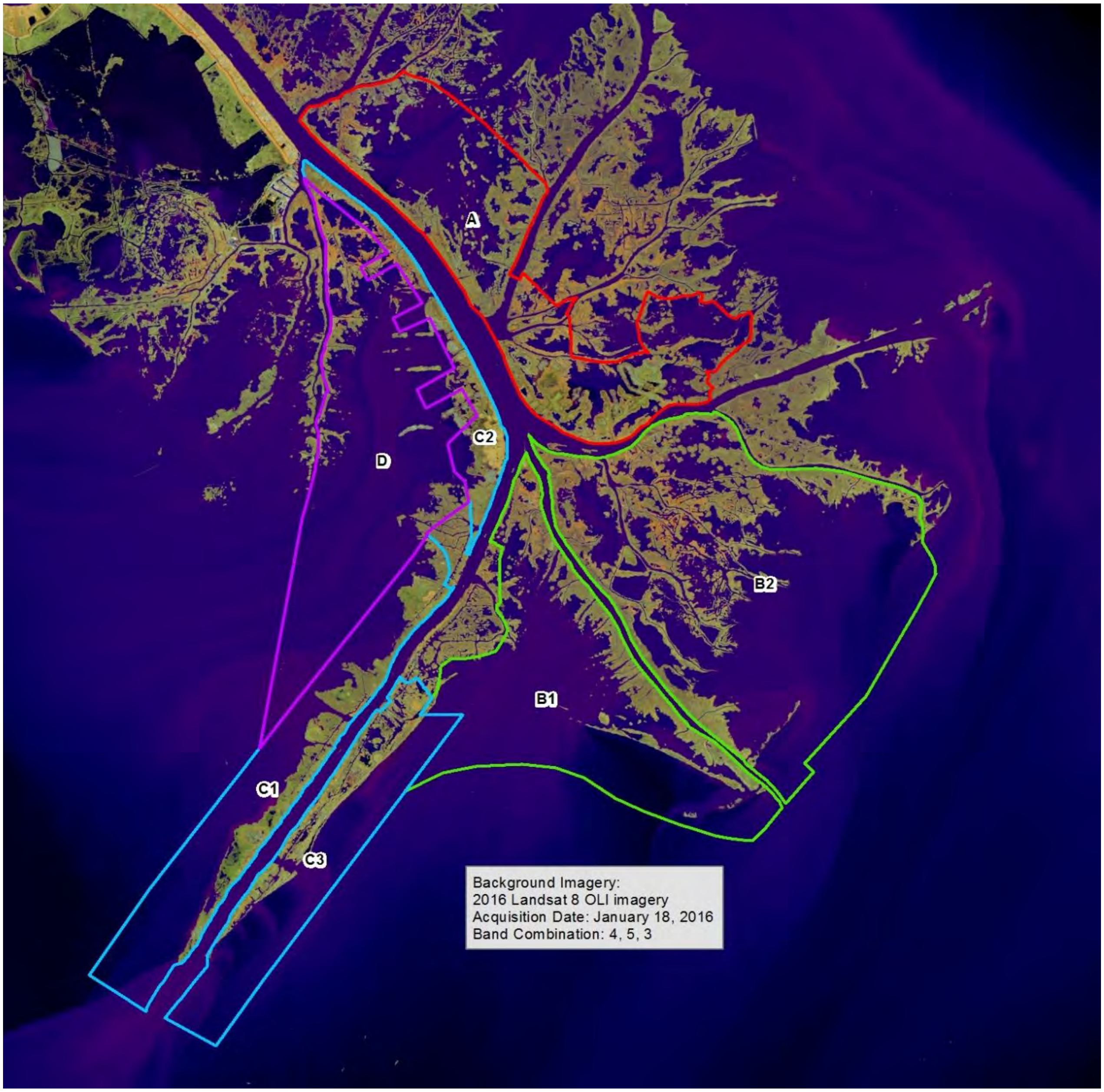


Figure 2. Mississippi River Deepening Land Loss Polygon Calculation Areas.

Sea Level Rise Effects*

Land loss rates estimated by the Service were adjusted by the projected effects of the medium relative sea level rise (RSLR) scenario for these analyses. The nearest water level gauge to the project area that is listed for use with the sea-level change curve calculator on the corpsclimate.us website is the one at Grand Isle. Therefore, we assumed the subsidence rate from Pahl et. al 2015: subsidence in Miss Delta = 5 feet/100 years. (1,524 millimeters/100 years) or about 15 mm/yr. Shinkle and Dokka (2004) estimated a subsidence rate of about 24 mm/yr, but recent CORS measurements at Boothville from 2002 to 2007 are much lower at about 3.5 mm/year (Morton &Bernier 2010). We used the earlier subsidence estimate from Britsch 2007 because the newer estimates were calculated from a comparatively limited period of time. Eustatic sea level rise was assumed to be 1.7 mm/yr.

(*) Subsequent to the Service's initial analyses, hydraulic modelling was conducted by The Water Institute of the Gulf (TWI) to determine the potential effects of the 4 mid-bay marsh creation alternatives. The analysis predicted substantial sediment infilling of West Bay during the 20 year period beginning at TY0 with each alternative and in the absence of any added land forms (FWOP). TWI used 19 mm/year as the subsidence rate and assumed an intermediate sea level rise scenario. Based upon estimates of substrate elevations at which marsh and submerged aquatic vegetation (SAV) are expected to grow (between 0.0 and +1.85 feet NAVD88 for SAV and between +1.85 and +4.5 feet NAVD88 for emergent marsh) the expected acreages of each were predicted after 20 years. The four (two from the environmental team and two proposed by TWIG during modelling) proposed mid-bay marsh creation alternatives had differential effects on the amount of sediment expected to build up within West Bay over 20 years. The DELFT 3D model results only extended to target year 20. Because of the uncertainty of diversion functioning or its potential purposeful closure, the resulting effects on perpetuating emergent marsh were not projected past TY20. Considering the potential increase in land loss that could occur versus. the positive effects of the diversion, we held the TY 20 values constant to TY50. This assumption was used for the West Bay (Area D) FWOP portion of the WVA analyses.

<u>Variable V_1 – Percent of wetland area covered by emergent vegetation</u>

FWOP–West Bay disposal area analysis considers the whole range (18,850 acres) of the hydrologic model as the project area. The remaining 3 disposal sites only consider project footprint and assumed that marsh creation polygons would be open water habitat.

Area A (Delta)	
	% Emergent
TY0	0
TY1	0
TY3	0
TY5	0
TY6	0
TY25	0
TY50	0

Area B (PAL)	
	% Emergent
TY0	0
TY1	0
TY3	0
TY5	0
TY6	0
TY25	0
TY50	0

Area C (SWP)	
	% Emergent
TY0	0
TY1	0
TY3	0
TY5	0
TY6	0
TY25	0
TY50	0

Area D (West Bay)	
	% Emergent
TY0	2
TY10	5
TY20	21
TY50	25

FWP –Created marsh platform has limited marsh function until material settlement, flooding and channel development. The assumption document suggests 0%, 15%, 50%, and 100% for TY years 1, 3, 5, and 6 respectively for unplanted marsh. Because this area is in close proximity to the freshwater and nutrients of the Mississippi River Delta, we adjusted the assumptions to10%, 25%, 100%, and 100% for TY years 1, 3, 5, and 6 respectively to reflect a more rapid vegetative response.

Area A (Delta)			
		acres	%
TY0	Constr.	0	0
	Maint.	0	0
TY1	Constr.	37	10

Area B (PAL)			
		acres	%
TY0	Constr.	0	0
	Maint.	0	0
TY1	Constr.	36	10

Area C (SWP)			
		acres	%
TY0	Constr.	0	0
	Maint.	0	0
TY1	Constr.	37	10

Area D (West Bay)			
		acres	%
TY0	Constr.	0	0
	Maint.	0	0
TY1	Constr.	36	10

	Maint.	13	10
TY3	Constr.	93	25
	Maint.	165	42
TY5	Constr.	375	103
	Maint.	265	40
TY6	Constr.	377	103
	Maint.	398	50
TY25	Constr.	405	111
	Maint.	2916	88
TY50	Constr.	431	118
	Maint.	6226	94

	Maint.	13	10
TY3	Constr.	90	25
	Maint.	164	42
TY5	Constr.	358	98
	Maint.	259	39
TY6	Constr.	356	98
	Maint.	390	50
TY25	Constr.	320	88
	Maint.	2886	88
TY50	Constr.	229	63
	Maint.	6154	93

	Maint.	13	10
TY3	Constr.	92	25
	Maint.	165	42
TY5	Constr.	368	101
	Maint.	263	40
TY6	Constr.	369	101
	Maint.	395	50
TY25	Constr.	371	102
	Maint.	2904	88
TY50	Constr.	364	99
	Maint.	6202	94

	Maint.	13	10
TY3	Constr.	91	25
	Maint.	165	42
TY5	Constr.	362	99
	Maint.	262	40
TY6	Constr.	361	99
	Maint.	394	50
TY25	Constr.	340	93
	Maint.	2894	88
TY50	Constr.	286	78
	Maint.	6174	94

Variable V_2 – Percent of open water covered by aquatic vegetation

Existing Conditions –SAV coverage estimation was determined for West Bay by optical area estimation and transect rake sampling for presence or absence conducted on September 26, 2014 by USFWS, NOAA, Arcadis, and Corps personnel. For PAL and Delta, SAV coverage information was derived from the Pass a Loutre Restoration CWPPRA PPL18 Candidate WVA analysis. The Southwest Pass disposal area SAV coverage was estimated by LDWF and Corps personnel.

Area A & B: SAV coverage was derived from the CWPPRA Pass a Loutre Restoration Candidate Project WVA.

Area C: Jeff Corbino, NOD Corps of Engineers biologist, and Shane Granier, LDWF Biologist and Pass a Loutre WMA Manager, provided the SAV data for the Southwest Pass disposal area.

Area D: SAV coverage was taken from the West Bay LCA BUDMAT project which was collected by field reconnaissance in September of 2014.

FWOP

According to the DELFT 3D hydrologic model run for Area D, SAV coverage is expected to increase as sediment from the West Bay diversion increases water bottom elevation and creates conditions conducive to SAV colonization. Standard Civil Works WVA assumptions applied to the other disposal sites with a 30% reduction in baseline SAV coverage at TY50.

Area A (Delta)	
	% SAV
TY0	25
TY1	25
TY3	25
TY5	25

Area B (PAL)	
	% SAV
TY0	25
TY1	25
TY3	25
TY5	25

Area C (SWP)	
	% SAV
TY0	8
TY1	8
TY3	8
TY5	8

Area D (West Bay)	
	% SAV
TY0	32
TY10	32
TY20	34
TY50	34

TY6	25
TY25	25
TY50	8

TY6	25
TY25	25
TY50	8

TY6	8
TY25	8
TY50	2

FWP & FWPWM

When the marsh land platform is constructed, all existing SAV will be buried. Until the created marsh platform settles to marsh elevation it is assumed that very little open water exists to support SAV growth. Only the disposal area footprint is considered in FWP for all disposal sites.

Area A (Delta)	
	% SAV
TY0	25
TY1	0
TY3	0
TY5	25
TY6	29
TY25	29
TY50	12.5

Area B (PAL)	
	% SAV
TY0	25
TY1	0
TY3	0
TY5	25
TY6	29
TY25	29
TY50	12.5

Area C (SWP)	
	% SAV
TY0	8
TY1	0
TY3	0
TY5	8
TY6	9
TY25	9
TY50	4

Area D (West Bay)	
	% SAV
TY0	32
TY1	0
TY3	0
TY5	32
TY6	37
TY25	37
TY50	16

<u>Variable V_3 – Marsh edge and interspersion</u>

Existing Conditions – Interspersion classes varied between areas and were determined utilizing aerial imagery and ArcMap GIS 10.3.1 software.

FWOP

Marsh growth predicted by the DELFT 3D model at TY20 was used to interpret interspersion. TYs before and after TY20 were interpolated or extrapolated using the hydrologic model results and the existing conditions.

Area A (Delta)		
	Class	%
TY0	3	30
	4	70
TY1	3	30
	4	70
TY3	3	30
	4	70
TY5	3	30
	4	70
TY6	3	30
	4	70

Area B (PAL)		
	Class	%
TY0	3	30
	4	70
TY1	3	30
	4	70
TY3	3	30
	4	70
TY5	3	30
	4	70
TY6	3	30
	4	70

Area C (SWP)		
	Class	%
TY0	3	100
TY1	3	100
TY3	3	100
TY5	3	100
TY6	3	100
TY25	3	50
	4	50
TY50	4	100

Area D (West Bay)		
	Class	%
TY0	4	100
TY10	3	50
	4	50
TY20	2	50
	3	50
TY50	2	50
	3	50

TY25	3	35
	4	65
TY50	3	40
	4	60

TY25	3	35
	4	65
TY50	3	40
	4	60

FWP & FWPWM

Baseline conditions were applied at TY0 for all areas. Standard Civil Works assumptions were applied for TY1–TY50.

Area A (Delta)		
	Class	%
TY0	3	30
	4	70
TY1	5	100
TY3	3	100
TY5	1	50
	3	50
TY6	1	100
TY25	2	100
TY50	3	100

Area B (PAL)		
	Class	%
TY0	3	30
	4	70
TY1	5	100
TY3	3	100
TY5	1	50
	3	50
TY6	1	100
TY25	2	100
TY50	3	100

Area C (SWP)		
	Class	%
TY0	3	100
TY1	5	100
TY3	3	100
TY5	1	50
	3	50
TY6	1	100
TY25	2	100
TY50	3	100

Area D (West Bay)		
	Class	%
TY0	4	100
TY1	5	100
TY3	3	100
TY5	1	50
	3	50
TY6	1	100
TY25	2	100
TY50	3	100

Variable V_4 – Percent of open water area <=1.5 feet deep in relation to marsh surface

Existing Conditions–

Area A & B: Water depths from field reconnaissance were collected by CWPPRA personnel for the Pass a Loutre Restoration Candidate Project. These data were gleaned from the CWPPRA WVA and utilized for both Areas A and B as the analysis incorporated both the Pass a Loutre WMA and the Delta NWR.

Area C: Water depths were taken from bathymetry data, provided by the Corps, collected by the Great Lakes Dredge and Dock Company in 2012.

Area D: Water depths were taken from the West Bay LCA BUDMAT project which was collected by field reconnaissance in September of 2014.

FWOP

Future estimates for Area D-West Bay were based on the results of the DELFT 3D hydrologic model utilized in the West Bay LCA BUDMAT analysis. The model included factors such as RSLR and the effects of sedimentation and land building due to the West Bay Diversion. The assumed range of water bottom level for SAV existence was 0 to 1.85 feet NAVD88. A subset (approximately +0.5 feet to 1.85 feet NAVD88) of that range was used as a guide to estimate shallow water areas using best professional judgment based on the 3D model 20 year results and the existing conditions for the TY10-TY50 values. The TY20 value was carried over for TY50 because the model was only run for a 20 year interval. Assumptions after that time are very difficult and depend on many unknowns, including the functionality of the diversion at that time in the future.

Area A (Delta)	
	Water ≤ 1.5ft (%)
TY0	19
TY1	19
TY3	19
TY5	19
TY6	19
TY25	19
TY50	19

Area B (PAL)	
	Water ≤ 1.5ft (%)
TY0	19
TY1	19
TY3	19
TY5	19
TY6	19
TY25	19
TY50	19

Area C (SWP)	
	Water ≤ 1.5ft (%)
TY0	15
TY1	15
TY3	15
TY5	15
TY6	15
TY25	15
TY50	10

Area D (West Bay)	
	Water ≤ 1.5ft (%)
TY0	10
TY1	15
TY3	25
TY5	25

FWP & FWPWM

Marsh that is lost is not assumed to become shallow open water <= 1.5 feet deep until TY50. According to the Civil Works standard assumptions applied for marsh creation, 1/6 of the SOW would become non-shallow.

Area A (Delta)	
	Water ≤ 1.5ft (%)
TY0	19
TY1	100
TY3	100
TY5	100
TY6	100
TY25	100
TY50	83

Area B (PAL)	
	Water ≤ 1.5ft (%)
TY0	19
TY1	100
TY3	100
TY5	100
TY6	100
TY25	100
TY50	83

Area C (SWP)	
	Water ≤ 1.5ft (%)
TY0	15
TY1	100
TY3	100
TY5	100
TY6	100
TY25	100
TY50	83

Area D (West Bay)	
	Water ≤ 1.5ft (%)
TY0	10
TY1	100
TY3	100
TY5	100
TY6	100
TY25	100
TY50	83

Variable V_5 - Salinity

Existing conditions – Salinity values represent mean growing season salinity (March 1–November 30).

Area A: Salinity was derived from data recorded at the CRMS2634 for the period of February 2008 to June 2016.

Area B: Salinity was derived from data recorded at the CRMS0154, 0157, and 0159 for the period of June 2007 to June 2016. The annual salinities were averaged and used for analysis.

Area C: Salinity was derived from data recorded at the CRMS0159 for the period of June 2007 to June 2016.

Area D: Salinity was derived from data recorded at the CRMS2608 for the period of July 2009 to June 2016.

FWOP, FWP, & FWPWM

Area A (Delta)	
	Salinity (ppt)
TY0-TY50	1.16

Area B (PAL)	
	Salinity (ppt)
TY0-TY50	1.03

Area C (SWP)	
	Salinity (ppt)
TY0-TY50	1.27

Area D (West Bay)	
	Salinity (ppt)
TY0-TY50	0.75

<u>Variable V_6 – Aquatic organism access</u>

Existing conditions – The four proposed marsh creation areas are not currently impounded or hydrologically controlled by any structures. Access to all parts of project area is assumed to be equal and existing conditions are expected to persist.

FWOP

All Areas	
TY0-TY50	1.00

FWP

The marsh creation area is considered to have no access at TY1 due to the elevation of the marsh platform and containment dikes. Based on Standard Civil Works assumptions, at TY5 the marsh creation area receives an access value of 1.0 due to settling of the marsh platform, formation of tidal channels, and gapping of the containment dikes.

All Areas	
TY0	1.00
TY1	0
TY3	0
TY5	1.00
TY6	1.00
TY25	1.00
TY50	1.00

FWPWM

The marsh creation area receives an additional 132 acres of maintenance annually. Based on Standard Civil Works assumptions full access is given at TY5 however, with annual maintenance full credit is never attained.

All Areas		
TY0	1.00	
TY1	0	
TY3	0	
TY5	0.38	(~260 acres of credit/685 acres built)
TY6	0.48	(~390 acres of credit/817 acres built)
TY25	0.87	(~2890 acres of credit/3325 acres built)
TY50	0.94	(~6200 acres of credit/6625 acres built)

Literature Cited

Pahl, James, Barb Kleiss, and Gary Brown 2015. Proposal for Addressing Relative Sea Level Rise in the LCA Mississippi River Hydrodynamic and Delta Management Feasibility Study. Figure 2 developed by Britsch. Pg 5.

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Shinkle, K.D. and R.K. Dokka. 2004. Rate of Vertical Displacement at Benchmarks in the Lower Mississippi Valley and the Northern Gulf Coast. NOAA TECHNICAL REPORT NOS/NGS 50.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
646 Cajundome Blvd.
Suite 400
Lafayette, Louisiana 70506
June 29, 2017

Colonel Michael N. Clancy
District Engineer
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Colonel Clancy:

Please reference the Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project. The U.S. Fish and Wildlife Service (Service) provided recommendations on the above proposed plan to the Corps of Engineers, New Orleans District (Corps) in an October 11, 2016 Draft and November 8, 2016 Supplemental Fish and Wildlife Coordination Act (FWCA) Reports. The Louisiana Department of Wildlife and Fisheries (LDWF) and National Marine Fisheries Service (NMFS) have provided their comments to the Service for inclusion in the FWCA Report. Therefore, this report supplements the October and November 2016 reports by including those comments and is submitted in accordance with provisions of the Fish and Wildlife Coordination Act (FWCA; 48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). This Final report contains a description of the fish and wildlife resources of the project area, identifies fish and wildlife-related impacts of the proposed project, and provides recommendations for the Recommended Plan (RP) to help conserve those resources. This Final report constitutes the report of the Secretary of the Interior as required by Section 2(b) of the Fish and Wildlife Coordination Act (FWCA, 48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

We appreciate the cooperation of your staff on this study. Should your staff have any questions regarding the enclosed report, please have them contact Ms. Catherine Breaux (504/862-2689) of this office.

Sincerely,

Joseph A. R

Joseph Ranson
Supervisor
Louisiana Ecological Service Office

Attachment

cc: FWS, SE LA Refuges, Lacombe, LA

EPA, Dallas, TX
NMFS, Baton Rouge, LA
CPRA, Baton Rouge, LA
LDWF, Baton Rouge, LA
LDWF, Natural Heritage Program, Baton Rouge, LA

MISSISSIPPI RIVER SHIP CHANNEL, GULF TO BATON ROUGE, LOUISIANA

FINAL
FISH AND WILDLIFE COORDINATION ACT REPORT

U.S. FISH AND WILDLIFE SERVICE

ECOLOGICAL SERVICES

LAFAYETTE, LOUISIANA

JUNE 2017

MISSISSIPPI RIVER SHIP CHANNEL, GULF TO BATON ROUGE, LOUISIANA

FINAL
FISH AND WILDLIFE COORDINATION ACT REPORT

SUBMITTED TO

NEW ORLEANS DISTRICT

U.S. ARMY CORPS OF ENGINEERS

NEW ORLEANS, LOUISIANA

PREPARED BY

CATHERINE BREAUX, FISH AND WILDLIFE BIOLOGIST

U.S. FISH AND WILDLIFE SERVICE

ECOLOGICAL SERVICES

LAFAYETTE, LOUISIANA

June 2017

EXECUTIVE SUMMARY

The U.S. Army Corps of Engineers, Mississippi River Valley Division, Regional Planning and Environment Division South, is preparing a Final General Reevaluation Report (FGRR) and Final Environmental Impact Statement (FEIS) for the New Orleans District (CEMVN) for The Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana, Project (MR Deepening Project). The 1981 Feasibility Study entitled "Deep-Draft Access to the Ports of New Orleans and Baton rouge, Louisiana" recommended deepening the Mississippi River's navigation channel to a -55-foot depth from Baton Rouge to the Gulf of Mexico. The 1981 project was authorized for construction by Section 101 of the 1985 Supplemental Appropriations Act (Public Law 99-88). Phase I and Phase II deepened the Mississippi navigation channel to -45 feet from Baton Rouge to the Gulf of Mexico. Construction was completed in December 1994. The FGRR evaluated the depth that creates the greatest net benefits up to a depth of -50 feet in order to implement the deepening of the Mississippi River channel from the current depth of -45 feet.

CEMVN proposes to designate additional disposal areas for the beneficial use-placement of dredged material removed during construction and maintenance of the Southwest Pass portion of the MR Deepening Project to 50 feet.

In concert with the early above mentioned feasibility and construction efforts to deepen the River to -45 feet, The Fish and Wildlife Service (Service) prepared a May 07, 1978 Planning Aid Report (PAR), June 1981 (Final), October 1984 (Supplemental), October 2016 (Draft), and November 2016 (Supplemental) Fish and Wildlife Coordination Act Reports (FWCARs) addressing the impacts on fish and wildlife resources from implementation of the Recommended Plan (RP), and also providing recommendations to mitigate adverse impacts on those resources (herein incorporated by reference).

This final report, which compliments the FGRR and FEIS, incorporates and supplements our May 1978 PAR and June 1981, October 1984, October 2016, and November 2016 FWCARs. This report contains descriptions of the existing fish and wildlife resources of the project area, discusses future with- and without-project habitat conditions, identifies fish and wildlife-related impacts of the proposed project, and provides recommendations for the RP including mitigation requirements for adverse impacts to those resources. This document constitutes the report of the Secretary of the Interior as required by Section 2(b) of the Fish and Wildlife Coordination Act (FWCA, 48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). This report has been provided to the National Marine Fisheries Service (NMFS) and the Louisiana Department of Wildlife and Fisheries (LDWF) and their comments have been incorporated into this Supplemental Draft report.

Overall, there would be positive net benefits to wetland resources in the project area, with the creation of emergent wetland habitat of higher value to fish and wildlife resources than the existing open water. Construction of the Mississippi River Deepening would result in approximately 12,323 Average Annual Habitat Units (AAHUs) and 24,291 acres of fresh-intermediate marsh habitat over the 50 year project life (See Appendix A for WVA Project Information and Assumptions). The Service supports the beneficial use of dredged material obtained from constructing and maintaining the MR Deepening Project, provided the following fish and wildlife conservation recommendations are implemented concurrently with project implementation: In our Oct 2016 draft and November 2016 supplemental FWCA reports CEMVN has concurred with our recommendations 1, 2,4,6,7, and 10. The Service appreciates CEMVNs concurrence and has no further recommendations in regards to those pervious recommendations.

1. The Service recommends that to the extent feasible all dredged material should be used beneficially to restore coastal habitats that are in decline.

2. The Service and NMFS recommend the Corps evaluate options to enhance the sediment loads of proposed diversion projects or existing breaches in the vicinity of Mardi Gras Pass and Fort St. Phillip if dredging south of New Orleans is proposed in the future.

3. The Service and NMFS recommend the Corps expand the beneficial use areas to include areas near Spanish Pass. CEMVN evaluated Spanish Pass and found it not to be within the most appropriate areas available at this time. This determination is based on the following: There isn't enough shoal material above River Mile (RM) 4 above Head of Passes (AHP) to justify the use of cutterhead dredges where currently hopper dredges dispose AHP material in the Hopper Dredge Disposal Area (HDDA). As such the costs of using cutterheads is not warranted in the area AHP in the vicinity of Spanish Pass and Venice, and the cost of adding 6 to 8 miles of pipeline from below Head of Passes would not be cost effective. If it becomes necessary to utilize cutterhead dredges on the western half of the Southwest Pass navigation channel in the vicinity of Venice, CEMVN will investigate the designation of additional shallow open water beneficial use disposal sites located in the vicinity of Venice/Spanish Pass. In addition should there be some cost-share opportunity in the future to cover the incremental cost then CEMVN has stated they would gladly work on that NEPA. The Service is satisfied that the area was evaluated.

4. The Service recommends avoiding and/or minimizing impacts to wetlands, including submerged aquatic vegetation in the study area.

5. The Service clarifies our previous recommendation 5 to state that we recommend CEMVN coordinate with any coastal restoration project's constructing agency to minimize impacts to complete or near completed Federal and State projects.

6. The Service recommends avoiding impacts to endangered or threatened species and their habitats, migratory birds, and colonial wading birds within and upstream of the study area as specified in this Fish and Wildlife Coordination Act Report and to investigate the possibility of using dredged material to restore/create habitat for threatened or endangered species.

7. The Service recommends coordination with the Service and other natural resource agencies in the planning of disposal areas and techniques and assessment of impacts and mitigation.

8. The Service's previous Recommendation 8 stated CEMVN should monitor created wetlands over the project life. CEMVN did not concur saying that beneficial use of dredged material will not be monitored under this project but may be monitored under the Beneficial Use Monitoring Plan contingent upon funding. The Service would like to reiterate and specifically recommend that the cost for minimal monitoring be included within the construction budget request. Such monitoring could ensure better beneficial use of disposed dredged material. Previous beneficial use in the Mississippi Delta has resulted in some areas failing to provide vegetated wetlands for a significant time or at all, thus possibly invalidating the Services and CEMVN agreement on the amount of beneficial acreage to be constructed by the proposed project. The Service is willing to work with USACE to develop cost-effective and efficient methods to monitor wetland creation sites for an appropriate length of time.

9. Previous Service Recommendation 9. The Service, NMFS and LDWF shall be provided an opportunity to review and submit recommendations on future detailed planning reports (e.g., Design Document Report, Engineering Document Report, etc.) and the draft plans and specifications on the Mississippi River Deepening Project addressed in this report as authorized in FWCA Sections 2a, 2e, and 2f (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*) which states that any water resource development project with a federal nexus will coordinate with the Service (including NMFS and the state equivalent, in this case LDWF) during all levels of planning, engineering and construction.

10. The Service recommends Special Use Permits be requested of the Delta National Wildlife Refuge (NWR) for any expected or proposed work on the Delta NWR. Close coordination by both the Corps and its contractor must be maintained with the Refuge Manager to ensure that construction and maintenance activities are carried out in accordance with provisions of any Special Use Permit issued by NWR. The Refuge Manager for the Delta NWR is Ms. Shelly Stiaes, (Shelly_Stiaes@fws.gov or 337-882-2000).

11. Louisiana Department of Wildlife and Fisheries' (LDWF) and the Service recommend contacting the LDWF office, Mr. Shane Granier (504-284-5264), for further information regarding any additional permits or coordination that may be required to perform work on the Pass a Loutre Wildlife Management Area (WMA).

12. If the RP has not been constructed within 1 year or if changes are made to the RP, the Corps should informally consult with the Service to ensure that no changes in listed species has occurred as the species information is updated regularly (both for newly listed species and for delisted species) as new information becomes available.

Provided that the above recommendations are included in the feasibility report and related authorizing documents, the Service will support further planning and implementation of the RP.

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INTRODUCTION

The U.S. Army Corps of Engineers, Mississippi River Valley Division, Regional Planning and Environment Division South, is preparing a Final General Reevaluation Report (FGRR) and Final Environmental Impact Statement (FEIS) for the New Orleans District (CEMVN) for The Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana, Project (MR Deepening Project). The 1981 Feasibility Study entitled "Deep-Draft Access to the Ports of New Orleans and Baton rouge, Louisiana" recommended deepening the Mississippi River's navigation channel to a -55-foot depth from Baton Rouge to the Gulf of Mexico. The 1981 project was authorized for construction by Section 101 of the 1985 Supplemental Appropriations Act (Public Law 99-88). Phase I and Phase II deepened the Mississippi navigation channel to -45 feet from Baton Rouge to the Gulf of Mexico. Construction was completed in December 1994. The current MR Deepening Project evaluated the depth that creates the greatest net benefits up to a depth of -50 feet in order to implement the deepening of the Mississippi River channel from the current depth of -45 feet.

CEMVN proposes to designate additional disposal areas for the beneficial use-placement of dredged material removed during construction and maintenance of the Southwest Pass portion of the MR Deepening Project to -50 feet.

In concert with the early above mentioned feasibility and construction efforts to deepen the River to -45 feet, The Fish and Wildlife Service (Service) prepared a May 07, 1978 Planning Aid Report (PAR), June 1981 (Final), October 1984 (Supplemental), October 2016 (Draft), and November 2016 (Supplemental) Fish and Wildlife Coordination Act Reports (FWCARs) addressing the impacts on fish and wildlife resources from implementation of the Selected Plan, and also providing recommendations to mitigate adverse impacts on those resources (herein incorporated by reference).

This final report, which compliments the FGRR and FEIS, incorporates and supplements our May 1978 PAR and June 1981, October 1984, October 2016, and November 2016 FWCARs. This report contains descriptions of the existing fish and wildlife resources of the project area, discusses future with- and without-project habitat conditions, identifies fish and wildlife-related impacts of the proposed project, and provides recommendations for the RP including mitigation requirements for adverse impacts to those resources. This document constitutes the report of the Secretary of the Interior as required by Section 2(b) of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). This report has been provided to the National Marine Fisheries Service (NMFS) and the Louisiana Department of Wildlife and Fisheries (LDWF) and their comments have been incorporated into this Supplemental Draft report.

DESCRIPTION OF STUDY AREA

The study area is located in southeastern Louisiana and consists of the Mississippi River from the Port of Baton Rouge and its major outlet to the Gulf of Mexico, Southwest Pass. The area includes the -45 foot channel of the Mississippi River. The Mississippi River, Gulf of Mexico to Baton Rouge Louisiana project authorized the construction of the channel to a depth of -55 feet. The project has been constructed and maintained to dimensions of -45 feet by 750 feet from New Orleans to Mile 18 below head of passes (BHP) and -45 feet by 600 feet from Mile 18 BHP to Gulf of Mexico allowing for transfer of over 400,000,000 tons of cargo each year. See Figure 1.

Figure 1. The Project Area for the Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project.

Surrounding Southwest Pass on either side of the channel is the location of additional disposal areas for the placement and beneficial use of dredged material removed during construction and maintenance of deepening the Mississippi River and Southwest Pass to -50 feet. The proposed disposal areas are located in Plaquemines Parish in southeastern Louisiana in the active delta of the Mississippi River (See Figure 2). The dredged material would be placed within the boundaries designated in Figure 2 and adjacent to the Southwest Pass navigation channels, with-in the Pass a Loutre Wildlife Management Area (Pass a Loutre WMA), and within the Delta National Wildlife Refuge (Delta NWR) located north of Pass a Loutre. It is anticipated the disposal areas will naturally vegetate through colonization of species from adjacent vegetated areas, consistent with experience at other beneficial use-disposal areas in the Mississippi River Delta.

Figure 2. The potential disposal area for dredged material resulting from the Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project.

Mississippi River Deepening Project
Disposal Areas

FISH AND WILDLIFE RESOURCES

The primary area of project impacts on fish and wildlife resources is the sparsely populated active delta of the Mississippi River, located generally south of Venice, Louisiana. The Mississippi River splits into three main channels within the delta region: Pass a Loutre, South Pass, and Southwest Pass. The active delta of the Mississippi includes the lower Mississippi River and its distributaries; subsiding natural levees along these water courses; dredged spoil disposal areas; large expanses of fresh and intermediate marsh and associated shallow ponds and lakes; and large open water bodies. Land elevations range from sea level along the Gulf coast, to approximately +10 feet above sea level along the natural levee ridges.

The marshes and natural levees of the project area were formed by river borne sediments deposited in shallow open water. Engineering works in the delta, coupled with upstream diversions, reservoirs, and bank stabilization work, have resulted in a greatly reduced quantity of sediments reaching the marshes and shallow open waters of the delta. Consequently, sediment deposition has not kept pace with subsidence and erosion and a surprisingly rapid rate of marsh loss is occurring in the area. However numerous crevasses constructed by the Service and LDWF and several crevasses as well as the West Bay diversion were constructed under Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) along with the Louisiana Coastal Area (LCA) Beneficial Use of Dredged Material Program (BUDMAT) are helping to combat marsh loss in parts of the delta.

The proposed disposal areas encompass a total of approximately 163,492 acres (ac) (Table 1) of mainly open water with some eroded freshwater and intermediate marsh. The 2016 USGS data shows that the total acreage of marsh in the project area has lost between 100ac to 200ac a year from 1984 to 2016, however there have been land gains in Areas A due to ongoing beneficial use of dredged material and Service, LDWF, and CWPPRA crevasse projects.

Table 1. 2016 Acres of land and water (acres and %) by area for the Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project. Refer to Figure 2 for Area A-D. 1984 through 2016 data provided by USGS.

	Land Acres (acres)	Water (acres)	Total (acres)	% Land	% Water
Area A	10,987	16,656	27,643	39.7%	60.3%
Area B	16,986	55,631	72,617	23.4%	76.6%
Area C	11,337	25,831	37,168	30.5%	69.5%
Area D	2,670	23,394	26,064	10.2%	89.8%
TOTAL	41,980	121,512	163,492	25.7%	74.3%

Description of Habitats

The major habitat types within the project area include natural levee forest, fresh and intermediate marsh, scrub/shrub, river, and estuarine water bodies.

Natural Levee Forest - These forested wetlands are located on subsiding natural levees along Tiger, Grand, and Raphael Passes and along the west bank of the Mississippi River between Venice and Head of Passes. Typical vegetation includes black willow (*Salix nigra*), green ash (*Fraxinus pennsylvanica*), persimmon (*Diospyros* spp.), red maple (*Acer rubrum*), and scattered bald cypress (T*axodium distichum*).

Fresh and Intermediate Marsh - Marsh in the project area is dominated by fresh marsh and receives continuous riverine input, with areas of intermediate marsh near the gulfward open water areas of West Bay, East Bay, and portions of the Delta NWR. The marshes in the project area are strongly influenced by freshwater discharges from the Mississippi River and associated distributary outlets. Salinity in areas of the project areas have an average annual growing season salinity of 0.75-1.27 parts per thousand (ppt) based on CRMS stations CRMS2634, CRMS0154, CRMS0159, and CRMS2608 for time periods from 2007 to 2016 (Louisiana Office of Coastal Protection and Restoration, 2013). Emergent plant species include: smooth cordgrass (*Spartina alterniflora*), Walter's millet (*Echinochloa walteri*), *Schoenoplectus pungens*, and *Nelumbo lutea*. Submerged aquatic vegetation, such *as Myriophyllum spicatum*, *Heteranthera dubia*, *Ceratophyllum demersum*, *Najas guadalupensis*, and *Potamogeton nodosus* are also common in the lower elevation intertidal and shallow subtidal portions of the project area. The two major soil types in the project area are commonly found together and are classified as Balize and Larose soils (BA). Both soil types are level and very poorly drained. They are flooded by Mississippi River water most of the time and support freshwater marshes.

Scrub/Shrub - This habitat type is synonymous with dredged spoil disposal areas in the project area. This dredged material consists of silt, clay, and sand taken from the Mississippi River and its distributary channels. These areas are typically, but not exclusively, limited to elevations above 2.0 feet North American Vertical Datum 1988 (NAVD88). Though spoil areas are initially barren, they are eventually colonized with a scrub/shrub complex of vegetation including rattlebox (*Crotalaria* spp.), goldenrod (*Solidago* spp), Bermuda grass (*Cynodon dactylon*), black willow, and eastern baccharis (*Baccharis halimifolia*).

River - This freshwater habitat type includes that portion of the Mississippi River and Southwest Pass which lies between the foreshore dikes and the existing bank.

Estuarine Water Bodies - This habitat type includes marsh ponds and lakes, estuarine bays and lakes, and aquatic beds characterized by stands of Eurasian watermilfoil (*Myriophyllum spicatum*), coontail (*Ceratophyllum demersum*), and fanwort (*Cabomba caroliniana*); and estuarine aquatic beds characterized by stands of widgeongrass (*Ruppia maritime*) and Eurasian watermilfoil (*Myriophyllum spicatum*). Water levels fluctuate from six to twelve inches or more in the vegetated areas and five to six feet in open water areas.

Fisheries Resources

Freshwater species occur in the Mississippi River and its distributaries, in petroleum industry access canals, and in the ponds and lakes within the fresh and intermediate marshes. Primary freshwater sportfishes include largemouth bass (*Micropterus salmoides*), yellow bass (*Morone mississippiensis*), black and white crappie (*Pomoxis* ssp.), bluegill (*Lepomis macrochirus*), freshwater drum (*Aplodinotus grunniens*), warmouth (*Lepomis gulosus*), channel catfish (*Ictalurus punctatus*), and blue catfish (*Ictalurus furcatus*). The commercial freshwater fishery is also important in the project area. Primary species harvested are alligator gar (*Atractosteus spatula*), blue catfish, and channel catfish.

The diverse sport and commercial estuarine and marine fisheries of the study area are of great importance. The nutrient-rich water in the Mississippi River in conjunction with the tidal marshes, aquatic vegetation beds, and shallow estuarine waters provide productive habitat to a variety of crustaceans and finfishes.

The importance of coastal marshes to estuarine-dependent fisheries production cannot be over-emphasized. Estuaries are among the most productive habitats in the world because they support high primary and fisheries production (Whittaker and Likens 1973; Walme 1972). These marshes produce vast amounts of organic detritus which are transported into adjacent estuarine waters. This detritus is extremely important in the maintenance of fish and shellfish productivity (Odum et al. 1973). Most of the economically important saltwater fishes and crustaceans harvested in Louisiana spawn offshore and then use estuarine areas for nursery habitat (Herke 1995). Marshes and associated shallow waters are also extremely important as nursery habitat for many estuarine-dependent species such as for Atlantic croaker (*Micropogonias undulatus*), spot (*Leiostomus xanthurus*) (Rogers 1979), gulf menhaden (*Brevoortia patronus*) (Simoneaux 1979), for immature white (*Litopeneaus setiferus*) and brown shrimp (*Farfantepenaeus aztecus*) (brown and white), as habitat for blue crabs (*Callinectes sapidus*) (More 1969), and as prime habitat for shrimp, gulf menhaden, Atlantic croaker, sand seatrout (*Cynoscion nebulosus*) and southern flounder (*Paralichthys lethostigma*) (Conner and Truesdale 1973).

There is growing evidence that the acreage of marsh is the most important factor influencing the production of estuarine-dependent fishes of sport and commercial importance. Turner (1979) reported that the Louisiana commercial inshore shrimp catch is directly proportional to the area of intertidal wetlands and that the area of estuarine water does not seem to be directly linked to shrimp yields.

Essential Fish Habitat

The project is located within an area identified as Essential Fish Habitat (EFH) by the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA, Magnuson-Stevens Act; P.L. 104-297). The updated and revised 2006 generic amendment of the Fishery Management Plans for the Gulf of Mexico, prepared by the Gulf of Mexico Fishery Management Council, identifies EFH in the project area to be estuarine emergent wetlands, submerged aquatic vegetation, mud, sand, shell, and rock substrates, and estuarine water column. Under the MSFCMA, wetlands and associated estuarine waters in the project area are identified as EFH for various Federally managed species including larvae/postlarvae and juvenile brown and white shrimp; eggs, larvae/postlarvae, and juvenile Gulf stone crab (*Menippe adina*); larvae/postlarvae, juvenile, and adult red drum; larvae and juvenile lane snapper (*Lutjanus synagris*); and juvenile dog snapper (*Lutjanus novemfasciatus*).

In addition to being designated as EFH for these species, water bodies and wetlands in the project area provide nursery and foraging habitats supportive of a variety of economically important marine fishery species, such as striped mullet (*Mugil cephalus*), Atlantic croaker, gulf menhaden, spotted seatrout (*Cynoscion nebulosus*), sand seatrout, southern flounder, black drum (*Pogonias cromis*), and blue crab. Some of these species also serve as prey for other fish species managed under the Magnuson-Stevens Act by the GMFMC (e.g., mackerels, snappers, and groupers) and highly migratory species managed by NMFS (e.g., billfishes and sharks) (http://www.gulfcouncil.org).

Wildlife Resources

The marshes and estuarine bays provide excellent nesting, foraging, breeding and nursery habitats, as well as, wintering and stopover habitat for wildlife species. The Mississippi River Delta provides important nesting and brooding habitat for mottled ducks, wading birds, and shore birds. Migratory and resident waterfowl are also abundant in the area. The National Audubon Society designated the Mississippi River Delta an Important Bird Area. The active delta provides habitat for wintering waterfowl, wading birds, marsh birds, and shore birds. The higher elevations of shrub-dominated spoil banks and willow-dominated uplands provide important stopover habitat for numerous Neotropical migratory songbird species which breed in North America and spend the winter in Mexico, the Caribbean, and Central or South America. Neotropical migrants expected in the project area include warblers, vireos, wrens, flycatchers, and many other species. Resident species include the blue jay (*Cyanocitta cristata*), cardinal (*Cardinalis cardinalis*), and mourning dove (*Zenaida macroura*). Woodpeckers, such as red-headed woodpecker (*Melanerpes erythrocephalus*), red-bellied woodpecker (*Melanerpes carolinus*), and yellow-bellied sapsucker (*Sphyrapicus varius*), are also typical in the project area forested habitat. Seabirds using the adjacent openwater areas may include laughing gull (*Leucophaeus atricilla*) and several species of terns.

Small game mammals that may be present in the project area include fox squirrel (*Sciurus niger*), eastern cottontail (*Sylvilagus floridanus*), and raccoon (*Procyon lotor*); and common furbearers include the raccoon, mink, nutria, and muskrat. Nongame mammals that occur in the study area include Virginia opossum (*Didelphis virginiana*), nine-banded armadillo (*Dasypus novemcinctus*), and several species of bats, rodents and insectivores. Reptiles include the common snapping turtle (*Chelydra serpentina*), red-eared turtle (*Trachemys scripta elegans*), various water snakes, five-lined skink (*Plestiodon inexpectatus*), and green anole (*Anolis carolinensis*). Representative amphibians include the green treefrog (*Hyla cinerea*), southern leopard frog (*Rana sphenocephala*), and northern spring peeper (*Pseudacris crucifer*).

Threatened and Endangered Species

Below is a list of federally-listed threatened and endangered species that could potentially be affected by the Corps' proposed channel deepening. In addition, a brief description of basic information regarding those species is provided along with means to reduce the likelihood of any potential impact to those species. Should the proposed action directly or indirectly affect any of the listed species further consultation with this office will be necessary.

Piping Plover and its Designated Critical Habitat (LA-6)

The piping plover was federally listed as a threatened species in December 1985, and its critical habitat was designated in July 2001. Individuals, as well as their designated critical habitat, occur along the Louisiana coast. Critical Habitat unit LA-6 consists of approximately 259 acres and occurs within the proposed beneficial use placement areas (Figure 4). Piping plovers winter in Louisiana, and may be present for 8 to 10 months annually. They normally arrive from their breeding grounds as early as late July and remain until late March or April. Piping plovers feed extensively on invertebrates in intertidal beaches, mudflats, sand flats, algal flats, and wash-over passes with no or very sparse emergent vegetation; they also require un-vegetated or sparsely vegetated areas for roosting. Roosting areas may have debris, detritus, or micro-topographic relief offering refuge to plovers from high winds and cold weather. In most areas, wintering piping plovers are dependent on a mosaic of sites distributed throughout the landscape, because the suitability of a particular site for foraging or roosting is dependent on local weather and tidal conditions. Plovers move among sites as environmental conditions change, and studies have indicated that they generally remain within a 2-mile area. Major threats to this species include the loss and degradation of habitat due to development, disturbance by humans and pets, and predation. Hunting in the early 1900s resulted in a drastic reduction of piping plover populations. A further detrimental impact to the population is attributed to the reduction of wintering habitat along the Gulf Coast, largely due to recreational and commercial development and dune stabilization. Recreational activities in areas along the Gulf Coast have been shown to decrease piping plover presence in those areas.

West Indian Manatee

The endangered West Indian manatee (*Trichechus manatus*) is known to regularly occur in Lakes Pontchartrain and Maurepas and their associated coastal waters and streams. It also can be found less regularly in other Louisiana coastal areas, most likely while the average water temperature is warm. Based on data maintained by the Louisiana Natural Heritage Program (LNHP), over 80 percent of reported manatee sightings (1999-2011) in Louisiana have occurred from the months of June through December. Manatee occurrences in Louisiana appear to be increasing and they have been infrequently observed in the Mississippi River. Cold weather and outbreaks of red tide may adversely affect these animals. However, human activity is the primary cause for declines in species number due to collisions with boats and barges, entrapment in flood control structures, poaching, habitat loss, and pollution.

During in-water work in areas that potentially support manatees all personnel associated with the project should be instructed about the potential presence of manatees, manatee speed zones, and the need to avoid collisions with and injury to manatees. All personnel should be advised that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973. Additionally, personnel should be instructed not to attempt to feed or otherwise interact with the animal, although passively taking pictures or video would be acceptable.

- All on-site personnel are responsible for observing water-related activities for the presence of manatee(s). We recommend the following to minimize potential impacts to manatees in areas of their potential presence:

- All work, equipment, and vessel operation should cease if a manatee is spotted within a 50-foot radius (buffer zone) of the active work area. Once the manatee has left the buffer zone on its own accord (manatees must not be herded or harassed into leaving), or after 30 minutes have passed without additional sightings of manatee(s) in the buffer zone, in-water work can resume under careful observation for manatee(s).

- If a manatee(s) is sighted in or near the project area, all vessels associated with the project should operate at "no wake/idle" speeds within the construction area and at all times while in waters where the draft of the vessel provides less than a four-foot clearance from the bottom. Vessels should follow routes of deep water whenever possible.

- If used, siltation or turbidity barriers should be properly secured, made of material in which manatees cannot become entangled, and be monitored to avoid manatee entrapment or impeding their movement.

- Temporary signs concerning manatees should be posted prior to and during all in-water project activities and removed upon completion. Each vessel involved in construction activities should display at the vessel control station or in a prominent location, visible to all employees operating the vessel, a temporary sign at least 8½ " X 11" reading language similar to the following: "CAUTION BOATERS: MANATEE AREA/ IDLE SPEED IS REQUIRED IN CONSRUCTION AREA AND WHERE THERE IS LESS THAN FOUR FOOT BOTTOM CLEARANCE WHEN MANATEE IS PRESENT". A second temporary sign measuring 8½ " X 11" should be posted at a location prominently visible to all personnel engaged in water-related activities and should read language similar to the following: "CAUTION: MANATEE AREA/ EQUIPMENT MUST BE SHUTDOWN IMMEDIATELY IF A MANATEE COMES WITHIN 50 FEET OF OPERATION".

- Collisions with, injury to, or sightings of manatees should be immediately reported to the Service's Louisiana Ecological Services Office (337/291-3100) and the Louisiana Department of Wildlife and Fisheries, Natural Heritage Program (225/765-2821). Please provide the nature of the call (i.e., report of an incident, manatee sighting, etc.); time of incident/sighting; and the approximate location, including the latitude and longitude coordinates, if possible.

Pallid Sturgeon

The pallid sturgeon (*Scaphirhynchus albus*) is an endangered, bottom-oriented, fish that inhabits large river systems from Montana to Louisiana. Within this range, pallid sturgeon tend to select main channel habitats in the Mississippi River and main channel areas with islands or sand bars in the upper Missouri River. In Louisiana it occurs in the Mississippi River. The pallid sturgeon is adapted to large, free-flowing, turbid rivers with a diverse assemblage of physical characteristics that are in a constant state of change. Many life history details and subsequent habitat requirements of this fish are not known. However, the pallid sturgeon is believed to utilize Louisiana riverine habitat during reproductive stages of its life cycle. Habitat loss through river channelization and dams has adversely affected this species throughout its range.

Entrainment issues associated with dredging operations in the Mississippi River is a potential effect that should be addressed in analyzing current proposed project effects. We recommend the following to minimize potential impacts to pallid sturgeon associated with dredging to ensure protection of the pallid sturgeon: (1) the cutterhead should remain completely buried in the bottom material during dredging operations. If pumping water through the cutterhead is necessary to dislodge material or to clean the pumps or cutterhead, etc., the pumping rate should be reduced to the lowest rate possible until the cutterhead is at mid-depth, where the pumping rate can then be increased; (2) during dredging, the pumping rates should be reduced to the slowest speed feasible while the cutterhead is descending to the channel bottom.

Red Knot

The red knot (*Calidris canutus rufa*), federally listed as a threatened species, is a medium-sized shorebird about 9 to 11 inches (23 to 28 centimeters) in length with a proportionately small head, small eyes, short neck, and short legs. The black bill tapers steadily from a relatively thick base to a relatively fine tip; bill length is not much longer than head length. Legs are typically dark gray to black, but sometimes greenish in juveniles or older birds in non-breeding plumage. Non-breeding plumage is dusky gray above and whitish below. The red knot breeds in the central Canadian arctic but is found in Louisiana during spring and fall migrations and the winter months (generally September through March).

During migration and on their wintering grounds, red knots forage along sandy beaches, tidal mudflats, salt marshes, and peat banks. Observations along the Texas coast indicate that red knots forage on beaches, oyster reefs, and exposed bay bottoms, and they roost on high sand flats, reefs, and other sites protected from high tides. In wintering and migration habitats, red knots commonly forage on bivalves, gastropods, and crustaceans. Coquina clams (*Donax variabilis*), a frequent and often important food resource for red knots, are common along many gulf beaches. Major threats to this species along the Gulf of Mexico include the loss and degradation of habitat due to erosion, shoreline stabilization, and development; disturbance by humans and pets; and predation.

Because red knots are known to utilize the Mississippi River Delta we recommend that the Corps investigate the feasibility of creating foraging and roosting areas for red knots in association with dredged material disposal operations. Such habitat restoration/creation could be incorporated into an ESA Section 7(a)(1) Conservation Program that could aid the Service in recovery efforts for that species.

The Corps Mississippi Valley Division (MVD) finalized a July 23, 2013, Conservation Plan for the Interior Least Tern, Pallid Sturgeon, and Fat Pocketbook Mussel in the Lower Mississippi River (Endangered Species Act, Section 7(a)(1)) that addressed conservation of those species via features of the Channel Improvement Program (CIP). The Service's assessment and recommendations for the CIP in the Lower Mississippi River (LMR) was provided to the Corps in our December 12, 2013 Biological Opinion (USFWS 2013). In that opinion we recommended that dredging activities avoid and/or minimize impacts on gravel bars, tributary mouths, backwater habitats, and affected species life cycle timing; those habitat features are not found in the project area.

<u>Migratory Birds</u>

Please be advised that the project area is located in habitats which are commonly inhabited by colonial nesting waterbirds and/or seabirds may be present; these species are protected by the Migratory Bird Treaty Act of 1918 (as amended).

Colonies may be present that are not currently listed in the database maintained by the Louisiana Department of Wildlife and Fisheries. That database is updated primarily by (1) monitoring previously known colony sites and (2) augmenting point-to-point surveys with flyovers of adjacent suitable habitat. Although several comprehensive coast-wide surveys have been recently conducted to determine the location of newly-established nesting colonies, we recommend that a qualified biologist inspect the proposed work site for the presence of undocumented nesting colonies during the nesting season because some waterbird colonies may change locations year-to-year. To minimize disturbance to colonial nesting birds, the following restrictions on activity should be observed:

1. For colonies containing nesting brown pelicans, all activity occurring within 2,000 feet of a rookery should be restricted to the non-nesting period (i.e., September 15 through March 31). Nesting periods vary considerably among Louisiana's brown pelican colonies, however, so it is possible that this activity window could be altered based upon the dynamics of the individual colony. Brown pelicans are known to nest on barrier islands and other coastal islands in St. Bernard, Plaquemines, and Jefferson, parishes.
2. For colonies containing nesting wading birds (i.e., herons, egrets, night-herons, ibis, and roseate spoonbills), anhingas, and/or cormorants, all activity occurring within 1,000 feet of a rookery should be restricted to the non-nesting period (i.e., September 1 through February 15, exact dates may vary within this window depending on species present).
3. For colonies containing nesting gulls, terns, and/or black skimmers, all activity occurring within 650 feet of a rookery should be restricted to the non-nesting period (i.e., September 16 through April 1, exact dates may vary within this window depending on species present).

In addition, we recommend that on-site contract personnel be trained to identify colonial nesting birds and their nests, and avoid affecting them during the breeding season (i.e., the time period outside the activity window).

Areas of Special concern

Public Lands - NWR and WMA

The Service's 49,000 acre Delta National Wildlife Refuge (NWR) is within the study area and currently material dredged from routine maintenance of the Mississippi River is disposed beneficially on that NWR. All construction or maintenance activities (e.g., surveys, land clearing, etc.) on a NWR will require the Corps to obtain a Special Use Permit from the Refuge Manager. Therefore, we recommend that the Corps request issuance of a Special Use Permit well in advance of conducting any work on the refuge. Please contact the Refuge Manager for further information on and for assistance in obtaining a Special Use Permit. Close coordination by both the Corps and its contractor must be maintained with the Refuge Manager to ensure that construction and maintenance activities are carried out in accordance with provisions of any Special Use Permit. The Refuge Manager for the Delta NWR is Ms. Shelly Stiaes, (Shelly_Stiaes@fws.gov or 337.882.2000).

Louisiana Department of Wildlife and Fisheries' (LDWF) Pass a Loutre Wildlife Management Area (WMA) encompasses approximately 115,000 acres and is located within the Mississippi River Delta. Please contact Shane Granier at the LDWF Office (504-284-5264) for further information regarding any additional permits or coordination that may be required to perform work on that WMA.

Both of these public lands could be impacted by any reduced flows of sediment laden water currently being delivered by adjacent distributaries. During planning the Service was concerned that a reduction of the water surface elevation via deepening of the channel could potentially result in decreased water flows down distributaries and an increase in erosion of these areas. However, modeling done by the Corps has shown that there will not be reduced flows or sediment from the river, thus not impacting the Delta NWR and Pass a Loutre WMA.

Coastal Restoration Efforts

The State of Louisiana and the Corps conducted modeling of the Mississippi River for the Louisiana Coastal Area, Mississippi River Hydrodynamic Study, Main Channel of the Mississippi River. That study is attempting to identify the best potential coastal restoration measures that can be developed using the Mississippi River. Restoration alternatives focus on sediment diversions from the Mississippi River. In addition the Coastal Wetlands Planning, Protection and Restoration program, (CWPPRA) has funded restoration projects that involve dredging sediments from shoals in the river to restore eroded coastal marshes. Other restoration activities in the project area include Coastal Wetlands Planning, Protection and Restoration Act projects such as crevasses and the West Bay diversion. According to modeling done by the Corps lowering of the river bed due to dredging will not have an effect on river stages or the quantity and duration of flows. However coordination of these projects should continue to insure there are no other potential impacts to those coastal restoration efforts.

EVALUATION METHODOLOGY

The WVA operates under the assumption that optimal conditions for general fish and wildlife habitat within a given coastal wetland type can be characterized, and that existing or predicted conditions can be compared to that optimum to provide an index of habitat quality. Habitat quality is estimated or expressed through the use of a mathematical model developed specifically for each wetland type. Each model consists of 1) a list of variables that are considered important in characterizing fish and wildlife habitat, 2) a Suitability Index graph for each variable, which defines the assumed relationship between habitat quality (Suitability Index) and different variable values, and 3) a mathematical formula that combines Suitability Index for each variable into a single value for wetland habitat quality; that single value is referred to as the Habitat Suitability Index, or HSI.

The WVA model for marsh habitat attempts to assess the suitability of each habitat type for providing resting, foraging, breeding, and nursery habitat to a diverse assemblage of fish and wildlife species. While the model does not specifically assess other wetland functions and values such as storm-surge protection, floodwater storage, water quality improvement, nutrient import/export, and aesthetics, it can be generally assumed that these functions and values are positively correlated with fish and wildlife habitat quality.

The procedure for evaluating project benefits on fish and wildlife habitats, the WVA model, uses a series of variables that are intended to capture the most important conditions and functional values of a particular habitat. Values for these variables are derived for existing conditions and are estimated for conditions projected into the future if no project efforts are applied (i.e., future-without-project), and for conditions projected into the future if the proposed project is implemented (i.e., future-with-project), providing an index of quality or habitat suitability of the habitat for the given time period. The HSI is combined with the acres of habitat to get a number that is referred to as "habitat units".

Expected project benefits are estimated as the difference in habitat units between the future-with- project (FWP) and future-without project (FWOP). To allow comparison of WVA benefits to costs for overall project evaluation, total benefits are averaged over a 50-year period, with the result reported as Average Annual Habitat Units (AAHUs).

The change (increase or decrease) in AAHUs for FWP scenario, compared to FWOP conditions, provides a measure of anticipated impacts. A net gain in AAHUs indicates that the project is beneficial to the habitat being evaluated; a net loss of AAHUs indicates that the project is damaging to that habitat type.

DESCRIPTION OF RECOMMENDED PLAN

The alternatives evaluated for this project include Alternatives 1, 2, and 3. Alternative 1 is the no action/base condition. It consist of a -45 foot (ft) deep Mississippi River channel at river crossings (there are 12 crossings in total within the project area) and the channel lowering to 48 ft in Lower Mississippi River. Alternative 2 would maintain a -48 ft depth at both the crossings and the lower river. The Recommended Plan (RP) consists of Alternative 3, constructing and maintaining the river channel and its crossings at -50ft. This includes deepening 12 river crossings from -45 feet to -50 feet at the Low Water Reference Plane (LWRP). This would also entail deepening and maintaining various shoals from -48 feet to -50 feet at Mean Lower Low Water (MLLW), from RM 13.4 Above Head of Passes (AHP) to RM 22 Below Head of Passes (BHP) via Southwest Pass, and using a portion of that material beneficially to create coastal wetland habitat. Deepening would only occur within previously disturbed reaches that are actively maintained by CEMVN for navigation purposes.

Existing maintenance on the Mississippi River channel includes the beneficial use of dredged material in disposal areas adjacent to the lower river; there is no feasible beneficial use sites for material dredged at the crossings. Alternative 3 includes an approximately 16% expansion of the existing disposal area. This expansion was in anticipation of the need for additional capacity associated with construction, and at the time of alternative development, an assumed/expected increase in annual operation and maintenance (O&M) (Figure 2).

Total Expansion of Disposal Areas in lower river = 24,053 acres
Previously Cleared Disposal Areas in lower river= 142,858 acres

PROJECT IMPACTS

During construction, the beneficial use of dredged material into open water habitat will initially result in approximately 1,462 acres of fresh marsh (with a final target elevation of 2 feet or less). These will be evenly distributed among the four areas seen in Figure 2. Therefore, the WVA evaluated an initial construction of 365 acres of marsh creation in Areas A, B, C, and D (Figure 2).

The annual beneficial use of dredged material in open water during river maintenance will result in approximately 528 acres of marsh distributed evenly across all four areas. The WVA evaluated an annual 132 acres in each Area for 50 years.

Using the WVA methodology, impact assessments were conducted by the Service based on data from the CWPPRA Pass a Loutre Restoration Candidate Project, the LCA West Bay project, DELFT 3D hydrologic model runs, the BUDMAT project, and knowledge of the area and experience with similar projects. The WVA results are listed in Table 2. Appendix A contains the WVA Project Information Sheet.

Approximately 12,323 Average Annual Habitat Units (AAHUs) and 24,291 acres of fresh marsh habitat are anticipated to be remaining via construction and maintenance through beneficial use over the 50 year project life (Table 2).

Table 2. Wetland Value Assessment Results for the Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project.

	Construction AAHUs (year 50 fwp-fwop)	Maintenance AAHUs (year 50 fwp-fwop)	Construction Net Marsh Acres (year 50 fwp-fwop)	Maintenance Net Marsh Acres (year 50 fwp-fwop)
Area A	190.1	1549.7	431.0	5852.4
Area B	99.3	1525.8	144.3	5723.2
Area C	180.4	1532.4	360.4	5829.9
Area D	106.8	1553.4	146.4	5803.6
TOTAL	6161.3	6161.3	1082.1	23209.1

With implementation of the RP there would be some minimal and insignificant impacts to wetland resources. A small, undetermined amount of wetland habitat would be temporarily impacted during the excavation of channels to provide equipment access to the proposed disposal areas. The resulting loss of wetland function would be temporary, as these areas would be backfilled to pre-project marsh elevations and eventually revegetated (naturally) and restored upon completion of the project. Direct placement of dredged material on existing marsh would be avoided. With implementation of the RP, there would be mainly positive impacts to wetlands in the project area. During construction, the beneficial use of dredged material into open water habitat will result in approximately 1,462 acres of intermediate marsh (with a final target elevation of 2 feet or less). The beneficial use of dredged material into open water during river maintenance will result in approximately 528 acres of marsh annually.

Wildlife Resources

Wildlife species, if present, would be only temporarily displaced from the project area during placement of dredged material. The placement of dredge material for beneficial use would reduce some shallow open water habitat by converting it to marsh, thereby reducing available foraging habitat for some avian species. However, the reduction in the amount of shallow open water is negligible compared to that remaining in the project area. Some positive indirect impacts to wildlife in the project area are anticipated with the RP. At the end of 50 years there would be 24,291 more acres of productive fresh and intermediate marsh than would be present without the project. Submerged and emergent vegetation potentially colonizing these areas would provide valuable and diverse habitat for foraging, refuge, breeding, nesting, nursery, and loafing of terrestrial wildlife, migratory waterfowl, and other avian species. Thus, it is anticipated that wildlife in and near the project area will ultimately benefit from the RP.

Fisheries Resources

It is anticipated that fishery species would avoid proposed areas of disposal activities during the project period, thereby minimizing direct and indirect impacts to those species. Sessile organisms may be buried during deposition for marsh creation. The expansive emergent wetland vegetation expected to colonize this area would enhance primary and secondary productivity in the area and provide substantial fisheries benefits resulting from valuable foraging, refuge, breeding, and nursery habitat for finfish and shellfish. Creation of new marsh would provide highly productive fisheries habitat, increase detrital food material, and likely contribute to overall increased fisheries productivity in the project area. Benefits to both commercial and recreational fisheries are expected.

Essential Fish Habitat

With implementation of the RP, initially some EFH for brown shrimp, white shrimp, and red drum would be directly impacted in the project area during the beneficial use of dredged material for wetlands development in the shallow open waters of the proposed disposal areas. Approximately 1,462 acres resulting from construction and 528 acres annually for maintenance of shallow open water bottom and associated EFH habitat (e.g., mud/sand substrates, SAV) would be potentially impacted by the placement of dredged material in the proposed disposal areas; however, these areas would be converted to generally more productive categories of EFH (e.g., estuarine emergent marsh, marsh edge, inner marsh, marsh/water interface) as they eventually become colonized by emergent vegetation. Thus, the RP would provide mainly positive indirect impacts to EFH in the project area, and any direct or temporary adverse impacts would be sufficiently offset by the net benefits from creating marsh, new shallow open water habitat, and associated EFH.

Additional, short term EFH impacts would include a temporary and localized increase in estuarine water column turbidity during the placement of dredged material in shallow open water areas; however, the project area is a naturally turbid environment and increased turbidity is not expected to significantly affect EFH needs within the project area.

Threatened and Endangered species

The Corps is responsible for determining whether the selected alternative is likely (or not likely) to adversely affect any listed species and/or critical habitat, and for requesting the Service's concurrence with that determination. If the Corps determines, and the Service concurs, that the selected alternative is likely to adversely affect listed species and/or critical habitat, a request for formal consultation in accordance with Section 7 of the Endangered Species Act should be submitted to the Service. That request should also include the Corps rationale supporting their determination.

SERVICE POSITION AND RECOMMENDATIONS

Overall, there would be positive net benefits to wetland resources in the project area, with the creation of emergent wetland habitat of higher value to fish and wildlife resources than the existing open water. Construction of the Mississippi River Deepening would result in approximately 12,323 Average Annual Habitat Units (AAHUs) and 24,291 acres of fresh-intermediate marsh habitat over the 50 year project life (See Appendix A for WVA Project Information and Assumptions). The Service supports the beneficial use of dredged material obtained from constructing and maintaining the MR Deepening project, provided the following fish and wildlife conservation recommendations are implemented concurrently with project implementation:

Overall, there would be positive net benefits to wetland resources in the project area, with the creation of emergent wetland habitat of higher value to fish and wildlife resources than the existing open water. Construction of the Mississippi River Deepening would result in approximately 12,323 Average Annual Habitat Units (AAHUs) and 24,291 acres of fresh-intermediate marsh habitat over the 50 year project life (See Appendix A for WVA Project Information and Assumptions). The Service supports the beneficial use of dredged material obtained from constructing and maintaining the MR Deepening Project, provided the following fish and wildlife conservation recommendations are implemented concurrently with project implementation: In our Oct 2016 draft and November 2016 supplemental FWCA reports CEMVN has concurred with our recommendations 1, 2,4,6,7, and 10. The Service appreciates CEMVNs concurrence and has no further recommendations in regards to those pervious recommendations.

1. The Service recommends that to the extent feasible all dredged material should be used beneficially to restore coastal habitats that are in decline.

2. The Service and NMFS recommend the Corps evaluate options to enhance the sediment loads of proposed diversion projects or existing breaches in the vicinity of Mardi Gras Pass and Fort St. Phillip if dredging south of New Orleans is proposed in the future.

3. The Service and NMFS recommend the Corps expand the beneficial use areas to include areas near Spanish Pass. CEMVN evaluated Spanish Pass and found it not to be within the most appropriate areas available at this time. This determination is based on the following: There isn't enough shoal material above River Mile (RM) 4 above Head of Passes (AHP) to justify the use of cutterhead dredges where currently hopper dredges dispose AHP material in the Hopper Dredge Disposal Area (HDDA). As such the costs of using cutterheads is not warranted in the area AHP in the vicinity of Spanish Pass and Venice, and the cost of adding 6 to 8 miles of pipeline from below Head of Passes would not be cost effective. If it becomes necessary to utilize cutterhead dredges on the western half of the Southwest Pass navigation channel in the vicinity of Venice, CEMVN will investigate the designation of additional shallow open water beneficial use disposal sites located in the vicinity of Venice/Spanish Pass. In addition should there be some cost-share opportunity in the future to cover the incremental cost then CEMVN has stated they would gladly work on that NEPA. The Service is satisfied that the area was evaluated.

4. The Service recommends avoiding and/or minimizing impacts to wetlands, including submerged aquatic vegetation in the study area.

5. The Service clarifies our previous recommendation 5 to state that we recommend CEMVN coordinate with any coastal restoration project's constructing agency to minimize impacts to complete or near completed Federal and State projects.

6. The Service recommends avoiding impacts to endangered or threatened species and their habitats, migratory birds, and colonial wading birds within and upstream of the study area as specified in this Fish and Wildlife Coordination Act Report and to investigate the possibility of using dredged material to restore/create habitat for threatened or endangered species.

7. The Service recommends coordination with the Service and other natural resource agencies in the planning of disposal areas and techniques and assessment of impacts and mitigation.

8. The Service's previous Recommendation 8 stated CEMVN should monitor created wetlands over the project life. CEMVN did not concur saying that beneficial use of dredged material will not be monitored under this project but may be monitored under the Beneficial Use Monitoring Plan contingent upon funding. The Service would like to reiterate and specifically recommend that the cost for minimal monitoring be included within the construction budget request. Such monitoring could ensure better beneficial use of disposed dredged material. Previous beneficial use in the Mississippi Delta has resulted in some areas failing to provide vegetated wetlands for a significant time or at all, thus possibly invalidating the Services and CEMVN agreement on the amount of beneficial acreage to be constructed by the proposed project. The Service is willing to work with USACE to develop cost-effective and efficient methods to monitor wetland creation sites for an appropriate length of time.

9. Previous Service Recommendation 9. The Service, NMFS and LDWF shall be provided an opportunity to review and submit recommendations on future detailed planning reports (e.g., Design Document Report, Engineering Document Report, etc.) and the draft plans and specifications on the Mississippi River Deepening Project addressed in this report as authorized in FWCA Sections 2a, 2e, and 2f (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*) which states that any water resource development project with a federal nexus will coordinate with the Service (including NMFS and the state equivalent, in this case LDWF) during all levels of planning, engineering and construction.

10. The Service recommends Special Use Permits be requested of the Delta National Wildlife Refuge (NWR) for any expected or proposed work on the Delta NWR. Close coordination by both the Corps and its contractor must be maintained with the Refuge Manager to ensure that construction and maintenance activities are carried out in accordance with provisions of any Special Use Permit issued by NWR. The Refuge

Manager for the Delta NWR is Ms. Shelly Stiaes, (Shelly_Stiaes@fws.gov or 337-882-2000).

11. Louisiana Department of Wildlife and Fisheries' (LDWF) and the Service recommend contacting the LDWF office, Mr. Shane Granier (504-284-5264), for further information regarding any additional permits or coordination that may be required to perform work on the Pass a Loutre Wildlife Management Area (WMA).

12. If the RP has not been constructed within 1 year or if changes are made to the RP, the Corps should informally consult with the Service to ensure that no changes in listed species has occurred as the species information is updated regularly (both for newly listed species and for delisted species) as new information becomes available.

Provided that the above recommendations are included in the feasibility report and related authorizing documents, the Service will support further planning and implementation of the RP.

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APPENDIX A

WETLAND VALUE ASSESSMENTS PROJECT INFORMATION SHEET

FOR

MISSISSIPPI RIVER SHIP CHANNEL, GULF TO BATON ROUGE, LOUISIANA

Wetland Value Assessment Project Information Sheet

September 26, 2016

Prepared for:
Mississippi River Deepening PDT

Prepared by
U.S. Fish and Wildlife Service

Project Name: Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project

Project Type(s): Marsh Creation

Project Area: Plaquemines Parish, Louisiana (Figure 1).

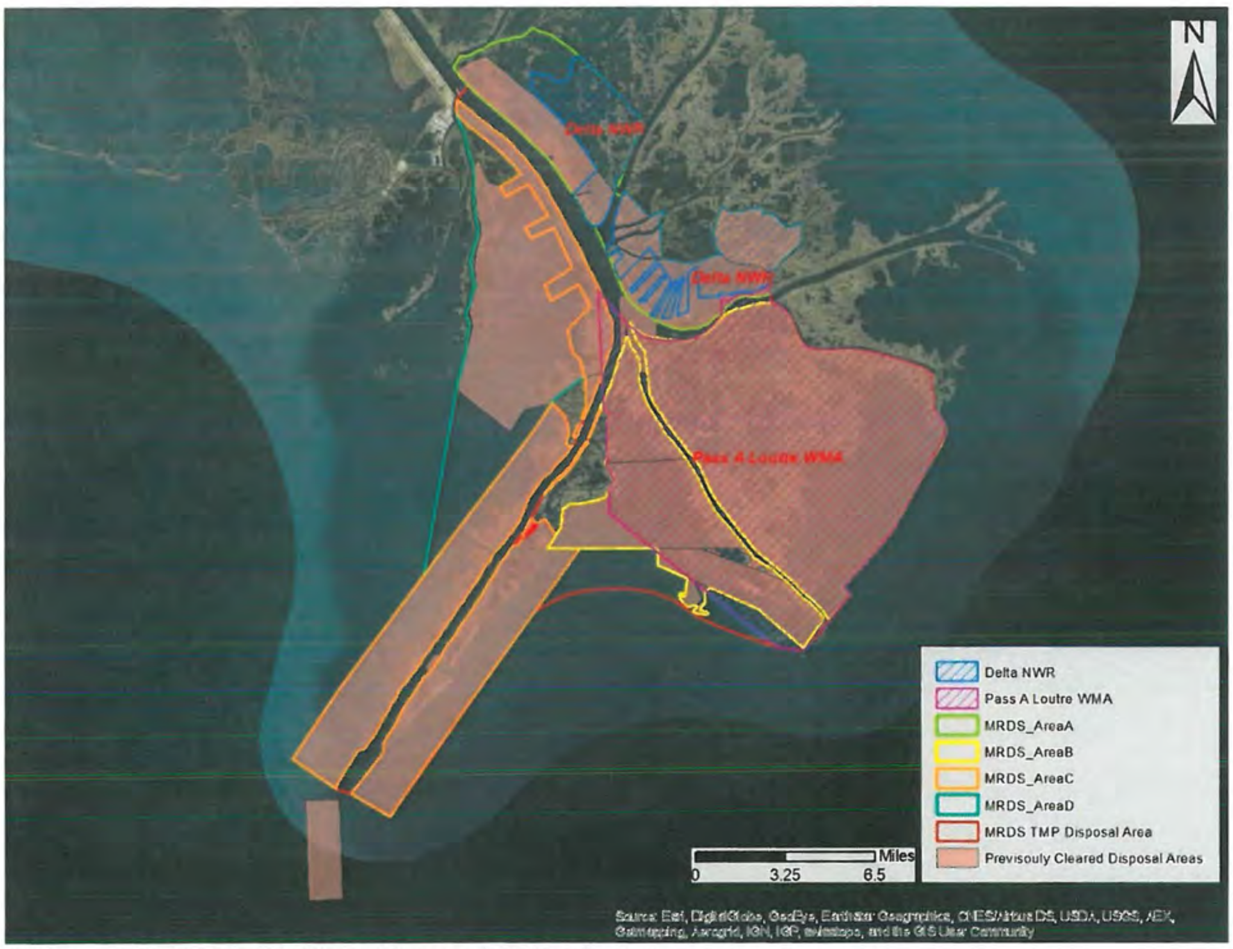

Figure 1. Mississippi River Deepening Project Area.

Project Goal:
This Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project is intended deepen the Mississippi River Ship Channel up to a 50 foot depth from Baton Rouge to the Gulf of Mexico and to create tidal freshwater marsh in the Mississippi River Delta with material dredged during construction and annual maintenance. Existing survey data shows that the proposed marsh creation sites in the delta have existing bottom elevations of approximately -2.5 feet NAVD88. The initial target elevation for dredge fill is between +4.0 and +4.5 feet NAVD88 which is expected to settle to an elevation between +2.5 and +3.0 feet NAVD88. Existing average marsh elevation, in the immediate vicinity is approximately +1.85 feet NAVD88.

Habitat Assessment Method
The WVA operates under the assumption that optimal conditions for general fish and wildlife habitat within a given coastal wetland type can be characterized, and that existing or predicted conditions can be compared to that optimum to provide an index of habitat quality. Habitat quality is estimated or expressed through the use of a mathematical model developed specifically for each wetland type. Each model consists of 1) a list of variables that are considered important in characterizing fish and wildlife habitat, 2) a Suitability Index graph for each variable, which defines the assumed relationship between habitat quality (Suitability Index) and different variable values, and 3) a mathematical formula that combines Suitability Index for each variable into a single value for wetland habitat quality; that single value is referred to as the Habitat Suitability Index, or HSI.

The WVA model for marsh habitat attempts to assess the suitability of each habitat type for providing resting, foraging, breeding, and nursery habitat to a diverse assemblage of fish and wildlife species. While the model does not specifically assess other wetland functions and values such as storm-surge protection, floodwater storage, water quality improvement, nutrient import/export, and aesthetics, it can be generally assumed that these functions and values are positively correlated with fish and wildlife habitat quality.

The procedure for evaluating project benefits on fish and wildlife habitats, the WVA model, uses a series of variables that are intended to capture the most important conditions and functional values of a particular habitat. Values for these variables are derived for existing conditions and are estimated for conditions projected into the future if no project efforts are applied (i.e., future-without-project), and for conditions projected into the future if the RP is implemented (i.e., future-with-project), providing an index of quality or habitat suitability of the habitat for the given time period. The habitat suitability index (HSI) is combined with the acres of habitat to get a number that is referred to as "habitat units".

Expected project benefits are estimated as the difference in habitat units between the future-with- project (FWP) and future-without project (FWOP). To allow comparison of WVA benefits to costs for overall project evaluation, total benefits are averaged over a 50-year period, with the result reported as Average Annual Habitat Units (AAHUs).

Existing – The project area is the open water and surrounding fresh marsh of the Lower Mississippi River Delta. The vegetation is classified as fresh marsh and receives continuous riverine input. Emergent plant species include: smooth cordgrass (*Spartina alterniflora*), Walter's millet (*Echinochloa walteri*), *Schoenoplectus pungens*, *Nelumbo lutea*. Submerged aquatic vegetation, such *as Myriophyllum spicatum*, *Heteranthera dubia*, *Ceratophyllum demersum*, *Najas guadalupensis*, and *Potamogeton nodosus* are also common in the lower elevation intertidal and shallow subtidal portions of the project area. The two major soil types in the project area are commonly found together and are classified as Balize and Larose soils (BA). Both soil types are level and very poorly drained. They are flooded by Mississippi River water most of the time and support freshwater marshes.

Land Loss/Gain*

- USGS calculated a historical loss rate for the disposal polygons (Figure 2) using a hyper-temporal analysis for the period 1984 to 2016. That analysis utilized TM satellite scenes and OLI imagery. The Fish and Wildlife Service calculated land loss rate using the same USGS Land/Water data, but with a different regression (land acres: time). That rate was used to calculate land/water values over the life of the project.

<u>Area A-Delta NWR Disposal Area (Delta)</u>

- FWOP gain rate: 0.54 %
- FWP loss rate: 0.54% (Gain rate is assumed to stay the same as FWOP for the life of the project).

<u>Area B-Pass a Loutre WMA Disposal Area (PAL)</u>

Area B subunits (B1 and B2) were combined for the land loss analysis and the WVA.

- FWOP loss rate: -0.78 %
- FWP loss rate: -0.39% (resumes to background loss rate at TY27).

<u>Area C-Southwest Pass Disposal Area (SWP)</u>

Area C subunits (C1, C2, and C3) were combined for the land loss analysis and the WVA.

- FWOP gain rate: 0.17 %
- FWP gain rate: 0.17% (Gain rate is assumed to stay the same as FWOP for the life of the project).

<u>Area D-West Bay Disposal Area (West Bay)</u>

- FWOP loss rate: -0.35 %
- FWP loss rate: -0.175% (resumes to background loss rate at TY27).

<u>All Areas</u>

For FWP we used the standard Civil Works WVA assumption of a 50% loss rate reduction for created marsh (but rate reverts back to FWOP rate when accretion equals 10 inches). Land loss rates were adjusted by the projected effects of three Relative Sea Level Rise (RSLR) scenarios. The medium RSLR scenario was chosen for these analyses. Additionally, FWP with Maintenance (FWPWM) accounts for an additional 132 acres added to each disposal site annually throughout the project life with respective loss/gain rates applied.

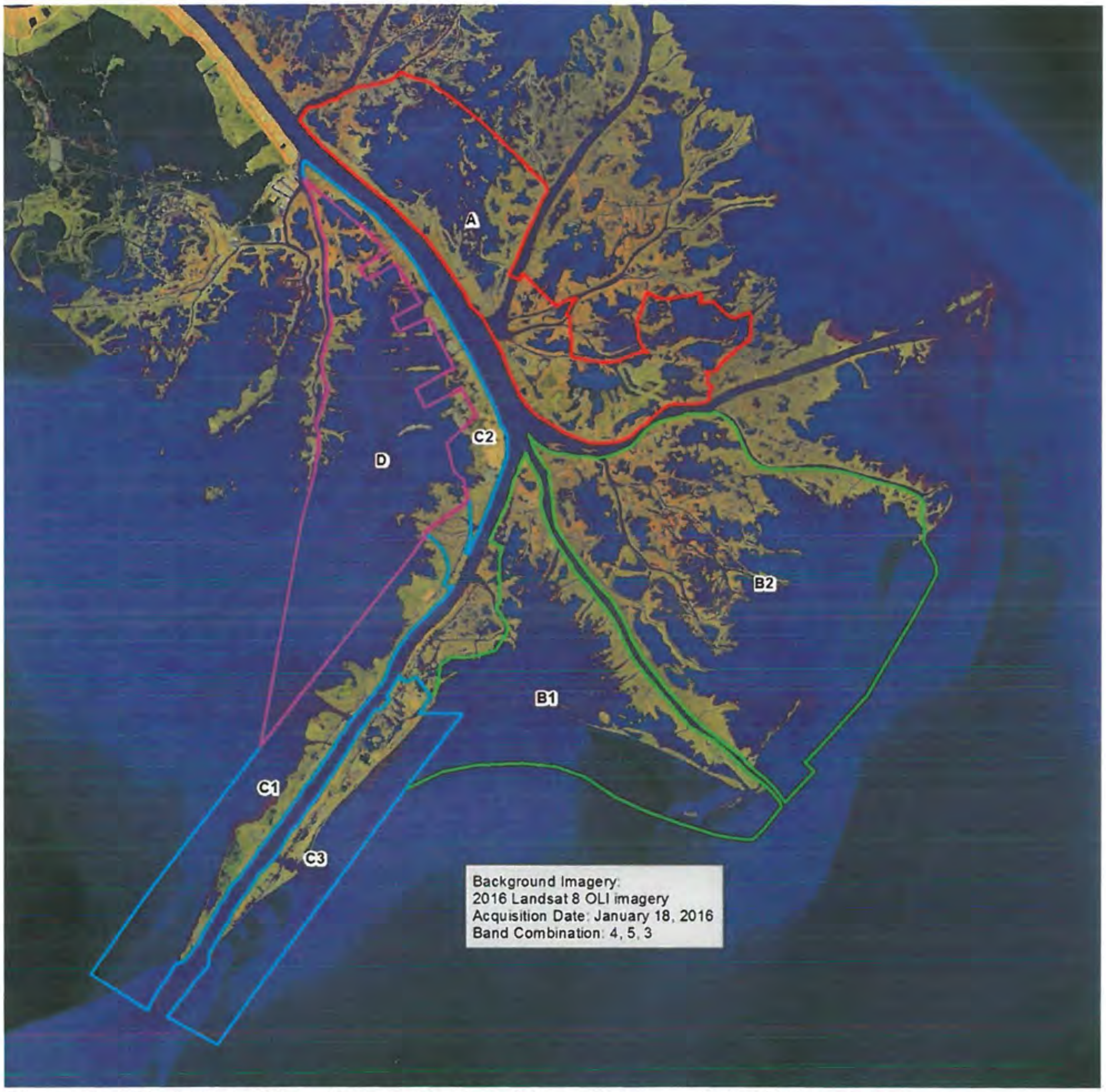

Figure 2. Mississippi River Deepening Land Loss Polygon Calculation Areas.

Sea Level Rise Effects*

Land loss rates estimated by the Service were adjusted by the projected effects of the medium relative sea level rise (RSLR) scenario for these analyses. The nearest water level gauge to the project area that is listed for use with the sea-level change curve calculator on the corpsclimate.us website is the one at Grand Isle. Therefore, we assumed the subsidence rate from Pahl et. al 2015: subsidence in Miss Delta = 5 feet/100 years. (1,524 millimeters/100 years) or about 15 mm/yr. Shinkle and Dokka (2004) estimated a subsidence rate of about 24 mm/yr, but recent CORS measurements at Boothville from 2002 to 2007 are much lower at about 3.5 mm/year (Morton &Bernier 2010). We used the earlier subsidence estimate from Britsch 2007 because the newer estimates were calculated from a comparatively limited period of time. Eustatic sea level rise was assumed to be 1.7 mm/yr.

(*) Subsequent to the Service's initial analyses, hydraulic modelling was conducted by The Water Institute of the Gulf (TWI) to determine the potential effects of the 4 mid-bay marsh creation alternatives. The analysis predicted substantial sediment infilling of West Bay during the 20 year period beginning at TY0 with each alternative and in the absence of any added land forms (FWOP). TWI used 19 mm/year as the subsidence rate and assumed an intermediate sea level rise scenario. Based upon estimates of substrate elevations at which marsh and submerged aquatic vegetation (SAV) are expected to grow (between 0.0 and +1.85 feet NAVD88 for SAV and between +1.85 and +4.5 feet NAVD88 for emergent marsh) the expected acreages of each were predicted after 20 years. The four (two from the environmental team and two proposed by TWIG during modelling) proposed mid-bay marsh creation alternatives had differential effects on the amount of sediment expected to build up within West Bay over 20 years. The DELFT 3D model results only extended to target year 20. Because of the uncertainty of diversion functioning or its potential purposeful closure, the resulting effects on perpetuating emergent marsh were not projected past TY20. Considering the potential increase in land loss that could occur versus. the positive effects of the diversion, we held the TY 20 values constant to TY50. This assumption was used for the West Bay (Area D) FWOP portion of the WVA analyses.

Variable V_1 - Percent of wetland area covered by emergent vegetation

FWOP–West Bay disposal area analysis considers the whole range (18,850 acres) of the hydrologic model as the project area. The remaining 3 disposal sites only consider project footprint and assumed that marsh creation polygons would be open water habitat.

Area A (Delta)	
	% Emergent
TY0	0
TY1	0
TY3	0
TY5	0
TY6	0
TY25	0
TY50	0

Area B (PAL)	
	% Emergent
TY0	0
TY1	0
TY3	0
TY5	0
TY6	0
TY25	0
TY50	0

Area C (SWP)	
	% Emergent
TY0	0
TY1	0
TY3	0
TY5	0
TY6	0
TY25	0
TY50	0

Area D (West Bay)	
	% Emergent
TY0	2
TY10	5
TY20	21
TY50	25

FWP -Created marsh platform has limited marsh function until material settlement, flooding and channel development. The assumption document suggests 0%, 15%, 50%, and 100% for TY years 1, 3, 5, and 6 respectively for unplanted marsh. Because this area is in close proximity to the freshwater and nutrients of the Mississippi River Delta, we adjusted the assumptions to10%, 25%, 100%, and 100% for TY years 1, 3, 5, and 6 respectively to reflect a more rapid vegetative response.

Area A (Delta)			
		acres	%
TY0	Constr.	0	0

Area B (PAL)			
		acres	%
TY0	Constr.	0	0

Area C (SWP)			
		acres	%
TY0	Constr.	0	0

Area D (West Bay)			
		acres	%
TY0	Constr.	0	0

	Maint.	0	0
TY1	Constr.	37	10
	Maint.	13	10
TY3	Constr.	93	25
	Maint.	165	42
TY5	Constr.	375	103
	Maint.	265	40
TY6	Constr.	377	103
	Maint.	398	50
TY25	Constr.	405	111
	Maint.	2916	88
TY50	Constr.	431	118
	Maint.	6226	94

	Maint.	0	0
TY1	Constr.	36	10
	Maint.	13	10
TY3	Constr.	90	25
	Maint.	164	42
TY5	Constr.	358	98
	Maint.	259	39
TY6	Constr.	356	98
	Maint.	390	50
TY25	Constr.	320	88
	Maint.	2886	88
TY50	Constr.	229	63
	Maint.	6154	93

	Maint.	0	0
TY1	Constr.	37	10
	Maint.	13	10
TY3	Constr.	92	25
	Maint.	165	42
TY5	Constr.	368	101
	Maint.	263	40
TY6	Constr.	369	101
	Maint.	395	50
TY25	Constr.	371	102
	Maint.	2904	88
TY50	Constr.	364	99
	Maint.	6202	94

	Maint.	0	0
TY1	Constr.	36	10
	Maint.	13	10
TY3	Constr.	91	25
	Maint.	165	42
TY5	Constr.	362	99
	Maint.	262	40
TY6	Constr.	361	99
	Maint.	394	50
TY25	Constr.	340	93
	Maint.	2894	88
TY50	Constr.	286	78
	Maint.	6174	94

Variable V_2 - Percent of open water covered by aquatic vegetation

Existing Conditions –SAV coverage estimation was determined for West Bay by optical area estimation and transect rake sampling for presence or absence conducted on September 26, 2014 by USFWS, NOAA, Arcadis, and Corps personnel. For PAL and Delta, SAV coverage information was derived from the Pass a Loutre Restoration CWPPRA PPL18 Candidate WVA analysis. The Southwest Pass disposal area SAV coverage was estimated by LDWF and Corps personnel.

Area A & B: SAV coverage was derived from the CWPPRA Pass a Loutre Restoration Candidate Project WVA.

Area C: Jeff Corbino, NOD Corps of Engineers biologist, and Shane Granier, LDWF Biologist and Pass a Loutre WMA Manager, provided the SAV data for the Southwest Pass disposal area.

Area D: SAV coverage was taken from the West Bay LCA BUDMAT project which was collected by field reconnaissance in September of 2014.

FWOP

According to the DELFT 3D hydrologic model run for Area D, SAV coverage is expected to increase as sediment from the West Bay diversion increases water bottom elevation and creates conditions conducive to SAV colonization. Standard Civil Works WVA assumptions applied to the other disposal sites with a 30% reduction in baseline SAV coverage at TY50.

Area A (Delta)	
	% SAV
TY0	25
TY1	25

Area B (PAL)	
	% SAV
TY0	25
TY1	25

Area C (SWP)	
	% SAV
TY0	8
TY1	8

Area D (West Bay)	
	% SAV
TY0	32
TY10	32

TY3	25
TY5	25
TY6	25
TY25	25
TY50	8

TY3	25
TY5	25
TY6	25
TY25	25
TY50	8

TY3	8
TY5	8
TY6	8
TY25	8
TY50	2

TY20	34
TY50	34

FWP & FWPWM

When the marsh land platform is constructed, all existing SAV will be buried. Until the created marsh platform settles to marsh elevation it is assumed that very little open water exists to support SAV growth. Only the disposal area footprint is considered in FWP for all disposal sites.

Area A (Delta)	
	% SAV
TY0	25
TY1	0
TY3	0
TY5	25
TY6	29
TY25	29
TY50	12.5

Area B (PAL)	
	% SAV
TY0	25
TY1	0
TY3	0
TY5	25
TY6	29
TY25	29
TY50	12.5

Area C (SWP)	
	% SAV
TY0	8
TY1	0
TY3	0
TY5	8
TY6	9
TY25	9
TY50	4

Area D (West Bay)	
	% SAV
TY0	32
TY1	0
TY3	0
TY5	32
TY6	37
TY25	37
TY50	16

Variable V_3 – Marsh edge and interspersion

Existing Conditions – Interspersion classes varied between areas and were determined utilizing aerial imagery and ArcMap GIS 10.3.1 software.

FWOP

Marsh growth predicted by the DELFT 3D model at TY20 was used to interpret interspersion. TYs before and after TY20 were interpolated or extrapolated using the hydrologic model results and the existing conditions.

Area A (Delta)		
	Class	%
TY0	3	30
	4	70
TY1	3	30
	4	70
TY3	3	30
	4	70
TY5	3	30
	4	70

Area B (PAL)		
	Class	%
TY0	3	30
	4	70
TY1	3	30
	4	70
TY3	3	30
	4	70
TY5	3	30
	4	70

Area C (SWP)		
	Class	%
TY0	3	100
TY1	3	100
TY3	3	100
TY5	3	100
TY6	3	100
TY25	3	50
	4	50
TY50	4	100

Area D (West Bay)		
	Class	%
TY0	4	100
TY10	3	50
	4	50
TY20	2	50
	3	50
TY50	2	50
	3	50

TY6	3	30
	4	70
TY25	3	35
	4	65
TY50	3	40
	4	60

TY6	3	30
	4	70
TY25	3	35
	4	65
TY50	3	40
	4	60

FWP & FWPWM

Baseline conditions were applied at TY0 for all areas. Standard Civil Works assumptions were applied for TY1–TY50.

Area A (Delta)		
	Class	%
TY0	3	30
	4	70
TY1	5	100
TY3	3	100
TY5	1	50
	3	50
TY6	1	100
TY25	2	100
TY50	3	100

Area B (PAL)		
	Class	%
TY0	3	30
	4	70
TY1	5	100
TY3	3	100
TY5	1	50
	3	50
TY6	1	100
TY25	2	100
TY50	3	100

Area C (SWP)		
	Class	%
TY0	3	100
TY1	5	100
TY3	3	100
TY5	1	50
	3	50
TY6	1	100
TY25	2	100
TY50	3	100

Area D (West Bay)		
	Class	%
TY0	4	100
TY1	5	100
TY3	3	100
TY5	1	50
	3	50
TY6	1	100
TY25	2	100
TY50	3	100

Variable V_4 - Percent of open water area <=1.5 feet deep in relation to marsh surface

Existing Conditions–

Area A & B: Water depths from field reconnaissance were collected by CWPPRA personnel for the Pass a Loutre Restoration Candidate Project. These data were gleaned from the CWPPRA WVA and utilized for both Areas A and B as the analysis incorporated both the Pass a Loutre WMA and the Delta NWR.

Area C: Water depths were taken from bathymetry data, provided by the Corps, collected by the Great Lakes Dredge and Dock Company in 2012.

Area D: Water depths were taken from the West Bay LCA BUDMAT project which was collected by field reconnaissance in September of 2014.

FWOP

Future estimates for Area D-West Bay were based on the results of the DELFT 3D hydrologic model utilized in the West Bay LCA BUDMAT analysis. The model included factors such as RSLR and the effects of sedimentation and land building due to the West Bay Diversion. The assumed range of water bottom level for SAV existence was 0 to 1.85 feet NAVD88. A subset (approximately +0.5 feet to 1.85 feet NAVD88) of that range was used as a guide to estimate shallow water areas using best professional judgment based on the 3D model 20 year results and the existing conditions for the TY10-TY50 values. The TY20 value was carried over for TY50 because the model was only run for a 20 year interval. Assumptions after that time are very difficult and depend on many unknowns, including the functionality of the diversion at that time in the future.

Area A (Delta)	
	Water ≤ 1.5ft (%)
TY0	19
TY1	19
TY3	19
TY5	19
TY6	19
TY25	19
TY50	19

Area B (PAL)	
	Water ≤ 1.5ft (%)
TY0	19
TY1	19
TY3	19
TY5	19
TY6	19
TY25	19
TY50	19

Area C (SWP)	
	Water ≤ 1.5ft (%)
TY0	15
TY1	15
TY3	15
TY5	15
TY6	15
TY25	15
TY50	10

Area D (West Bay)	
	Water ≤ 1.5ft (%)
TY0	10
TY1	15
TY3	25
TY5	25

FWP & FWPWM

Marsh that is lost is not assumed to become shallow open water <= 1.5 feet deep until TY50. According to the Civil Works standard assumptions applied for marsh creation, 1/6 of the SOW would become non-shallow.

Area A (Delta)	
	Water ≤ 1.5ft (%)
TY0	19
TY1	100
TY3	100
TY5	100
TY6	100
TY25	100
TY50	83

Area B (PAL)	
	Water ≤ 1.5ft (%)
TY0	19
TY1	100
TY3	100
TY5	100
TY6	100
TY25	100
TY50	83

Area C (SWP)	
	Water ≤ 1.5ft (%)
TY0	15
TY1	100
TY3	100
TY5	100
TY6	100
TY25	100
TY50	83

Area D (West Bay)	
	Water ≤ 1.5ft (%)
TY0	10
TY1	100
TY3	100
TY5	100
TY6	100
TY25	100
TY50	83

Variable V_5 - Salinity

Existing conditions – Salinity values represent mean growing season salinity (March 1–November 30).

Area A: Salinity was derived from data recorded at the CRMS2634 for the period of February 2008 to June 2016.

Area B: Salinity was derived from data recorded at the CRMS0154, 0157, and 0159 for the period of June 2007 to June 2016. The annual salinities were averaged and used for analysis.

Area C: Salinity was derived from data recorded at the CRMS0159 for the period of June 2007 to June 2016.

Area D: Salinity was derived from data recorded at the CRMS2608 for the period of July 2009 to June 2016.

FWOP, FWP, & FWPWM

Area A (Delta)	
	Salinity (ppt)
TY0-TY50	1.16

Area B (PAL)	
	Salinity (ppt)
TY0-TY50	1.03

Area C (SWP)	
	Salinity (ppt)
TY0-TY50	1.27

Area D (West Bay)	
	Salinity (ppt)
TY0-TY50	0.75

<u>**Variable V_6 – Aquatic organism access**</u>

Existing conditions – The four proposed marsh creation areas are not currently impounded or hydrologically controlled by any structures. Access to all parts of project area is assumed to be equal and existing conditions are expected to persist.

FWOP

All Areas	
TY0-TY50	1.00

FWP

The marsh creation area is considered to have no access at TY1 due to the elevation of the marsh platform and containment dikes. Based on Standard Civil Works assumptions, at TY5 the marsh creation area receives an access value of 1.0 due to settling of the marsh platform, formation of tidal channels, and gapping of the containment dikes.

All Areas	
TY0	1.00
TY1	0
TY3	0
TY5	1.00
TY6	1.00
TY25	1.00
TY50	1.00

FWPWM

The marsh creation area receives an additional 132 acres of maintenance annually. Based on Standard Civil Works assumptions full access is given at TY5 however, with annual maintenance full credit is never attained.

All Areas		
TY0	1.00	
TY1	0	
TY3	0	
TY5	0.38	(~260 acres of credit/685 acres built)
TY6	0.48	(~390 acres of credit/817 acres built)
TY25	0.87	(~2890 acres of credit/3325 acres built)
TY50	0.94	(~6200 acres of credit/6625 acres built)

Literature Cited

Pahl, James, Barb Kleiss, and Gary Brown 2015. Proposal for Addressing Relative Sea Level Rise in the LCA Mississippi River Hydrodynamic and Delta Management Feasibility Study. Figure 2 developed by Britsch. Pg 5.

Morton, R.A. and Bernier, J.C., 2010. Recent subsidence-rate reductions in the Mississippi Delta and their geological implications. Journal of Coastal Research, 26(3), 555–561. West Palm Beach (Florida), ISSN 0749-0208.

Shinkle, K.D. and R.K. Dokka. 2004. Rate of Vertical Displacement at Benchmarks in the Lower Mississippi Valley and the Northern Gulf Coast. NOAA TECHNICAL REPORT NOS/NGS 50.

On October 11, 2016, the United States Fish and Wildlife Service (USFWS) provided a Draft Coordination Act Report, as required by the Fish and Wildlife Coordination Act (Appendix 8). The Service provided 12 Fish and Wildlife Conservation Recommendations in the report. MVN has reviewed the recommendations and responses are provided below:

1. The Service recommends that to the extent feasible all dredged material should be used beneficially to restore coastal habitats that are in decline.

Response: Concur. Dredged material will be beneficially used to the maximum extent practicable, subject to the requirements of the Federal Standard.

2. The Service and NMFS recommend the Corps evaluate options to enhance the sediment loads of proposed diversion projects or existing breaches in the vicinity of Mardi Gras Pass and Fort St. Phillip if dredging south of New Orleans is proposed in the future.

Response: Concur. If dredging south of New Orleans is proposed in the future, to the extent permissible under the USACE determination pursuant to 33 USC Section 408 and Sections 10/404 Regulatory determinations, the USACE will consider all reasonable alternatives, including those that could enhance the sediment loads of reasonably foreseeable diversion projects or existing breaches, in the context of adhering to the Federal Standard.

3. The Service and NMFS recommend the Corps expand the beneficial use areas to include areas near Spanish Pass.

Response: Do not concur. At this time the most appropriate areas available were identified, the proposed project involves the disposal of beneficial use of dredged materials at locations within the Federal Standard.

4. The Service recommends avoiding and/or minimizing impacts to wetlands, including submerged aquatic vegetation in the study area.

Response: Concur. The USACE will avoid and minimize, to the maximum extent practicable, potential project-induced adverse impacts to wetlands, submerged aquatic vegetation, and other natural resources in the study area.

5. The Service recommends avoiding and/or minimizing impacts to coastal restoration efforts in the study area and continued coordination with those efforts to avoid or minimize impacts to their effectiveness.

Response: Do not concur. Any coastal restoration effort that is constructed outside of a partnership with USACE for the construction of an authorized federal project, is subject to the 408

(33 USC Section 408) process and must avoid impacts to existing Corps water resources projects, including this project.

6. The Service recommends avoiding impacts to endangered or threatened species and their habitats, migratory birds, and colonial wading birds within and upstream of the study area as specified in this Fish and Wildlife Coordination Act Report. The service also recommends the Corps investigate the possibility of using dredged material to restore/create habitat for threatened or endangered species.

Response: Concur, in part. The USACE will avoid, to the maximum extent practicable, adverse project-induced impacts to endangered or threatened species and their habitats, migratory birds, and colonial wading birds within and upstream of the proposed study area. The USACE will also consider using dredged material to restore/create habitat for threatened or endangered species should those opportunities fall under the Federal Standard.

7. The Service recommends the Corps coordinate with the Service and other natural resource agencies in the planning of disposal areas and techniques and assessment of impacts and mitigation.

Response: Concur. The USACE will continue to coordinate with the Service as well as other natural resource agencies in planning disposal areas, the techniques utilized, assessment of the potential impacts, and potential mitigation.

8. The created wetlands should be monitored over the project life to help evaluate the effectiveness of these features and to document both the elevation and acreage of wetland areas created.

Response: Do not concur. Beneficial use of dredged material will not be monitored under this project. Beneficial use areas may be monitored under the CEMVN Beneficial Use Monitoring Plan contingent upon funding, as is current practice.

9. The Service and other resource agencies shall be provided an opportunity to review and submit recommendations on future detailed planning reports (e.g., Design Document Report, Engineering Document Report, etc.) and the draft plans and specifications on the Mississippi River Deepening Project addressed in this report.

Response: Do not concur. While the USACE will coordinate and consult with regard to the Endangered Species Act and Fish and Wildlife Coordination Act, primarily with regard to plans and specifications review, the USACE will not provide maintenance dredging plans and specifications to non-Corps agencies for outside review.

10. The Service recommends Special Use Permits be requested of the Delta National Wildlife Refuge (NWR) for any expected or proposed work on the Delta NWR. Close coordination by both

the Corps and its contractor must be maintained with the Refuge Manager to ensure that construction and maintenance activities are carried out in accordance with provisions of any Special Use Permit issued by NWR. The Refuge Manager for the Delta NWR is Ms. Shelly Stiaes, (Shelly Stiaes@fws.gov or 337-882-2000).

Response: Concur. The USACE will coordinate with LaDOTD as the NFS to ensure LaDOTD secures the appropriate special use permit from the Refuge Manager for the Delta NWR for proposed work on the Delta NWR. USACE will review the special use permit prior to acceptance to determine that USACE can comply with all the conditions sought by USFWS in its proposed special use permit.

11. Louisiana Department of Wildlife and Fisheries (LDWF) and the Service recommend contacting the LDWF office, Mr. Shane Granier (504-284-5264), for further information regarding any additional permits or coordination that may be required to perform work on the Pass a Loutre Wildlife Management Area (WMA).

Response: Do not concur. For that portion of the Pass a Loutre WMA that falls within the Federal Navigation Servitude, USACE will exercise its rights under the servitude for purposes of the work to be performed within that area. Should any portion of the WMA fall outside of the lands and water bottoms that are subject to the Federal Navigation Servitude, the non-Federal Sponsor is required under the project authorization to provide USACE an authorization for entry to such lands and water bottoms. Therefore, any necessary contact regarding the required authorization for entry for lands and water bottoms under the jurisdiction of LDWF will be handled by the project's NFS.

12. If the proposed project has not been constructed within 1 year or if changes are made to the proposed project, the Corps should re-initiate Endangered Species Act consultation with the Service.

Response: Concur. The USACE will re-initiate Endangered Species Act consultation with the Service if the proposed project has not been constructed within 1 year or if significant changes are made to the proposed project.

On October 11, 2016, the United States Fish and Wildlife Service (USFWS) provided a Draft Coordination Act Report, as required by the Fish and Wildlife Coordination Act. The Service provided 12 Fish and Wildlife Conservation Recommendations in the report. MVN responded to all 12 recommendations, concurring with Recommendations #1, 2, 4, 6, 7, and 10 and 12.

On June 29, 2017 the USFWS provided the Final CAR, which provided additional comments and clarifications on **Recommendations # 3, 5, 8, 9, 11, and 12.** These comments and clarifications are labeled "Final Recommendation" and are provided after MVN's original response "Response #." Also below are MVN's final responses, labeled "MVN Final Response".

Recommendation 3. The Service and NMFS recommend the Corps expand the beneficial use areas to include areas near Spanish Pass.

Response #1: Do not concur. At this time the most appropriate areas available were identified; the proposed project involves the disposal of beneficial use of dredged materials at locations within the Federal Standard.

Final Recommendation: The Service and NMFS recommend the Corps expand the beneficial use areas to include areas near Spanish Pass. CEMVN evaluated Spanish Pass and found it not to be within the most appropriate areas available at this time. This determination is based on the following: There isn't enough shoal material above River Mile (RM) 4 above Head of Passes (AHP) to justify the use of cutterhead dredges where currently hopper dredges dispose AHP material in the Hopper Dredge Disposal Area (HDDA). As such the costs of using cutterheads is not warranted in the area AHP in the vicinity of Spanish Pass and Venice, and the cost of adding 6 to 8 miles of pipeline from below Head of Passes would not be cost effective. If it becomes necessary to utilize cutterhead dredges on the western half of the Southwest Pass navigation channel in the vicinity of Venice, CEMVN will investigate the designation of additional shallow open water beneficial use disposal sites located in the vicinity of Venice/Spanish Pass. In addition should there be some costshare opportunity in the future to cover the incremental cost then CEMVN has stated they would gladly work on that NEPA. The Service is satisfied that the area was evaluated.

MVN Final Response: Concur.

Recommendation 5. The Service recommends avoiding and/or minimizing impacts to coastal restoration efforts in the study area and continued coordination with those efforts to avoid or minimize impacts to their effectiveness.

Response: Do not concur. MVN does not anticipate potential impacts to coastal restoration efforts outside the designated disposal areas. Within the designated disposal areas, any coastal restoration effort that is constructed outside of a partnership with USACE is subject to the 408 (33 USC Section 408) permission process and must avoid impacts to existing Corps water resources projects, including this project.

Final Recommendation: The Service clarifies our previous recommendation 5 to state that we recommend CEMVN coordinate with any coastal restoration project's constructing agency to minimize impacts to complete or near completed Federal and State projects.

MVN Final Response: Concur.

Recommendation 8. The created wetlands should be monitored over the project life to help evaluate the effectiveness of these features and to document both the elevation and acreage of wetland areas created.

Response: Do not concur. Beneficial use of dredged material will not be monitored under this project. Beneficial use areas may be monitored under the CEMVN Beneficial Use Monitoring Plan contingent upon funding, as is current practice.

Final Recommendation: The Service's previous Recommendation 8 stated CEMVN should monitor created wetlands over the project life. CEMVN did not concur saying that beneficial use of dredged material will not be monitored under this project but may be monitored under the Beneficial Use Monitoring Plan contingent upon funding. The Service would like to reiterate and specifically recommend that the cost for minimal monitoring be included within the construction budget request. Such monitoring could ensure better beneficial use of disposed dredged material. Previous beneficial use in the Mississippi Delta has resulted in some areas failing to provide vegetated wetlands for a significant time or at all, thus possibly invalidating the Services and CEMVN agreement on the amount of beneficial acreage to be constructed by the proposed project. The Service is willing to work with USACE to develop cost-effective and efficient methods to monitor wetland creation sites for an appropriate length of time.

MVN Final Response: MVN would make an effort to obtain elevation/vegetation information during any particular fiscal year under the Beneficial Use Monitoring Plan. However, such an effort would entirely depend on the O&M budget of the project and the dredging needs of the Mississippi River navigation channel.

Recommendation 9. The Service and other resource agencies shall be provided an opportunity to review and submit recommendations on future detailed planning reports (e.g., Design Document Report, Engineering Document Report, etc.) and the draft plans and specifications on the Mississippi River Deepening Project addressed in this report.

Response: Do not concur. While the USACE will coordinate and consult with regard to the Endangered Species Act and Fish and Wildlife Coordination Act, primarily with regard to plans and specifications review, the USACE will not provide maintenance dredging plans and specifications to non-Corps agencies for outside review.

Final Recommendation: Previous Service Recommendation 9. The Service, NMFS and LDWF shall be provided an opportunity to review and submit recommendations on future detailed planning reports (e.g., Design Document Report, Engineering Document Report,

etc.) and the draft plans and specifications on the Mississippi River Deepening Project addressed in this report as authorized in FWCA Sections 2a, 2e, and 2f (48 Stat. 401 , as amended; 16 U.S.C. 661 *et seq.)* which states that any water resource development project with a federal nexus will coordinate with the Service (including NMFS and the state equivalent, in this case LDWF) during all levels of planning, engineering and construction.

MVN Final Response: Concur.

Recommendation 11. Louisiana Department of Wildlife and Fisheries (LDWF) and the Service recommend contacting the LDWF office, Mr. Shane Granier (504-284-5264), for further information regarding any additional permits or coordination that may be required to perform work on the Pass a Loutre Wildlife Management Area (WMA).

Response: Do not concur. For that portion of the Pass a Loutre WMA that falls within the Federal Navigation Servitude, USACE will exercise its rights under the servitude for purposes of the work to be performed within that area. Should any portion of the WMA fall outside of the lands and water bottoms that are subject to the Federal Navigation Servitude, the non-Federal Sponsor is required under the project authorization to provide USACE an authorization for entry to such lands and water bottoms. Therefore, any necessary contact regarding the required authorization for entry for lands and water bottoms under the jurisdiction of LDWF will be handled by the project's NFS.

Final Recommendation: Louisiana Department of Wildlife and Fisheries' (LDWF) and the Service recommend contacting the LDWF office, Mr. Shane Granier (504-284-5264), for further information regarding any additional permits or coordination that may be required to perform work on the Pass a Loutre Wildlife Management Area (WMA).

MVN Final Response: Coordination with LDWF would continue to occur, at a minimum, during the MVN annual dredging conferences which identifies probable dredging and beneficial use placement areas for the upcoming fiscal year. However, it would remain the responsibility of the projects NFS for initiating contact regarding the required authorization for entry for lands and water bottoms under the jurisdiction of LDWF.

Recommendation 12. If the proposed project has not been constructed within 1 year or if changes are made to the proposed project, the Corps should re-initiate Endangered Species Act consultation with the Service.

Response: Concur. The USACE will re-initiate Endangered Species Act consultation with the Service if the proposed project has not been constructed within 1 year or if significant changes are made to the proposed project.

Final Recommendation: If the RP has not been constructed within 1 year or if changes are made to the RP, the Corps should informally consult with the Service to ensure that no

changes in listed species has occurred as the species information is updated regularly (both for newly listed species and for delisted species) as new information becomes available. Provided that the above recommendations are included in the feasibility report and related authorizing documents, the Service will support further planning and implementation of the RP.

MVN Final Response: So as to avoid potential impacts to newly listed protected species, MVN concurs with the recommendation to coordinate with the Service within 1 year if changes to the plan occur, and prior to construction activities.

=============================LDWF============================

1) LDWF would like the maximum elevation of beneficial use to be increased from 2.5'NAVD'88 to *4.5'* NAVD'88. This would be consistent with previous requirements and work performed in the area. It would also provide habitat that is beneficial to a large number of wildlife that utilize the MS Delta and that are designated as "species of conservation concern" as outlined in the 2015 Louisiana Wildlife Action Plan. A few of these species include mottled ducks, and colonial birds such as black skimmers and terns. Wetlands built to an elevation of 2.5' NAVD'88 would be completely tidal and quickly subside to subtidal wetlands in a short period of time. Subtidal wetlands do not provide the limited and necessary habitat required for many species on the delta.

MVN Final Response: The deepening study has stated the goal of our BU placement of dredged material is to create marsh habitat at a final target elevation of about +2.0 feet NAVD88, which would allow for tidal exchange and vegetative establishment. Recognizing the variability in subsidence over the area, nowhere in the project's documents is the initial placement height discussed, only that the desired "placement" elevation is meant to develop coastal marsh habitat. This was presented also recognizing the need to coordinate with the natural resource agencies prior to placement so as to better achieve sustainable coastal habitat. Recognizing there may be some natural variability in initial habitat classification in a placement area (e.g. ponds, ridges, marsh, etc), and recognizing also the rapid subsidence which leads to changes in coastal habitat classification (e.g. ridge to marsh to open water) the study largely focuses on coastal marsh in order to 1) comply with the Magnuson Stevens Fishery Conservation Act by replacing open water Essential Fish Habitat with intertidal Essential Fish Habitat, and 2) provide a reasonable estimate the benefits achieved due to construction in the area using the marsh model wetland value assessment.

MVN recognizes that target placement elevations may vary throughout the disposal areas based on the differences in subsidence with the areas. Recognizing the high rate of subsidence in Pass

A Loutre WMA, and recognizing also the topographic variability inherent with dredge material placement that allows ridges, high marsh, and emergent marsh, MVN Operations Division's will continue coordination with LDWF on BU placement sites in the Pass a Loutre WMA so as to maximize ecological benefits from beneficial use. MVN recognizes that continued coordination with LDWF could help maximize beneficial use and lead to more desirable coastal habitat.

2) The plan claims that all the dredged sediment in the deepening project will be used beneficially with the exception of the material from the Bar Channel between river miles 19 and 22 BHP. This is not true. There are a few areas in the lower river where cutter head dredges have been proven ineffective and/or an impediment to navigation very similar to the Bar Channel. One such area is the channel bend at Head of Passes. See language in the public notice on page 7 that states the following: "The remainder of the shoal material would not be used beneficially because...cutter heads would pose hazards to navigation, as in the bar channel." Past practice has demonstrated that much of this material would be placed in the Head of Passes designated disposal area (HDDA). This practice is contradictory to the statement that all the material is to be used beneficially.

MVN Final Response: The plan for construction of the deeper channel in Southwest Pass call for only cutterhead dredges to be used from Mile 6.0 AHP down to the bar channel. Hopper dredges would be used for constructing the deeper channel in the remaining lower jetty to bar channel reaches. Although MVN will not utilize cutterhead dredges for routine maintenance of the channel in the Head of Passes reach, MVN will utilize cutterhead dredges to construct the deeper channel in the Head of Passes reach. The reference to page 7 of the 404 public notice is in reference to maintenance activities and is not contradictory to the description of construction.

3) We also assume that O&M of the 45' channel will continue during the construction of the 50' channel which will require continued disposal into the HDDA which this agency has objected to due to its negative environmental impacts. This practice along with potential construction disposal into the HDDA will further exacerbate the shoaling of Pass-a-Loutre and starvation of the wetlands of the lower river of sediment and freshwater. In order to alleviate this negative impact we suggest that the use of the HDDA be clearly identified and used as little as possible. Additionally, the HDDA should be dredged out to full capacity at the conclusion of the deepening project.

MVN Final Response: As identified in the report and in the response to LDWF Comment #2 above, the HDDA will not be utilized during construction. MVN will continue to strive to minimize use of the HDDA during annual maintenance dredging of Southwest Pass. However, the use of hopper dredges in the upper half of the Southwest Pass channel is necessary (for all the reasons provided in the report). Although MVN strives to dredge the HDDA at the end of each year's dredging cycle for Southwest Pass, funding limits its dredging to approximately every 2 years.

4) We encourage the USACE to maintain the channel of Pass-a-Loutre to its confluence with Southeast Pass as part of this project. This will offset many of the detrimental impacts from past and future O&M projects on the lower river and the additional impact that the deepening project will have on the wetlands of the river delta.

MVN Final Response: MVN cannot perform maintenance dredging of the Pass a Loutre channel as this waterway is not a federally authorized project.

5) The project has been reviewed by the LDWF Louisiana Natural Heritage Program for potential impacts to species of conservation concern. The Natural Heritage Database indicates the likely presence of the following species:

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The pallid sturgeon *(Scaphirhychus albus)* may occur in water bodies near your proposed project. The pallid sturgeon is listed as endangered under the Endangered,Species Act (16 U.S.C. 1531-1544) and occurs in the Mississippi and Atchafalaya rivers in southern Louisiana, and the Red River. This species requires large, turbid, free-flowing riverine habitat and is adapted to living close to the bottom of large rivers with and gravel bars. Pallid sturgeon typically spawn from May-August, but successful reproduction has been severely reduced due to habitat modification. This includes the loss of habitat through the construction of dams that have modified flows, reduced turbidity and lowered water temperatures. We advise you to take the necessary measures to avoid the breeding season and any degradation of water quality in the Mississippi and Atchafalaya rivers. If you have any questions, please contact Beau Gregory at 337-491-2576.

Piping Plover
The piping plover *(Charadrim melodus)* may occur within one mile of the project area. This species is federally listed as threatened with its critical habitat designated along the Louisiana coast. Piping plovers winter in Louisiana feeding at intertidal beaches, mudflats, and sand flats with sparse emergent vegetation. Primary threats to this species are destruction and degradation of winter habitat, habitat alteration through shoreline erosion, woody species encroachment of lake shorelines and riverbanks, and human disturbance of foraging birds. For more information on piping plover critical habitat, visit the U.S. Fish and Wildlife website: http://endangered.fws.gov.

Snowy Plover
Our database also indicates the possible occurrence of Snowy Plover *(Charadrius alexandrinus)* in your project area. This species holds a state rank of SIB, S2N and is considered critically imperiled in Louisiana. The Snowy Plover winters along the Gulf Coast and can be found year round in southwest Louisiana. This species occurs on beaches, dry mud or salt flats, and the sandy shores of rivers, lakes, and ponds, and nests where vegetation is sparse or absent. A major threat to the Snowy Plover is the alteration of coastal habitat. We recommend that you take the necessary precautions to protect the critical habitat of this species. If you have any questions or need additional information, please call Michael Seymour at 225- 763-3554.

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colonies. If work for the proposed project will commence during the nesting season, conduct a field visit to the worksite to look for evidence of nesting colonies. This field visit should take place no more than two weeks before the project begins. If no nesting colonies are found within 400 meters (700 meters for brown pelicans) of the proposed project, no further consultation with LDWF will be necessary. If active nesting colonies are found within the previously stated distances of the proposed project, further consultation with LDWF will be required. In addition, colonies should be surveyed by a qualified biologist to document species present and the extent of colonies. Provide LDWF with a survey report which is to include the following information:

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To minimize disturbance to colonial nesting birds, the following restrictions on activity should be observed:
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- For colonies containing nesting gulls, tems, and/or black skimmers, all project activity occurring within 400 meters (700 meters for brown pelicans) of an active nesting colony should be restricted to the nonnesting period (i.e., September 16 through April 1).

MVN Final Response:
In June of 2017 the USFWS provided final recommendations to avoid protected species, including migratory birds and colonial wading birds in the Final Fish and Wildlife Coordination Act Report (Appendix 8). MVN has accepted these recommendations. On July 7, 2017, the USFWS issued a Not Likely to Adversely to Affect determination for federally threatened and endangered species and their critical habitat (Appendix A-22). MVN will continue to abide by the federal no-work distance restrictions for nesting birds provided by the USFWS: 650 feet for nesting terns, gulls, and black skimmers; 1000 feet for nesting wading birds; 2000 feet for nesting brown pelicans.

JOHN BEL EDWARDS
GOVERNOR

State of Louisiana
DEPARTMENT OF WILDLIFE AND FISHERIES

JACK MONTOUCET
SECRETARY

July 19, 2017

Attn: Marshall K. Harper, Chief
Planning, Programs, and Project Management Division
Environmental Planning and Compliance Branch
United States Army Corps of Engineers
7400 Leake Avenue
New Orleans, LA 70118

RE: *Application Number: Mississippi River Deepening Phase III*
Applicant: U.S. Army Corps of Engineers-New Orleans District
Notice Date: July 1, 2017

Dear Mr. Harper:

The professional staff of the Louisiana Department of Wildlife and Fisheries (LDWF) has reviewed the notice referenced above for the proposed deepening of the Mississippi River Navigation Channel to 50 feet from Baton Rouge to the Gulf of Mexico. The following recommendations have been provided by the appropriate biologist(s):

1) LDWF would like the maximum elevation of beneficial use to be increased from 2.5'NAVD'88 to 4.5' NAVD'88. This would be consistent with previous requirements and work performed in the area. It would also provide habitat that is beneficial to a large number of wildlife that utilize the MS Delta and that are designated as "species of conservation concern" as outlined in the 2015 Louisiana Wildlife Action Plan. A few of these species include mottled ducks, and colonial birds such as black skimmers and terns. Wetlands built to an elevation of 2.5' NAVD'88 would be completely tidal and quickly subside to subtidal wetlands in a short period of time. Subtidal wetlands do not provide the limited and necessary habitat required for many species on the delta.

2) The plan claims that all the dredged sediment in the deepening project will be used beneficially with the exception of the material from the Bar Channel between river miles 19 and 22 BHP. This is not true. There are a few areas in the lower river where cutter head dredges have been proven ineffective and/or an impediment to navigation very similar to the Bar Channel. One such area is the channel bend at Head of Passes. See language in the public notice on page 7 that states the following: "The remainder of the shoal material would not be used beneficially because...cutter heads would pose hazards to navigation, as in the bar channel." Past practice has demonstrated that much of this material would be placed in the Head of Passes designated disposal area (HDDA). This practice is contradictory to the statement that all the material is to be used beneficially.

3) We also assume that O&M of the 45' channel will continue during the construction of the 50' channel which will require continued disposal into the HDDA which this agency has objected to due to its negative environmental impacts. This practice along with potential construction disposal into the HDDA will further exacerbate the shoaling of Pass-a-Loutre and starvation of the wetlands of the lower river of sediment and freshwater. In order to alleviate this negative impact we suggest that the

use of the HDDA be clearly identified and used as little as possible. Additionally, the HDDA should be dredged out to full capacity at the conclusion of the deepening project.

4) We encourage the USACE to maintain the channel of Pass-a-Loutre to its confluence with Southeast Pass as part of this project. This will offset many of the detrimental impacts from past and future O&M projects on the lower river and the additional impact that the deepening project will have on the wetlands of the river delta.

5) The project has been reviewed by the LDWF Louisiana Natural Heritage Program for potential impacts to species of conservation concern. The Natural Heritage Database indicates the likely presence of the following species:

Pallid Sturgeon

The pallid sturgeon (*Scaphirhychus albus*) may occur in water bodies near your proposed project. The pallid sturgeon is listed as endangered under the Endangered Species Act (16 U.S.C. 1531-1544) and occur in the Mississippi and Atchafalaya rivers in southern Louisiana, and the Red River. This species requires large, turbid, free-flowing riverine habitat and is adapted to living close to the bottom of large rivers with sand and gravel bars. Pallid sturgeon typically spawn from May-August, but successful reproduction has been severely reduced due to habitat modification. This includes the loss of habitat through the construction of dams that have modified flows, reduced turbidity and lowered water temperatures. We advise you to take the necessary measures to avoid the breeding season and any degradation of water quality in the Mississippi and Atchafalaya rivers. If you have any questions, please contact Beau Gregory at 337-491-2576.

Piping Plover

The piping plover (*Charadrius melodus*) may occur within one mile of the project area. This species is federally listed as threatened with its critical habitat designated along the Louisiana coast. Piping plovers winter in Louisiana feeding at intertidal beaches, mudflats, and sand flats with sparse emergent vegetation. Primary threats to this species are destruction and degradation of winter habitat, habitat alteration through shoreline erosion, woody species encroachment of lake shorelines and riverbanks, and human disturbance of foraging birds. For more information on piping plover critical habitat, visit the U.S. Fish and Wildlife website: http://endangered.fws.gov.

Snowy Plover

Our database also indicates the possible occurrence of Snowy Plover (*Charadrius alexandrinus*) in your project area. This species holds a state rank of S1B, S2N and is considered critically imperiled in Louisiana. The Snowy Plover winters along the Gulf Coast and can be found year round in southwest Louisiana. This species occurs on beaches, dry mud or salt flats, and the sandy shores of rivers, lakes, and ponds, and nests where vegetation is sparse or absent. A major threat to the Snowy Plover is the alteration of coastal habitat. We recommend that you take the necessary precautions to protect the critical habitat of this species. If you have any questions or need additional information, please call Michael Seymour at 225-763-3554.

Bird Nesting Colonies

Our database indicates the presence of **bird nesting colonies** within one mile of this proposed project. **Please be aware that entry into or disturbance of active breeding colonies is prohibited by the Louisiana Department of Wildlife and Fisheries (LDWF). In addition, LDWF prohibits work within a certain radius of an active nesting colony.**

Nesting colonies can move from year to year and no current information is available on the status of these colonies. If work for the proposed project will commence during the nesting season, conduct a field visit to the worksite to look for evidence of nesting colonies. This field visit should take place no more than two weeks before the project begins. If no nesting colonies are found within 400 meters (700 meters for brown pelicans) of the proposed project, no further consultation with LDWF will be necessary. If active nesting colonies are found within the previously stated distances of the proposed project, further consultation with LDWF will be required. In addition, colonies should be surveyed by a qualified biologist to document species present and the extent of colonies. Provide LDWF with a survey report which is to include the following information:

1. qualifications of survey personnel;
2. survey methodology including dates, site characteristics, and size of survey area;
3. species of birds present, activity, estimates of number of nests present, and general vegetation type including digital photographs representing the site; and
4. Topographic maps and ArcView shapefiles projected in UTM NAD83 Zone 15 to illustrate the location and extent of the colony.

Please mail survey reports on CD to: Louisiana Natural Heritage Program
La. Dept. of Wildlife & Fisheries
P.O. Box 98000
Baton Rouge, LA 70898-9000

To minimize disturbance to colonial nesting birds, the following restrictions on activity should be observed:

- For colonies containing nesting wading birds (i.e., herons, egrets, night-herons, ibis, roseate spoonbills, anhingas, and/or cormorants), all project activity occurring within 300 meters of an active nesting colony should be restricted to the non-nesting period (i.e., September 1 through February 15).

- For colonies containing nesting gulls, terns, and/or black skimmers, all project activity occurring within 400 meters (700 meters for brown pelicans) of an active nesting colony should be restricted to the non-nesting period (i.e., September 16 through April 1).

No other impacts to rare, threatened or endangered species or critical habitats are anticipated from the proposed project. No state or federal parks, wildlife refuges, wildlife management areas or scenic rivers are known at the specified site or within ¼ mile of the proposed project.

The Louisiana Department of Wildlife and Fisheries submits these recommendations to the U.S. Army Corps of Engineers in accordance with provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.). Please do not hesitate to contact Habitat Section biologist Chris Davis at 225-765-2642 should you need further assistance.

Sincerely,

Randell S, Myers
Assistant Secretary

tb/cm

1) LDWF would like the maximum elevation of beneficial use to be increased from 2.5'NAVD'88 to *4.5'* NAVD'88. This would be consistent with previous requirements and work performed in the area. It would also provide habitat that is beneficial to a large number of wildlife that utilize the MS Delta and that are designated as "species of conservation concern" as outlined in the 2015 Louisiana Wildlife Action Plan. A few of these species include mottled ducks, and colonial birds such as black skimmers and terns. Wetlands built to an elevation of 2.5' NAVD'88 would be completely tidal and quickly subside to subtidal wetlands in a short period of time. Subtidal wetlands do not provide the limited and necessary habitat required for many species on the delta.

MVN Final Response: The deepening study has stated that subject to the limitations of the Federal Standard regulations, the goal of BU placement of dredged material is to create marsh habitat at a final target elevation of about +2.0 feet NAVD88 , which would allow for tidal exchange and vegetative establishment. Recognizing the variability in subsidence over the area, nowhere in the project's documents is the initial placement height discussed, only that the desired "placement" elevation meant to develop coastal marsh habitat. This was presented also recognizing the need to coordinate with the natural resource agencies prior to placement so as to better achieve sustainable coastal habitat. Recognizing there may be some natural variability in initial habitat classification in a placement area (e.g. ponds, ridges, marsh, etc), and recognizing also the rapid subsidence which leads to changes in coastal habitat classification (e.g. ridge to marsh to open water) the study largely focuses on coastal marsh in order to 1) comply with the Magnuson Stevens Fishery Conservation Act by replacing open water Essential Fish Habitat with intertidal Essential Fish Habitat, and 2) provide a reasonable estimate the benefits achieved construction in the area using the marsh model wetland value assessment.

MVN recognizes that target placement elevations may vary throughout the disposal areas based on the differences in subsidence with the areas. Recognizing the high rate of subsidence in Pass A Loutre WMA, and recognizing also the topographic variability inherent with dredge material placement that allows ridges, high marsh, and emergent marsh, MVN Operations Division's will continue coordination with LDWF on BU placement sites in the Pass a Loutre WMA so as to maximize ecological benefits from beneficial use. MVN recognizes coordination with LDWF would maximize beneficial use and lead to more desirable coastal habitat.

2) The plan claims that all the dredged sediment in the deepening project will be used beneficially with the exception of the material from the Bar Channel between river miles 19 and 22 BHP. This is not true. There are a few areas in the lower river where cutter head dredges have been proven ineffective and/or an impediment to navigation very similar to the Bar Channel. One such area is the channel bend at Head of Passes. See language in the public notice on page 7 that states the following: "The remainder of the shoal material would not be used beneficially because...cutter heads would pose hazards to navigation, as in the bar channel." Past practice has demonstrated that much of this material would be placed in the Head of Passes designated disposal area (HDDA). This practice is contradictory to the statement that all the material is to be used beneficially.

MVN Final Response: The plan for construction of the deeper channel in Southwest Pass call for only cutterhead dredges to be used from Mile 6.0 AHP down to the bar channel. Hopper dredges would be used for constructing the deeper channel in the remaining lower jetty to bar *channel reaches. Although MVN will not utilize cutterhead dredges for routine maintenance of the channel in the Head of Passes reach, MVN will utilize cutterhead dredges to construct the deeper channel in the Head of Passes reach. The reference to page 7 of the 404 public notice is in reference to maintenance activities and is not contradictory to the description of construction.*

3) We also assume that O&M of the 45' channel will continue during the construction of the 50' channel which will require continued disposal into the HDDA which this agency has objected to due to its negative environmental impacts. This practice along with potential construction disposal into the HDDA will further exacerbate the shoaling of Pass-a-Loutre and starvation of the wetlands of the lower river of sediment and freshwater. In order to alleviate this negative impact we suggest that the use of the HDDA be clearly identified and used as little as possible. Additionally, the HDDA should be dredged out to full capacity at the conclusion of the deepening project.

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DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVENUE
NEW ORLEANS, LOUISIANA 70118

REPLY TO
ATTENTION OF

Regional Planning and
Environmental Division South
Environmental Compliance Branch

PUBLIC NOTICE

Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project, Phase III Deepening

Introduction. This 30 day Public Notice is issued in accordance with provisions of Title 33 CFR Parts 336.1(b)(1) and 337.1, which establish policy, practices, and procedures to be followed concerning federal actions involving the placement of dredged or fill material into waters of the United States.

This notice provided by the U.S. Army Corps of Engineers New Orleans District (CEMVN) is a revised public notice to one that was originally published March 14, 2017. This revised notice addresses project-related impacts to waters of the United States for the next phase of deepening the Mississippi River Ship Channel (MRSC) from Baton Rouge, Louisiana to the Gulf of Mexico. The MRSC would be deepened from 48 feet to a depth of 50 feet at Mean Lower Low Water (MLLW) in the lower Mississippi from River Mile (RM) 13.4 Above Head of Passes (AHP) to RM 0.0 at Head of Passes, and from Head of Passes to RM 22 Below Head of Passes (BHP) (i.e., Southwest Pass and Southwest Pass bar channel). The MRSC would also be deepened at 12 river crossings from 45 feet to a depth of 50 feet below the Low Water Reference Plane (LWRP), for ships to access the Port of Baton Rouge.

The difference between this public notice and the March 14, 2017 notice is the upstream limit of the proposed action. The original public notice discussed deepening the 3 southernmost crossings above New Orleans, Louisiana, in order to allow deep draft access to the Port of South Louisiana. However, on May 23, 2017, USACE made an agency decision to deepen all 12 deep draft crossings between New Orleans and Baton Rouge, Louisiana, expanding deep draft access to the Port of Baton Rouge. The expansion of scope was based on the encouraging results of a 2D hydraulic model which indicated that maintenance of the 12 crossings would be considerably less than previously estimated. This, in turn, decreased the costs of long-term maintenance of the plan and improved the economic benefits to the Nation.

The project is currently authorized to a depth of 55 feet, however, an integrated general reevaluation report and draft supplemental environmental impact statement (SEIS) were prepared to reevaluate changes in economics and environmental conditions that have occurred since the original 1981 Feasibility Report. This integrated report was released for public and agency comment on December 16, 2016 (http://www.mvn.usace.army.mil/About/Mississippi-River-Ship-Channel).

On May 23, 2017, USACE made an agency decision to select Alternative 3 from the SEIS as the agency's Recommended Plan, in lieu of Alternative 3d, described as the tentatively selected plan in the Draft SEIS. Of note, Alternative 3d was a scaled-down version of Alternative 3, and selected to deepen only the 3 southern most crossings allowing access to the Port of South Louisiana. The change in alternative selection was made based on encouraging results of a hydraulic 2D model which indicated maintenance of the 12 crossings would actually be significantly less than estimated, thus improving the Benefits/Cost ratio of Alternative 3.

Project Authority. A feasibility report entitled "Deep-Draft Access to the Ports of New Orleans and Baton Rouge, Louisiana" was prepared in 1981 recommending deepening the Mississippi River navigation channel to a 55 feet depth from Baton Rouge to the Gulf of Mexico. The final Chief of Engineers Report for the project was signed in 1983. The project was authorized for construction by the 1985 Supplemental Appropriations Act, and the Water Resources and Development Act of 1986 (PL 99-662). Section 2101(b) of the Water Resources Reform and Development Act 2014 (Pub. Law 113-121) effectively amended the project authorization pursuant to its amendment of Section 101(b)(1) of the Water Resources Development Act of 1986, (Pub. Law 99-662) regarding the requisite non-Federal cost share for the operation, maintenance, repair, rehabilitation and replacement of general navigation features of commercial navigation harbor projects.

During the pre-construction planning, a construction sequence was developed that would implement the authorized project in three construction phases, to obtain the fully authorized project. Phase I was completed in December of 1987 and provided a depth of 45 feet from Donaldsonville, Louisiana at RM 181.0 to the Gulf of Mexico. Construction of Phase II was completed in December 1994 and involved deepening of the MRSC to a depth of 45 feet between Donaldsonville and Baton Rouge and involved dredging of eight river crossings. Phase III was originally defined as deepening of the MRSC from the Gulf to Baton Rouge from a depth of 45 feet to a depth of 55 feet. However, the Louisiana Department of Transportation and Development (LDOTD), as the local sponsor, limited the scope for the third phase to a target depth of 50 feet. Dredging beyond 50 feet was not requested by LDOTD because a cost-share agreement would be required.

In order to proceed with the evaluation of alternatives for the third phase of construction, this effort was initiated with the issuance of Federal funds to initiate a General Reevaluation Report, following execution of the Feasibility and Cost Sharing Agreement (FCSA), signed on April 2, 2015 with LDOTD.

Location. Construction and maintenance activities would occur in multiple reaches in of the MRSC between New Orleans and Baton Rouge, Louisiana. Dredging and disposal activities would occur at 12 river crossings that are currently maintained between New Orleans and Baton Rouge, Louisiana, within currently maintained areas in the lower ship channel, as well as beneficial use disposal areas in lower Plaquemines Parish, Louisiana (Figures 1-3).

Project Description. CEMVN proposes to deepen and maintain multiple reaches of the Mississippi River ship channel from the Gulf of Mexico to the Port of Baton Rouge. This includes deepening 12 river crossings from 45 feet to 50 (LWRP, Table 1). This would also entail deepening and maintaining various shoals from 48 feet to 50 feet (MLLW), from RM 13.4 AHP to Head of Passes, and from Head of Passes to RM 22 BHP via Southwest Pass. Approximately 2/3 of all material dredged during construction would be used beneficially to create approximately 1460 acres of coastal wetland habitat in lower Plaquemines Parish, Louisiana. Deepening would only occur within previously disturbed reaches that are actively maintained by CEMVN for navigation purposes. As such, dredging quantities of the proposed action are summarized in Table 2 as the incremental quantities beyond existing operations and maintenance (O&M) practices, what the study defines as the No-Action Alternative.

B.R. Front	**River Mile 234-229 AHP**
Redeye	**River Mile 226-221 AHP**
Sardine Point	**River Mile 221-216 AHP**
Medora	**River Mile 214-208 AHP**
Granada	**River Mile 207-202 AHP**
Bayou Goula	**River Mile 199-196 AHP**
Alhambra	**River Mile 193-188 AHP**
Philadelphia	**River Mile 185-181 AHP**
Smoke Bend	**River Mile 179-172 AHP**
Richbend	**River Mile 160-155 AHP**
Belmont	**River Mile 156-151 AHP**
Fairview	**River Mile 117-111 AHP**

Table 1. Names and reaches of the 12 deep draft crossings.

	Crossings Construction	Lower River Construction (RM 13.4 AHP-19 BHP)	Bar Channel Construction RM (19BHP-22BHP)	Annual O&M- 12 Crossings	Annual O&M- Lower River/Bar Channel
Proposed Action	8,600,000 cy	19,900,000 cy	1,620,000 cy	1,600,000 cy	0 cy

Table 2. Cubic yards (cy) of incremental dredging requirements beyond the No-action alternative.

Construction

Approximately 8,600,600 cubic yards of material would be dredged by deepening the 12 crossings from 45 to 50 feet (LWRP). Assuming adequate funding, construction would occur over a 3-5 year period. Because of this phased approach to construction, it is anticipated that dustpan dredges will be readily available and it is unlikely that hopper dredges would be utilized for crossing construction. Dustpans are typically utilized at crossings during falling water and low water conditions. The suction head of the dustpan, approximately the width of the dredge, is lowered to the face of the material to be removed. High velocity water jets loosen the material which is then drawn by pump as slurry through the dredge pipe and floating pipeline where the material is deposited adjacent to the navigation channel. As the discharge pipe is limited on dustpans, this dictates that the material be deposited no farther than 1000 feet from the dredge. This type of disposal offers some environmental benefits by maintaining sediment within the channel to build sandbars, reduce erosion, and provide material to build or replenish island habitats and, eventually, coastal wetlands.

Future geotechnical analyses of the river crossings will be required during detailed design in order to determine if dredging the channel will negatively impact channel slopes. In order to ensure slope stability during detailed project design, bank grading and revetment (i.e., sub-aqueous rock and/or articulated concrete mattress) may be determined necessary for final design. Stabilization of the bank is essential to ensure that bank failure and land loss do not occur within these areas. Currently, it is anticipated that 9 of the 12 crossings (Fairview, Belmont, Rich Bend, Philadelphia, Alhambra, Grenada, Sardine Point, Red Eye and Baton Rouge Front) may warrant some level of stabilization measures. If determined necessary, vegetation would be temporarily cleared along the sections of riverbank proposed for revetment. Upon completion, each site will be left in a condition comparable to its current state. Vegetation will reclaim the cleared land and forested habitat is expected to return within a relatively short period of time.

The material dredged during construction in the vicinity of Southwest Pass (RM 13.4 AHP

– RM 19 BHP) would occur via cutterhead dredge, and would total approximately 19,900,000 cubic yards. For efficient cutterhead dredging, a continuous reach (miles in length) of the channel must shoal to depths that provide a cut of 4-6 feet. Cutterhead dredges are equipped with a rotating cutter apparatus surrounding the intake end of the suction pipe. Cutterheads can efficiently dig and pump up to a mile of all types of alluvial materials and compacted deposits, such as clay and hardpan. Using booster pumps, cutterhead dredges have the capability of pumping dredged material longer distances, but can be cost-prohibitive and limited by available lengths of discharge pipe.

Material from Southwest Pass vicinity construction would typically be placed unconfined in targeted areas of open water within the 167,318 acres of designated beneficial use placement areas. The material would be deposited as uniformly as practicable to achieve an expected final elevation of about +2.0 feet NAVD88 to create approximately 1,460 acres of intertidal coastal wetland habitat, resulting in a net of approximately 575 average annualized habitat units (AAHUs) after 50 years.

CEMVN provides dredging contractors with a limited number of mandatory access corridors/staging areas for Southwest Pass cutterhead disposal operations. This is done to limit impacts to existing wetlands as well as to existing flowlines that lie on the ground surface all along Southwest Pass. Temporary access dredging may be required to allow construction equipment and pipeline to reach designated beneficial use placement areas. Excavation of flotation access channel material and access corridor material would be performed by a mechanical dredge only when there are no less damaging practicable access alternatives. The resulting unavoidable impacts to emergent marsh would be temporary in duration, minor in extent, and would be incidental to beneficial placement on a much larger scale. Flotation access channels would be limited to a maximum bottom width of about 80 feet and a maximum depth of about 8.0 feet (MLLW). These access corridors may be backfilled with dredged material to a maximum elevation of about three feet above adjacent marsh upon completion of dredging and placement activities to restore these corridors to pre-project marsh elevations after settlement.

In order to deepen the bar channel (RM 19 BHP-RM 22 BHP) from 48 feet to 50 feet (MLLW), approximately 1,620,000 cubic yards of material will be dredged using hopper dredges. Hopper dredges operate by storing dredged material onboard and transporting it to an open water disposal site downstream. Hopper dredges are typically operated in situations where dredged material must be moved greater distances. Hoppers would dredge-and-haul to the 2,975 acre EPA-designated ocean dredged material disposal site (ODMDS) located adjacent to, and west of, the bar channel. If river currents are sufficiently strong, hopper dredges working in the bar channel may also perform work in the agitation dredging mode. Agitation dredging in this case involves filling a hopper dredge to capacity and allowing it to overflow. Fine sediments released into surface waters are carried out of the mouth of river to the Gulf of Mexico. Coarser/heavier sediments collect in the hopper and are ultimately hauled to the ODMDS for placement. Between 2009 through 2015, hopper dredges have only performed agitation dredging in this reach during 2015.

The ODMDS site is regulated under Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. This disposal area will not be expanded as part of this plan. As part of CEMVN's annual coordination with the US Environmental Protection Agency (EPA) Region 6 regarding MVN use of the ODMDS, CEMVN provides EPA Region 6 with a determination on the acceptability of Southwest Pass dredged material for placement into the ODMDS. The following information, required for evaluation of dredged materials proposed for ocean disposal, is provided to EPA Region 6 by CEMVN: 1) dredging project information; 2) dredged material characterization/evaluation; and 3) regulatory compliance evaluation. EPA Region 6 reviews the MVN determination to evaluate the environmental effects of dredged material disposal and to ensure that compliance with the ocean dumping criteria at 40 CFR 220-228 has been demonstrated. EPA Region 6 then informs the MVN whether or not it concurs with MVN's determination. The most recent Section 103 EPA Concurrence decision for placement of shoal material from Southwest Pass in the Southwest ODMDS was received on 06 February 2017.

Maintenance

Once constructed to 50 feet, the annual O&M of the project would only increase in the area of the crossings. The average annual O&M of the 12 crossings would increase by approximately 1,600,000 cubic yards (approximately 10%), from 16,400,000 cubic yards to 18,000,000 cubic yards. As with current practice, shoal material would be released adjacent to the channel and/or in deeper open water areas downstream of the crossings. Current practice dictates that hopper dredges are only utilized at crossings if dustpan dredges are unavailable, or if shoaling is greater than what the available dustpans can handle. When activated, hopper dredges operate at crossings by storing dredged material onboard and transporting it to a disposal site downstream that is greater than 50 feet (LWRP). Hopper dredges are more costly than dustpan dredges and are typically operated in situations where dredged material must be moved greater distances (e.g. Southwest Pass). Because dustpans are usually available and are more economical to operate, hoppers are used sparingly and not utilized at crossings every year. Over the last 20 years hopper dredges have accounted for less than 10% of all material handled in the crossings.

Annual maintenance of the lower river (RM 13.4 AHP to RM 22 BHP) is not anticipated to increase beyond existing O&M after construction. O&M in this reach currently averages 22,250,000 cubic yards. Maintenance would continue to include a combination of cutterhead and hopper dredges for shoals that occur. On average, approximately 6,600,000 cubic yards of shoal material would be dredged via cutterhead to create approximately 530 acres of coastal marsh each year, resulting in a net of approximately 6,160 AAHUs after 50 years. Additional shallow mud flats and emergent vegetation are expected to accumulate after material placement thereby creating suitable habitat for wetland vegetation and wildlife species that could occur within the proposed disposal area. As evidenced with previous CEMVN beneficial use-placement areas in the delta, placement areas would naturally vegetate through colonization of species from adjacent vegetated areas. The loss of ubiquitous shallow open water habitat would be offset by the creation of (increasingly scarce) coastal wetland habitat. The remainder of the shoal material would not be used beneficially because either shoaling patterns do not justify the costs of utilizing cutterheads under the Federal Standard or because cutterheads would pose hazards to navigation, as in the bar channel. The remaining material from O&M will be disposed of in the Hopper Dredged Disposal Area at the Head of Passes (to be used beneficially at a later date) or in the EPA-designated ODMDS in the Gulf of Mexico.

Sediment Analysis. In order to better assess the potential impacts of deepening on water quality and biota within the river crossings, dredge slurry was collected directly from the discharge lines of dustpan dredges performing maintenance on 11 deep draft crossings during Fiscal Year 2016 in order to better assess the potential impacts of deepening on water quality within the river. The solid and liquid fractions of the slurry were analyzed individually for the presence of priority pollutants including metals, pesticides, polychlorinated biphenyls, and semi-volatile organic compounds. Metals were common to both fractions, and were detected at or below background levels in the Mississippi River. Chlordane pesticides and hydrocarbon exhaust products were detected infrequently in the solid samples, but at levels generally at or below 1 part per billion. All detected contaminants were below regulatory water quality criteria and ecological screening values, and dredging of the crossings is not expected to have a negative impact on human health or the environment.

Status of Supplemental Environmental Impact Statement (SEIS) and Other Environmental Documents. The 30-day public review of this notice is associated with SEIS #15-1 that was prepared to comply with the National Environmental Policy Act. That SEIS completed its 45-day review/comment period on January 30, 2017. Environmental compliance for the proposed action would be achieved upon: coordination of the draft and final version of SEIS with appropriate agencies, organizations, and individuals for their review and comments; public review of the Section 404(b)(1) Public Notice; signing of the Section 404(b)(1) Evaluation; receipt and acceptance or resolution of all U.S. Fish and Wildlife Service and National Marine Fisheries Service's comments and recommendations provided under the Fish and Wildlife Coordination Act; National Marine Fisheries Service's concurrence that the project is compliant with the Magnuson-Stevens Fishery Conservation Act; Louisiana Department of Natural Resources' concurrence with the determination that the proposed action is consistent with the Louisiana Coastal Zone program to the maximum extent practicable; resolution of any Louisiana Department of Environmental Quality (LDEQ) comments on the air quality impact analysis documented in the SEIS; receipt of a Clean Water Act Section 401 water quality certification from LDEQ; and concurrence from the Louisiana State Historic Preservation Officer with the CEMVN determination that the proposed action would not affect known historical properties and is compliant with Section 106 of the National Historic Preservation Act on December 7, 2016. The Record of Decision will not be signed until the proposed action achieves environmental compliance with applicable laws and regulations, as described above.

Coordination. The following is a partial list of agencies to which a copy of this notice is being sent:

U.S. Environmental Protection Agency, Region VI
U.S. Fish and Wildlife Service
National Marine Fisheries Service
U.S. Coast Guard, Eighth District
Louisiana Department of Environmental Quality
Louisiana Department of Wildlife and Fisheries
Louisiana Department of Natural Resources
Louisiana Department of Wildlife and Fisheries
Louisiana Department of Transportation and Development
Louisiana State Historic Preservation Officer

This notice is being distributed to these and appropriate Congressional, Federal, Tribal, state, and local interests, environmental organizations, and other interested parties.

Evaluation Factors. Evaluation includes application of the Section 404(b)(1) guidelines promulgated by the Administrator of EPA, through 40 CFR 230.

Public Involvement. Interested parties may express their views on the placement of material associated with the proposed action or suggest modifications. All comments postmarked on or before the expiration of the comment period for this notice will be considered. Any person who has an interest that may be affected by deposition of excavated or dredged material may request a public hearing. The request must be submitted in writing to the District Engineer within the comment period of this notice and must clearly set forth the interest that may be affected and the manner in which the interest may be affected by the proposed action. You are requested to communicate the information contained in this notice to any parties who may have an interest in the proposed action. For further information regarding the proposed action, please contact Mr. Steve Roberts at (504) 862-2517; FAX number (504) 862-1375 and E-mail address steve.w.roberts@usace.army.mil.

for Marshall K. Harper
Chief, Environmental Planning Branch

COMMENT PERIOD FOR THIS PUBLIC NOTICE EXPIRES: AUG 2 2017

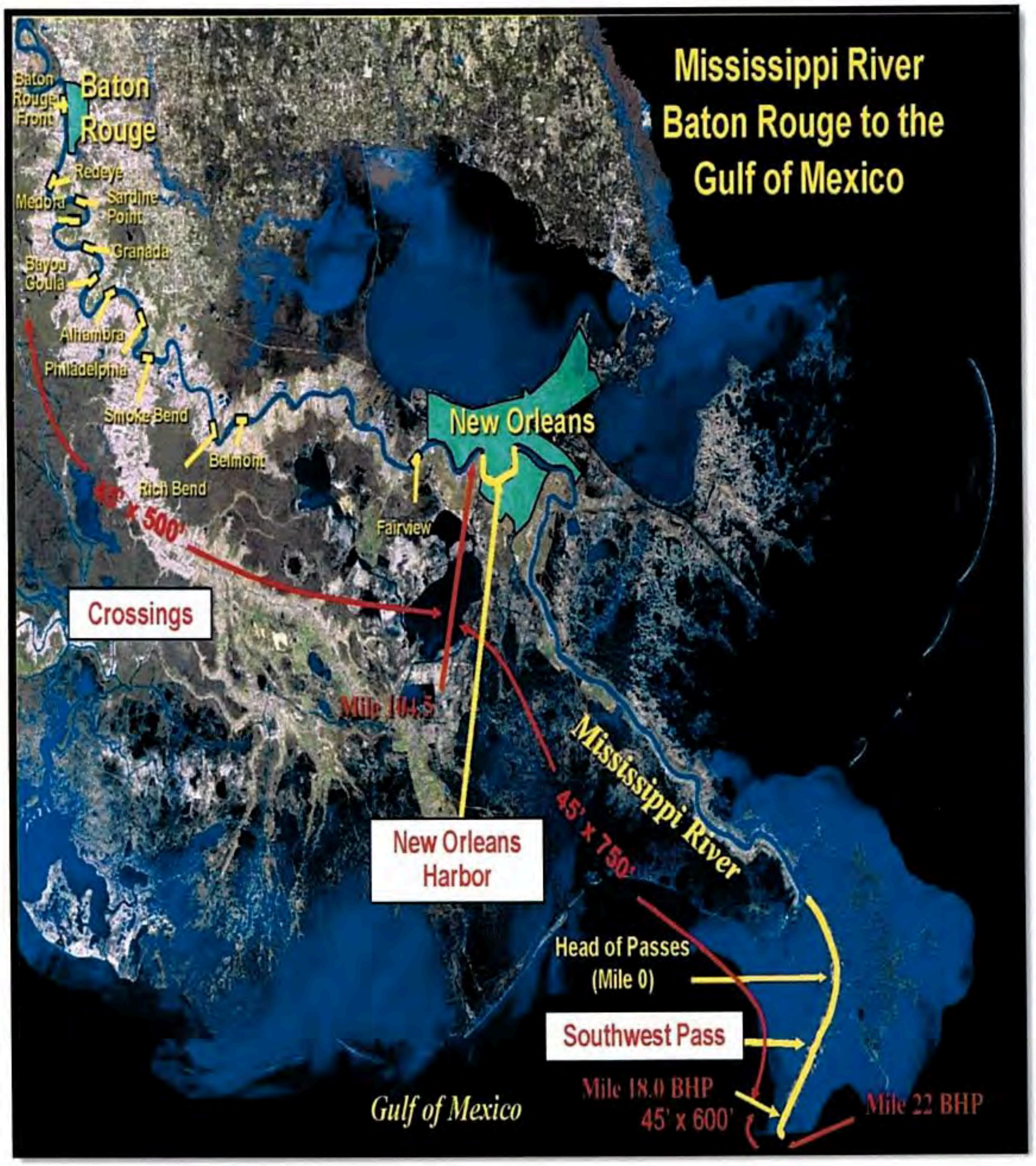


Figure 1. Prominent features of the Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana project extend from the Port of Baton Rouge, Louisiana to RM 22 Below Head of Passes.

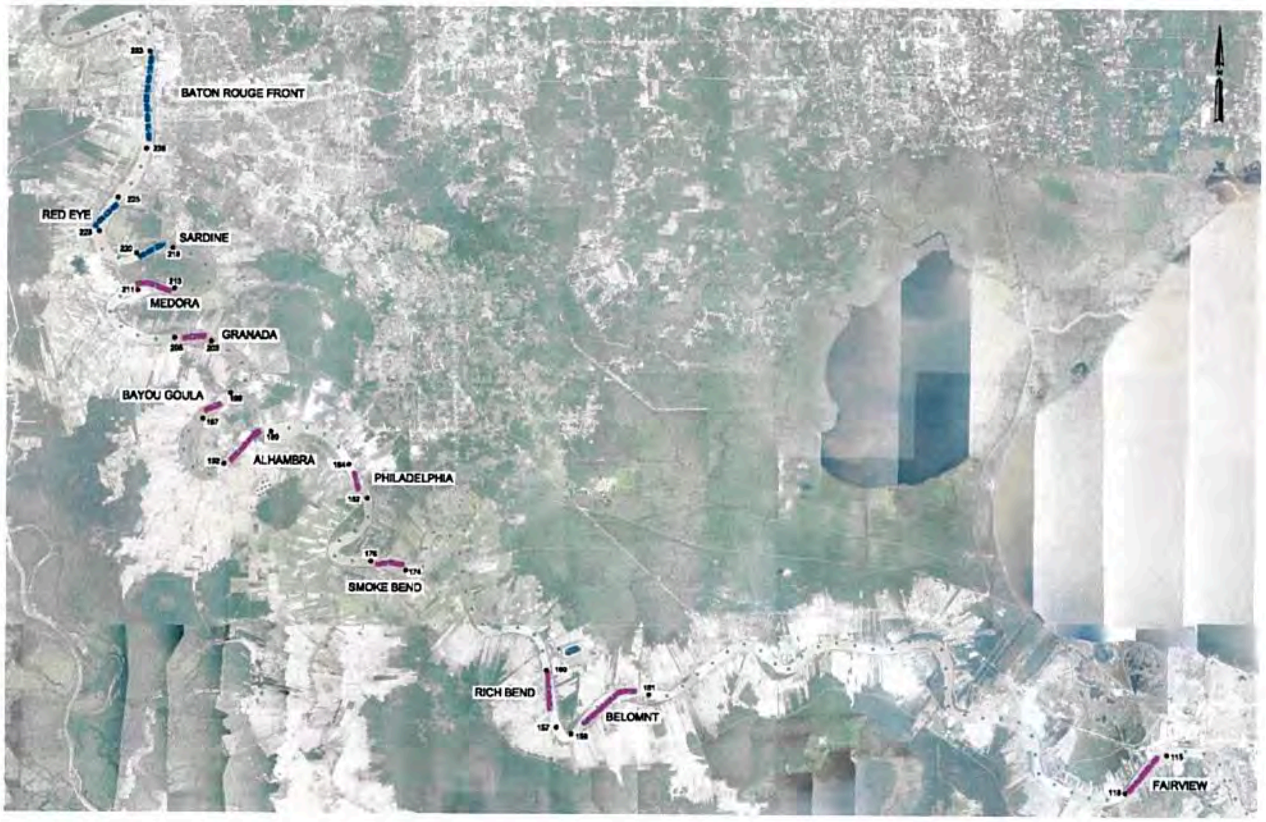


Figure 2. There are 12 actively maintained crossings that are maintained at 45 feet (LWRP) between New Orleans and Baton Rouge, Louisiana. The proposed plan includes deepening 12 crossings that would allow deep draft access to the Port of Baton Rouge.

Figure 3. The long term plan includes 143,264 acres that were previously cleared under the National Environmental Policy Act (red), and 24,054 acres of additional beneficial use area (black).

AUG 2 2 2017

SECTION 404(b)(1) EVALUATION

Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project

The following short form 404(b)(1) evaluation follows the format designed by the Office of the Chief of Engineers. As a measure to avoid unnecessary paperwork and to streamline regulation procedures while fulfilling the spirit and intent of environmental statutes, the New Orleans District is using this format for all proposed project elements requiring 404 evaluation, but involving no significant adverse impacts.

Project related impacts would not result in significant adverse impacts to waters of the United States. Construction impacts would occur over a 3-5 year period, and the amount of material dredged during construction (approximately 30,120,000 cy) would actually be less than the average amount of material dredged during an average annual operations and maintenance (O&M) cycle (approximately 38,600,000 cy). Once constructed to 50 feet, the annual O&M of the project would only increase in the area of the crossings, and increase by roughly 10%, from 16,400,000 cy to 18,000,000 cy.

In order to better assess the potential impacts of deepening on water quality and biota within the river crossings, dredge slurry was collected directly from the discharge lines of dustpan dredges performing maintenance on 11 deep draft crossings during Fiscal Year 2016. The solid and liquid fractions of the slurry were analyzed individually for the presence of priority pollutants including metals, pesticides, polychlorinated biphenyls, and semi-volatile organic compounds. Metals were common to both fractions, and were detected at or below background levels in the Mississippi River. Chlordane pesticides and hydrocarbon exhaust products were detected infrequently in the solid samples, but at levels generally at or below 1 part per billion. All detected contaminants were below regulatory water quality criteria and ecological screening values, and dredging of the crossings is not expected to have a negative impact on human health or the environment.

Project related impacts to wetlands would be beneficial and result in the construction of 1,460 acres of increasingly scarce coastal marsh habitat. The O&M for the project would continue to benefit coastal wetlands by averaging approximately 530 acres of coastal marsh habitat annually. The 30-day public comment period on the 404 Public Notice concluded on 02 August 2017 without adverse or controversial comments received. The Louisiana Department of Environmental Quality issued a Water Quality Certification (WQC 170309-01) for the proposed action on 14 July 2017.

PROJECT TITLE. Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project, Phase III Deepening

PROJECT DESCRIPTION. CEMVN proposes to deepen and maintain multiple reaches of the Mississippi River ship channel from the Gulf of Mexico to the Port of Baton Rouge. This includes deepening 12 river crossings from 45 feet to 50 feet at the Low Water Reference Plane (LWRP) (Encls 1,3 & 4). This would also entail deepening and maintaining various shoals from 48 feet to 50 feet at Mean Lower Low Water (MLLW), from RM 13.4 Above Head of Passes (AHP) to Head of Passes, and from

Head of Passes to RM 22 Below Head of Passes (BHP) via Southwest Pass. Approximately 1,460 acres of coastal wetland habitat will be created in lower Plaquemines Parish, Louisiana. Deepening would only occur within previously disturbed reaches that are actively maintained by CEMVN for navigation purposes. As such, dredging quantities of the proposed action are summarized in Enclosure 2 as the incremental quantities beyond existing operations and maintenance (O&M) practices, and what the study defines as the No-Action Alternative.

Construction

Approximately 8,600,600 cy of material would be dredged by deepening the 12 crossings from 45 to 50 feet at the LWRP. Assuming adequate funding, construction would occur over a 3-5 year period. Because of this phased approach to construction, it is anticipated that dustpan dredges will be readily available and it is unlikely that hopper dredges would be utilized for crossing construction. Dustpans are typically utilized at crossings during falling water and low water conditions. The suction head of the dustpan, approximately the width of the dredge, is lowered to the face of the material to be removed. High velocity water jets loosen the material, which is then drawn by pump as slurry through the dredge pipe and floating pipeline where the material is deposited adjacent to the navigation channel. As the discharge pipe is limited on dustpans, this dictates that the material be deposited no farther than 1000 feet from the dredge. This type of disposal offers some environmental benefits by maintaining sediment within the channel to build sandbars, reduce erosion, and provide material to build or replenish island habitats and, eventually, coastal wetlands.

Future geotechnical analyses of the river crossings will be required during detailed design in order to determine if dredging the channel will negatively impact channel slopes. In order to ensure slope stability during detailed project design, bank grading and revetment (i.e., sub-aqueous rock and/or articulated concrete mattress) may be determined necessary for final design. Stabilization of the bank is essential to ensure that bank failure and land loss do not occur within these areas. Currently, it is anticipated that 9 of the 12 crossings (Fairview, Belmont, Rich Bend, Philadelphia, Alhambra, Grenada, Sardine Point, Red Eye and Baton Rouge Front) may warrant some level of stabilization measures. If determined necessary, vegetation would be temporarily cleared along the sections of riverbank proposed for revetment. Upon completion, each site will be left in a condition comparable to its current state. Vegetation will reclaim the cleared land and forested habitat is expected to return within a relatively short period of time.

The material dredged during construction in the vicinity of Southwest Pass (RM 13.4 AHP – RM 19 BHP) would occur via cutterhead dredge, and would total approximately 19,900,000 cy. For efficient cutterhead dredging, a continuous reach (miles in length) of the channel must shoal to depths that provide a cut of 4-6 feet. Cutterhead dredges are equipped with a rotating cutter apparatus surrounding the intake end of the suction pipe. Cutterheads can efficiently dig and pump up to a mile of all types of alluvial materials and compacted deposits, such as clay and hardpan. Using booster pumps, cutterhead dredges have the capability of pumping dredged material longer distances, but can be cost-prohibitive and limited by available lengths of discharge pipe.

Material from Southwest Pass vicinity construction would typically be placed unconfined in targeted areas of open water within the 167,300 acres of designated beneficial use placement areas (Encl 5). The material would be deposited as uniformly as practicable to achieve a targeted final elevation of about +2.0 feet NAVD88 to create approximately 1,460 acres of intertidal coastal wetland habitat, resulting in a net of approximately 575 AAHUs after 50 years.

CEMVN provides dredging contractors with a limited number of mandatory access corridors/staging areas for Southwest Pass cutterhead disposal operations. This is done to limit impacts to existing wetlands as well as to existing flowlines that lie on the ground surface all along Southwest Pass. Temporary access dredging may be required to allow construction equipment and pipeline to reach designated beneficial use placement areas. Excavation of flotation access channel material and access corridor material would be performed by a mechanical dredge only when there are no less damaging practicable access alternatives. The resulting unavoidable impacts to emergent marsh would be temporary in duration, minor in extent, and would be incidental to beneficial placement on a much larger scale. Flotation access channels would be limited to a maximum bottom width of about 80 feet and a maximum depth of about 8.0 feet at Mean Lower Low Water (MLLW). These access corridors may be backfilled with dredged material to a maximum elevation of about three feet above adjacent marsh upon completion of dredging and placement activities to restore these corridors to pre-project marsh elevations after settlement.

In order to deepen the bar channel (RM 19 BHP-RM 22 BHP) from 48 feet MLLW to 50 feet MLLW, approximately 1,620,000 cy of material will be dredged using hopper dredges. Hopper dredges operate by storing dredged material onboard and transporting it to an open water disposal site downstream. Hopper dredges are typically operated in situations where dredged material must be moved greater distances. Hoppers would dredge-and-haul to the 2,975 acre EPA-designated ocean dredged material disposal site (ODMDS) located adjacent to, and west of, the bar channel. If river currents are sufficiently strong, hopper dredges working in the bar channel may also perform work in the agitation dredging mode. Agitation dredging in this case involves filling a hopper dredge to capacity and allowing it to overflow. Fine sediments released into surface waters are carried out of the mouth of river to the Gulf of Mexico. Coarser/heavier sediments collect in the hopper and are ultimately hauled to the ODMDS for placement. Between 2009 through 2015, hopper dredges have only performed agitation dredging in this reach during 2015.

The ODMDS site is regulated under Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. This disposal area will not be expanded as part of this plan. As part of CEMVN's annual coordination with EPA Region 6 regarding MVN use of the ODMDS, CEMVN provides EPA Region 6 with a determination on the acceptability of Southwest Pass dredged material for placement into the ODMDS. The following information, required for evaluation of dredged materials proposed for ocean disposal, is provided to EPA Region 6, by the CEMVN: (1) dredging project information; (2) dredged material characterization/evaluation; and (3) regulatory compliance evaluation. EPA Region 6 reviews the CEMVN determination to evaluate the environmental effects of dredged material disposal and to ensure that compliance with the ocean dumping criteria at 40 CFR 220-228 has been demonstrated. EPA Region 6 then informs the CEMVN whether or not it concurs with CEMVN's determination. The most recent Section 103 EPA Concurrence decision for placement of shoal material from Southwest Pass in the Southwest ODMDS was received on 06 February 2017.

Maintenance

Once constructed to 50 feet, the annual O&M of the project would only increase in the area of the crossings. The average annual O&M of the 12 crossings would increase by approximately 1,600,000 cy (by approximately 10%), from 16,400,000 yards to 18,000,000 cy. As with current practice, shoal material would be released adjacent to the channel and/or in deeper open water areas downstream of the crossings. Current practice dictates that hopper dredges are only utilized at crossings if dustpan dredges are unavailable, or if shoaling is greater than what the available dustpans can handle. When activated, hopper dredges operate at crossings by storing dredged material onboard and transporting it to a disposal site downstream that is greater than 50 feet depth at the LWRP. Hopper dredges are more costly than dustpan dredges and are typically operated in situations where dredged material must be moved greater distances (e.g. Southwest Pass). Because dustpans are usually available and are more economical to operate, hoppers are used sparingly and not utilized at crossings every year. Over the last 20 years hopper dredges have accounted for less than 10% of all material handled in the crossings.

Annual maintenance of the lower river (RM 13.4 AHP to RM 22 BHP) is not anticipated to increase beyond existing O&M after construction. O&M in this reach currently averages 22,250,000 cy. Maintenance would continue to include a combination of cutterhead and hopper dredges for shoals that occur. On average, approximately 6,600,000 cy of shoal material would be dredged via cutterhead to create approximately 530 acres of coastal marsh each year, resulting in a net of approximately 6,160 AAHUs after 50 years. As evidenced with previous CEMVN beneficial use-placement areas in the delta, placement areas would naturally vegetate through colonization of species from adjacent vegetated areas. The loss of the widely abundant shallow open water habitat would be offset by the creation of (increasingly scarce) coastal wetland habitat. The remainder of the shoal material would not be used beneficially because either shoaling patterns do not justify the costs of utilizing cutterheads under the Federal Standard, or either because cutterheads would pose hazards to navigation, as in the bar channel. The remaining dredged material (15,650,000 cy) from O&M will be disposed of in the Head of Passes (to be used beneficially at a later date) or in the EPA-designated ODMDS in the Gulf of Mexico.

Project related impacts to water quality would be temporary and localized and would include: increased turbidity and total suspended sediments, organic enrichment, chemical leaching, reduced dissolved oxygen, and elevated carbon dioxide levels. Following construction, these temporary and localized effects would return to pre-construction levels. There are no significant long-term adverse effects anticipated to waters of the United States from deepening or future O&M. Overall, the project would contribute approximately 575 AAHUs of benefit from project construction, and would contribute approximately 6160 AAHUs of benefit from project O&M after the 50-year period of analysis for the study.

The proposed actions consist of measures to minimize the adverse effects of storm water erosion and thus require no separate measures or controls for compliance with CWA Section 402(p) and LAC 33:IX.2341.B.14.j.

1. Review of Compliance (230.10 (a)-(d)).	Preliminary[1]		Final[2]	
A review of this project indicates that:				
a. The discharge represents the least environmentally damaging practicable alternative and if in a special aquatic site, the activity associated with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose (if no, see section 2 and information gathered for environmental assessment alternative):	$\boxed{\text{YES}}$	NO*	$\boxed{\text{YES}}$	NO
b. The activity does not appear to: (1) violate applicable state water quality standards or effluent standards prohibited under Section 307 of the Clean Water Act; (2) jeopardize the existence of Federally listed endangered or threatened species or their habitat; and (3) violate requirements of any Federally designated marine sanctuary (if no, see section 2b and check responses from resource and water quality certifying agencies):	YES	NO*	$\boxed{\text{YES}}$	NO
c. The activity will not cause or contribute to significant degradation of waters of the United States including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, esthetic, and economic values (if no, see section 2):	$\boxed{\text{YES}}$	NO*	$\boxed{\text{YES}}$	NO
d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem (if no, see section 5).	$\boxed{\text{YES}}$	NO*	$\boxed{\text{YES}}$	NO

	N/A	Not Significant	Significant*
2. Technical Evaluation Factors (Subparts C-F).			

	N/A	Not Significant	Significant*
2. Technical Evaluation Factors (Subparts C-F).			
a. Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C).			
(1) Substrate impacts.			X
(2) Suspended particulates/turbidity impacts.		X	
(3) Water column impacts.		X	
(4) Alteration of current patterns and water circulation.			X
(5) Alteration of normal water fluctuations/ hydro period.		X	
(6) Alteration of salinity gradients.		X	
b. Biological Characteristics of the Aquatic Ecosystem (Subpart D).			
(1) Effect on threatened/endangered species		X	
(2) Effect on the aquatic food web.		X	
(3) Effect on other wildlife (mammals, birds, reptiles, and amphibians).		X	
c. Special Aquatic Sites (Subpart E).			
(1) Sanctuaries and refuges.		X	
(2) Wetlands.		X	
(3) Mud flats.	X		
(4) Vegetated shallows.		X	
(5) Coral reefs.	X		
(6) Riffle and pool complexes.	X		
d. Human Use Characteristics (Subpart F).			
(1) Effects on municipal and private water supplies.		X	
(2) Recreational and commercial fisheries impacts.		X	
(3) Effects on water-related recreation.		X	
(4) Esthetic impacts.		X	
(5) Effects on parks, national and historical monuments, national seashores, wilderness areas research sites, and similar preserves.		X	

Remarks. Where a check is placed under the significant category, preparer has attached explanation.

2.a.(1) and (4). The project will convert ubiquitous open water habitat to increasingly scarce and ecologically important coastal marsh habitat. This action is not expected to contribute to the toxicity of benthic organisms in the beneficial use disposal area. The conversion would change elevation, water circulation, depth, and current patterns along with benthic communities by converting shallow open water to intermediate marsh. This alteration would create marsh in a degraded wetland environment over time, and would be net beneficial to the area. Changes in location, structure, and dynamics of aquatic communities; substrate erosion and deposition rates; the deposition of suspended particulates; and the rate and extent of mixing of dissolved and suspended components of the water body are expected. These alterations are desirable, and are considered to be beneficial effects of wetland restoration.

A three-dimensional (3D) model, Delft, was used to investigate the potential effects of channel deepening on the migration of salt water wedge upriver from the Gulf of Mexico, as well as the effectiveness of the saltwater sill barrier (designed previously to contain saltwater intrusion at a channel depth of 55 ft). The analysis considered three key components: (1) if deepening of the channel would cause the salt water wedge to migrate further upriver; (2) if deepening of the channel would impact the duration and frequency of the salt water migration; and (3) the effectiveness

	N/A	Not Significant	Significant*

2. Technical Evaluation Factors (Subparts C-F).

of the barrier sill in preventing the migration of the saltwater wedge upriver where it could impact fresh water intakes. The model looked at the location of the toe of the wedge without the sill in place. The results of the model indicated that deepening the channel to recommended 50 ft resulted in the salt water wedge migrating no further upriver then under the current project conditions. The duration of the presence of the wedge was slightly extended for the 50 ft project over the current 48.5 ft project condition, but the barrier sill proved to be a sufficient impedance preventing further upstream progression of the wedge even with the increased channel depth. With the barrier sill in place freshwater intakes located downriver experienced longer durations of elevated chloride levels. However this is temporary and compensated for by supplying freshwater from upriver of the sill via pipelines to communities located downriver.

3. Evaluation of Dredged or Fill Material (Subpart G).[3]

a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material.

(1) Physical characteristics	X
(2) Hydrography in relation to known or anticipated sources of contaminants	X
(3) Results from previous testing of the material or similar material in the vicinity of the project	X
(4) Known, significant sources of persistent pesticides from land runoff or percolation	
(5) Spill records for petroleum products or designated (Section 311 of CWA) hazardous substances	X
(6) Other public records of significant introduction of contaminants from industries, municipalities, or other sources	X
(7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities	
(8) Other sources (specify)	X

Remarks: There have been no major impacts associated with dredged material within the crossings or the lower river associated with this project since authorization. However, In order to better assess the potential impacts of deepening on water quality and biota within the river crossings, dredge slurry was collected directly from the discharge lines of dustpan dredges performing maintenance on 11 deep draft crossings during Fiscal Year 2016. The solid and liquid fractions of the slurry were analyzed individually for the presence of priority pollutants including metals, pesticides, polychlorinated biphenyls, and semi-volatile organic compounds. Metals were common to both fractions, and were detected at or below background levels in the Mississippi River. Chlordane pesticides and hydrocarbon exhaust products were detected infrequently in the solid samples, but at levels generally at or below 1 part per billion. All detected contaminants were below regulatory water quality criteria and ecological screening values, and dredging of the crossings is not expected to have a negative impact on human health or the environment. Other sources included conversations and email communications from CEMVN staff from 29 September 2016 to 11 November 2016, including Joseph Musso, Jeff Corbino, and Danny Wiegand.

Appropriate references:

1. Environmental Regulatory Code, Part IX. Water Quality Regulation. Louisiana Department of Environmental Quality, 1994, 3rd Edition.

2. State of Louisiana Water Quality Management Plan, Volume 5, Part B – Water Quality Inventory. Louisiana Department of Environmental Quality, Office of Water Resources, 1994.

3. Louisiana DEQ, Chapter 11 Surface Water Quality Standards: http://www.deq.louisiana.gov/portal/Portals/0/planning/regs/title33/33v09.pdf

4. Louisiana Department of Environmental Quality. 2016. *2016 Louisiana Water Quality Inventory: Integrated Report.* http://www.deq.louisiana.gov/portal/DIVISIONS/WaterPermits/WaterQualityStandardsAssessment/Water

3. Evaluation of Dredged or Fill Material (Subpart G).[3]

QualityInventorySection305b/2016IntegratedReport.aspx

5. NOAA, Screening Quick Reference Tables: http://response.restoration.noaa.gov/

6. US Coast Guard, National Response Center: http://www.nrc.uscg.mil/

7. USEPA, CERCLIS Database of Hazardous Waste Sites: www.epa.gov/superfund/sites/cursites/index.htm

8. USEPA, EnviroMapper StoreFront: https://www3.epa.gov/enviro/

9. USEPA, National Recommended Water Quality Criteria: http://epa.gov/waterscience/criteria/wqcriteria.html

10. USEPA, Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material: https://www.epa.gov/wetlands

b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or the material meets the testing exclusion criteria.

YES NO

4. Disposal (Fill) Site Delineation (230.11(f)).

a. The following factors, as appropriate, have been considered in evaluating the disposal site.

(1) Depth of water at disposal site	x
(2) Current velocity, direction, and variability at disposal site	x
(3) Degree of turbulence	x
(4) Water column stratification	x
(5) Discharge vessel speed and direction	x
(6) Rate of discharge..	x
(7) Dredged material characteristics (constituents, amount, and type of material, settling velocities)	x
(8) Number of discharges per unit of time	x
(9) Other factors affecting rates and patterns of mixing (specify)	

Appropriate references: Same as 3(a)

b. An evaluation of the appropriate factors in 4a above indicates that the disposal site and/or size of mixing zone are acceptable.

YES NO*

5. Actions to Minimize Adverse Effects (Subpart H).

All appropriate and practicable steps have been taken, through application of the recommendations of 230.70-230.77 to ensure minimal adverse effects of the proposed discharge.

YES NO*

Actions taken: Material dredged in the construction of the lower river will be placed in a manner conducive to marsh creation (vs. open water disposal). Available data shows material not to be a carrier of contaminants.

6. Factual Determination (230.11).

A review of appropriate information as identified in items 2-5 above indicates that there is minimal potential for short- or long-term (adverse) environmental effects of the proposed discharge as related to:

a. Physical substrate at the disposal site (review sections 2a, 3, 4, and 5 above).	YES	NO*
b. Water circulation, fluctuation and salinity (review sections 2a, 3, 4, and 5).	YES	NO*
c. Suspended particulates/turbidity (review sections 2a, 3, 4, and 5)	YES	NO*
d. Contaminant availability (review sections 2a, 3, and 4).	YES	NO*
e. Aquatic ecosystem structure and function (review sections 2b and c, 3, and 5).	YES	NO*
f. Disposal site (review sections 2, 4, and 5).	YES	NO*
g. Cumulative impact on the aquatic ecosystem.	YES	NO*
h. Secondary impacts on the aquatic ecosystem.	YES	NO*

*A negative, significant, or unknown response indicates that the proposed project may not be in compliance with the Section 404(b)(1) Guidelines.

[1]Negative responses to three or more of the compliance criteria at this stage indicates that the proposed project may not be evaluated using this "short form procedure". Care should be used in assessing pertinent portions of the technical information of items 2a-d, before completing the final review of compliance.

[2]Negative responses to one of the compliance criteria at this stage indicates that the proposed project does not comply with the guidelines. If the economics of navigation and anchorage of Section 404(b)(2) are to be evaluated in the decision-making process, the "short form" evaluation process is inappropriate.

[3]If the dredged or fill material cannot be excluded from individual testing, the "short form" evaluation process is inappropriate.

7. Evaluation Responsibility.

Evaluation prepared by: Steve Roberts, Biologist, PDC-CEC

Date: 10 August 2017

Evaluation reviewed by: Richard Boe, Chief, PDC-CEC

Date: 11 August 2017

8. Findings.

a. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines X

b. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines with the inclusion of the following conditions .... ________

c. The proposed disposal site for discharge of dredged or fill material does not comply with the Section 404(b)(1) guidelines for the following reason(s):

(1) There is a less damaging practicable alternative .... ________

(2) The proposed discharge will result in significant degradation of the aquatic ecosystem .... ________

(3) The proposed discharge does not include all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem .... ________

22 Aug 17
Date

MICHAEL N. CLANCY
Colonel, EN
Commanding

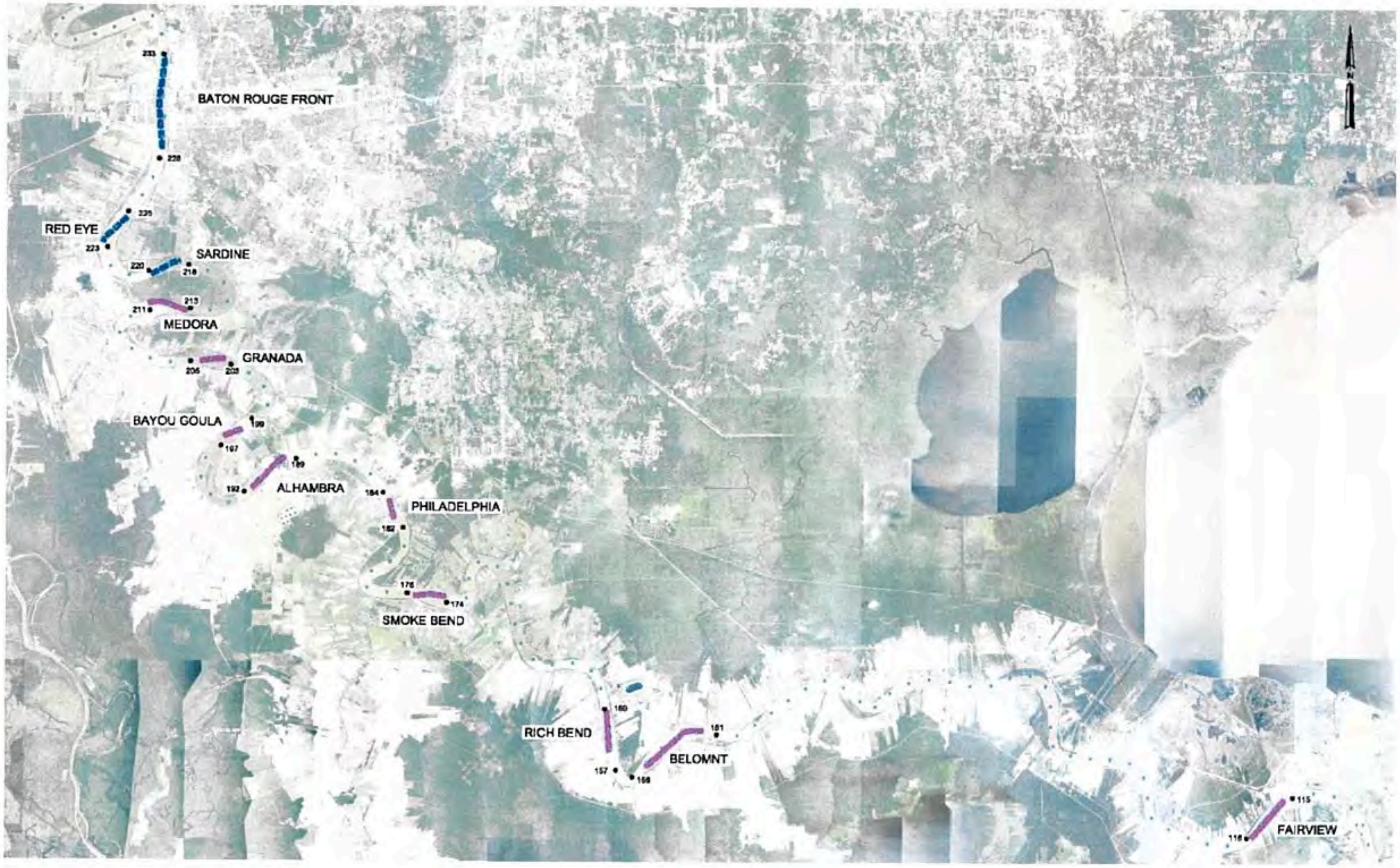
B.R. Front	**River Mile 234-229 AHP**
Redeye	**River Mile 226-221 AHP**
Sardine Point	**River Mile 221-216 AHP**
Medora	**River Mile 214-208 AHP**
Granada	**River Mile 207-202 AHP**
Bayou Goula	**River Mile 199-196 AHP**
Alhambra	**River Mile 193-188 AHP**
Philadelphia	**River Mile 185-181 AHP**
Smoke Bend	**River Mile 179-172 AHP**
Richbend	**River Mile 160-155 AHP**
Belmont	**River Mile 156-151 AHP**
Fairview	**River Mile 117-111 AHP**

Enclosure 1. Names and reaches of the 12 deep draft crossings.

	Crossings Construction	**Lower River Construction (RM 13.4 AHP-19 BHP)**	**Bar Channel Construction RM (19BHP-22BHP)**	**Annual O&M- 12 Crossings**	**Annual O&M-Lower River/Bar Channel**
Proposed Action	8,600,000 cy	19,900,000 cy	1,620,000 cy	1,600,000 cy	0 cy

Enclosure 2. Cubic yards (cy) of incremental dredging requirements above the No-action alternative.

Enclosure 3. Prominent features of the Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana project extend from the Port of Baton Rouge, Louisiana to RM 22 Below Head of Passes.



Enclosure 4. There are 12 actively maintained crossings that are maintained at 45 feet (LWRP) between New Orleans and Baton Rouge, Louisiana. The proposed plan includes deepening and maintaining twelve crossings to 50 feet (LWRP) allow deep draft access to the Port of Baton Rouge.

Enclosure 5. The beneficial use placement area includes 143,264 acres that were previously cleared (red) under the National Environmental Policy Act, and 24,054 acres (black) of additional beneficial use areas.

JOHN BEL EDWARDS
GOVERNOR

CHUCK CARR BROWN, PH.D.
SECRETARY

State of Louisiana

DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL SERVICES

JUL 14 2017

AI No.: 205378
Activity No.: CER20170002

Mr. Steve Roberts
Department of the Army
Corps of Engineers, New Orleans District
CEMVN-PDC-CEC
7400 Leake Avenue
New Orleans, Louisiana 70118

RE: Mississippi River Ship Channel, Gulf to Baton Rouge
Water Quality Certification WQC 170309-01
River Miles 0 to 234

Dear Mr. Roberts:

The Louisiana Department of Environmental Quality, Water Permits Division (LDEQ), has received the U.S. Army Corps of Engineers New Orleans District's (CEMVN) request to amend Water Quality Certification, WQC 170309-01 to include the deepening of 12 deep draft crossings at the Mississippi River Ship Channel (MSRC) between New Orleans and Baton Rouge, expanding deep draft access from the Gulf of Mexico to the Port of Baton Rouge. The decision to maintain the 12 crossings was made on May 23, 2017, based on results of a hydraulic 2-D model which indicated maintenance costs would be significantly less than first estimated in the draft supplement environmental impact statement (SEIS).

The information provided in the application and the public notice has been reviewed in terms of compliance with State Water Quality Standards, the approved Water Quality Management Plan and applicable state water laws, rules and regulations. LDEQ determined that the requirements for a Water Quality Certification have been met. LDEQ concludes that the deposit of spoil, as amended, will not violate water quality standards as provided for in LAC 33:IX.Chapter 11. Therefore, LDEQ hereby issues Department of the Army, Corps of Engineers, New Orleans District – Mississippi River Ship Channel, Gulf to Baton Rouge Water Quality Certification, WQC 170309-01.

Should you have any questions concerning any part of this certification, please contact Elizabeth Hill at (225) 219-3225 or by email at elizabeth.hill@la.gov. Please reference Agency Interest (AI) number 205378 and Water Quality Certification 170309-01 on all future correspondence to this Department to ensure all correspondence regarding this project is properly filed into the Department's Electronic Document Management System.

Sincerely,

Scott Guilliams

Scott Guilliams
Administrator
Water Permits Division

c: IO-W

John Bel Edwards
GOVERNOR

Chuck Carr Brown, Ph.D.
SECRETARY

State of Louisiana

DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL SERVICES

APR 20 2017

Mr. Steve Roberts
Department of the Army
Corps of Engineers, New Orleans District
CEMVN-PDC-CEC
7400 Leake Avenue
New Orleans, Louisiana 70118

AI No.: 205378
Activity No.: CER20170001

RE: Mississippi River Ship Channel, Gulf to Baton Rouge
Water Quality Certification WQC 170309-01
St. James, St. Charles, and Plaquemines Parishes

Dear Mr. Roberts:

The Louisiana Department of Environmental Quality, Water Permits Division (LDEQ), has reviewed your application to deepen the Mississippi River to 50 feet to improve navigational capacity from the Gulf of Mexico to the Port of South Louisiana under the authority of the Mississippi River Ship Channel, Gulf to Baton Rouge Project from River Mile (RM) 13.4 above Head of Passes, to RM 0 at Head of Passes, from Head of Passes to RM 22 below Head of Passes; and deepen Richbend Crossing, Belmont Crossing and Fairview Crossing.

The information provided in the application and the Supplemental Environmental Impact Statement has been reviewed in terms of compliance with State Water Quality Standards, the approved Water Quality Management Plan and applicable state water laws, rules and regulations. LDEQ determined that the requirements for a Water Quality Certification have been met. LDEQ concludes that the deposit of spoil will not violate water quality standards as provided for in LAC 33:IX.Chapter 11. Therefore, LDEQ hereby issues Department of the Army, Corps of Engineers, New Orleans District – Mississippi River Ship Channel, Gulf to Baton Rouge Water Quality Certification, WQC 170309-01.

Should you have any questions concerning any part of this certification, please contact Elizabeth Hill at (225) 219-3225 or by email at elizabeth.hill@la.gov. Please reference Agency Interest (AI) number 205378 and Water Quality Certification 170309-01 on all future correspondence to this Department to ensure all correspondence regarding this project is properly filed into the Department's Electronic Document Management System.

Sincerely,

Scott Guilliams
Administrator
Water Permits Division

c: IO-W
Corps of Engineers – New Orleans District

Annex 12 - Best Management Practices

Best Management Practices and Avoidance Procedures

Operations & Dredging
Endangered Species System (ODESS)
Marine Mammal Observation

US Army Corps of Engineers

District

Project

Contract

Dredge

Dredging Company

Load Number (*Required*)/Date

Start Date (*Required*)

Start Time (*24 hours*) (*Required*)

End Date (*Required*)

End Time (*24 hours*) (*Required*)

Beaufort Sea State
- ☐ 0 (0-1 kn, 0-0 ft)
- ☐ 1 (1-3 kn, 0-1 ft)
- ☐ 2 (4-6 kn, 1-2 ft)
- ☐ 3 (6-10 kn, 2-3.5 ft)
- ☐ 4 (10-16 kn, 3.5-6 ft)
- ☐ 5 (16-21 kn, 6-9 ft)
- ☐ 6 (21-27 kn, 9-13 ft)
- ☐ 7 (27-33 kn, 13-19 ft)
- ☐ 8 (33-40 kn, 19-25 ft)
- ☐ 9 (40-47 kn, 25-32 ft)
- ☐ 10 (47-55 kn, 32-41 ft)
- ☐ 11 (55-63 kn, 41-52 ft)
- ☐ 12 (>63 kn, >52 ft)

Species Observed (*Required*)
- ☐ Bryde's/Sei Whale
  #_____ Est. Length (*ft.*) _____
- ☐ Fin Whale
  #_____ Est. Length (*ft.*) _____
- ☐ Humpback Whale
  #_____ Est. Length (*ft.*) _____
- ☐ Manatee
  #_____ Est. Length (*ft.*) _____
- ☐ Minke Whale
  #_____ Est. Length (*ft.*) _____
- ☐ Pilot Whale
  #_____ Est. Length (*ft.*) _____
- ☐ Right Whale
  #_____ Est. Length (*ft.*) _____
- ☐ Unknown
  #_____ Est. Length (*ft.*) _____

Air Temp (℃)

Water Temp (℃)

Winds (*K*)

Seas (*ft*)

Cloud Cover (%)

Magnetic Bearing to Sighting

Estimated Distance

Vessel's Heading

Heading of Animal(s)

Coloration

Fins or Flippers Observed

Behaviors Observed

Surfacing Intervals Time

Surfacing Intervals Distance

Comments (*Was the behavior of the animal(s) affected by the vessel? How far did the animal(s) move? Who was notified?*)

Observer(s) Name(s) (*Required; Print*)

Observer(s) Signature(s)

Observer(s) Company

West Indian Manatee

It is extremely unlikely that manatees would be found in the project area or the surrounding shallow open waters; however, if manatees are observed within 100 yards of the “active work zone” during dredging/placement activities, MVN would implement the appropriate special operating conditions (e.g., no operation of moving equipment within 50 feet of a manatee; all vessels should operate at no wake/idle speeds within 100 yards of work area; siltation barriers, if used, should be re-secured and monitored; report manatee sightings or collisions), as provided by the USFWS, Lafayette, Louisiana Field Office. The following special operating conditions for manatees would be included in any MVN plans and specifications developed prior to dredging and placement activities, as recommended by the USFWS, Lafayette, Louisiana Field Office:

“The West Indian manatee may be present in the project vicinity. The Contractor shall instruct all personnel associated with the project of the potential presence of manatees in the area, and the need to avoid collisions with these animals. All construction personnel shall be advised that there are civil and criminal penalties for harming, harassing, or killing manatees. Manatees are protected under the Marine Mammal Protection Act of 1972, and the Endangered Species Act of 1973. The Contractor shall be held responsible for any manatee harmed, harassed, or killed as a result of construction activities not conducted in accordance with these Specifications:

> “Manatee Signs. Prior to commencement of construction, each vessel involved in construction activities shall display at the vessel control station or in a prominent location, visible to all employees operating the vessel, a temporary sign at least 8-1/2" x 11" reading, "CAUTION: MANATEE HABITAT/IDLE SPEED IS REQUIRED IN CONSTRUCTION AREA." In the absence of a vessel, a temporary 3' x 4' sign reading "CAUTION: MANATEE AREA" shall be posted adjacent to the issued construction permit. A second temporary sign measuring 8-1/2" x 11" reading "CAUTION: MANATEE HABITAT. EQUIPMENT MUST BE SHUTDOWN IMMEDIATELY IF A MANATEE COMES WITHIN 50 FEET OF OPERATION" shall be posted at the dredge operator control station and at a location prominently adjacent to the issued construction permit.
>
> The Contractor shall remove the signs upon completion of construction.
>
> a. Special Operating Conditions if Manatees are Present in the Project Area.
>
> (1) If a manatee(s) is sighted within 100 yards of the project area, all appropriate precautions shall be implemented by the Contractor to ensure protection of the manatee. These precautions shall include the operation of all moving equipment no closer than 50 feet of a manatee. If a manatee is closer than 50 feet to moving equipment or the project area, the equipment shall be shut down and all construction activities shall cease to ensure

protection of the manatee. Construction activities shall not resume until the manatee has departed and the 50-foot buffer has been reestablished.

(2) If a manatee(s) is sighted in the project area, all vessels associated with the project shall operate at "no wake/idle" speeds at all times, and vessels will follow routes of deep water whenever possible, until the manatee has departed the project area. Boats used to transport personnel shall be shallow-draft vessels, preferably of the light-displacement category, where navigational safety permits.

(3) If siltation barriers are used, they shall be made of material in which manatees cannot become entangled, are properly secured, and are regularly monitored to avoid manatee entrapment."

Sturgeon

In the most recent Biological Opinion on the project from the USFWS (December 28, 2016), The Service provided the following recommendations for MVN to implement during 2017 annual maintenance dredging activities. Implementation of those recommendations should further reduce the unlikely chance of encountering sea turtles, pallid sturgeon, or other fish species while conducting dredging activities (Appendix A-15).

"1. To the extent possible, schedule dredging activities in the project area during low flow periods, when salt water occurs on the channel bottom further upriver than during normal or high river flows.

2. The cutterhead should remain completely buried in the bottom material during dredging operations. If pumping water through the cutterhead is necessary to dislodge material or to clean the pumps or cutterhead, etc., the pumping rate should be reduced to the lowest rate possible until the cutterhead is at mid-depth, where the pumping rate can then be increased.

3. During dredging, the pumping rates should be reduced to the slowest speed feasible while the cutterhead is descending to the channel bottom."

In accordance with these recommendations, cutterhead dredges working in the Mississippi River utilize the following operational best management practices to avoid/minimize adverse impacts to sturgeons that may be in the area of dredging activity: 1) When lowering the ladder, the pumping rate should be reduced to the slowest speed feasible while the cutterhead is being lowered to the channel bottom; 2) The cutterhead remains completely buried in the channel bottom during dredging operations; and 3) If pumping water through the cutterhead is deemed necessary to dislodge material, or to clean the pumps, the pumping rate should be reduced to the lowest rate feasible while raising the ladder until the cutterhead is at least at mid-depth at which point the pumping rate can then be increased.

Colonial Nesting Birds

Colonial nesting wading birds (including, but not limited to, herons, egrets, and Ibis) and seabirds/water-birds (including, but not limited to terns, gulls, Black Skimmers, and Brown Pelicans) are known to nest in the project area. The nesting birds and their nests must not be disturbed or destroyed. The nesting activity period extends from 15 February through 15 September. USACE coordinates plans and specs with USFWS for each dredging contract (multiple times annually) for compliance under the Endangered Species Act and Migratory Bird Treaty Act. Previous coordination efforts indicate that dredging activity during this period may be subject to additional requirements as stated below. Note that below designations (e.g. “Section X”) will be filled in with the appropriate alpha or numeric reference at the proper time.

“Implementation and Reporting:

a. In addition to the paragraph located in Section X, paragraph X entitled "Implementation and Reporting," the Contractor shall also submit the Bird Nesting Prevention Plan, see paragraph X entitled "Bird Nesting Prevention and Avoidance Measures."

b. The presence of nesting wading birds and/or seabirds/water-birds within the minimum distances from the work area, as specified in the paragraph entitled "No Work Distances," shall be immediately reported to CEMVN.

No-work distance restrictions are as follows:

Terns, gulls, and Black Skimmers - 650 feet;

Colonial nesting wading birds - 1000 feet; and,

Brown Pelicans - 2000 feet.

Coordination by the New Orleans District personnel with the U.S. Fish and Wildlife Service may result in a reduction or relaxing of these no-work distances depending on the species of birds found nesting at the work site and specific site conditions.

Bird Nesting Prevention and Avoidance Measures:

The Contractor shall prepare and submit to the Contracting Officer's Representative, for approval, a plan detailing the efforts that will be undertaken to prevent birds from nesting within the minimum distances, as specified in paragraph X entitled "No Work Distances," from any work activity. The plan shall be submitted in accordance with paragraph X entitled "Implementation and Reporting."

Nest prevention measures shall be intended to deter birds from nesting on the placement area(s) and access corridor(s) without physically harming birds during the nesting activity period, as specified in the paragraph entitled "General." Nest prevention measures may be used in combination and/or adjusted to be most effective. The use of any harassment measures shall be in accordance with EM 385-1-1 (Safety and Health Requirements), dated September 15, 2008. At minimum, nest prevention measures shall include the following:

> Flagging/Streamers - Flagging and/or streamers at least 2 ft in length and which consist of reflective plastic/mylar type material shall be attached to the top of stakes at least 3 feet in height. The stakes shall be driven into the ground at approximately 20-foot intervals. Flagging and/or streamers shall be placed such that the flags/streamers move in a light wind.
>
> Vehicular/Pedestrian Traffic - At minimum, one terrain vehicle and/or one person shall travel throughout the entire placement area at least once per hour from dawn to dusk.

Upon the exercise of Option Item "Bird Nesting Prevention and Avoidance Measures," the Contractor shall begin work within 24 hours. Specific nest prevention measures used during the work shall be monitored for effectiveness and may require adjustment and/or modification. All equipment/supplies used for nest prevention shall be removed from the work site upon the completion of work and as directed by the Contracting Officer.

If bird nests are discovered at the work site, immediate notification shall be made in accordance the paragraph entitled "Reporting." The Contractor shall immediately mark the bird nests with flagging on stakes 3-feet above the ground surface and no closer than 3 feet from the nest. The Contractor shall immediately implement safe work distances from the nest(s) as specified in the paragraph entitled "No Work Distances," place flagging to create exclusion zone(s) around the nest(s), and advise all equipment operators of the bird nest(s) and exclusion zone(s)."

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202 – 2733

February 6, 2017

Mr. Edward D. Creef
Chief, Environmental Function
US Army Corps of Engineers
New Orleans District
7400 Leake Avenue
New Orleans, Louisiana 70118

Ref: Concurrence on FY16 Ocean Dumping Evaluation (ODE) for the Southwest Pass segment of the Mississippi River

Dear Mr. Creef:

This letter is written in response to your November 30, 2016 request for concurrence on the suitability for ocean disposal of maintenance material from future maintenance dredging projects for the Southwest Pass segment of the Mississippi River, Louisiana. The final report entitled *Mississippi River, Baton Route to the Gulf of Mexico, Louisiana Navigation Project; Southwest Pass Ocean Dumping Evaluation* – November 30, 2016 (Section 103 Evaluation Report) and supporting documents were received by the U.S. Environmental Protection Agency (EPA) on December 6, 2017.

Prior to EPA's review of the ODE, EPA issued a conditional concurrence (January 13, 2017) on the FY 2017 Southwest Pass maintenance dredging pending its review and independent evaluation of the ODE. This letter serves to replace the conditional concurrence with a full concurrence (without conditions) for the 2017 maintenance dredging.

EPA has completed its review and independent evaluation of the ODE for the Southwest Pass reach of the Mississippi River and supporting documents. EPA concurs with your determination that the proposed disposal of shoal material at the Mississippi River Southwest Pass Ocean Dredged Material Disposal Site (ODMDS) will comply with the criteria set forth in 40 CFR Part 227. This evaluation supports maintenance dredging events in Fiscal years 2017 through 2021.

A brief discussion of the compliance of the material with the criteria is provided below.

Exclusionary Criteria – 40 CFR § 227.13(b)

The maintenance dredged material from the Mississippi River Southwest Pass (Mile 7.0 BHP to Mile 19.0 BHP) does not meet the exclusionary criteria.

Water Column and Suspended Phase Determinations - 40 CFR § 227.6(c)(1&2) and 227.27(a&b)

Copper exceeded the both the federal WQC and the Louisiana Acute WQC at all three DMMUs and the ODMDS. Silver concentrations exceeded the federal WQC at all three DMMUs and the ODMDS.

Ammonia concentrations exceeded the federal WQC at all three DMMUs. Because the concentration at the ODMDS exceeded either the LA acute WQC or the federal WQC for Copper and Silver, MVN chose to establish a project specific WQC at 5% above background (ODMDS) for dilution calculations. The highest dilution factor (20-fold) was based on observed copper concentrations at DMMU-3 (0.065 mg/L). Therefore, the dilution factor for copper was carried forward for dilution modeling (STFATE) to determine compliance with water quality criteria.

A maximum of 20-fold dilution for copper is required to comply with the calculated project specific WAC at 5% above background inside the Mississippi River Southwest Pass ODMDS boundary. STFATE model results indicated that a 2.E+09 fold dilution would occur 3.25 hours following placement of the dredged material. Based on STFATE water quality modeling, minimum required dilutions (460-fold) were achieved at the edge of the ODMDS and everywhere after four hours for a disposal volume of 6,400 cubic yards or less.

Bioassays were conducted using the following three species: *Mysidopsis bahia*, age class <24 hours, *Mysidopsis bahia*, age class 6-7 days, and *Cyprinodon variegatus* 10-days old. Toxicity test results showed poor survival for *M. bahia*, age class <24 hours, in undiluted elutriate treatments for DMMUs-1 and -2 (0% to 54% survival) and for *M. bahia*, age class 6-7 days, in the undiluted DMMU-3 elutriate and 50% dilution from DMMUs -1 and -2 (10%, 78% and 74%, respectively). Statistically significant impacts were observed for DMMU-1 and DMMU-2 but not DMMU-3. A maximum LC50 of 54% was calculated based on DMMU-2 elutriate.

Survival of *C. variegatus* in all of the dredged material treatments is greater than, or equal to, survival in the dilution water treatment or survival in the dredged material treatments is less than survival in the dilution water treatment, but the difference does not exceed 10%.

The water column limiting permissible concentration (LPC) for ocean placement is equivalent to 0.01 of the EC_{50}/LC_{50} (54%) within a 4-hour dilution period inside the boundary of the placement site. STFATE model results indicated that a 5.52E-08-fold dilution would occur 3.25 hours following placement of the dredged material. Minimum required dilutions (3.0E+12) were achieved at the edge of the ODMDS and everywhere after four hours for a disposal volume of 6,400 cubic yards or less. Therefore, the suspended particulate phase of the material at the ODMDS complies with 40 CFR § 227.6(c)(1) and 227.27(a).

Benthic Determinations - 40 CFR § 227.6(c)(3) and 227.27(b)

Solid phase toxicity evaluation: Ten-day toxicity tests were conducted on project materials using the following three species: *Americamysis bahia* (~ 3-days old) and *Leptocheirus plumulosus* (3-5 mm; no mature males or females). These organisms are appropriate sensitive benthic marine organisms and are good predictors of adverse effects to benthic marine communities. The amphipod toxicity was within 10% of the reference and the worm toxicities were within 20% of the control. The control was used for comparison because an unexplained mortality of 42% occurred in the reference. These results show that the solid phase of the material is not likely to cause significant mortality and meets the solid phase toxicity criteria of 40 CFR § 227.6(c)(3) and 227.27(b).

Solid phase bioaccumulation evaluation: Twenty-eight-day bioaccumulation tests were conducted on the solid phase of the project material for the contaminants of concern using two appropriate sensitive benthic marine organisms, *Nereis virens* and *Macoma nasuta*. These species are considered to be good representatives of the phylogenetically diverse base of the marine food chain. Tissue concentrations were compared to Food and Drug Administration (FDA) Action Levels. None of the contaminants, for which there are FDA Action Levels, exceed such thresholds in the tissues of organisms exposed to project sediments. Concentrations of contaminants in tissues of organisms exposed for 28 days to project sediments were compared to concentrations in tissues of organisms exposed for 28 days to reference sediment. Tissues concentration in N. *virens* and M. *nasuta* were not statistically significantly greater than reference sediment bioaccumulation values for any DMMU. EPA has determined there is no potential for undesirable effects due to bioaccumulation as a result of the presence of individual chemicals or of the solid phase of the dredged material as a whole. Accordingly, it is concluded that the solid phase of the material proposed for disposal meets the ocean disposal criteria at 40 CFR § 227.6(c)(3) and 227.27(b).

In accordance with the Water Resources Development Act of 1992 amendments to MPRSA, disposal activities must be conducted in accordance with the approved 1996 Mississippi River Southwest Pass Site Management and Monitoring Plan (SMMP).

Should you have any questions regarding this determination or management of the Mississippi River Southwest Pass ODMDSs, please contact Dr. Jessica Franks of my staff by telephone at 214-665-9736 or by e-mail at franks.jessica@epa.gov.

Sincerely,

Karen McCormick
Chief
Marine, Coastal and Analysis Section (6WQ-EC)

MISSISSIPPI RIVER, SOUTHWEST PASS, LOUISIANA

SITE MANAGEMENT PLAN
FOR THE SOUTHWEST PASS
OCEAN DREDGED MATERIAL DISPOSAL SITE

AS REQUIRED BY
SECTION 102 OF THE
MARINE PROTECTION, RESEARCH, AND SANCTUARIES ACT

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The following Site Management and Monitoring Plan for the Mississippi River-Southwest Pass ocean dredged material disposal site complies with Section 102(c)(3) of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. Section 1401, et seq.) as amended by Section 506 of the Water Resources Development Act Amendments of 1992 (WRDA 92; Public Law 102-580), and has been approved by the following officials of Region 6 and the U. S. Environmental Protection Agency, and New Orleans District of the U.S. Army Corps of Engineers.

Samuel Coleman (signature) — 24 May 2017

Samuel Coleman, P.E.
Acting Regional Administrator
Region 6
U.S. Environmental Protection Agency

Date

(signature) — 6 Jun 17

Michael N. Clancy
Colonel, U.S. Army
District Commander

Date

This plan goes into effect upon the date of the last signature for a period not to exceed 10 years. The plan shall be reviewed and revised more frequently if site use and conditions at site indicate a need for revision.

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LIST OF TERMS

CEMVN	U.S. Army Corps of Engineers, Mississippi Valley Division, New Orleans District
CFR	Code of Federal Regulations
DQM	Dredging Quality Management
EPA	U.S. Environmental Protection Agency
FR	Federal Register
EIS	Environmental Impact Statement
MLG	Mean Low Gulf
MPRSA	Marine Protection, Research, and Sanctuaries Act of 1972
NAD	North American Datum
NMFS	National Marine Fisheries Service
ODMDS	Ocean Dredged Material Disposal Site
R6	U.S. Environmental Protection Agency - Region 6
RIA	Regional Implementation Agreement
SMMP	Site Management and Monitoring Plan
SWP	Southwest Pass
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
WRDA	Water Resources Development Act of 1992
XML	eXtensible Markup Language

SITE MANAGEMENT AND MONITORING PLAN

MISSISSIPPI RIVER, SOUTHWEST PASS, LOUISIANA OCEAN DREDGED MATERIAL DISPOSAL SITE

1.0 GENERAL

The Southwest Pass (SWP) Ocean Dredged Material Disposal Site (ODMDS) is a feature of the Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana, Federal navigation project. The SWP ODMDS is co-regulated by the Environmental Protection Agency, Region 6 (EPA-R6), and the Army Corps of Engineers, New Orleans District (CEMVN). The management and monitoring strategies for disposal of suitable dredged material from the SWP Channel vicinity are described in this Site Monitoring and Management Plan (SMMP).

In accordance with Section 102(c)(3) of the Marine Protection, Research and Sanctuaries Act, as amended by the Water Resource and Development Act (WRDA) of 1992, this SMMP includes the following information:

A. A baseline assessment of site conditions;

B. A program for monitoring the ODMDS;

C. Special management conditions and practices for site operation;

D. Considerations for the quantity of dredged material to be discharged at the site, and the presence of contaminants in shoal material;

E. Anticipated use of the ODMDS over the long term; and

F. A schedule for review and revision of the SMMP.

The structure and content of this SMMP is based on recommendations provided in the "*Guidance Document for Development of Site Management Plans for Ocean Dredged Material Disposal Sites*" (EPA and USACE, February 1996).

Final designation of the SWP ODMDS was first sought in August 1984 with the release of the draft Environmental Impact Statement (EIS). After review, the draft was approved as final and the Final Rule for designation was published in the Federal Register March 31, 1989 (54 FR 61).

A SMMP was first developed for the SWP ODMDS in December 1996. SMMP provisions shall be requirements for all dredged material disposal and monitoring activities at the site. All MPRSA Section 103 ocean disposal permits or contract specifications shall be conditioned as necessary to assure consistency with the SMMP.

This revision to the SWP ODMDS SMMP supersedes all previous SMMPs. The SMMP itself, however, does not authorize the use of any ODMDS for ocean disposal of dredged materials.

Use of any ODMDS for ocean disposal of dredged materials is regulated under a permit (or contract specification) under MPRSA Section 103.

2.0 SITE MANAGEMENT

The MPRSA of 1972 (33 U.S.C. Section 1401, et seq.) is the legislative authority regulating the disposal of dredged material into ocean waters, including the territorial sea. The transportation of dredged material for the purpose of placement into ocean waters is permitted by the USACE or, in the case of Federal projects, authorized for disposal under MPRSA Section 103(e), applying environmental criteria established by the EPA in the Ocean Dumping Regulations (40 CFR Parts 220-228).

Section 228.3 of the Ocean Dumping Regulations established general disposal site management responsibilities, stating that "management of a site consists of regulating times, rates, and methods of disposal and quantities and types of materials disposed of; developing and maintaining effective ambient monitoring programs for the site; conducting disposal site designation and evaluation studies; and recommending modifications in site use and/or designation." This SMMP relates these management responsibilities to observed environmental conditions in the SWP ODMDS vicinity, dredged material characteristics, and dredging and disposal methods.

2.1 Site Management Objectives

The purpose of ODMDS management is to ensure that placement activities do not unreasonably degrade or endanger human health, welfare, the marine environment, or economic potentialities. The objective of the SMMP is to provide guidelines in making management decisions necessary to fulfill mandated responsibilities to protect the marine environment.

The specific management objective for the SWP ODMDS is to ensure ocean discharge of only that dredged material that satisfies the criteria set forth in 40 CFR Part 227 Subparts B, C, D, E, and G and Part 228.4(e) and is suitable for unrestricted placement at the ODMDS.

This objective will be achieved through the following measures:

1. Regulation and administration of ocean dumping permits;
2. Development and maintenance of a site monitoring program;
3. Evaluation of permit compliance and monitoring results.

2.2 Site Management Roles and Responsibilities

Development of SMMPs for ODMDSs within CEMVN's area of operation is the joint responsibility of EPA-R6 and the CEMVN. Both agencies are responsible for assuring that all components of the SMMP are implementable, practical, and applicable to site management decision-making.

In accordance with Section 102 (c) of the MPRSA, EPA is responsible for designation of ODMDSs, evaluation of environmental effects of dredged material disposal at these sites, determining the need for modification of site use or site closure based on observed environmental impacts, and for reviewing and concurring on dredged material suitability determinations. The CEMVN is responsible for evaluating dredged material suitability and issuing MPRSA Section 103 permits, regulating site use, and monitoring and documenting dredged material transport and disposal actions.

Where use of an EPA-designated site is not feasible or not permitted, the CEMVN may, with concurrence with EPA-6, select an alternative site in accordance with Section 103(b) of the MPRSA.

2.3 Funding

Physical, chemical, and biological effects-based testing shall be undertaken on sediments to be deposited at the ODMDS. This testing will be conducted at least every 5 years, contingent on the availability of funds, or as necessary to address contaminant concerns due to unanticipated events, and will be funded by the CEMVN for Federal projects. When a Section 103 permit is issued by the CEMVN for placement of material in the SWP ODMDS, the project permittee will be responsible for funding any testing required. The permittee or CEMVN, as appropriate, shall also be responsible for costs associated with placement site hydrographic monitoring and remote surveillance of hopper dredges utilizing the SWP ODMDS. EPA-R6 will be responsible for costs associated with trend assessment surveys of the ODMDS and surrounding environs; and independent processing of hopper dredge surveillance data provided by CEMVN or the permittee, as appropriate. Federal funding of all aspects of this SMMP is contingent on availability of appropriated funds.

2.4 Baseline Assessment

Baseline conditions at the SWP ODMDS were assessed during the site designation process. Details of baseline conditions, including descriptions of the marine environment in the site vicinity and the physical, chemical and biological characteristics of the sediments and the water column at the site, are contained in the draft (EPA 1984) and "Final Environmental Impact Statement (EIS) for the Mississippi River, Southwest Pass Ocean Dredged Material Disposal Site Designation" (EPA 1988). In 1995 and 2012, EPA-R6 collected and characterized sediment and biological samples at the SWP ODMDS to assess trends and for comparison to baseline conditions at the disposal site (Trulli 1996; Newbert 2014; Newfields 2014).

2.4.1 Disposal and Reference Site Characterization

2.4.1.1 Disposal Site Characterization

The SWP ODMDS is located west of and parallel to the SWP bar channel (Figure 1), approximately 1.75 nautical miles from the mouth of SWP. The site is rectangular with an area of about 3.4 square nautical miles. Both the position and size of the ODMDS were initially based on maintenance dredging requirements and historic use of the site by the CEMVN. Water depths range from about -18 feet Mean Low Gulf (MLG) in the northernmost portion of the ODMDS to about -160 feet MLG in the southernmost portion.

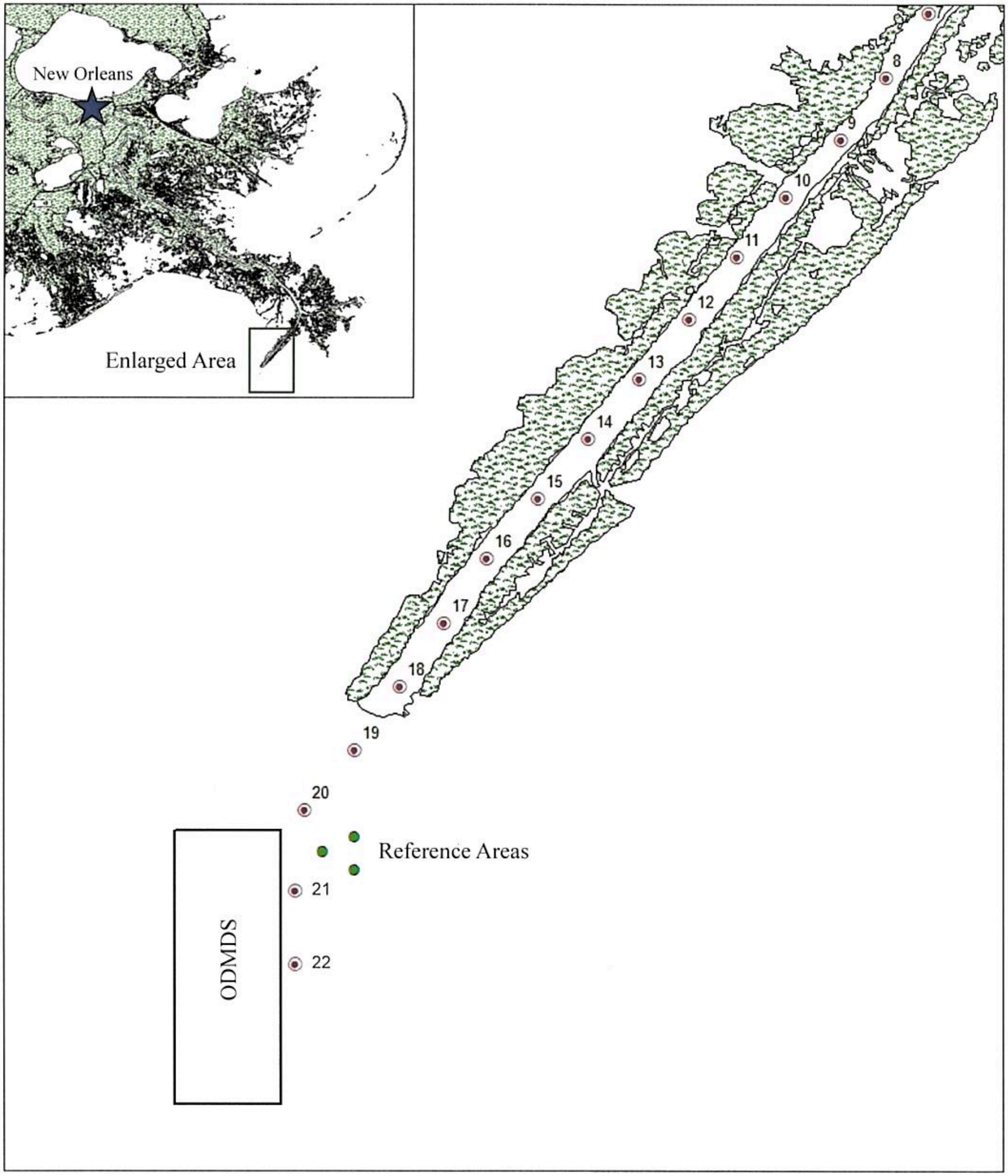

Figure 1. Southwest Pass ODMDS and Reference Areas. Shoal material removed by hopper dredges during maintenance of the navigation channel between miles 11 and 22 (numbered and ringed circles) is typically discharged into the ODMDS.

The existing site received interim designation for disposal of dredged material from SWP in 1977 (42 FR 2461 et seq.). Interim status of the site was extended indefinitely in January 1980. The SWP ODMDS received final designation on May 1, 1989 (54 FR 61).

The coordinates of the rectangular-shaped site are as follows:

NAD 27		NAD 83	
28°54'12"N	89°27'15"W	28°54'12.86"N	89°27'15.17"W
28°54'12"N	89°26'00"W	28°54'12.86"N	89°26'00.17"W
28°51'00"N	89°27'15"W	28°51'00.87"N	89°27'15.17"W
28°51'00"N	89°26'00"W	28°51'00.87"N	89°26'00.17"W

The SWP ODMDS is small in relation to the overall Mississippi River delta area. It is situated in a dynamic nearshore environment that is dominated by riverine and coastal forces. These forces act on the entire delta area and mask any potential effects of dredged material disposal – making the ODMDS indistinguishable from surrounding environs with respect to physical, chemical, and biological characteristics of the substrate and water column.

Substrates within the area have a general increase in fine-grained sediments with distance from the mouth of the river, and bathymetry is primarily determined by flow from SWP. Instability of the area favors small-bodied opportunistic macrofauna capable of re-colonization of disturbed sediments. The degree of water column stratification is dependent on river discharged. Waters are well-oxygenated, and turbidity is a function of suspended load carried by the river and resuspension of sediment from the seafloor. Low-levels of hydrocarbons are detectable in both the sediment and water column.

The location and configuration of the ODMDS involves only short transit of the hopper dredge from the navigation channel to the ODMDS (approximately 150 feet from the channel edge to the ODMDS boundary). This minimizes interference with other activities such as fishing and navigation in the site environs during dredging and disposal operations. The site also is easily accessible for surveillance of dredged material disposal operations and monitoring.

Nearshore fisheries feeding and breeding grounds occur throughout the delta. Estuaries bordering the river begin approximately 2 nautical miles north of the ODMDS, with major estuaries no closer than 11 nautical miles to the site. There are no marine sanctuaries, special aquatic sites, historically significant artifacts, or critical amenities near the project area.

2.4.1.2 Reference Site Characterization. Reference sampling stations for this project have been established east of the SWP ODMDS based on the Area Approach (Figure 1). An alternate station within the original reference area assessment footprint was introduced in 2016 due to increased depth and heavy ship traffic near two of four sampling stations listed in the 2003 Regional

Implementation Agreement (RIA). Sampling stations currently used during ocean dumping evaluations are located at the following coordinates (NAD 1983):

NAD 83	
28°53'58"N	89°25'31"W
28°53'45"N	89°25'09"W
28°54'09"N	89°25'09"W

2.4.2 Disposal Site History and Dredged Material Volumes

2.4.2.1 Historical Use of the Site. The SWP ODMDS is utilized during maintenance of the Mississippi River, SWP navigation channel. Construction and maintenance of the SWP navigation channel is authorized under the Rivers and Harbors Acts of 1946 and 1962, the Supplemental Appropriations Act of 1985, and the Water Resources Development Act of 1986 (Public Law 99-662) which provide for the construction of a 55-foot-deep channel in the Mississippi River from the Gulf of Mexico to Baton Rouge, LA. The SWP navigation channel is currently maintained to an elevation of -45 feet MLG and a width of 750' from Mile 11.0 Above Head of Passes (AHP) to Mile 17.5 Below Head of Passes (BHP), transitioning to a channel width of 600' between Mile 17.5 BHP and Mile 18 BHP, and continuing to Mile 22.0 BHP.

SWP maintenance dredging is conducted approximately between Mile 10.0 AHP and Mile 22.0 BHP. Deep draft hopper dredges are utilized for maintenance along the entire channel length. Typically, shoal material removed from the lower jetty and bar channel dredging reaches (Mile 11.0 BHP to Mile 22.0 BHP) by deep draft hopper dredges is deposited in the SWP ODMDS. On rare occasions, hopper dredges working upriver of Mile 11.0 BHP may utilize the SWP ODMDS for disposal. Only dredged material from the SWP navigation channel is placed in the SWP ODMDS.

The earliest record of hopper dredges utilizing a Gulf of Mexico disposal site adjacent to and west of the SWP jetties during maintenance of the Mississippi River dates back to 1919. Annual use of the site by hopper dredges has likely occurred since at least 1940. An evaluation of environmental impacts associated with site use was conducted during the late 1970s and 1980s, culminating in formal ODMDS designation in 1989 after it was documented that impacts of historical and continued use to the surrounding environment were not significant.

Volume of dredged material placed within the SWP ODMDS in any given year is highly variable, and fluctuates with river conditions and unpredictable shoaling patterns. From 1996 to 2014, between 2,000,000 and 11,000,000 cubic yards of dredged material were placed annually in the SWP ODMDS by hopper dredges operating in dredge and haul mode. Historical dredging records exhibit an even greater variation where reported volumes ranged from less than 32,000 cubic yards to greater than 21,000,000 cubic yards per year. From 1996 to 2014, an average of approximately 6.2 million cubic yards of SWP dredged material were annually placed in the SWP ODMDS.

2.4.2.2 Dredged Material Transport and Disposal Methods. Routine bathymetric surveys are made within the SWP portion of the Mississippi River navigation channel to identify shoals that may pose a navigation hazard. Based on review of these bathymetric surveys, daily dredging assignments are made to remove critical shoals. Dredging is conducted on non-continuous reaches typically beginning in the winter and continuing to the late summer, often with multiple deep draft hopper dredges working together. When a deep draft hopper dredge is working in the channel, dredging and disposal operations will occur 24 hours a day, 7 days a week until the authorized channel dimensions are restored.

Shoal material removed by hopper dredge is transported within the vessel's on-board hopper and discharged within the boundaries of the SWP ODMDS by opening the hopper's bay doors or flushed by separating the hull of split-hull hoppers. While individual SWP dredging reaches or assignments may be located more than 10 miles upriver of the SWP ODMDS, the transportation distance between the navigation channel and the SWP ODMDS is between 125 and 150 feet. Dredged material volume for each hopper load varies by vessel size, and may range between 2,000 and 6,000 cubic yards. Location of discharge within the SWP ODMDS is typically near the eastern boundary of the ODMDS to reduce overall transit time, and somewhat dependent on draft requirements of a loaded hopper dredge. Smaller hopper dredges may use the upper portion of the SWP ODMDS where depths of about 25 feet are common; while larger hopper dredges tend to utilize the seaward portion of the SWP ODMDS where depths are greater than 40 feet.

2.4.2.3 Summary of Monitoring Reports.

1. "*Report of Field Survey*", IEC 1984. Seasonal field surveys were conducted at 10 stations in and adjacent to the SWP ODMDS. Water column measurements were taken for conventional parameters (salinity, temperature, pH, dissolved oxygen, and total suspended solids), dissolved metals, and chlorohydrocarbons. Substrate measurements included sediment grain size, metals, chlorohydrocarbons, and organic carbon. Box-cores and trawls were used to collect macrofuana and epifauna. The survey concluded that effects of dredged material disposal on the surrounding environment could not be identified.

2. "*Evaluation of the Southwest Pass of the Mississippi River Ocean Dredged Material Disposal Site and Channel*", Batelle 1992. Sediment from the SWP navigation channel, reference areas east of the channel, and the SWP ODMDS were collected for physical, chemical, and biological analyses. Testing was conducted primarily to help select a suitable reference site and to determine if bioassay and bioaccumulation results from the channel should be compared to results from the SWP ODMDS or select reference sites. The reference area identified in this study just east of the navigation channel is used in CEMVN Ocean Dumping Evaluations. The study also concluded that low-levels of contaminants detected in the channel were present at the SWP ODMDS but not at the reference area.

3. "*Region VI Contaminated Sediment Study*", Battelle Ocean Sciences 1994 (Phase I) and 1995 (Phases II and III). The Phase I study included a literature review to determine data gaps

for multiple ODMDSs along the TX and LA coasts, including the SWP ODMDS. Phases II and III of the study included the development and execution of a sampling and analysis plan to address these data gaps. Raw and tabulated data are included as appendices to the report.

4. "*Analysis of Dredged Material Placement Site Dispersion, Southwest Pass ODMDS*", USACE Engineer Research and Development Center 2010. Bathymetric surveys of the SWP ODMDS collected between 1999 and 2009 were analyzed to examine changes in seafloor elevation at the site. The study concluded that "…mean bed elevations within the SWP ODMDS have decreased by approximately 7 feet over the 1999-2009 survey period, representing a million cubic yard loss of sediment despite the placement of 57 million cubic yards of dredged material during this same period." The SWP ODMDS is, thus, a dispersive site exhibiting no long term accumulation of shoal material placed at this site by CEMVN hopper dredges.

5. A baseline and trend study of five ODMDs located along the Louisiana coast was conducted in 2012 by the U.S. EPA-R6 Marine & Coastal Section to assess the chemical, physical, and biological characteristics within the ODMDs and surrounding areas. The following reports are a result of this monitoring.

- "*USEPA Region 6 Sorting, Identification, Enumeration, Data, Analysis and Reporting of Benthic Macroinvertebrate and Sediment Samples for None Ocean Dredged Material Disposal Sites – Louisiana and Texas*" prepared February 10, 2014 for EPA-R6 by EcoAnalysts, Inc. The report concluded that the annual dredge material disposal at the SWP ODMDS has only a temporary impact and that since 1995 the benthic communities were actively recolonizing the area.

- "*2012 Texas and Louisiana Ocean Dredged Material Disposal Sites (ODMDSs) Sediment Profile Imaging Survey: Date Report (February 24, 2014)*" prepared for EPA-R6 by NewFields. The SPI report concluded that there was no evidence of long-term, adverse impacts at any of the sites from the placement of dredged material.

2.4.2.4 Enforcement Activities. No enforcement actions have been required or taken since designation of the SWP ODMDS.

3.0 SITE MONITORING

The MPRSA Section 102 establishes the need for including a monitoring program as part of the SMMP. Site monitoring is conducted to ensure the environmental integrity of a disposal site and the areas surrounding the site and to verify compliance with the site designation criteria, any special management conditions, and with permit requirements. Monitoring programs should be flexible, cost effective, and based on scientifically sound procedures and methods to meet site-specific monitoring needs.

The intent of the monitoring program is to provide the following:

1. Information indicating whether the disposal activities are occurring in compliance with the permit and site restrictions;

2. Information indicating short-term and long-term fate of materials disposed of in the marine environment; and

3. Information concerning the short-term and long-term environmental impacts of the disposal.

The primary purpose of the SMMP is to determine whether dredged material site management practices, including disposal operations, at the site need to be changed to avoid unreasonable degradation or endangerment of human health, welfare, the marine environment, or economic potentialities.

Monitoring results will be used for making decisions, preventing unacceptable adverse effects beyond each site's boundary, and ensuring regulatory compliance over the life of the ODMDS. The baseline assessment conducted during site designation and subsequent trend assessment surveys have not identified any topics of special concern or restrictions on site use. Research conducted to date suggests that no degradation or endangerment of human health, welfare, the marine environment or other uses of the ocean have occurred from annual discharge of dredged material into the SWP ODMDS. In the absence of specific areas of concern or critical research needs, the primary objective of the monitoring program is to confirm that the decisions made regarding the suitability of the dredged material are correct and that the material is not having an adverse impact to the environment.

3.1 Baseline Monitoring

Table 1 summarizes various site characterization surveys of the SWP ODMDS conducted by the USACE, EPA-R6, and others as part of the designation process and subsequent monitoring to evaluate the dredge material management effectiveness for the ODMDS. These existing data include but are not limited to water and sediment chemistry, sediment mapping, bathymetry, physical oceanographic conditions and biological studies related to benthic macroinvertebrates and fisheries. These data, as well as data from future surveys that will be added to the database will serve to define baseline conditions for comparative purposes for evaluation of placement and potential impacts associated with the use of the SWP ODMDS.

3.2 Site Monitoring

The EPA and the USACE implement a "tiered" testing approach to evaluate benthic and water column impacts of dredged material proposed for ocean disposal. This approach is designed to aid in generating only enough information to characterize the dredged material and make a regulatory compliance decision. This allows optimal use of resources by focusing the least effort on dredging operations where impacts are clear, and expending the most effort on operations requiring more extensive investigations to determine the potential for impacts. It is necessary to proceed through the tiers only until information sufficient to demonstrate compliance with or noncompliance with 40 CFR 227.6 and 227.13 has been obtained.

The evaluation of shoal material suitability may be divided into reoccurring tasks. Annual evaluations are performed by reviewing all available contaminant and maritime accident reports in the vicinity of SWP to determine if a significant pollution event has occurred (Tier 1).

Table 1. Summary of site characterization surveys and other studies associated with the SWP ODMDS.

Survey/Study	Site	Date	Conducted by	Objectives	Reference
Mississippi River-South and Southwest Pass maintenance dredging ocean disposal and water quality assessment					USACE 1976
Laboratory evaluation of the toxicity of material to be dredged from Southwest Pass, LA. (summer series – 25°C)					USACE 1979
Laboratory evaluation of the toxicity of material to be dredged from Southwest Pass, LA. (winter series – 15°C)					USACE 1980
Appendix B - Report of Field Surveys	ODMDS	1980-1981	IEC	Sediment and water chemistry, grain size, bioassays, and bioaccumulation done in ODMDS and surrounding area	USEPA 1984
Evaluation of the Southwest Pass of the Mississippi River Ocean Dredged Material Disposal Site and Channel	ODMDS, channel	Apr-92	PNWL	Sediment and water chemistry, bioassays, and bioaccumulation	USEPA 1992
Southwest Pass Navigation Channel Contaminant Assessment	Channel	Oct-95	EH&A	Sediment, water, and elutriate chemistry, grain size, bioassays, and bioaccumulation	USACE 1995
Region VI Contaminated Sediment Study – Phase III	ODMDS	Jun/Jul 1996	Battelle	Bulk sediment, toxicology, benthics, fish community, and tissue analysis in ODMDS and reference sites	Trulli 1996
Southwest Pass Navigation Channel Dredged Material Assessment	Channel	May-97	EH&A	Sediment, water, and elutriate chemistry, grain size, bioassays, and bioaccumulation	USACE 1997
Final Report for Dredged Material Assessment for Southwest Pass, Louisiana – April 1999	Channel	Apr-99	Battelle	Sediment, water, and elutriate chemistry, grain size, bioassays, and bioaccumulation	Dahlen et al. 2000
Bathymetry	ODMDS	Oct-00	USACE-MVN	Depth soundings at ODMDS and adjacent bar channel	10/11/12 Letter
Bathymetry	ODMDS	Jan-01	USACE-MVN	Depth soundings at ODMDS and adjacent bar channel	10/11/12 Letter
Bathymetry	ODMDS	Jan-02	USACE-MVN	Depth soundings at ODMDS and adjacent bar channel	10/11/12 Letter
Bathymetry	ODMDS	Sep-02	USACE-MVN	Depth soundings at ODMDS and adjacent bar channel	10/11/12 Letter
Bathymetry	ODMDS	Oct-03	USACE-MVN	Depth soundings at ODMDS and adjacent bar channel	10/11/12 Letter
Bathymetry	ODMDS	Sep-04	USACE-MVN	Depth soundings at ODMDS and adjacent bar channel	10/11/12 Letter
Bathymetry	ODMDS	Jan-06	USACE-MVN	Depth soundings at ODMDS and adjacent bar channel	10/11/12 Letter
Bathymetry	ODMDS	Nov-06	USACE-MVN	Depth soundings at ODMDS and adjacent bar channel	10/11/12 Letter
Mississippi River-Southwest Pass Louisiana Contaminant Assessment	ODMDS, channel	Jul-07	PBS&J	Sediment, water, and elutriate chemistry, grain size, bioassays, and bioaccumulation	USACE 2007
Bathymetry	ODMDS	Nov-07	USACE-MVN	Depth soundings at ODMDS and adjacent bar channel	10/11/12 Letter
Bathymetry	ODMDS	Dec-08	USACE-MVN	Depth soundings at ODMDS and adjacent bar channel	10/11/12 Letter
Bathymetry	ODMDS	Aug-09	USACE-MVN	Depth soundings at ODMDS and adjacent bar channel	10/11/12 Letter
Analysis of Dredged Material Placement Site Dispersion, Southwest Pass ODMDS	ODMDS	Aug-10	USACE/ERDC	Sediment dispersivity study conducted at the ODMDS	USACE 2010
Mississippi River-Southwest Pass, Louisiana, Contaminant Assessment	ODMDS, channel	Oct-10	PBS&J	Sediment, water, and elutriate chemistry, grain size, bioassays, and bioaccumulation	USACE 2011
Bathymetry	ODMDS	Sep-10	USACE	Depth soundings at ODMDS and adjacent bar channel	10/11/12 Letter
Region VI Status and Trends Survey, Benthic Report	ODMDS	Feb-14	EcoAnalysts, Inc.	Benthic Analysis and sediment grain size	Neubert 2014
Region VI Status and Trends Survey, SPI report	ODMDS	Feb-14	New Fields	Sediment Profile Image Analysis	New Fields 2014
Mississippi River-Southwest Pass, Louisiana, Contaminant Assessment	ODMDS, channel	Apr-16	USACE-MVN	Sediment, water, and elutriate chemistry, grain size, bioassays, and bioaccumulation	USACE 2016

Approximately every 5 years, or as necessitated by significant incidence of pollution, an "Ocean Dumping Evaluation" is performed using a battery of complex physical, chemical, and biological effects-based testing of shoal material, sediment, and water collected from the SWP vicinity (Tiers 2-3). Site monitoring for permittee's is the same as that for civil works projects except that ocean dumping evaluations are required initially as part of the permit process and have a life of 3 years consistent with the life of the permit.

A. <u>*Annual Review*</u>. Contaminant spill reports available from the U.S. Coast Guard National Response Center (NRC) are reviewed by the CEMVN before the beginning of each fiscal year to evaluate all incidences of pollution in the vicinity of SWP as part of the Tier 1 evaluation process. Maritime accident reports available from media outlets are also regularly monitored over the course of each fiscal year. All significant pollution events are investigated to determine if contaminants have the potential to become incorporated with channel shoal material. This investigation may include consultation with regional pollution experts and / or collection and analysis of shoal material from the impacted area. A summary of the NRC review and investigation of significant pollution events are provided to the EPA-R6 by letter prior to the beginning of each fiscal year.

B. <u>*Ocean Dumping Evaluations*</u>. Approximately every 5 years, or sooner if warranted by changing conditions or pollution incidents, Tier 2-3 physical, chemical, and biological evaluations of the SWP shoal material are conducted to characterize the channel's dredged material and determine if it is suitable for placement at the SWP ODMDS. The CEMVN collects and analyzes shoal material and site water from dredged material management units within the navigation channel; site water from the SWP ODMDS; and sediment from a nearby reference area un-impacted by dredging and disposal operations. Collected materials are subject to physical and chemical testing, and used as media in biological effects-based tests pursuant to the EPA criteria at 40 CFR, Part 227 and 228, and in accordance with the 2003 RIA and the Green Book (USEPA/ USACE, 1991) procedures. The CEMVN evaluates the data produced by this testing to determine if dredged material from the Mississippi River is suitable for discharge into the SWP ODMDS. This evaluation may be divided into "Solid Phase" and "Suspended Particulate Phase" components:

(1) *Solid Phase Evaluation.* Potential impacts to the benthos are addressed through performance comparisons between sensitive benthic organisms exposed to channel shoal material and reference sediment – rated both by mortality rate and propensity of contaminants to accumulate in tissues of test organisms. The benthic evaluation draws inferences from contaminants detected in project shoal material and reference sediments.

(2) *Suspended Particulate Phase Evaluation.* Potential impacts to the water column at the SWP ODMDS are addressed by comparison of contaminant concentration observed in dredge elutriates to established regulatory water quality criteria and background concentrations measured in SWP ODMDS site water; and mortality rates of sensitive water column organisms exposed to dredge elutriates and control seawater. The water column evaluation identifies any dilution requirements from these two comparisons, and concludes with an estimate of dilution potential available at the disposal site.

All data and reports generated during the collection and analyses, and the CEMVN's evaluation of the data, are provided to EPA-R6 for an independent review. After review, EPA-R6 notifies the CEMVN with a letter of concurrence or non-concurrence regarding suitability of dredged material for discharge into the SWP ODMDS. The EPA-R6 independent review is typically performed within 45 days of receiving a complete data submittal, but may extend up to 90 days in cases where new or complex data have been generated. If bioassay results indicate that SWP dredged material is not suitable for ODMDS placement, the CEMVN and EPA-R6 will consider various management options to rectify the situation.

Other federal and state agencies, academia, and non-government organizations periodically conduct research in the area around the SWP outlet. EPA-R6 and the CEMVN will periodically review the findings of these groups or request data that are relevant to the SWP navigation channel, ODMDS, and project area to improve our understanding of site environs. Conversely, EPA-R6 and the CEMVN should make every effort to provide project reports and data to interested parties upon request. New or existing information that is relevant to management of the SWP ODMDS should be incorporated into future versions of this SMMP.

3.3 Special Management Conditions or Practices

Currently, no special management conditions or practices related to placement of dredged material into the designated SWP ODMDS are required. As previously discussed, evaluations of sediment quality have indicated that the material from the channel is suitable for offshore placement without such requirements. However, all operations shall be conducted such that the dredged material remains within the bounds of the SWP ODMDS immediately following descent to the ocean floor.

The following management practices have been adopted by the agencies to monitor dredging and disposal operations. These management practices are also applicable to Permitees.

A. *Routine Coordination Before and After Maintenance Dredging*. As described in the RIA, the CEMVN provides an annual letter to EPA-R6 at the end of each fiscal year that describes maintenance dredging work that was completed in that fiscal year and a description of planned maintenance that will be performed in the subsequent fiscal year. To complement this letter, the CEMVN will notify EPA-R6 at least 10 days prior to the start of new work and provide a "Post-Disposal" report for all completed contracts and government work within 90 days of completion.

(1) Notification of upcoming work will be transmitted by e-mail and include: contract # and contractor name (or notation of work performed by the government); names of hopper dredges; anticipated schedule; and list of available disposal areas.

(2) Post-disposal reports will be transmitted by letter and include: a brief narrative describing the work; contract # and contractor name (or notation of work performed by the government); names of hopper dredges; start and end dates for each dredge; disposal areas utilized by each hopper with total volume of dredged material discharged at each site; discharge coordinates in cases where loads were placed in the SWP ODMDS; and a description of any unauthorized discharges including suspected cause and management actions taken.

(3) Bathymetric surveys of the SWP ODMDS associated with routine channel maintenance will be obtained annually between dredging cycles, typically between September and November of each calendar year. For scheduled work or permitted actions, bathymetric surveys will be obtained before the start of disposal operations and within 45 days following completion of disposal operations. Bathymetric readings will be collected along parallel transects running perpendicular to the channel and spaced approximately 500 feet apart. The survey limits may be adjusted depending on the spatial extent of disposal for a given project. A comparison between pre- and post-dredging bathymetry (or of annual surveys bookending maintenance dredging events) should be made, and graphical and descriptive results of elevation changes should be provided to EPA-R6 as part of the Post-Disposal Report.

B. *Remote Surveillance of Hopper Dredges.* Hopper dredges will be monitored during performance of SWP channel maintenance, and vessel movements will be recorded during transport and discharge of dredged material for each hopper load. Currently, monitoring of all private industry hopper dredges is performed by the CEMVN through the USACE Dredging Quality Management (DQM) system. An overview of the DQM system is available at: http://dqm.usace.army.mil/Specifications/Index.aspx. For all hopper dredges utilizing the SWP ODMDS, vessel monitoring data for each hopper load is provided to EPA-R6 as an XML file that is compatible with the agency's independent vessel monitoring system. Submittals are provided by the CEMVN or Permitee to EPA-R6 on a weekly basis during maintenance dredging operations. Any suspected discharges outside of the SWP ODMDS boundaries (often referred to as "short dumps") or other anomalies detected during transport of dredged material to the site (such as excessive leakage) will be investigated to determine their cause upon discovery by either agency through the respective surveillance systems. Except in cases of sensor error, all incidences of short dumps, excessive leakage, or other dredge malfunctions will be documented by the agencies and furnished immediately to the CEMVN Contracting Division for action to remedy or prevent reoccurrence.

C. *Modification of Disposal Limits along the SWP ODMDS Eastern Boundary.* A 500-foot "restricted discharge" buffer has been established on the eastern boundary of the SWP ODMDS, and is intended to reduce the occurrence of false "short dump" warnings that may be triggered in EPA's vessel tracking system by hopper dredges discharging their loads immediately upon entry into the SWP ODMDS. The buffer appears as a modification to the "government furnished disposal area" on CEMVN contract drawings, such that the area available for disposal is reduced in size and distance between the navigation channel and eastern limit of disposal extended by 500 feet (total distance between the channel and SWP ODMDS extended from about 150 feet to 650 feet). The actual SWP ODMDS boundaries will remain intact, and the discharge buffer is intended solely to reduce the incidence of false warnings and resultant coordination between agencies to investigate their cause.

D. *Management of Unauthorized Discharges.* Discharges of dredged material outside of the SWP ODMDS boundaries will be treated as "unauthorized discharges". Such discharges may occur as a result of dredging equipment malfunction during transport to the SWP ODMDS with spillage of material outside of the SWP ODMDS boundaries, or discharge of dredged material in close proximity to a SWP ODMDS boundary such that it falls outside of the site during descent to the seafloor. Should an unauthorized discharge occur outside of the SWP ODMDS, the CEMVN or Permittee will notify EPA-R6 within a reasonable period of time upon discovery of the event, and coordination between EPA-R6 and the CEMVN or Permittee will determine appropriate management actions based on the cause and potential environmental impact of the discharge. Such actions may include documentation of the event and its underlying cause to reduce reoccurrence in the future; bathymetric surveying to identify the extent of the affected area and/or estimate the quantity of dredged material associated with the discharge; notation of poor performance during rating of the dredging contract; or enforcement of financial penalties and mitigation requirements for contractors (in instances of flagrant and repeated unauthorized discharges).

E. *Trend Assessments*. Trend assessment surveys of the sediment, benthos and water column will continue to be performed periodically (approximately every 10 years) by EPA-R6 as budgets allow. Should future disposal at the SWP ODMDS result in unacceptable adverse impacts, further studies may be required to determine the persistence of these impacts, the extent of the impacts within the marine system, and/or possible means of mitigation. In addition, the management plan presented may require revision based on the outcome of any monitoring program.

3.4 Quantity of Material and Presence of Contamination

3.4.1 Quantity of Material Allowable for Disposal at the ODMDS

An average of approximately 6.2 million cubic yards of dredged material are annually removed from the SWP lower jetty and bar channel reaches and placed in the SWP ODMDS. The SWP ODMDS is a dispersive site with sufficient capacity to accommodate the annual discharge of up to 33,000,000 cubic yards of dredged material. The dredged material discharged into the site is reworked by wave action, littoral currents, and river currents and eventually transported out of the SWP ODMDS. It is expected that this material will not move in distinct mounds, but instead will blend with the surrounding environment causing a progressive transition to sediment containing a higher percentage of silt and clay. Net dispersion from the SWP ODMDS is to the southwest and influenced primarily by river discharge and storm events. An estimated 77,000,000 cubic yards of sediment per year is carried out into the Gulf of Mexico via SWP.

Due to the quantity of sediment carried naturally by the river, any potential impacts of dredged material discharge or dispersion of dredged material from the SWP ODMDS are effectively masked by the river plume both inside and outside of the SWP ODMDS boundaries. Interference from disposal operations on other uses of the ocean, including shipping and fishing, are minimal and related to the physical presence of dredging equipment during transport and discharge operations (as opposed to the formation of vertical mounds of shoal material that may present a navigation hazard). There are no special aquatic sites or amenity areas in the SWP ODMDS vicinity that would be adversely impacted by the dispersion of dredged material.

3.4.2 Presence, Nature and Bioavailability of Contaminants in Dredged Material

The general procedure for evaluating dredged material is provided in section 3.2 "Site Monitoring". A summary inclusive of all three evaluations is provided below.

The grain size distribution of SW Pass shoal material is variable. The observed range in sand content across evaluations was approximately 6% to 60%. Within the corresponding large range of percent fines, the silt to clay ratio of fines was fairly consistent across samples and about 2:1 on average. The detection of metals and ammonia at regional background levels was common to all evaluations, and low-levels of petroleum related contaminants were observed in the 2011 report. Survival of sensitive benthic organisms exposed to shoal material was 90% or greater, and with no observed ecologically-significant bioaccumulation of contaminants. Organism survival and contaminant bioaccumulation were similar between shoal material and reference sediment exposures.

Survival of sensitive water-column organisms exposed to channel elutriates was typically 80% or greater across evaluations, and not significantly different than survival of organisms exposed to laboratory-prepared dilution water. Characteristic of dredged material removed from waterways across coastal Louisiana, ammonia was detected in elutriates at concentrations that may occasionally be above seasonally dependent water quality criteria (as observed in the 2011 evaluation). Sufficient dilution potential exists within the boundaries of the SWP ODMDS for rapid dilution of ammonia to non-toxic levels and transformation to non-toxic forms.

3.5 ANTICIPATED SITE USE

It is anticipated that annual maintenance of the SWP navigation channel and disposal of SWP dredged material into the SWP ODMDS will continue in the future. During each maintenance event, an average of approximately 6.2 million cubic yards of dredged material removed by deep draft hopper dredges will be discharged into the SWP ODMDS. SWP maintenance dredging typically begins in the winter and continues into the late summer, and dredging and disposal operations will occur 24 hours a day, 7 days a week until authorized channel dimensions are restored. Use of the site for dredged material disposal by other governmental or private entities is not expected. There is no anticipated closure date for the SWP ODMDS.

4.0 SITE MANAGEMENT PLAN REVIEW AND REVISION

Pursuant to Section 102(c) of the MPRSA, as amended by WRDA 1992, EPA-R6 and the CEMVN will review this SMMP no less frequently than every 10 years after adoption and every 10 years, thereafter. Modifications or updates to the SMMP may be proposed by either agency – and may be based on environmental compliance deficiencies identified during periodic reviews; specific results from monitoring surveys or other reports; and / or routine coordination between agencies related to dredged material transport, discharge, or disposal site monitoring. Following a 30-day agency review period to determine if the proposed changes are justified and practicable (implementable), the modifications may be incorporated into the plan by mutual consent of both agencies.

5.0 IMPLEMENTATION

This plan is effective from the date of signature for a period not to exceed 10 years as outlined in Section 4.0.

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Vititoe, Jennifer M CIV USARMY CEMVN (US)

From:	McCormick, Karen <McCormick.Karen@epa.gov>
Sent:	Monday, December 11, 2017 8:19 AM
To:	Vititoe, Jennifer M CIV USARMY CEMVN (US)
Subject:	[EXTERNAL] Re: Mississippi River Deepening Project

Jennifer - my apology but yes EPA agrees that the USACE does not have to do any additional sampling for the upcoming event to use the ODMS. The event is for both construction (deepening from current depth to a depth of 50 ft plus advance maintenance and over depth) and subsequent operation and maintenance of the Mississippi River Ship Channel to the equivalent depth.

Thanks

Karen McCormick, Chief
Marine, Coastal & Analysis Section
US EPA R6
1445 Ross Avenue
Dallas, TX. 75202
Wk: 214-665-8365
Cell: 214-789-2814
mccormick.karen@epa.gov

Sent from my iPhone

> On Dec 11, 2017, at 8:04 AM, Vititoe, Jennifer M CIV USARMY CEMVN (US) <Jennifer.M.Vititoe@usace.army.mil> wrote:
>
> confirmation that use of the ODMDS is acceptable for both construction (deepening from current depth to a depth of 50 ft plus advance maintenance and over depth) and subsequent operation and maintenance of the Mississippi River Ship Channel to the equivalent depth.

From:	Franks, Jessica
To:	Vititoe, Jennifer M CIV USARMY CEMVN (US)
Cc:	Roberts, Steve W CIV CPMS (US)
Subject:	[Non-DoD Source] RE: Mississippi River Deepening Project
Date:	Thursday, July 27, 2017 12:08:01 PM

Thank you Jennifer for the detailed explanation regarding the proposed deepening project. This makes sense and I agree that no further testing of this material will be needed outside of the typical 5 year testing cycle.

Jessica

-----Original Message-----
From: Vititoe, Jennifer M CIV USARMY CEMVN (US) [mailto:Jennifer.M.Vititoe@usace.army.mil]
Sent: Monday, July 24, 2017 4:24 PM
To: Franks, Jessica <Franks.Jessica@epa.gov>
Cc: Roberts, Steve W CIV CPMS (US) <Steve.W.Roberts@usace.army.mil>
Subject: RE: Mississippi River Deepening Project

Jessica,

I apologize for the delay in responding to you. Both myself and the Environmental Manager for this project were out of the office for the past week.

Our deepening study proposes to provide a -50 foot Mean Lower Low Water (MLLW) navigation channel from Baton Rouge to the Gulf of Mexico. For segments of the river below Venice, Louisiana, such deepening would result in a channel that is about 1.5 feet deeper than what is currently provided by the CEMVN (-48.5 feet MLLW). This small difference in depth is well-within the dredging tolerance of equipment that is used to maintain the channel (+/- 2 to 3 feet). Additionally, it is apparent from review of recent surveys that depths within the bar channel already exceed our proposed depth (see attached bar channel survey from July 12, 2017). Such movement of shoals in excess of current maintenance dredging targets is believed to be from the combined flushing of bed load material at high river stage through the lateral dike and jetty system of Southwest Pass while hopper dredges are actively working in the area. Shoal material will likely return to the bar channel during future spring floods, and sediment within the bar channel would be indistinguishable from shoals that settle elsewhere in the pass. These shoals are periodically tested by our Operations Division and subject to review by your agency. The most recent evaluation completed this Fiscal Year demonstrated that the material is suitable for ocean disposal. Therefore, our office has determined that shoals within the bar channel that would be removed as part of the deepening study have already been adequately characterized and do not require further testing.

More substantial dredging is required between Baton Rouge and New Orleans in areas known as the Deep Draft Crossings, where greater than 5 feet of bed load material beyond what is typically dredged would need to removed. This material has been evaluated under the Clean Water Act and determined to be suitable for open water discharge downstream in the Mississippi River for movement by river currents. The differences in required depth of dredging to achieve a -50 foot MLLW channel above New Orleans and below Venice may be attributed to datum conversions between Mean Low Gulf (MLG) and MLLW. Despite the differences in depth, all dredging associated with the deepening project would involve the handling of shifting bed load and shoals.

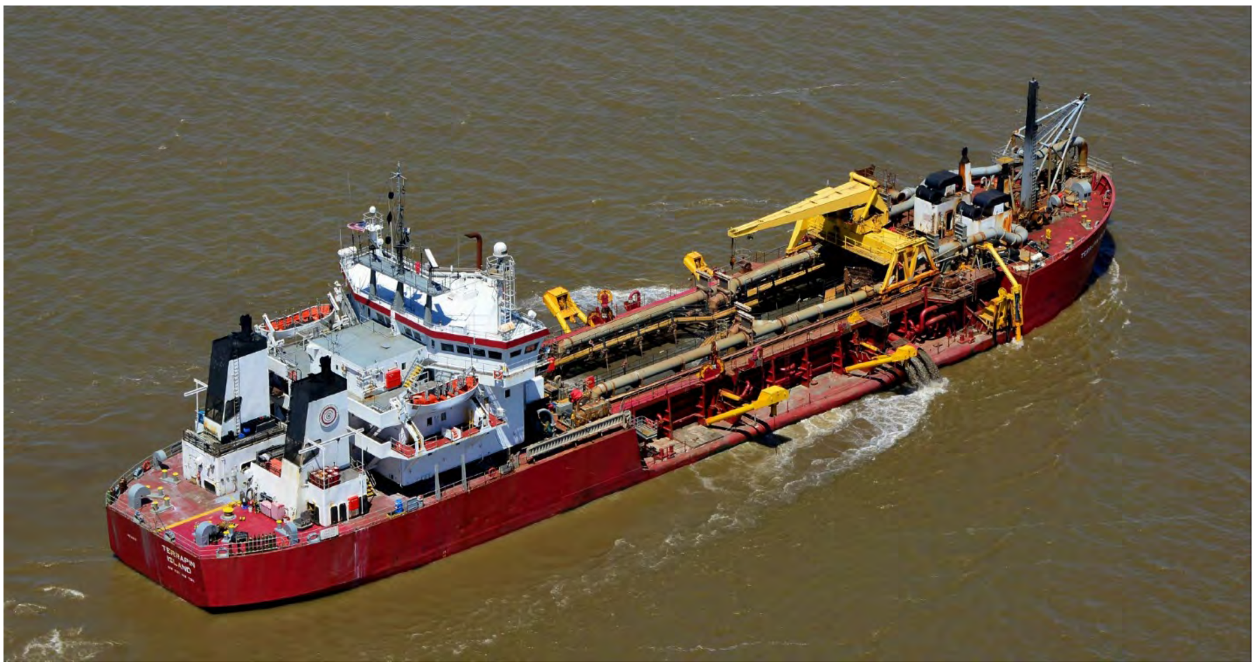
Please let me know if you would like to discuss further.

Jennifer Vititoe
Plan Formulation
USACE - MVN
504-862-1252

-----Original Message-----

MISSISSIPPI RIVER, BATON ROUGE TO THE GULF OF MEXICO, LOUSIANA NAVIGATION PROJECT

SOUTHWEST PASS
OCEAN DUMPING EVALUATION



U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT

OPERATIONS DIVISION – TECHNICAL SUPPORT BRANCH
ENVIRONMENTAL FUNCTION

November 30, 2016

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1.0 INTRODUCTION

This report consolidates work products and information gathered to evaluate shoal material from the Southwest Pass reach of the Mississippi River, Baton Rouge to the Gulf of Mexico, LA, project (Southwest Pass) to determine its suitability for ocean disposal. Environmental media from Southwest Pass, the adjacent Ocean Dredged Material Disposal Site (ODMDS), and a nearby reference area were collected by JESCO Environmental and Geotechnical Services between April 26 and 29, 2016 (USACE Contract W912P8-14D-0036, Task Order 004). Media was transported to the USACE Engineer Research and Development Center (ERDC) in Vicksburg, Mississippi, for chemical and biological analyses on April 30, 2016. ERDC processed and analyzed samples between April 30, 2016 and September 26, 2016; and prepared a report documenting findings of the biological tests in November 2016 (MIPR 60848521; Labor Codes 2A7IEC, 2A7IED, and 2CA39B). The total costs of the media collection and analyses were $155,063.51.

Herein, data produced by this effort are evaluated to assess potential impacts to water column and benthic environs of the Southwest Pass ODMDS associated with the discharge of dredged material. Potential impacts to the water column are addressed by comparison of contaminant concentration observed in channel elutriates to water quality criteria (WQC) and background concentrations measured at the ODMDS; and mortality rates of sensitive water column organisms exposed to channel elutriates and control seawater. The water column evaluation identifies any dilution requirements from these two comparisons, and concludes with an estimate of dilution potential available at the ODMDS. Potential impacts to the benthos are addressed thru performance comparisons between sensitive benthic organisms exposed to Southwest Pass shoal material and reference sediment – rated both by mortality and propensity of contaminants to accumulate in tissues of test organisms. The benthic evaluation draws inferences from contaminants detected in project shoal material and sediments.

Sample collection, chemical and grain size analyses, water column toxicity tests, benthic toxicity tests, benthic bioaccumulation tests, and evaluation of the data address the EPA criteria given in 40 CFR Part 227 and were performed in accordance with the Regional Implementation Agreement (RIA) and the Green Book (USEPA/USACE, 1991) procedures. This report characterizes dredged material that is typical of the Southwest Pass navigation channel, and its findings are applicable to annual dredged material evaluations that will support maintenance dredging events in Fiscal Years (FY) 2017 thru at least 2021.

2.0 METHODS

An analytical work plan entitled "Ocean Dumping Evaluation - Quality Assurance Plan Mississippi River, Southwest Pass" (QAP) developed by the ERDC Environmental Laboratories and the U.S. Army Corps of Engineers, New Orleans District (CEMVN) was finalized on January 21, 2016 (Appendix A). The work plan fully describes procedures to conduct and interpret physical, chemical, and biological tests.

On March 2, 2016, JESCO submitted their "Mississippi River Southwest Pass Sediment and Water Field Sampling and Safety Plan" that acknowledged project requirements; detailed procedures for media collection and handling; established a communication network between the CEMVN, ERDC, and JESCO; and identified mechanisms to reduce and respond to hazards that would be encountered by the field sampling crew (Appendix B).

An overview of methods described in these Appendices is provided below.

2.1 Field Sampling Event

2.1.1 Sampling Stations

Southwest Pass was divided into three Dredged Material Management Units (DMMUs), each with three sampling stations located where shoaling was observed above project depth (based on bathymetric surveys conducted on March 5 and April 17, 2016; see Appendix B). Shoal material was collected from nine stations total within Southwest Pass (three from each DMMU), and water was collected at a single station from each DMMU for preparation of elutriates. To gauge potential environmental impacts observed during chemical and biological tests, disposal site water was collected from a single station within the ODMDS for chemical analysis; and sediment was collected from three reference stations for chemical and biological analyses. Coordinates for the sampling stations are provided in Table 1 (as generated in the *Field Sampling Report* – Appendix C) and depicted in Figure 1. Currently, dredged material removed from DMMUs 2 and 3 are within economical transport distances of the ODMDS; while material removed from DMMU 1 is hauled to an inland (upriver) hopper dredge disposal site at the Head of Passes. Capacity of the inland disposal site may become limited within the next five maintenance dredging cycles, and it is possible that dredged material removed from DMMU 1 may be transported to and discharged in the ODMDS during future maintenance events. Therefore, shoal material from DMMU 1 was included in this evaluation.

Coordinates for four Reference Area stations are listed in the RIA within an area just southeast of the channel's jetties. However, two of the sites are located within the navigation thoroughfare and waters currently greater than -70-feet deep. Collection of material at these sites would have required the sampling vessel to anchor within the heavily-trafficked Southwest Pass entrance, with expected lengthy times at anchor because of the depth of the sampling sites and low-recovery volume typical of reference material. To alleviate safety concerns, these sites were omitted from the Sampling and Analysis Plan and replaced with an alternate site outside of the navigation thoroughfare (Figure 1). The alternate site was within the area surveyed in the Baseline Assessment for the ODMDS, and site conditions were not expected to vary from sites presented in the RIA. To verify this assumption, samples from two sites specified in the RIA and the alternate site were analyzed individually to make possible a comparison of physical and chemical properties of the sediments (see sections 3.3 Comparison of RIA and Alternate Reference Sites and 4.3 Special Topics).

2.1.2 Water Quality Parameters and Field Observations

Water salinity, temperature, and pH were measured at the water surface, mid-depth, and bottom depth of each sampling location. General weather conditions, air temperature, wind conditions, surface water conditions (sea-state), and un-gauged water depth were also noted for each station (Table 1 and Appendix C).

A weighted measuring tape was used to determine water depth. A weighted water pump (Pollarwater XWP4012) with food grade tubing and weighted rope with markings in 1-foot increments was used to collect water samples from specific depth zones. The Ponar sediment sampler was used, as needed, for additional weight to lessen the lateral movement of equipment by tidal and river flows.

Prior to measured water quality observations at each station and depth, at least 10-times the sampling hose volume was pumped and discarded to avoid cross contamination between stations and station depths. A Horiba U-52 Multi-parameter Water Quality Meter and flow thru cell were then used to measure salinity, temperature, and pH from each depth zone. The Horiba U-52 was calibrated at the beginning of each day.

2.1.3 Collection of Water Samples

Water samples from Southwest Pass and the ODMDS were collected with the same equipment weighting, depth measuring, and tube purging procedures as described above in section *2.1.2 Water Quality Parameters and Field Observations*. Water was collected from approximately 30 feet below the water's surface at the DMMU stations, and 15 feet below the water's surface at the ODMDS. New disposable gloves were worn when handling samples at different stations.

Sample containers were filled completely with site water to avoid head space, and immediately preserved as appropriate (cold storage or cold storage plus chemical preservatives; see below section *2.2 Preservation, Storage, and Transport*). Appendix C contains a record of each sample noted at the time of collection on the project's Chain of Custody Form, as well as sample volumes, container type, and labeling information for each sample.

Additional preservatives and field treatment were required for the ODMDS water samples. 5mL of 1:1 HNO_3 and 3 mL of 1:1 H_2SO_4 were added to sampling containers to lower pH to <2 for Metals and Ammonia / Total Organic Carbon (TOC) samples, respectively. 4 mL of 6 Normal NaOH was added to cyanide containers to increase sample pH to >12.

2.1.4 Collection of Sediment Samples

Sediment samples were collected from the upper 2-feet of DMMU and Reference Area stations using a Ponar dredge sampler. To increase sample collection efficiency, the Ponar was lowered from the boat deck to approximately 5-10 feet off the bottom where the device was allowed to stabilize prior to a final drop for sample collection. Multiple grab samples were made at each DMMU and Reference Area station to collect the required sample volumes. A portion of the material from each grab collected at individual DMMU and Reference Area stations was set aside and homogenized in a stainless steel bucket with a stainless steel spoon prior to filling sample containers for chemical analyses. The remaining material was placed in 3.5-gallon buckets for homogenization (compositing) at the ERDC laboratory to support the preparation of elutriates, physical testing, and biological exposures.

Between sampling stations, all non-disposable sampling equipment was thoroughly flushed with ambient water and then rinsed with de-ionized water. New disposable gloves were worn when handling samples at different stations.

All sample containers were filled completely with sediment to avoid head space and placed on ice. Appendix C contains a record of each sample noted at the time of collection on the project's Chain of Custody Form, as well as sample volumes, container type, and labeling information for each sample.

*2.*2 Sample Preservation, Storage, and Transport

Immediately after collection, container lids were checked for secure fastening. Samples were containerized in pre-labeled sample containers, and immediately preserved as appropriate (cold storage or cold storage plus chemical preservatives). Packing materials were used for glass containers to avoid breakage during transport. Cleaned and lined 55-gallon drums were used to store ice for immediate field cold preservation. At the end of each sampling day, samples were transferred from ice storage to a refrigerated trailer maintaining a temperature of 2-4^{0}C. Prior to refrigerated storage, samples were checked for proper packaging, inventoried, organized, and the truck's internal temperature was verified to be between 2-4°C. Samples were protected from light during storage and transportation via amber and opaque sampling containers, opaque ice chests, and the sealed refrigerated trailer.

In order to meet analytical hold time limits and because of uncertainty in the time required to finish sample collection, the ODMDS water sample containers were shipped overnight on April 29, 2016 by commercial carrier to ERDC (for analysis of PCBs, Pesticides, Metals, Ammonia, Total Organic Carbon, and Cyanide) and to RTI Laboratories (for the analysis of Semi-Volatile Organic Compounds).

After conclusion of the sampling event, the remaining samples were transported by JESCO personnel in the refrigerated trailer to the ERDC Environmental Laboratories on Aril 30, 2016. Samples were checked for proper packaging, inventoried, and organized, and the refrigerated trailer's internal temperature was verified to be 2-4^{0}C. Upon arrival, all samples were inventoried and sample media was stored at 4 ± 1°C in commercial walk-in coolers at the ERDC until needed for analysis.

Chain of Custody forms are provided in Appendix C.

2.3 Media Preparation and Sediment Compositing

On May 5, 2016, a composite for each DMMU and the reference area was produced by combining and homogenizing individual sediment samples in a 35-gallon HDPE drum (e.g., DMMU-1 A, B, and C combined to create a DMMU-1 composite). Homogenization was performed with a 0.43 hp Lightnin™ homogenizer (Rochester, New York) with stainless steel dual impeller (7-inch diameter). Mixing was conducted for a minimum of 5-minutes and until the composite material had a uniform consistency.

For each DMMU, a standard elutriate was prepared by thoroughly mechanically mixing one part sediment from the DMMU composite and four parts DMMU site water for 30-

minutes, followed by a 60-minute settling period. The supernatant was siphoned and used for chemical and biological testing, and defined as the 100% elutriate.

The site waters from DMMUs 1 and 2 used for elutriate preparation were collected during a period of low salinity (<1‰), and were well below the minimum salinity tolerance for marine test organisms (25‰ for mysids and 5‰ for sheepshead minnows). However, control survival was previously documented by the ERDC laboratory to be adequate at salinities as low as 15 ‰ for mysids. As a compromise between conflicting guidance defining project elutriates by conditions at the dredging site and those prescribing salinity tolerance for test organisms, site water salinity from DMMUs 1 and 2 was adjusted upwards to 16 ‰ (approximately matching conditions observed at DMMU 3 and the ODMDS). Seasalt (Crystal Sea Marinemix®) was gradually added to the site waters of DMMU 1 and 2 while magnetically stirring until a target salinity of 16‰ was reached. The water was then allowed to equilibrate for one hour prior to preparation of elutriates for biological exposures, as described above.

All equipment and containers were cleaned with soap, water, isopropyl alcohol, and rinsed with reverse osmosis water before preparation of each sample.

2.4 Physical and Chemical Analytical Methods

A table of physical and chemical analytical methods for sediment, water, elutriates, and tissue is provided in Appendix D. The table also includes detection limits achieved by the laboratories, relevant ecological benchmarks and regulatory (enforceable) standards, and Target Detection Limits (TDLs) prescribed in the QAP. Sediment chemistry results were used to reduce the number of contaminants analyzed in tissue samples (i.e., the tissue contaminant list was reduced to contaminants detected in one or more sediment samples). Full analytical reports furnished by the laboratories - including Electronic Data Deliverables and Quality Assurance / Quality Control data - are provided in Appendix D.

2.5 Biological testing

Bioassays were conducted by the ERDC according to standard guidance where available (USEPA 1994; USEPA 2002; USEPA/USACE 1991, 1998). The aquatic toxicity testing facility at ERDC consists of three laboratories containing five temperature and humidity controlled environmental rooms (Darwin, St. Louis, MO, USA), four temperature controlled water baths and two environmentally controlled incubators. Relevant equipment for processing samples and fulfilling all requirements of laboratory bioassays (e.g., pH meters, Dissolved Oxygen (D.O.) meters, temperature probes, ammonia probes, refractometers, centrifuges, etc.) were available.

Bioassays were conducted to assess the potential for biological effects of dredged material released into the water column during placement (elutriate toxicity tests on the suspended phase particulate) and once in-place at the disposal site (sediment toxicity and bioaccumulation tests). Each type of bioassay utilized at least two taxonomically and functionally dissimilar species. Elutriate toxicity tests employed two life stages of the mysid shrimp *Americamysis bahia* and the fish *Cyprinodon variegatus*; sediment toxicity tests used the surface deposit feeding amphipod *Leptocheirus plumulosus* and the epibenthic mysid shrimp *A. bahia*. Sediment bioaccumulation tests were conducted with the bulk deposit-feeding polychaete worm *Nereis virens* and the facultative filter feeding and surface deposit feeding clam *Macoma nasuta*.

2.5.1 Water Quality Parameters

Water quality during biological testing was measured using a Yellow Springs Instruments (YSI) Model 556 multiprobe system (Yellow Springs, OH) for temperature, salinity, pH, and D.O. Total pore water ammonia-N (and elutriate water) and pH were measured using a 720A ion-selective electrode (ISE) meter (Thermo Orion Electron Corp., Beverly, MA) equipped with a 95-12 ammonia-sensitive electrode and a 9107BN automatic temperature compensating pH triode (Thermo Orion Electron Corp., Beverly, MA). Total overlying water ammonia-N during bioassays was also measured using LeMotte titration kits (Chestertown, MD, USA). Both ammonia measurement methods determined ammonia as total ammonia-nitrogen (-N). Total ammonia and ionized ammonia were calculated based on molecular mass and measured pH, temperature and salinity in the test water.

2.5.2 Elutriate Bioassays

Elutriate bioassays were conducted for 96-hours (or 48-hours for the early mysid life stage test) using the 100% elutriate, in addition to 50% and 10% dilutions of the elutriate. All concentrations, including the control and reference waters, were replicated five times. All elutriate toxicity tests were conducted at 20 ± 1^{0}C in temperature and humidity controlled environmental rooms (Darwin, St. Louis, MO, USA). The measurement endpoint for the tests was survival.

> *<u>Zooplankton Bioassay</u>* - *A. bahia* (<1-day old) were shipped overnight from Aquatic Biosystems (ABS, Fort Collins, CO, USA), observed for health and shipment impacts, fed brine shrimp (*Artemia* spp.) and immediately used in elutriate bioassays. The control and dilution water was reconstituted seawater prepared using Crystal Sea Marinemix® Sea Salt Mix. Tests were conducted in

1 L glass beakers containing 200 mL test media. Ten *A. bahia* were added per replicate and were fed twice daily to avoid cannibalism. Test acceptability criteria included water parameters within the specified range (USEPA/USACE 1991, 1998), at least 90% survival in the performance control and sensitivity to a reference toxicant (e.g., potassium chloride (KCl)) within acceptable control chart ranges (± 2-Standard Deviations (S.D.) from the mean). The 48-hour tests were conducted from May 10 to 12, 2016.

Crustacean Bioassay - *A. bahia* was exposed to the elutriate at 4-days old (specified range: 1- to 5-days with no more than a 24-hour range in age; USEPA/USACE 1998). The mysids were shipped overnight from Aquatic Biosystems (ABS, Fort Collins, CO, USA), immediately observed for potential shipment impacts and fed *Artemia* spp. upon receipt. The mysids were held for 72-hours (received at the appropriate age to be 4-day old) prior to testing for acclimation and observation. The control water and dilution water was reconstituted seawater prepared using Crystal Sea Marinemix® Sea Salt Mix. Tests were conducted in 1 L glass beakers containing 200 mL test media. Ten *A. bahia* were added per replicate and were fed twice daily to avoid cannibalism. Test acceptability criteria included water parameters within the specified range (USEPA/USACE 1991, 1998), at least 90% survival in the performance control and sensitivity to a reference toxicant (e.g., KCl) within acceptable control chart ranges (± 2-S.D. from the mean). The 96-hour tests were conducted from May 9 to 13, 2016.

Fish Bioassay - The sheepshead minnow *C. variegatus* was exposed to the elutriate at 10-days old (specified range: 1- to 14-days with no more than a 24-hour range in age; USEPA/USACE 1998). Fish were shipped overnight from Aquatic Biosystems (ABS, Fort Collins, CO, USA) immediately observed for potential shipment impacts and fed *Artemia* spp. upon receipt. The *C. variegatus* were held for 72-hours (received at the appropriate age to be 10-day old for testing) prior to testing for acclimation and observation. The control water and dilution water was reconstituted seawater prepared using Crystal Sea Marinemix® Sea Salt Mix. Tests were conducted in 300 mL glass beakers containing 200 mL test media. Ten fish were added per replicate and were fed at 48-hours. Test acceptability criteria included water parameters within the specified range (USEPA/USACE 1991, 1998), at least 90% survival in the performance control and sensitivity to a reference toxicant (e.g., KCl) within acceptable control chart ranges (± 2-S.D. from the mean). 96 hour tests were conducted from May 9 to 13, 2016.

Reference Toxicity Tests for Elutriate Bioassays - Reference toxicant tests were conducted on each batch of test organisms to assess test organism sensitivity relative to historic information recorded on in-house laboratory control charts. The selected reference toxicant was KCl. Reagent grade KCl was weighed and completely dissolved into the appropriate reconstituted waters for each test species (described above). Five triplicated concentrations were prepared (100, 50, 25, 12.5, 6.25%) with the previously described number of organisms in each replicate. The 100% concentration used was 1.0 g/L for *A. bahia* and 2.0 g/L for *C. variegatus*. The endpoint measured was survival after a 48- or 96-hour exposure. The median effects endpoints generated in the reference toxicity tests were compared to historic information recorded in ERDC or vendor control charts (± 2-S.D. from the mean).

2.5.3 Whole Sediment Toxicity Bioassays

Whole sediment toxicity tests were conducted to simulate exposure of benthic organisms to the in-place dredged material at the disposal site. DMMU test sediments were stored at $4^{o}C$ until needed for use in the bioassays. In addition, a well characterized performance control sediment (Sequim Bay, WA, USA) and a project specific reference sediment were tested simultaneously. Due to the porewater salinity of the site sediments being outside the tolerance range of test organisms, the sediment was added two days prior to test start to allow the porewater to equilibrate to the required target salinity. One 50% water exchange was conducted the day prior to test initiation. Bulk sediment pore water ammonia concentrations were measured upon sediment receipt and were below levels provided in the test guidance (USEPA/USACE 1991, USEPA 1994). Prior to testing, sediments were thoroughly homogenized using an impeller mixer. Two standard test organisms, *L. plumulosus* and *A. bahia*, were used in 10-day testing from May 27 to June 6, 2016. Water quality parameters were measured from each replicate chamber (i.e., temperature, pH, dissolved oxygen salinity and overlying water ammonia) at test initiation and termination. Water bath temperature was monitored and recorded daily. Aeration was provided to test chambers. The measurement endpoint for both tests was survival. Performance control survival was compared to the requirements provided in test guidance (USEPA/USACE 1991, 1998).

<u>*Deposit Feeder / Burrower Bioassay*</u> – A 10-day sediment toxicity test was conducted on *L. plumulosus* (3-5 mm; no mature males or females) obtained from in-house cultures. Amphipods were sieved from culture/holding sediment and kept in clean reconstituted seawater overnight prior to test initiation. Approximately 175 mL of each test material and 725 mL overlying seawater (Crystal Sea Marine Mix®) at 20‰ were placed into each of five replicate 1 L glass beakers. The study was conducted at 25 ± 1°C under a 24-hour, continuous light regime. Specimen were not fed during testing. At test initiation, 20 amphipods were added to each replicate, and behavioral observations that could be relevant to test results were recorded daily. Following the 10-day exposure, sediment from each beaker was passed thru a 425 μm sieve and surviving organisms were recovered and enumerated.

<u>*Filter Feeder Bioassay*</u> – A 10-day sediment toxicity test was conducted on *A. bahia* (~ 3-days old) obtained from Aquatic Biosystems (Fort Collins, CO, USA). The mysids were kept in clean reconstituted Instant Ocean® seawater overnight prior to test initiation. Approximately 175 mL of each test material and 725 mL overlying seawater (Instant Ocean Seasalt®) at 30‰ were placed into each of five replicate 1 L glass beakers. The study was conducted at 20 ± 1°C under a 16:8 hour light regime. Specimen were fed a concentrated suspension of

Artemia spp. nauplii ≤24-hours old daily. At test initiation, twenty 20 mysids were added to each replicate, and behavioral observations that could be relevant to test results were recorded daily. Following the 10-day exposure, sediment from each beaker was passed thru a 425 µm sieve and surviving organisms recovered and enumerated.

<u>*Reference Toxicity Tests for Sediment Toxicity Exposures*</u> - Reference toxicant tests were conducted on each batch of test organisms to assess test organism sensitivity relative to historic information recorded in laboratory control charts. In-house and vendor control charts were used for *L. plumulosus* and *A. bahia*, respectively. The selected reference toxicant was KCl. Reagent grade KCL was weighed and completely dissolved into Crystal Sea Marine Mix® water. Six concentrations were prepared (0, 0.312, 0.625, 1.25, 2.5 and 5.0 mg/L for *L. plumulosus; and* 0, 0.0625, 0.125, 0.25, 0.5, and 1 g/L for *A. bahia*) with three replicates per treatment containing ten organisms each. The endpoint measured for both organisms was survival after a 96-hour exposure.

2.5.4 Whole Sediment Bioaccumulation Bioassays

The 28-day bioassays were conducted from June 2 to 30, 2016, with the standard organisms *N. virens* and *M. nasuta*. Prior to testing, sediments were thoroughly homogenized using an impeller mixer. Test sediments were added to tanks on May 25, 2016, and the test organisms were added to the tanks eight days later. The test system was setup eight days prior to test initiation in order to allow the porewater salinity to equilibrate to a level within the tolerance range of the test organisms. Approximately 10 kg (at least 5 cm depth) of each test material and 30 L overlying seawater (Crystal Sea® Marinemix) was placed into each of five replicate 10-gallon glass tanks. On June 2, test organisms (approximately 40 g wet tissue) were added to test chambers and 40 g of unexposed tissue was collected for background tissue residues. 70% of the water from each test chamber was exchanged three times per week (Monday, Wednesday, Friday). Survival and mass of recoverable tissue were recorded after the 28-day exposure to the test material. Prior to preservation, test organisms were purged of undigested sediment (specifics are described below). Recovered tissue was thoroughly homogenized using a hand held tissue grinder (Omni, Kennesaw, GA, USA). Biomass measurements were obtained using a Mettler Toledo AX26DR Electronic Analytical Balance (Columbus, OH). Lipid analysis was conducted using method B503067. All analyses were performed on a wet tissue mass basis. Tissue chemistry methods are provided above in section 2.4.

<u>*Deposit Feeder / Burrower Sediment Bioaccumulation Test*</u> - *N. virens* was field-collected (Aquatic Research Organisms, Hampton, NH, USA) and acclimated to laboratory conditions for at least 24-hours prior to testing. Tests were conducted at 20 ± 1 ºC. At test initiation, approximately 40 g of wet tissue was added to each replicate tank (n = 5). Any worms that did not burrow within 2-hours were replaced. After the 28-day exposure, the *N. virens* were removed from the test sediment and allowed to purge their guts for 24-hours in 3.75 L glass jars containing clean reconstituted seawater. Following gut purging, worms were

removed from water, thoroughly rinsed with deionized water, cleaned of any debris, blotted dry, homogenized and frozen (-20°C) until ready for chemical analysis.

Filter Feeder Sediment Bioaccumulation Test – *M. nasuta* was field-collected (Aquatic Research Organisms, Hampton, NH, USA) and acclimated to laboratory conditions for at least 24-hours prior to testing. At test initiation, approximately 40 g of wet tissue was added to each replicate tank (n = 5). Tests were conducted at 15 ± 1 ºC and any clams that did not burrow within the first 24-hours following addition were replaced. After the 28-day exposure, the clams were removed from the test sediment and allowed to purge their guts for 24-hours in 3.75 L glass jars containing clean reconstituted seawater. After purging, a scalpel was used to cut the shell hinge and the blunt edge of the blade was used to scrape undigested sediment from the gut. The remaining tissue was thoroughly rinsed with deionized water, cleaned of any debris, blotted dry, homogenized and frozen (-20 °C) until ready for chemical analysis.

2.5.5 Statistical Analysis

Elutriate Bioassay Statistical Analysis - Statistical analysis was only performed when survival in the undiluted (100%) elutriate water was reduced by at least 10% relative to the dilution water. Statistical analyses were conducted using Toxcalc® statistical software (Version 5.0, Tidepool Scientific Software, McKinleyville, CA). All data were statistically compared to data from the dilution water. Data normality (Shapiro-Wilk's Test), homogeneity of variance (Bartlett's Test), and treatment differences compared to the reference (one way ANOVA and Dunnett's Method, one-tailed analysis) for organism survival were determined at the $\alpha = 0.05$ level. When normality could not be achieved, Steel's Many-One Rank test (one-tailed analysis) was used to compare elutriate treatments to the dilution water. The lethal median concentration producing 50% mortality (LC50) in elutriate or reference toxicity test dilutions was determined by the Spearman–Karber method using Toxcalc® (verison 5.0, Tidepool Scientific Software, McKinleyville, CA).

Whole Sediment Toxicity Bioassays Statistical Analysis **-** The difference in survival between DMMU sediment and the reference sediment exposures did not exceed 20% for *L. plumulosus* or 10% for *A. bahia,* therefore, further statistical analyses were not required (See Section *3.2.2 Whole Sediment Toxicity Bioassays*).

Bioaccumulation Statistical Analysis - For bioaccumulation tissue residue level evaluations, statistical analyses were conducted SigmaStat® statistical software (SPSS, Chicago IL). Data normality was evaluated using Shapiro-Wilk's test. Homogeneity of variance was evaluated using the Levene's median test. Where data were normal and homogeneous or could be made normal and / or homogeneous thru a data transformation (e.g., arc-sine square root or log) the standard t-test was utilized. Where data were not normal and/or variances not homogenous, data were first converted to ranks and standard t-test were then employed. Statistical significance was determined at $\alpha = 0.05$. In cases where tissue residues were less than detection limits, half the detection limit were applied to statistical comparisons as recommended in Clark (1998). Tissue residues were conservatively compared to the Food and Drug Administration action levels (where available) using the 95th percentile of the data distribution.

2.6 Dilution Calculations

2.6.1 Dilution Factor

Project specific WQC were set as the lowest acute state or Federal regulatory WQC. In cases where background levels of a contaminant in ODMDS waters exceeded a published regulatory WQC, the criterion was redefined as a value 5% above background levels measured at the ODMDS. Additional WQC were established as 1% of the LC50 determined from the elutriate bioassays.

In cases where a criterion was exceeded, dilution requirements were calculated using the following equation:

$$D = (C_e - C_{wq}) / (C_{wq} - C_{ds})$$

Where

D = dilution to meet a project specific criterion;
C_e = concentration of the dissolved contaminant in the standard elutriate (assumed 100% generic contaminant concentration in dredge slurry);
C_{wq} = project specific WQC; and
C_{ds} = background concentration of the contaminant at the ODMDS

Contaminants requiring the most dilution to meet project specific WQC were carried forward for dilution modeling.

2.6.2 STFATE Modeling

The *Short-Term Fate of Dredged Material Disposed in Open Water for Predicting Deposition and Water Quality Effects* (STFATE) module of the Automated Dredging and Disposal Alternatives Modeling System was used to examine dilution potential within the ODMDS. Maximum identified dilution factors, based on contaminant and bioassay results, were selected for analysis to predict if sufficient dilution would be available to meet project specific WQC within 4-hours inside the ODMDS without ever exceeding the criterion outside of the disposal site.

The hopper dredge TERRAPIN ISLAND was selected for modeling of a typical Southwest Pass discharge event because of its large bin capacity (relative to dredges that routinely perform channel maintenance) and the availability of reliable dredge performance data collected during FY 2016. All other parameters were based on observations made during this dredged material evaluation (grain size, contaminant concentrations, general water quality parameters; presented in Tables 1 - 5), the 2016 bathymetric survey of the ODMDS (water depth presented in Appendix B), and USACE / EPA sponsored site investigations (prevailing current direction and speed). Note that modeled depths were based on depths present in the accessible portion of the ODMDS for the TERRAPIN ISLAND due to limited modeling ability to simulate the zonation of the Southwest Pass ODMDS. Model input files are included in Appendix E.

2.7 Unplanned Deviations and Resolutions

The field sampling event overlapped with FY 2016 maintenance dredging of Southwest Pass, and the hopper dredge TERRAPIN ISLAND was actively working within the limits of DMMUs 2 and 3 the week of April 24. On April 29, the dredging assignment for the TERRAPIN ISLAND overlapped with the DMMU-3A shoal material collection site. JESCO began collection at CEMVN furnished sampling coordinates for DMMU-3A but moved, as directed for safety, after the hopper dredge initiated a new dredging run. In order to collect the required sample volume for DMMU-3A while maintaining a safe distance from the hopper dredge, the CEMVN provided alternate coordinates at the upper limits of the TERRAPIN ISLAND's dredging assignment. The alternate site was 2,400-feet upriver of the original site and within the same ribbon of shoal material that was being targeted by the hopper dredge. Settling of shoal material within this ribbon was influenced by the adjacent and upriver Burrwood Bayou outlet. There were no expected / apparent impacts to the evaluation from the use of two sampling stations, as the full collection for DMMU-3A was within the same distinct Burrwood Bayou shoal.

Sample splits of DMMU and Reference Area sediments were shipped to RTI Laboratories (a subcontractor of Air, Water, and Soil Laboratories Inc) on May 6 for Semi-volatile Organic Compound (SVOC) analyses by method SW8270D. RTI provided results of these analyses thru the prime contractor to ERDC staff on June 7 and 8 in Analytical Detection Report and Electronic Data Deliverable (EDD) formats. ERDC staff reviewing the data noted discrepancies between the reports and EDDs, as well as other anomalies in the reporting of instrument calibration and quality control measures. Rectification of these discrepancies and anomalies was hampered by communication breakdowns between the multiple layers of management (i.e., ERDC could not communicate directly with RTI) and turnover in staff at both RTI and ERDC. In order to keep the project on track given the low probability that the SVOC data were salvageable, the CEMVN and EPA Region 6 agreed to analyze archived sediments for SVOCs at a separate laboratory. Archived material was analyzed on July 13 by TestAmerica, with reports generated by July 26. Although the samples were extracted outside of method hold times, the list of detected analytes – as well as their reported concentration – were comparable to the original RTI reports. The TestAmerica dataset was deemed reliable and used to select analytes carried forward for tissue analysis.

3.0 RESULTS

The evaluation of data produced by this effort may be divided into two components. Potential impacts to the water column are addressed by comparison of contaminant concentration observed in channel elutriates to WQC and background concentrations measured at the disposal site; and mortality rates of sensitive water column organisms exposed to channel elutriates and control seawater. The water column evaluation identifies any dilution requirements from these two comparisons, and concludes with an estimate of dilution potential available at the disposal site. Potential impacts to the benthos are addressed thru performance comparisons between sensitive benthic organisms exposed to Southwest Pass shoal material and reference sediment – rated both by mortality rate and propensity of contaminants to accumulate in tissues of test organisms. The benthic evaluation draws inferences from contaminants detected in project shoal material and sediments.

3.1 Potential Water Column Impacts

3.1.1 Elutriate Chemistry

Summaries of analytes detected in elutriates for each of the three in-channel DMMUs and the ODMDS are presented in Table 2. Full analytical reports are provided in Appendix D.

The metals antimony, silver, and zinc were detected in elutriates at concentrations comparable to those observed in ODMDS site water. The concentrations of arsenic, chromium, mercury, nickel, and selenium in channel elutriates exceeded observed concentrations in ODMDS site water, but were below available water quality criteria.

Copper was detected in all elutriate samples at concentrations between 15 and 18 times greater that the LA acute WQC. However, background copper concentration in ambient ODMDS waters exceeded regulatory criteria. Therefore, a project specific WQC was established at 5% above background for dilution calculations. Ammonia detected in all elutriate samples exceeded the federal acute WQC, with consideration of temperature, salinity, and pH that were measured at the ODMDS during media collections. Based on elutriate chemistry results, copper and ammonia may be present in dredged sediments and would require dilution with ODMDS waters to meet their respective criteria.

No other analytes were detected in project elutriates.

3.1.2 Elutriate Bioassays

A summary of survival data from the suspended particulate phase bioassays is presented in Table 3. A complete synopsis of test results is provided in Appendix F.

A. bahia **Larval and Post-Larval Elutriate Bioassays**

Larval and post-larval *A. bahia* performed poorly in undiluted elutriate treatments for DMMUs 1 and 2 (0% to 54% survival); and post-larval *A. bahia* performed poorly in the undiluted DMMU-3 elutriate and 50% dilutions from DMMUs 1 and 2 (20%, 78%, and 74%, respectively). Water quality parameters were within the acceptability ranges specified by testing guidance (US EPA / US ACE 1991, 1998). However, the salinity of test treatments (16‰) was significantly below the typical testing range in USEPA/USACE (1998) for *A. bahia* (25 to 30 ‰), and it is possible that the mysids were sensitized to other factors in the elutriate water (including ammonia).

The KCl reference toxicity test results suggest confounding factors may have contributed to poor survival. While survival in the laboratory performance control at 16 ‰ salinity met the ≥ 90% requirement, the LC50 value from the KCl reference toxicity tests conducted on larval and post-larval mysids was 0.16 and 0.31 g/L (respectively). These values were below mean LC50 values from ERDC *A. bahia* control charts generated at salinities of 15 to 20 ‰ (mean = 0.38 ± 0.08 g/L) and 30 ‰ (mean = 0.66 ± 0.04 g/L). This suggests that test organisms are more sensitive to KCl at lower salinity. It was previously reported by Hall and Anderson (2008) that various marine organisms, including *A. bahia* (De Lisle and Roberts 1988), can be more sensitive to chemicals (most notably metals due to speciation and bioavailability) at lower salinity. Due to the lines of evidence that *A. bahia* is more sensitive at a lower salinity, these test results should be considered conservative.

Based on statistically significant reduction in mean survival for the larval and post-larval *A. bahia* bioassays, a maximum LC50 of 54% was calculated (DMMU-2 elutriate dilution series).

C. variegates **Elutriate Bioassays**

Survival of *C. variegates* was 100% in all undiluted elutriate treatments. Test conditions, including water quality parameters and organism sensitivity, were within acceptable ranges. No statistical analyses were performed due to high survival in all treatments, and no dilution requirements were identified thru this bioassay.

3.1.3 Dilution Potential

Dilution requirements for project elutriates are provided in Table 4. The highest dilution factor (DF) of 184 was based on elutriate bioassay results from DMMU-2 exposures. Due to possible confounding effects of low salinity on test organism survival, the worst-case dilution requirement for copper (DF = 20) in the DMMU-3 elutriate was also carried forward for dilution modeling to provide a more realistic depiction of water column impacts from dredged material discharge.

Two separate model runs were produced in STFATE. Sufficient dilution of the DMMU-2 elutriate after discharge was achieved less than 180 minutes after discharge into the

ODMDS to meet the bioassay-based WQC (Figure 2a), and sufficient dilution of the DMMU-3 elutriate occurred within 90 minutes after discharge to meet the copper-based WQC (Figure 2b). The bioassay-based and copper criteria were never exceeded outside of the ODMDS in either model run. Complete STFATE output files are provided in Appendix E.

3.2 Potential Impacts to the Benthos

3.2.1 Sediment Chemistry

Summaries of analytes detected in shoal material and sediment composites from each of the three in-channel DMMUs and the Reference Area are presented in Table 5. The NOAA Effects Range-Low (ER-L) screening value for marine sediments is provided as a generalized guide to help gauge the ecological significance of detected analytes. In cases where the ER-L was exceeded, the Effects Range-Median (ER-M) is provided in parenthesis as a lower threshold of potential toxicity. Full analytical reports are provided in Appendix D.

Detected analytes common to most samples included metals, petroleum related contaminants, ammonia, and pesticides. The pesticide DDT exceeded the ER-L in channel shoal material by factors of 1.2 to 2.3, but was at least 3-times lower than the ER-M. All detected analytes were carried forward for further investigation in the bioaccumulation evaluation.

3.2.2 Whole Sediment Toxicity Bioassays

A summary survival data from the suspended phase bioassays is presented in Table 6. A complete synopsis of test results is provided in Appendix F.

Mean survival of *L. plumulosus* ranged from 78% to 84% in DMMU sediments, compared to 42% in the Reference sediment exposure. Because of low and unexplained poor survival in Reference sediment exposures, control survival (95%) was used as an alternative performance metric for comparison of survival percentage in DMMU exposures. Mean survival of *A. bahia* was 89% to 95% in all DMMU and Reference sediments. Test conditions, including water quality parameters, pore water ammonia, and organism sensitivity, were within acceptable ranges for both bioassays. Differences in survival between the DMMUs and Control sediments did not exceed 20% for *L. plumulosus*, or 10% for *A. bahia* between DMMU and Reference sediments. Therefore, statistical analyses were not required and no toxicity was identified thru the bioassays.

3.2.3 Whole Sediment Bioaccumulation Bioassays

Summaries of analytes detected in the tissues of *N. virens* and *M. nasuta* are presented in Tables 7 and 8. Full analytical results are provided in Appendix F. Mean contaminant concentration is reported for the DMMUs, Reference Area, and initial (pretesting) state, with FDA Action Levels and background concentration observed in the Northern Gulf of Mexico provided as a gauge of ecological significance for each detect. Detected analytes included metals and PAHs.

As detailed in Appendix F, no FDA Action Levels were exceeded and there were no statistically significant differences between contaminant levels observed in organisms exposed to DMMU and Reference sediments. Evaluation factors provided in the RIA are irrelevant to this study, based on the results of the statistical comparisons.

3.3 Comparison of RIA and Alternate Reference Area Sites

The alternate reference area site or “Reference C” is approximately ½-mile from neighboring RIA reference sites “Reference A” and “Reference B”, and about 1-mile from the unutilized RIA reference sites. Water depth at the alternate site was -45 feet, compared with depths between -43 and -49 feet at the pre-existing sites. All sites had a combined silt and clay content above 80%, and may be classified as silty clays or silty clay loams. Reference B had a slightly greater clay content with less sand, and a greater moisture content (56%) than sites A and C (47% and 48%, respectively; Table 9).

The type and concentration of contaminants at all 3 sites were virtually identical, and included mostly metals and PAHs. Low-level detects (<1 ppb) of the pesticides DDD and DDE were common to all samples (Table 9). Reference B had slightly greater reported concentrations of contaminants relative to its sister sites. However, this slight increase is likely due to the sample’s higher moisture content and an artifact of the conversion of contaminant concentration from wet weight to dry weight. A “normalized score” is provided in Table 9 to show the general relationship between samples. Contaminant concentration for a detected analyte in each individual sample was normalized to mean concentration of the contaminant observed across all three samples. Normalized scores within classes of contaminants were then averaged. Scores that are less than 1.0 represent samples where contaminant concentration tends to be below the mean, and scores greater than 1.0 are indicative of a sample where contaminants tend to be elevated relative to the mean.

4.0 DISCUSSION

4.1 Synopsis of Water Column Impacts

Southwest Pass dredging elutriates were virtually contaminant free, and detected analytes included only metals and ammonia. Results of elutriate bioassays varied considerably among test species. Survival of larval sheepshead minnow was 100%, while survival of planktonic and crustacean stages of mysid shrimp were as low as 38% and 0% (respectively). In the absence of any known contaminant, the bioassay results suggest that survival may have been influenced by test treatment salinity (16 ‰) as compared to the recommended lower limits of test organism salinity tolerance (5 ‰ for sheepshead minnows and 25 ‰ for mysid shrimp). It should be noted that survival of *A. bahia* in solid phase bioassays conducted at 30 ‰ ranged from 89% to 95%.

Copper was detected in dredging elutriates and background waters of the ODMDS at concentrations above regulatory WQC. Therefore, dilution targets and a project specific copper WQC was established as 5% above background ODMDS levels. A maximum dilution factor of 20 was calculated for the DMMU-3 elutriate to meet the copper WQC. Based on STFATE modeling, sufficient dilution would be achieved within 90 minutes of discharge from the hopper bin. The CEMVN recommends a follow-up analysis of river and ODMDS waters to determine if elevated concentrations of copper were anomalous to this evaluation or related to high river stage.

The concentration of silver detected in dredging elutriates exceeded the regulatory WQC but was less than concentrations observed in ambient ODMDS waters. Therefore, no project specific WQC was established and dilution is not required (or possible). The CEMVN recommends a follow-up analysis of river and ODMDS waters to determine if elevated concentrations of silver were anomalous to this evaluation or related to high river stage.

Ammonia was detected in dredging elutriates just above the regulatory WQC, with a maximum calculated dilution requirement of 4. Based on the STFATE modeling for copper, dilution potential within the ODMDS is sufficient for ammonia abatement.

Mysids performed poorly in project elutriates. Though the low salinity of elutriate treatments may have contributed to high mortality of the marine test species, STFATE modeling was performed to evaluate dilution potential in the ODMDS. Sufficient dilution to 1% of the lowest calculated LC50 from the mysid bioassays would be achieved within 180 minutes of discharge from the hopper bin. The CEMVN recommends a review of elutriate bioassay procedures to determine if alternate freshwater or brackish species may be used in cases where low salinities are observed in dredging elutriates.

Based on findings of this evaluation, the Limiting Permissible Concentration (LPC) for the liquid and suspended particulate phases - as presented in 40 CFR 227.27(a) - are met. Dredged material discharges would be compliant with the criteria at 40 CFR 227.6(c)(1) without special handling or management.

4.2 Synopsis of Impacts to the Benthos

Southwest Pass shoal material was virtually contaminant free. Detected contaminants of concern included metals, ammonia, PAHs and DDT. The concentrations of all detected analytes were below respective ecological screening values protective of sensitive marine species. There were no statistically significant differences in survival of sensitive benthic organisms exposed to shoal material and reference area sediments; nor were there any statistically significant differences in the bioaccumulation of contaminants between organisms exposed to shoal material and reference sediments. The accumulation of metals was several orders of magnitude below available FDA Action Limits; and the accumulation of all detected contaminants were comparable or lower than background levels observed in organisms harvested from the northern Gulf of Mexico.

Based on findings of this evaluation, the LPC for the solid phase - as presented in 40 CFR 227.27(b) - are met. Dredged material discharges would be compliant with the criteria at 40 CFR 227.6(c)(3) without special handling or management.

4.3 Special Topics

The alternate “Reference C” is in the immediate vicinity of two reference sites prescribed in the RIA, and within the area assessed to establish baseline conditions for the Southwest Pass reference area. It lies outside of the shipping lane with a water depth that permits sampling with conventional equipment. Further, Reference C has nearly identical physical and chemical characteristics to the RIA Reference A and B sites. The CEMVN recommends that Reference C be incorporated into future Southwest Pass Ocean Dumping Evaluations as an alternate to the RIA’s reference sites in deep water shipping lanes where sampling may be unsafe or infeasible.

Table 1. Field data log (adapted from *Appendix C Field Sampling Report*) – sampling site location with general water quality parameters, observations and sea state at time of collection.

TABLE 1. DREDGE SEDIMENT & WATER SAMPLING FIELD LOG

PREPARED BY: ROBERT BURWELL

DATE & TIME	STATION	COORDINATES	DEPTH	WATER QUALITY PARAMETERS				NOTES & GENERAL OBSERVATIONS		
			Feet	Depth	Temp (°C)	pH	Salinity (ppt±)	Temp (°F)	Wind Speed (mph)	Sea State (feet), etc.
4/29/2016 1400	DMMU 1-A	N 29° 02' 54.3" W 89° 18' 58.2"	40	Surface -	18.3	8.00	0.42	80	9-12	choppy
				Mid-Depth -	18.3	8.01	0.54			
				Depth -	18.3	7.62	9.09			
4/29/2016 1300	DMMU 1-B	N 29° 02' 3.41" W 89° 19' 47.25"	40	Surface -	18.8	7.53	0.293	80	9-12	slightly choppy
				Mid-Depth -	18.4	7.78	0.37			
				Depth -	18.3	7.69	6.55			
4/29/2016 1200	DMMU 1-C	N 29° 01' 37.16" W 89° 20' 13.61"	45	Surface -	18.6	7.59	0.39	80	9-12	slightly choppy
				Mid-Depth -	18.2	7.57	0.379			
				Depth -	18.7	7.89	10			
4/29/2016 1030	DMMU 2-A	N 29° 00' 11.21 " W 89° 21' 04"	41	Surface -	18.1	7.72	0.64	79	12-14	choppy
				Mid-Depth -	18.1	7.77	0.736			
				Depth -	18.0	7.52	2.62			
4/29/2016 900	DMMU 2-B	N 28° 59' 28.31" W 89° 21' 39.16"	36	Surface -	NA	NA	NA	79	9-12	choppy
				Mid-Depth -	18.1	7.83	0.91			
				Depth -	17.9	7.60	10.02			
4/28/2016 1330	DMMU 2-C	N 28° 58' 57.664" W 89° 22' 25.375"	36	Surface -	18.0	7.79	0.9	83	5-7	calm
				Mid-Depth -	18.0	7.67	1.61			
				Depth -	18.3	7.74	11.2			
4/29/2016 800	DMMU 3-A	N 28° 58' 08.702" W 89° 23' 07.126" and N 28°58'27.84" W 89°22'45.84"	40	Surface -	18.0	7.77	1.47	78	15	choppy
				Mid-Depth -	18.0	7.78	5.55			
				Depth -	19.2	7.86	21.6			
4/28/2016 1000	DMMU 3-B	N 28° 57' 23.402" W 89° 23' 30.69"	40	Surface -	17.6	7.51	0.76	80	5-7	calm
				Mid-Depth -	17.3	7.71	2.8			
				Depth -	18.5	7.85	13.7			
4/28/2016 900	DMMU 3-C	N 28° 56' 37.24" W 89° 24' 14.45"	45	Surface -	17.6	7.57	1.16	78	3-5	calm; fog
				Mid-Depth -	17.4	7.75	1.32			
				Depth -	18.2	7.84	13			
4/26/2016 930	REFERENCE A	N 28°53'58" W 89°25'30"	43	Surface -	21.2	8.37	3.44	83	8	slightly choppy
				Mid-Depth -	21.6	8.50	29.2			
				Depth -	20.9	8.42	32.8			
4/26/2016 1100	REFERENCE B	N 28°53'45" W 89°25'09"	49	Surface -	21.4	8.28	2.6	83	8-10+	slightly choppy
				Mid-Depth -	21.7	8.65	14.9			
				Depth -	20.9	8.44	32.9			
4/26/2016 1500	REFERENCE C	N 28°54'09" W 89°25'09"	45	Surface -	21.3	8.27	2.3	83	10-15	choppy
				Mid-Depth -	20.9	8.48	31			
				Depth -	20.9	8.41	33.5			
4/26/2016 830	ODMDS	N 28°53'22" W 89°26'51"	20	Surface -	19.4	8.49	6.42	80	8	choppy
				Mid-Depth -	19.9	8.56	8.6			
				Depth -	19.6	8.71	16.2			

± ppt - parts per thousand

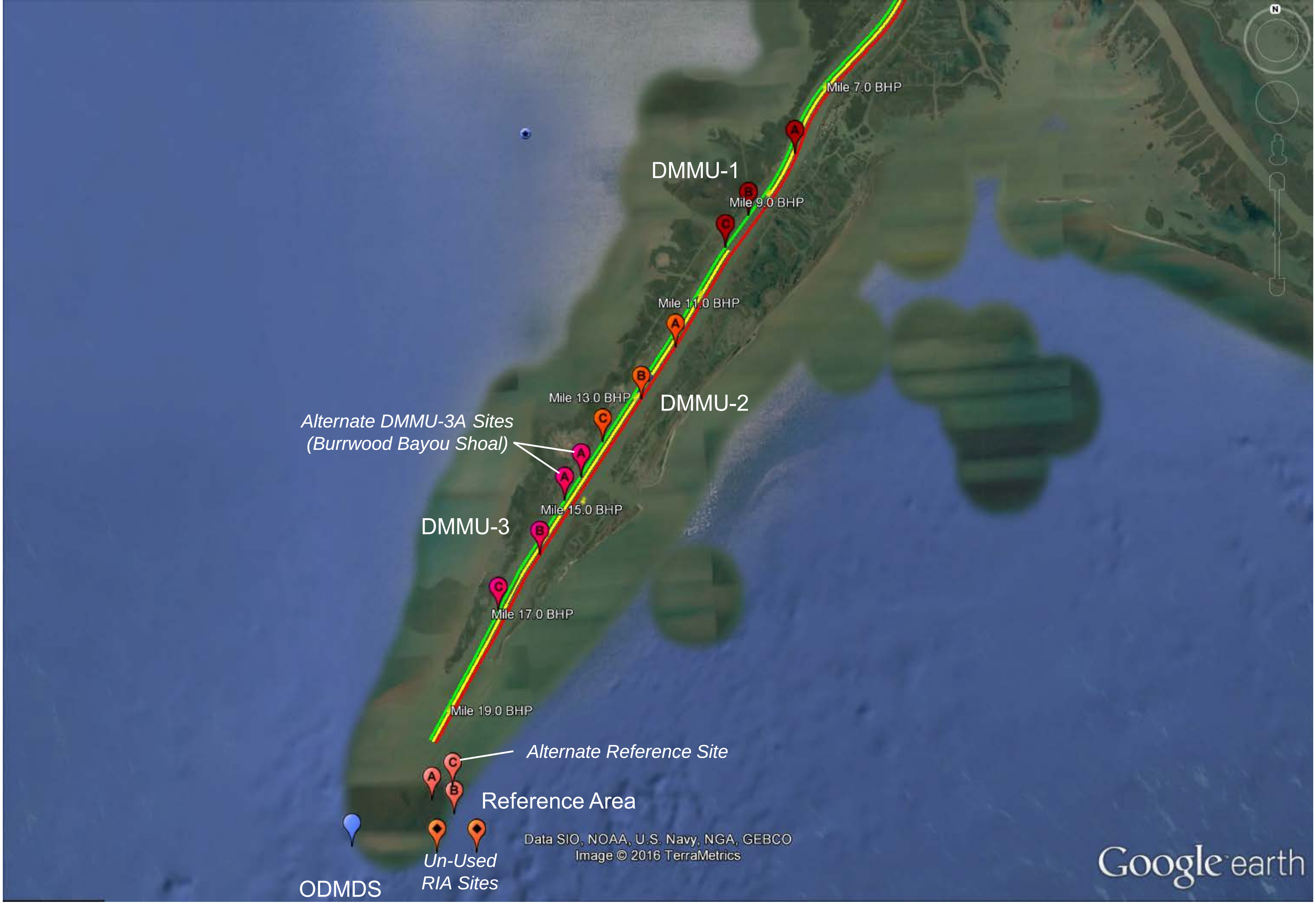


Figure 1. Location of Southwest Pass sample collection sites from DMMU-1 (red), DMMU-2 (orange), and DMMU-3 (pink). Water and sediment were collected from the ODMDS (blue) and three reference sites (salmon). Note that only two of four reference sites listed in the RIA were used in this evaluation.

Table 2. Chemistry results for parameters detected in ODMDS site water and Southwest Pass channel elutriates. Regulatory water quality criteria (WQC) are provided for comparison to obsevred contaminant concentration in the elutriates, and highlited values indicate where a criterion has been exceeded. Alternate criteria were established in cases where analytes in ambient ODMDS waters exceeded the WQC.

Class	Parameter	Units	Saltwater Criterion: EPA CMC	Saltwater Criterion: LDEQ Acute	Saltwater Criterion: 5% Above Background[A]	Background ODMDS	Elutirate DMMU-1	Elutirate DMMU-2	Elutirate DMMU-3
Metals	Antimony	mg/L				0.0012	0.0018	0.0019	0.0014
	Arsenic	mg/L	0.069	0.069		0.0165	0.0372	0.0355	0.0398
	Chromium	mg/L	1.1	0.515		< *0.001*	0.0017	0.0014	0.0023
	Copper	mg/L	0.0048	0.0036	0.0323	**0.0312**	**0.0579**	**0.0593**	**0.0650**
	Mercury	mg/L	0.0018	0.002		0.000007	0.000008	0.000011	0.000017
	Nickel	mg/L	0.074	0.074		0.0084	0.0289	0.0264	0.0222
	Selenium	mg/L	0.29			0.052	0.138	0.131	0.143
	Silver	mg/L	0.0019		0.0058	**0.0055**	**0.0050**	**0.0044**	**0.0051**
	Zinc	mg/L	0.09	0.09		0.0437	0.0492	0.0702	0.0389
Other	Ammonia as N[B]	mg/L	1.8			0.126	**8.34**	**5.86**	**4.74**
	Total Organic Carbon	mg/L				4.56	7.37	9.26	10.1
	Bis(2-ethylhexyl)phthalate	mg/L				8.9	< *4.8*	< *4.7*	< *5.1*

A = For analytes detected in ODMDS waters at concentrations above the WQC, LPC compliance targets were set 5% above backround.

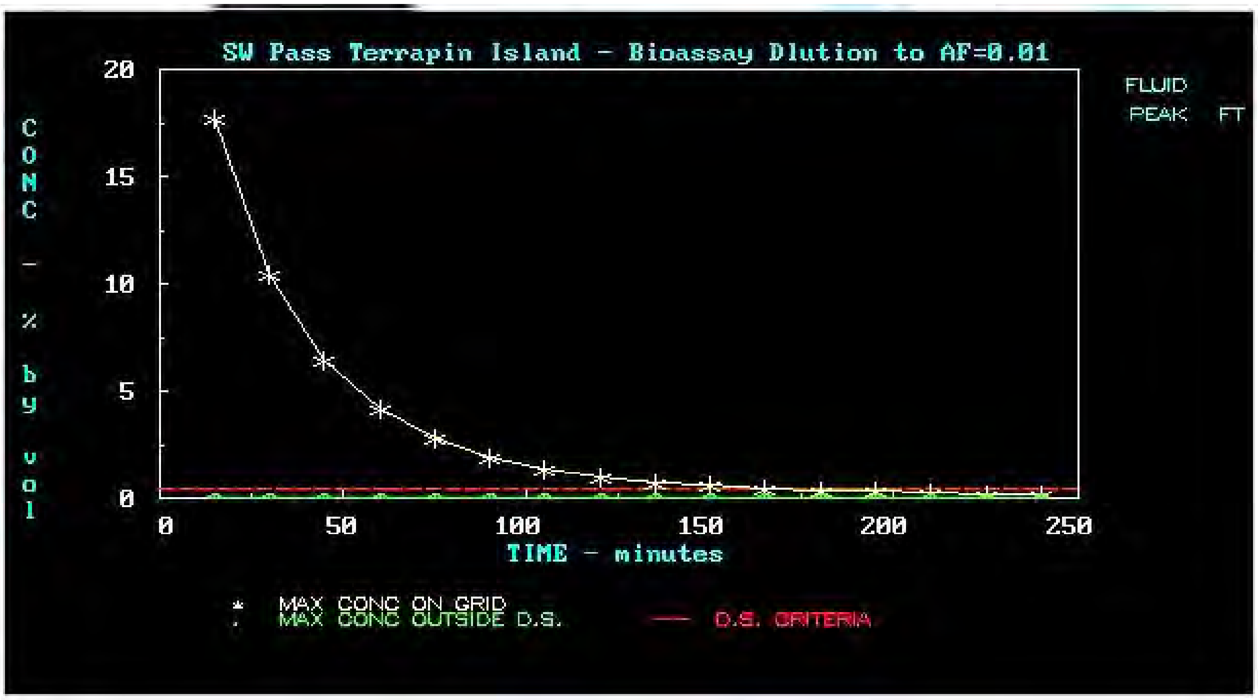
B = Assumes a pH of 8.6, salinity of 10 ppt, and temperature of 20˚C.

Table 3. Elutriate bioassay toxicity results. Mean survival and standard deviation from the mean for elutriate treatments (100%, 50%, and 10%) and reconstituted seawater treatment (0%). Asterisks and boldface font denote both at least 10% reduction and statistically significant reduction in survival relative to the dilution water. Un-ionized ammonia (UIA) concentrations provided are averaged from levels determined at test initiation and termination.

DMMU	Treatment	*96-hour Cyprinodon variegatus*	UIA (mg/L)	*48-hour Americamysis bahia*	UIA (mg/L)	*96-hour Americamysis bahia*	UIA (mg/L)
Control	NA	100 ± 0	<0.01	90 ± 10	<0.01	98 ± 4	0.02
DMMU-1	0%	100 ± 0	0.01	98 ± 4	0.01	100 ± 0	0.07
	10%	100 ± 0	0.01	80 ± 7	0.03	88 ± 16	0.04
	50%	100 ± 0	0.09	90 ± 10	0.17	**78 ± 15***	0.17
	100%	100 ± 0	0.19	**38 ± 13***	0.47	**0 ± 0***	0.44
DMMU-2	0%	100 ± 0	0.01	96 ± 5	0.01	94 ± 9	0.07
	10%	98 ± 4	0.01	84 ± 9	0.02	94 ± 9	0.03
	50%	98 ± 4	0.05	94 ± 5	0.12	**74 ± 11***	0.13
	100%	100 ± 0	0.13	**54 ± 22***	0.34	**0 ± 0***	0.31
DMMU-3	0%	100 ± 0	<0.01	100 ± 0	0.00	98 ± 4	0.03
	10%	100 ± 0	0.01	86 ± 13	0.01	98 ± 4	0.03
	50%	100 ± 0	0.04	94 ± 9	0.10	90 ± 7	0.14
	100%	100 ± 0	0.11	90 ± 10	0.30	**20 ± 14***	0.32

Table 4. Dilution Factors (DF) for Southwest Pass channel elutriates based on elutriate chemistry and bioassay data. Criteria are provided for comparison to observed or calculated ODMDS and elutirate concentration. Dilution modeling was performed with STFATE on the parameter with the greatest DF based on the mysid bioassays (see model relults in Figures 2a). Because results of the mysid bioassay may have been influenced by low salinity in the test treatments, additional STFATE modeling was performed on the elutraite contaminant requiring the most dilution (copper; Figure 2b).

Parameter	Units	Criterion	ODMDS Background	DMMU-1		DMMU-2		DMMU-3	
				Elutriate [ ]	DF	Elutriate [ ]	DF	Elutriate [ ]	DF
Copper	mg/L	0.0328 (5% Above Background)	0.0312	0.0579	16	0.0593	17	0.065	**20**
Ammonia	mg/L	1.8 (EPA CMC)	0.13	8.34	4	5.86	2	4.74	2
Bioassay	%	0.54 to 0.75 (DMMU Specific LPC)	0	100	168	100	**184**	100	132



Figures 2a and 2b. Graphical depiction of the dilution of dredge effluent to 1% of the LC50 (based on the DMMU-2 elutriate, above) and within 5% of background copper concentrations observed at the ODMDS (based on the DMMU-3 elutriate, below). Maximum predicted concentration of dredge effluent, thru time, is represented inside the ODMDS boundaries (white line) and outside of the ODMDS (green line). The LC50 and copper based water quality criteria appear as red dashed lines on the respective figures.

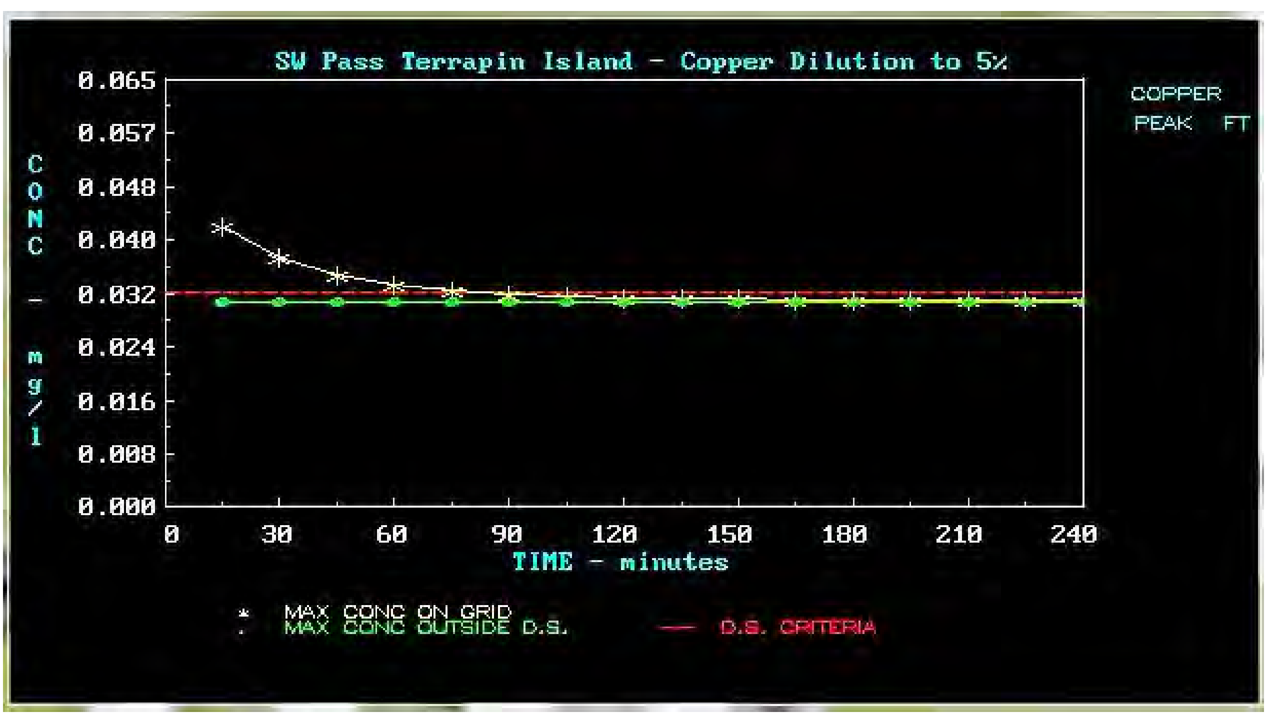


Table 5. Parameters detected in shoal material and reference sediment composites. The non-regulatory NOAA Marine "Effects Range-Low" (ER-L) and "Effects Range-Median" (ER-M) screening values are provided for convenience to gauge potential toxicity, with highlighted values where a measured paramter exceedes an ER-L and with the ER-M in parenthesis.

	Analyte	Method	Units	Sample Composites				ERL (ERM)
				DMMU 1	DMMU 2	DMMU 3	Reference	
Metals	Arsenic	SW 846/6020	mg/kg	4.24	3.91	4.86	5.65	8.2
	Beryllium	SW 846/6020	mg/kg	0.60	0.48	0.56	0.69	
	Cadmium	SW 846/6020	mg/kg	0.49	0.36	0.38	0.24	1.2
	Chromium	SW 846/6020	mg/kg	14.2	12.5	13.8	17.5	81
	Copper	SW 846/6020	mg/kg	11.2	9.8	10.6	13.0	34
	Lead	SW 846/6020	mg/kg	15.5	14.2	14.6	28.8	46.7
	Mercury	EPA 7474	mg/kg	0.08	0.07	0.09	0.11	0.15
	Selenium	SW 846/6020	mg/kg	0.71	0.90	1.28	1.17	
	Silver	EPA 7000	mg/kg	0.05	0.04	0.04	0.24	1
	Thallium	SW 846/6020	mg/kg	0.20	0.17	0.17	0.22	
	Zinc	SW 846/6020	mg/kg	57.0	49.4	58.5	65.3	150
Conventional	Ammonia as N	EPA 350.1	mg/kg	5.1	26.5	17.8	7.3	
	TOC Mean	SW9060A	µg/g	4,410	4,540	4,920	3,850	
	TOC Max	SW9060A	µg/g	4,360	4,450	4,840	3,830	
	TOC Min	SW9060A	µg/g	4,310	4,360	4,760	3,810	
	Sand	ASTM 422	%	23.5	36.0	30.7	16.1	
	Silt	ASTM 422	%	52.8	44.8	43.9	47.3	
	Clay	ASTM 422	%	23.7	19.2	25.4	36.6	
	Classification	ASTM 422	-	Silt Loam	Loam	Loam	Silty Clay Loam	
	Percent Solids	SM18 2540G	%	54.6	59.5	51.6	48.8	
	Percent Moisture	% Calculation	%	45.4	40.5	48.4	51.2	

Table 5, continued. Parameters detected in shoal material and reference sediment composites. The non-regulatory NOAA Marine "Effects Range-Low" (ER-L) and "Effects Range-Median" (ER-M) screening values are provided for convenience to gauge potential toxicity, with highlighted values where a measured paramter exceedes an ER-L and with the ER-M in parenthesis.

	Analyte	Method	Units	Sample Composites DMMU 1	DMMU 2	DMMU 3	Reference	ERL (ERM)
LPAH	Naphthalene	SW8270D	µg/Kg	5.5	< *2.4*	5.4	< *2.9*	160
	Acenaphthylene	SW8270D	µg/Kg	3.4	3.8	6.0	< *3.8*	44
	Acenaphthene	SW8270D	µg/Kg	3.1	4.4	3.1	< *3.2*	16
	Fluorene	SW8270D	µg/Kg	< *3.9*	4.7	4.4	< *4.4*	19
	Phenanthrene	SW8270D	µg/Kg	18	21	19	16	240
	Anthracene	SW8270D	µg/Kg	4.6	6.6	12.0	5.0	85.3
HPAH	Fluoranthene	SW8270D	µg/Kg	32	41	36	35	600
	Pyrene	SW8270D	µg/Kg	34	45	45	38	665
	Benzo(a)anthracene	SW8270D	µg/Kg	19	26	36	24	261
	Chrysene	SW8270D	µg/Kg	23	27	43	26	384
	Benzo (b) fluoranthene	SW8270D	µg/Kg	26	33	48	31	
	Benzo(k)fluoranthene	SW8270D	µg/Kg	11	9.1	17	11	
	Benzo(a)pyrene	SW8270D	µg/Kg	18	24	40	22	430
	Indeno(1,2,3-cd)pyrene	SW8270D	µg/Kg	12	13	26	18	
	Dibenz(a,h)anthracene	SW8270D	µg/Kg	< *3.3*	4.5	6.8	< *3.7*	63.4
	Benzo(g,h,i)perylene	SW8270D	µg/Kg	17	20	28	20	
Other	4,4´-DDD	EPA 8081A	µg/Kg	0.46	0.66	0.64	0.44	2
	4,4´-DDE	EPA 8081A	µg/Kg	0.66	0.78	0.65	0.85	2.2
	4,4´-DDT	EPA 8081A	µg/Kg	1.19	1.33	2.29	< *0.30*	1 (7)

Table 6. Whole sediment bioassay toxicity results. Mean survival and standard deviation from the mean for Control, Reference Area, and DMMU treatments. Note that statistical comparisons were not made because the differences in survival did not exceed 20% for *L. plumulosus* between the Control and DMMUs or 10% for *A. bahia* between the Reference Area and DMMUs.

Treatment	*Leptocheirus plumulosus*	*Americamysis bahia*
Control	95 ± 4	95 ± 7
Reference	42 ± 14	95 ± 7
DMMU-1	84 ± 7	89 ± 9
DMMU-2	79 ± 8	95 ± 4
DMMU-3	78 ± 10	89 ± 8

Table 7. Analytes detected in *N. virens* tissue samples before exposure to project media (Initial) and after exposure to Reference Area sediments and DMMU Shoal Material. FDA Action Levels and northern Gulf of Mexico (GOM) background contaminant levels for polychaetes are provided to gauge ecological significance of detected analytes.

Parameter	Units	FDA Action Levels	North GOM Background	*N. virens* (Mean Concentration)				
				Initial	Reference	DMMU-1	DMMU-2	DMMU-3
Arsenic	mg/kg	76	7.4 to 37	15.02	6.45	7.60	<5.95	<5.51
Cadmium	mg/kg	3.0	0.15 to 0.83	<0.038	0.071	0.084	0.078	0.074
Chromium (Total)	mg/kg	12	0.89 to 4.6	1.70	0.48	0.52	0.46	0.57
Copper	mg/kg	N/A	2.3 to 5.3	2.03	1.59	1.57	1.46	1.89
Lead	mg/kg	1.5	0.31 to 1.2	0.16	0.17	0.23	0.13	0.13
Mercury	mg/kg	1.0	0.03 to 0.04	0.021	0.011	0.011	0.009	0.009
Nickel	mg/kg	70	0.53 to 3.5	0.90	0.35	1.08	0.37	0.40
Selenium	mg/kg	N/A	0.61 to 0.99	0.89	0.92	0.87	1.38	0.86
Zinc	mg/kg	N/A	14 to 16	12.16	20.64	15.78	25.96	18.45
Anthracene	µg/kg	N/A	<20	15.02	6.45	7.60	<5.95	<5.51

Table 8. Analytes detected in *M. nasuta* tissue samples before exposure to project media (Initial) and after exposure to Reference Area sediments and DMMU Shoal Material. FDA Action Levels and northern Gulf of Mexico (GOM) background contaminant levels for bivalves are provided to gauge ecological significance of detected analytes.

Parameter	Units	FDA Action Levels	North GOM Background	*M. nasuta* (Mean Concentration)				
				Initial	Reference	DMMU-1	DMMU-2	DMMU-3
Arsenic	mg/kg	86	3.4 to 5.4	2.19	4.34	4.38	4.43	4.30
Cadmium	mg/kg	3.0	0.15 to 0.83	0.04	0.06	0.07	0.07	0.06
Chromium (Total)	mg/kg	13	0.49 to 5.2	0.32	0.56	0.80	0.85	0.80
Copper	mg/kg	N/A	0.58 to 2.8	1.94	3.66	4.88	5.98	6.05
Lead	mg/kg	1.7	<0.47	0.11	0.23	0.28	0.40	0.30
Mercury	mg/kg	1.0	<0.028	0.01	0.01	0.02	0.01	0.02
Nickel	mg/kg	80	0.70 to 3.1	0.39	0.62	0.71	0.77	0.74
Selenium	mg/kg	N/A	0.50 to 1.5	0.58	0.67	0.67	0.64	0.65
Silver	mg/kg	N/A	0.11 to 0.56	0.08	<0.04	0.06	<0.04	<0.04
Zinc	mg/kg	N/A	7.0 to 30	12.94	14.36	15.50	16.54	15.50
Fluoranthene	µg/kg	N/A	<20	21.22	15.23	15.18	12.72	10.81
Pyrene	µg/kg	N/A	<20	4.02	3.66	6.14	6.41	6.73

Table 9. Physical and chemical comparison between reference sites specified in the RIA and an alternate reference site. Note that all three sites were composited into a single sample for use in solid phase bioassay and bioaccumulation tests.

				RIA Sites		Alternate Site
	Analyte	**Method**	**Units**	**Reference A**	**Reference B**	**Reference C**
Metals	Arsenic	SW 846/6020	mg/kg	5.57	6.57	5.49
	Beryllium	SW 846/6020	mg/kg	0.69	0.73	0.68
	Cadmium	SW 846/6020	mg/kg	0.26	0.31	0.23
	Chromium	SW 846/6020	mg/kg	17.8	19.7	16.7
	Copper	SW 846/6020	mg/kg	13.7	14.9	12.2
	Lead	SW 846/6020	mg/kg	17.7	21.0	22.9
	Mercury	EPA 7474	mg/kg	0.11	0.12	0.11
	Selenium	SW 846/6020	mg/kg	1.18	1.24	1.06
	Silver	EPA 7000	mg/kg	0.05	0.06	0.05
	Thallium	SW 846/6020	mg/kg	0.22	0.25	0.21
	Zinc	SW 846/6020	mg/kg	72.3	72.8	66.4
	Normalized Score	Calculation	-	*0.97*	*1.09*	*0.94*
Conventional	Ammonia as N	EPA 350.1	mg/kg	7.8	9.8	7.5
	Total Organic Carbon (TOC) Mean	SW9060A	µg/g	3,490	5,100	4,110
	TOC Max	SW9060A	µg/g	3,460	5,030	4,060
	TOC Min	SW9060A	µg/g	3,400	4,930	4,020
	Sand	ASTM 422	%	19.8	6.8	17.7
	Silt	ASTM 422	%	44.0	49.9	46.7
	Clay	ASTM 422	%	36.3	43.3	35.6
	Classification	ASTM 422	-	Silty Clay Loam	Silty Clay	Silty Clay Loam
	Percent Solids	SM18 2540G	%	53.3	43.8	51.6
	Percent Moisture	% Calculation	%	46.7	56.2	48.4
LPAH	Naphthalene	SW8270D	µg/Kg	< *2.7*	8.3	< *2.7*
	Acenaphthylene	SW8270D	µg/Kg	< *3.6*	5.1	< *3.6*
	Phenanthrene	SW8270D	µg/Kg	12	22	12
	Anthracene	SW8270D	µg/Kg	4.0	6.6	3.8
	Normalized Score	Calculation	-	*0.77*	*1.47*	*0.76*
HPAH	Fluoranthene	SW8270D	µg/Kg	20	38	24
	Pyrene	SW8270D	µg/Kg	24	44	27
	Benzo(a)anthracene	SW8270D	µg/Kg	14	26	16
	Chrysene	SW8270D	µg/Kg	16	31	21
	Benzo (b) fluoranthene	SW8270D	µg/Kg	21	38	25
	Benzo(k)fluoranthene	SW8270D	µg/Kg	7.3	12	6.9
	Benzo(a)pyrene	SW8270D	µg/Kg	13	24	16
	Indeno(1,2,3-cd)pyrene	SW8270D	µg/Kg	11	22	13
	Dibenz(a,h)anthracene	SW8270D	µg/Kg	4.4	5.0	< *3.5*
	Benzo(g,h,i)perylene	SW8270D	µg/Kg	14	25	16
	Normalized Score	Calculation	-	*0.78*	*1.36*	*0.86*
Other	Bis(2-ethylhexyl)phthalate	SW8270D	µg/Kg	< *25*	34	< *25*
	4,4´-DDD	EPA 8081A	µg/Kg	0.42	0.41	0.35
	4,4´-DDE	EPA 8081A	µg/Kg	0.64	0.92	0.78
	Normalized Score (Pesticides)	Calculation	-	*0.94*	*1.11*	*0.94*

5.0 REFERENCES

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Vititoe, Jennifer M CIV USARMY CEMVN (US)

From: McCormick, Karen <McCormick.Karen@epa.gov>
Sent: Monday, December 11, 2017 8:19 AM
To: Vititoe, Jennifer M CIV USARMY CEMVN (US)
Subject: [EXTERNAL] Re: Mississippi River Deepening Project

Jennifer - my apology but yes EPA agrees that the USACE does not have to do any additional sampling for the upcoming event to use the ODMS. The event is for both construction (deepening from current depth to a depth of 50 ft plus advance maintenance and over depth) and subsequent operation and maintenance of the Mississippi River Ship Channel to the equivalent depth.

Thanks

Karen McCormick, Chief
Marine, Coastal & Analysis Section
US EPA R6
1445 Ross Avenue
Dallas, TX. 75202
Wk: 214-665-8365
Cell: 214-789-2814
mccormick.karen@epa.gov

Sent from my iPhone

> On Dec 11, 2017, at 8:04 AM, Vititoe, Jennifer M CIV USARMY CEMVN (US) <Jennifer.M.Vititoe@usace.army.mil> wrote:
>
> confirmation that use of the ODMDS is acceptable for both construction (deepening from current depth to a depth of 50 ft plus advance maintenance and over depth) and subsequent operation and maintenance of the Mississippi River Ship Channel to the equivalent depth.

From:	Franks, Jessica
To:	Vititoe, Jennifer M CIV USARMY CEMVN (US)
Cc:	Roberts, Steve W CIV CPMS (US)
Subject:	[Non-DoD Source] RE: Mississippi River Deepening Project
Date:	Thursday, July 27, 2017 12:08:01 PM

Thank you Jennifer for the detailed explanation regarding the proposed deepening project. This makes sense and I agree that no further testing of this material will be needed outside of the typical 5 year testing cycle.

Jessica

-----Original Message-----
From: Vititoe, Jennifer M CIV USARMY CEMVN (US) [mailto:Jennifer.M.Vititoe@usace.army.mil]
Sent: Monday, July 24, 2017 4:24 PM
To: Franks, Jessica <Franks.Jessica@epa.gov>
Cc: Roberts, Steve W CIV CPMS (US) <Steve.W.Roberts@usace.army.mil>
Subject: RE: Mississippi River Deepening Project

Jessica,

I apologize for the delay in responding to you. Both myself and the Environmental Manager for this project were out of the office for the past week.

Our deepening study proposes to provide a -50 foot Mean Lower Low Water (MLLW) navigation channel from Baton Rouge to the Gulf of Mexico. For segments of the river below Venice, Louisiana, such deepening would result in a channel that is about 1.5 feet deeper than what is currently provided by the CEMVN (-48.5 feet MLLW). This small difference in depth is well-within the dredging tolerance of equipment that is used to maintain the channel (+/- 2 to 3 feet). Additionally, it is apparent from review of recent surveys that depths within the bar channel already exceed our proposed depth (see attached bar channel survey from July 12, 2017). Such movement of shoals in excess of current maintenance dredging targets is believed to be from the combined flushing of bed load material at high river stage through the lateral dike and jetty system of Southwest Pass while hopper dredges are actively working in the area. Shoal material will likely return to the bar channel during future spring floods, and sediment within the bar channel would be indistinguishable from shoals that settle elsewhere in the pass. These shoals are periodically tested by our Operations Division and subject to review by your agency. The most recent evaluation completed this Fiscal Year demonstrated that the material is suitable for ocean disposal. Therefore, our office has determined that shoals within the bar channel that would be removed as part of the deepening study have already been adequately characterized and do not require further testing.

More substantial dredging is required between Baton Rouge and New Orleans in areas known as the Deep Draft Crossings, where greater than 5 feet of bed load material beyond what is typically dredged would need to removed. This material has been evaluated under the Clean Water Act and determined to be suitable for open water discharge downstream in the Mississippi River for movement by river currents. The differences in required depth of dredging to achieve a -50 foot MLLW channel above New Orleans and below Venice may be attributed to datum conversions between Mean Low Gulf (MLG) and MLLW. Despite the differences in depth, all dredging associated with the deepening project would involve the handling of shifting bed load and shoals.

Please let me know if you would like to discuss further.

Jennifer Vititoe
Plan Formulation
USACE - MVN
504-862-1252

-----Original Message-----

From: Franks, Jessica [mailto:Franks.Jessica@epa.gov]
Sent: Friday, July 14, 2017 1:31 PM
To: Vititoe, Jennifer M CIV USARMY CEMVN (US) <Jennifer.M.Vititoe@usace.army.mil>
Subject: [Non-DoD Source] Mississippi River Deepening Project

Good afternoon Jennifer,

I am the ocean dumping coordinator for Region 6. I recently learned of the Mississippi River Deepening Project and it appears that there are plans to place some of the "construction/new work" material from the deepening at the Mississippi River Southwest Pass ODMDS. If that is the case, this material would have to be tested to determine its suitability for placement at the ODMDS. See Ocean Dumping Regulations at 40 CFR Sub Chapter H (attached) and the Marine Protection Research Sanctuaries Act (MPRSA), i.e. ocean dumping Act.

I would like to discuss this project with you. Please let me know when would be a good time for me to give you a call.

Thanks,

Jessica

EVALUATION OF DREDGED MATERIAL COLLECTED FROM THE DEEP-DRAFT CROSSINGS OF THE MISSISSIPPI RIVER

BLUF

Shoal material within the Mississippi River's Deep-Draft Crossings is predominantly sand and substantially free of contaminants. The solid and liquid fractions of dredged material contain trace levels of metals and pesticides at concentrations below low-level ecological benchmarks and regulatory water quality criteria, and it is unlikely that project discharges adversely impact river environs.

Collection Overview

Dredged material was collected from eleven Deep-Draft Crossings of the Mississippi River between New Orleans and Baton Rouge during Fiscal Year 2016 (Figure 1). Sample collections were made directly from the discharge lines of the dredges JADWIN, HURLEY, and WALLACE MC GEORGE during performance of annual maintenance. Two food-grade buckets (5-gallons, each) were filled at each site, either thru: (1) direct placement of the buckets within the discharge, (2) extension of food-grade containers (1-quart) on dipper poles into the discharge for transference to the buckets, or (3) extension of crane-mounted stainless steel pots (approximately 2.5-gallons) into the discharge with transference to the buckets. Sampling methods were dependent on river and weather conditions, equipment availability, experience level of participating deck hands, and other safety considerations as directed by senior crewmembers. Samples were not allowed to "thicken" thru prolonged or excessive overflow of material from the sampling containers. The solid and liquid fraction of each sample was consistent with that of the dredge slurry (about 1 part sediment to 6 parts water).

Sample Handling and Analysis

Collected material was allowed to settle for approximately 2 hours. The liquid fraction was siphoned into pre-cleaned plastic HDPE bottles for analysis of ammonia (125-ml, preserved with sodium hydroxide) and cyanide (250-ml, preserved with sulfuric acid), and a LDPE 5-liter cubitainer for analysis of inorganic (metals) and organic contaminants (Polycyclic Aromatic Hydrocarbons or "PAHs", Organonitrogen Compounds, Polychlorinated Biphenyls or "PCBs", Pesticides, and Chlorinated Hydrocarbons). The remaining water was decanted from the buckets and the solid fraction was homogenized. Solids were transferred to an 8-ounce glass jar for analysis of inorganic and organic contaminants, and a ½-gallon Ziploc bag for grain size analysis. All containers were immediately placed on ice and shipped overnight in ice chests to the ERDC Environmental Chemistry Laboratory for processing.

Prior to analysis of the liquid fraction by the ERDC laboratory, an aliquot from the cubitainer was centrifuged to separate fine-grained suspended sediments from the sample. Additionally, a fraction of the centrifuged liquid portioned for analysis of dissolved metals was filtered thru a 0.45μm filter. Liquid used for analysis of organic contaminants, selenium, and mercury was not filtered. Methods used for the analysis of the solid and liquid fractions are provided in Tables 1 and 2.

Results

(A) *Solid Fraction*. Results of physical and chemical analyses are provided in Table 1.

Shoal material collected from the crossings was predominantly sand, with an average sand content of 98.3%. Philadelphia had the lowest sand content (93.4%), and all other sites had a sand content of at least 98%. The proportion of coarse and medium sands was greatest at Baton Rouge Front (23.4%), Rich Bend (24.5%), and Belmont (26.1%). The proportion of fine sands was greatest at Medora and Alhambra (95.4% and 96.8%, respectively).

Total Organic Carbon (TOC) content was less than 0.5% at most sites, but slightly exceeded 1% at Baton Rouge Front and Granada. Ammonia content was less than 0.5 mg/kg at all sites.

The metals arsenic, beryllium, cadmium, chromium, copper, lead, nickel, selenium, thallium, and zinc were common to all sites. Mercury and silver were observed less frequently, and at concentrations at or near analytical detection limits. All detected metals were at concentrations below NOAA's "threshold effect level" (TEL) screening values for freshwater sediments.

The PAHs naphthalene and acenaphthylene were detected at Alhambra; and benzo(a)pyrene was detected at Granada. PCB-1248 was detected at Granada. The concentration of all detected PAHs and PCBs were less than 6 μg/kg and below available TELs.

Low-levels (<0.5 μg/kg) of Chlordane pesticides were found at Alhambra, Smoke Bend, and Granada. The pesticides 4,4´-DDD and 4,4´-DDE were detected at low concentration (<0.7 μg/kg) and common to the upper crossings (Baton Rouge Front, Sardine Point, Medora, and Granada). All detected pesticides were at levels below available TELs.

(B) *Liquid Fraction*. Results of chemical analyses are provided in Table 2.

The metals antimony, arsenic, chromium, copper, nickel, selenium, and zinc were detected in all samples. Lead, silver and mercury were detected less frequently and at concentrations near analytical detection limits. Nearly all metals were detected at concentrations below the lowest available state or federal acute water quality criteria (WQC). The concentration of dissolved zinc at

Sardine Point (0.13 mg/l) was approximately 10% greater than the acute WQC (0.12 mg/l).

The pesticides Aldrin and alpha-BHC were detected at Granada; and Endrin ketone was detected at Baton Rouge Front. All pesticide detects were at parts-per-trillion levels, and the Aldrin detect was several orders of magnitude below its available WQC. No other organic pollutants were detected in the liquid fraction of the dredged material.

Discussion

Shoal material within the Mississippi River's Deep-Draft Crossings is predominantly sand and substantially free of contaminants. Dredged material solids collected from the discharge lines of dustpan dredges during performance of maintenance contained metals and pesticides at concentrations below low-level "TEL" ecological benchmarks. The liquid fraction of the dredged material contained metals and pesticides largely below regulatory WQC. The concentration of zinc at Sardine Point exceeded the WQC by about 10%, but dilution below the WQC would be expected to occur on the order of seconds after discharge and within an allowable mixing zone appropriately sized for the Mississippi River.

Subtle variation in the concentration of contaminants at the crossings may be attributed to variation in grain size and TOC content. For example, crossings with a higher proportion of medium and coarse grained sands (Baton Rouge Front, Rich Bend, and Belmont) had relatively higher concentrations of cadmium and copper compared to other samples. Similarly, crossings with a TOC content above 1% (Baton Rouge Front and Granada) had higher concentrations of detected pesticides. Such variation is likely not an indicator of a pollution source, but rather a function of the availability of larger grains of sand and organic particles for contaminants to adsorb to or bind with in a given sample.

Based on the findings of this evaluation, it is unlikely that the discharge of dredged material removed from the crossings adversely impacts benthic or water column environments of the Mississippi River. Further, no additional chemical inventories or biological tests are recommended barring a major contaminant spill; and no special handling or management actions have been identified for future dredging events.

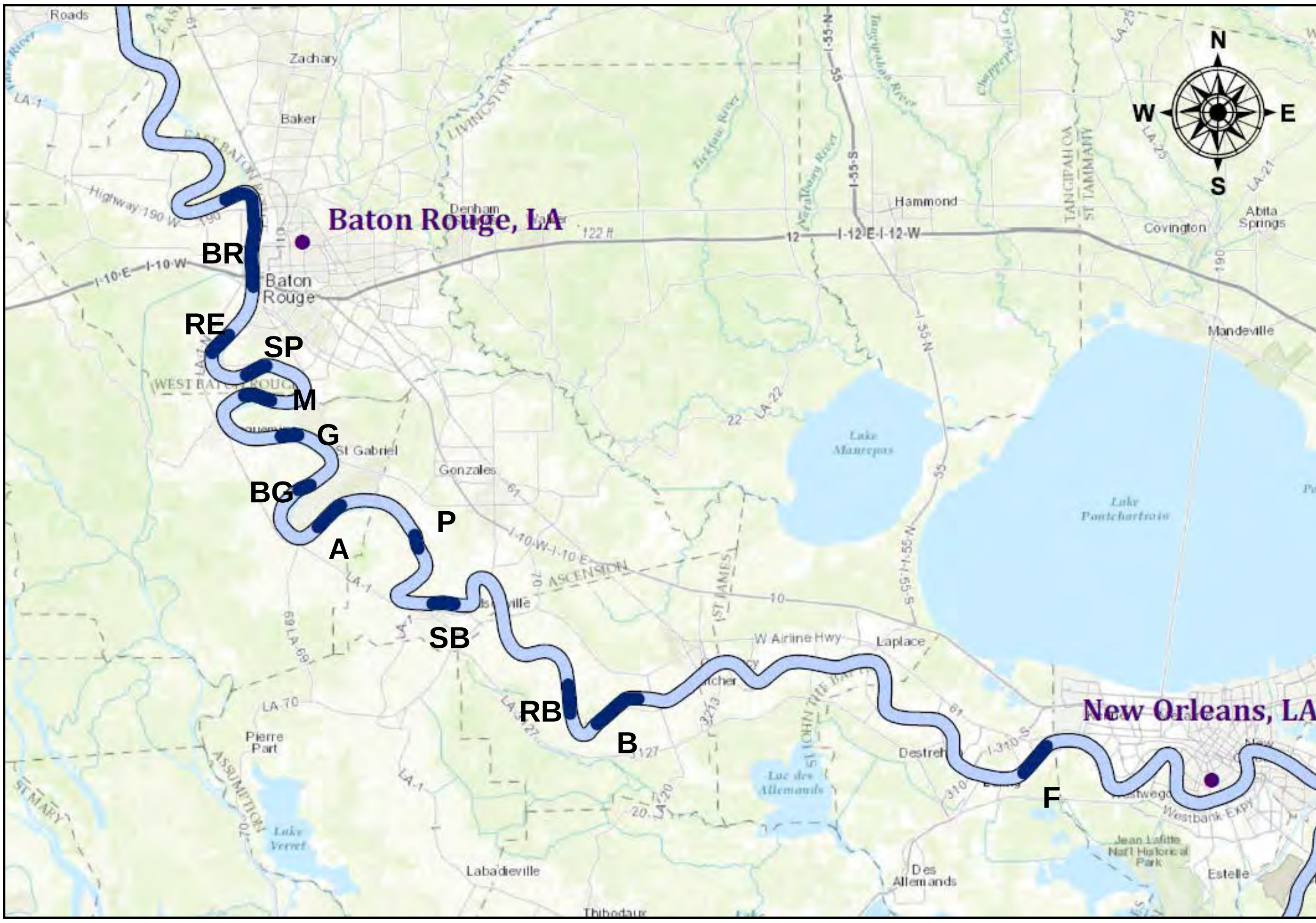

Figure 1. Approximate location of the Mississippi River Deep-Draft Crossings between Baton Rouge and New Orleans. River Mileage and date sampled during Fiscal Year 2016 are provided in the table below.

Crossing	River Mile (Center)	Abreviation	Date Sampled
Baton Rouge Front	230.5	BR	12-Sep-16
Red Eye	224	RE	4-Aug-16
Sardine Point	219.3	SP	20-Aug-16
Medora	212	M	31-Aug-16
Granada	204.3	G	12-Sep-16
Bayou Goula	198.2	BG	4-Aug-16
Alhambra	190.5	A	10-Aug-16
Philadelphia	183	P	31-Aug-16
Smoke Bend	175	SB	10-Aug-16
Rich Bend	158.8	RB	4-Aug-16
Belmont	154.2	B	26-Jul-16
Fairview	115.7	F	Not Sampled

Table 1. Analytes detected in dredged material solids (shaded values) collected from 11 Deep Draft Crossings of the Mississippi River between Baton Rouge and New Orleans. The NOAA "Threshold Effects Level" (TEL) screening standard for freshwater benthic organisms has been provided to gauge the significance of detected contaminants.

					Deep Draft Crossings										
Class	Analyte	Method	Units	Freshwater TEL	Baton Rouge Front	Red Eye	Sardine Point	Medora	Granada	Bayou Goula	Alhambra	Philadelphia	Smoke Bend	Rich Bend	Belmont
Metals	Antimony	SW 846/6020	mg/kg	.	< *0.20*	< *0.19*	< *0.20*	< *0.19*	< *0.18*	< *0.20*	< *0.20*	< *0.19*	< *0.19*	< *0.19*	< *0.20*
	Arsenic	SW 846/6020	mg/kg	5.9	1.91	1.25	1.04	1.24	1.59	0.996	1.04	1.14	1.08	1.52	1.5
	Beryllium	SW 846/6020	mg/kg	.	0.076	0.070	0.067	0.073	0.073	0.067	0.065	0.069	0.065	0.082	0.080
	Cadmium	SW 846/6020	mg/kg	0.596	0.156	0.039	0.027	0.031	0.090	0.028	0.030	0.033	0.040	0.138	0.112
	Total Chromium	SW 846/6020	mg/kg	37.3	2.47	2.35	2.84	2.80	2.75	2.80	2.50	3.22	2.59	4.01	3.27
	Copper	SW 846/6020	mg/kg	35.7	0.94	0.64	0.68	0.65	0.82	0.60	0.55	0.64	0.61	0.97	0.88
	Lead	SW 846/6020	mg/kg	35	4.08	3.05	2.84	3.96	4.02	2.86	3.09	3.37	3.68	3.8	3.41
	Mercury	EPA 7474	mg/kg	0.174	0.006	0.003	< *0.002*	0.004	0.004	< *0.002*	< *0.002*	0.003	< *0.002*	0.004	0.003
	Nickel	SW 846/6020	mg/kg	18	5.75	5.63	5.88	6.35	6.03	5.44	4.86	5.59	5.52	5.68	5.6
	Selenium	SW 846/6020	mg/kg		0.112	0.117	0.069	0.097	0.099	0.084	0.086	0.089	0.081	0.094	0.098
	Silver	EPA 7000	mg/kg		< *0.20*	0.36	< *0.20*	< *0.19*	< *0.18*	0.29	< *0.20*	0.31	0.28	< *0.19*	0.33
	Thallium	SW 846/6020	mg/kg		0.028	0.029	0.026	0.034	0.033	0.029	0.028	0.032	0.032	0.027	0.027
	Zinc	SW 846/6020	mg/kg	123	7.82	8.5	9.48	9.98	8.04	8.24	7.67	10.6	7.66	8.16	7.99
Conventional	Ammonia as N	EPA 350.1	mg/kg		0.399	0.209	0.142	0.25	0.319	0.205	0.097	0.419	0.141	0.161	0.46
	Total Organic Carbon (TOC)	SW9060A	µg/g		1,120	308	159	131	1,090	175	163	136	171	423	384
	Gravel	ASTM 422	%		0	0	0	0	0	0	0	0	0	0	0
	Very Coarse Sand	ASTM 422	%		0.1	0.1	0	0	0	0.1	0.1	0.6	0	0.1	0.1
	Coarse Sand	ASTM 422	%		0.9	0.1	0.1	0.1	0.1	0.4	0.1	1.4	0	0.4	0.4
	Medium Sand	ASTM 422	%		22.4	12.0	9.7	2.9	12.1	9.9	1.9	3.4	5.3	24.0	25.6
	Fine Sand	ASTM 422	%		74.6	86.6	87.6	93.7	86.3	86.3	95.2	85.1	93.1	73.7	72.1
	Very Fine Sand	ASTM 422	%		1.2	0.3	1.4	1.7	0.8	1.3	1.6	2.9	0.6	0.6	0.6
	Silt	ASTM 422	%		0	0.1	0.8	1.0	0.1	1.2	0.4	3.5	0.2	0.3	0.4
	Clay	ASTM 422	%		0.9	0.9	0.4	0.6	0.6	0.8	0.6	3.2	0.7	0.9	0.8
	Classification	ASTM 422	-		Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand
	Percent Solids	SM18 2540G	%		81.1	80.9	82.3	81.3	80.3	80.3	79.0	80.4	81.9	80.6	82.3
LPAH	Naphthalene	SW8270D	µg/Kg	34.6	< *0.35*	< *0.35*	< *0.35*	< *0.38*	< *0.36*	< *0.36*	5.1	< *0.37*	< *0.36*	< *0.36*	< *0.37*
	Acenaphthylene	SW8270D	µg/Kg	5.87	< *0.46*	< *0.47*	< *0.47*	< *0.51*	< *0.47*	< *0.47*	5.8	< *0.49*	< *0.47*	< *0.47*	< *0.50*
	Acenaphthene	SW8270D	µg/Kg	6.71	< *0.39*	< *0.39*	< *0.40*	< *0.43*	< *0.40*	< *0.40*	< *0.41*	< *0.41*	< *0.40*	< *0.40*	< *0.42*
	Fluorene	SW8270D	µg/Kg	21.2	< *0.53*	< *0.54*	< *0.54*	< *0.58*	< *0.54*	< *0.54*	< *0.57*	< *0.57*	< *0.54*	< *0.54*	< *0.57*
	Phenanthrene	SW8270D	µg/Kg	41.9	< *0.64*	< *0.65*	< *0.65*	< *0.70*	< *0.66*	< *0.66*	< *0.69*	< *0.69*	< *0.66*	< *0.66*	< *0.69*
	Anthracene	SW8270D	µg/Kg	46.9	< *0.39*	< *0.40*	< *0.40*	< *0.43*	< *0.40*	< *0.40*	< *0.42*	< *0.42*	< *0.40*	< *0.40*	< *0.42*

Table 1, Continued. Analytes detected in dredged material solids (shaded values) collected from 11 Deep Draft Crossings of the Mississippi River between Baton Rouge and New Orleans. The NOAA "Threshold Effects Level" (TEL) screening standard for freshwater benthic organisms has been provided to gauge the significance of detected contaminants.

					Deep Draft Crossings										
Class	Analyte	Method	Units	Freshwater TEL	Baton Rouge Front	Red Eye	Sardine Point	Medora	Granada	Bayou Goula	Alhambra	Philadelphia	Smoke Bend	Rich Bend	Belmont
HPAH	Fluoranthene	SW8270D	µg/Kg	111	< 0.43	< 0.44	< 0.44	< 0.47	< 0.44	< 0.44	< 0.46	< 0.46	< 0.44	< 0.44	< 0.46
	Pyrene	SW8270D	µg/Kg	53	< 0.41	< 0.42	< 0.42	< 0.45	< 0.42	< 0.42	< 0.44	< 0.44	< 0.42	< 0.42	< 0.44
	Benzo(a)anthracene	SW8270D	µg/Kg	31.7	< 0.50	< 0.51	< 0.52	< 0.56	< 0.52	< 0.52	< 0.54	< 0.54	< 0.52	< 0.52	< 0.54
	Chrysene	SW8270D	µg/Kg	57.1	< 0.48	< 0.49	< 0.49	< 0.53	< 0.49	< 0.49	< 0.51	< 0.51	< 0.49	< 0.49	< 0.52
	Benzo (b) fluoranthene	SW8270D	µg/Kg		< 0.63	< 0.65	< 0.65	< 0.70	< 0.65	< 0.65	< 0.68	< 0.68	< 0.65	< 0.65	< 0.68
	Benzo(k)fluoranthene	SW8270D	µg/Kg		< 0.81	< 0.83	< 0.83	< 0.90	< 0.83	< 0.83	< 0.87	< 0.87	< 0.83	< 0.84	< 0.88
	Benzo(a)pyrene	SW8270D	µg/Kg	31.9	< 0.40	< 0.41	< 0.41	< 0.44	5.3	< 0.41	< 0.43	< 0.43	< 0.41	< 0.41	< 0.43
	Indeno(1,2,3-cd)pyrene	SW8270D	µg/Kg		< 0.41	< 0.42	< 0.42	< 0.46	< 0.43	< 0.42	< 0.44	< 0.44	< 0.42	< 0.43	< 0.45
	Dibenz(a,h)anthracene	SW8270D	µg/Kg	6.22	< 0.45	< 0.46	< 0.46	< 0.49	< 0.46	< 0.46	< 0.48	< 0.48	< 0.46	< 0.46	< 0.48
	Benzo(g,h,i)perylene	SW8270D	µg/Kg		< 0.40	< 0.41	< 0.41	< 0.44	< 0.41	< 0.41	< 0.43	< 0.43	< 0.41	< 0.41	< 0.43
Organonitrogen	Benzidine	SW8270D	µg/Kg		< 84	< 86	< 86	< 93	< 86	< 86	< 90	< 90	< 86	< 87	< 91
	3,3´-Dichlorobenzidine	SW8270D	µg/Kg		< 2.1	< 2.2	< 2.2	< 2.3	< 2.2	< 2.2	< 2.3	< 2.3	< 2.2	< 2.2	< 2.3
	2,4-Dinitrotoluene	SW8270D	µg/Kg		< 1.6	< 1.7	< 1.7	< 1.8	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
	2,6-Dinitrotoluene	SW8270D	µg/Kg		< 2.1	< 2.1	< 2.1	< 2.3	< 2.1	< 2.1	< 2.2	< 2.2	< 2.1	< 2.1	< 2.2
	1,2-Diphenylhydrazine	SW8270D	µg/Kg		< 2.6	< 2.6	< 2.6	< 2.8	< 2.6	< 2.6	< 2.8	< 2.8	< 2.6	< 2.6	< 2.8
	Nitrobenzene	SW8270D	µg/Kg		< 1.7	< 1.7	< 1.7	< 1.8	< 1.7	< 1.7	< 1.8	< 1.8	< 1.7	< 1.7	< 1.8
	N-Nitrosodimethylamine	SW8270D	µg/Kg		< 1.7	< 1.8	< 1.8	< 1.9	< 1.8	< 1.8	< 1.8	< 1.9	< 1.8	< 1.8	< 1.9
	N-Nitroso-di-n-propylamine	SW8270D	µg/Kg		< 0.47	< 0.48	< 0.48	< 0.52	< 0.48	< 0.48	< 0.51	< 0.51	< 0.48	< 0.48	< 0.51
	N-Nitrosodiphenylamine	SW8270D	µg/Kg		< 1.9	< 1.9	< 1.9	< 2.1	< 1.9	< 1.9	< 2.0	< 2.0	< 1.9	< 1.9	< 2.0
Polychlorinated Biphenyls	PCB-1016	EPA 8082	µg/Kg	34.1 (sum)	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.29	< 0.29	< 0.28	< 0.27	< 0.29	< 0.32
	PCB-1221	EPA 8082	µg/Kg		< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.29	< 0.29	< 0.28	< 0.27	< 0.29	< 0.32
	PCB-1232	EPA 8082	µg/Kg		< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.29	< 0.29	< 0.28	< 0.27	< 0.29	< 0.32
	PCB-1242	EPA 8082	µg/Kg		< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.29	< 0.29	< 0.28	< 0.27	< 0.29	< 0.32
	PCB-1248	EPA 8082	µg/Kg		< 0.28	< 0.28	< 0.28	< 0.28	4.28	< 0.29	< 0.29	< 0.28	< 0.27	< 0.29	< 0.32
	PCB-1254	EPA 8082	µg/Kg		< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.29	< 0.29	< 0.28	< 0.27	< 0.29	< 0.32
	PCB-1260	EPA 8082	µg/Kg		< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.29	< 0.29	< 0.28	< 0.27	< 0.29	< 0.32

Table 1, Continued. Analytes detected in dredged material solids (shaded values) collected from 11 Deep Draft Crossings of the Mississippi River between Baton Rouge and New Orleans. The NOAA "Threshold Effects Level" (TEL) screening standard for freshwater benthic organisms has been provided to gauge the significance of detected contaminants.

					Deep Draft Crossings										
Class	Analyte	Method	Units	Freshwater TEL	Baton Rouge Front	Red Eye	Sardine Point	Medora	Granada	Bayou Goula	Alhambra	Philadelphia	Smoke Bend	Rich Bend	Belmont
Pesticides	Aldrin	EPA 8081A	µg/Kg		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
	alpha-Chlordane	EPA 8081A	µg/Kg	4.5 (sum)	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.03	< 0.03	0.04	< 0.03	< 0.03
	gamma-Chlordane	EPA 8081A	µg/Kg		< 0.03	< 0.03	< 0.03	< 0.03	0.20	< 0.03	0.12	< 0.03	0.10	< 0.03	< 0.03
	Dieldrin	EPA 8081A	µg/Kg	2.85	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
	4,4´-DDD	EPA 8081A	µg/Kg	3.54	0.67	< 0.03	0.07	0.18	0.68	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
	4,4´-DDE	EPA 8081A	µg/Kg	1.42	0.20	< 0.03	0.04	0.09	0.30	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
	4,4´-DDT	EPA 8081A	µg/Kg	1.19	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
	Endosulfan I	EPA 8081A	µg/Kg		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
	Endosulfan II	EPA 8081A	µg/Kg		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
	Endosulfan sulfate	EPA 8081A	µg/Kg		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
	Endrin	EPA 8081A	µg/Kg	2.67	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
	Endrin aldehyde	EPA 8081A	µg/Kg		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
	Endrin ketone	EPA 8081A	µg/Kg		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
	Heptachlor	EPA 8081A	µg/Kg		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
	Heptachlor epoxide	EPA 8081A	µg/Kg	0.6	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
	alpha-BHC	EPA 8081A	µg/Kg		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
	beta-BHC	EPA 8081A	µg/Kg		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
	delta-BHC	EPA 8081A	µg/Kg		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
	gamma-BHC (Lindane)	EPA 8081A	µg/Kg	0.94	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
	Toxaphene	EPA 8081A	µg/Kg	0.1	< 1.01	< 1.01	< 1.0	< 1.01	< 1.02	< 1.04	< 1.04	< 1.0	< 0.98	< 1.02	< 1.15
Chlorinated Hydrocarbons	1,3-Dichlorobenzene	SW8270D	µg/Kg		< 1.6	< 1.6	< 1.6	< 1.7	< 1.6	< 1.6	< 1.7	< 1.7	< 1.6	< 1.6	< 1.7
	1,4-Dichlorobenzene	SW8270D	µg/Kg		< 1.4	< 1.5	< 1.5	< 1.6	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.6
	1,2-Dichlorobenzene	SW8270D	µg/Kg		< 2.1	< 2.2	< 2.2	< 2.3	< 2.2	< 2.2	< 2.3	< 2.3	< 2.2	< 2.2	< 2.3
	1,2,4-Trichlorobenzene	SW8270D	µg/Kg		< 1.1	< 1.1	< 1.1	< 1.2	< 1.1	< 1.1	< 1.2	< 1.2	< 1.1	< 1.1	< 1.2
	Hexachlorobenzene	SW8270D	µg/Kg		< 0.43	< 0.44	< 0.44	< 0.47	< 0.44	< 0.44	< 0.46	< 0.46	< 0.44	< 0.44	< 0.46
	2-Chloronaphthalene	SW8270D	µg/Kg		< 0.42	< 0.43	< 0.43	< 0.46	< 0.43	< 0.43	< 0.45	< 0.45	< 0.43	< 0.43	< 0.45
	Hexachlorocyclopentadiene	SW8270D	µg/Kg		< 2.2	< 2.2	< 2.2	< 2.4	< 2.2	< 2.2	< 2.3	< 2.3	< 2.2	< 2.2	< 2.3
	Hexachloroethane	SW8270D	µg/Kg		< 1.4	< 1.5	< 1.5	< 1.6	< 1.5	< 1.5	< 1.5	< 1.6	< 1.5	< 1.5	< 1.6
	Hexachlorobutadiene	SW8270D	µg/Kg		< 0.45	< 0.46	< 0.46	< 0.5	< 0.46	< 0.46	< 0.48	< 0.48	< 0.46	< 0.46	< 0.48

Table 2. Analytes detected in the liquid fraction of dredged material (shaded values) collected from 11 Deep Draft Crossings of the Mississippi River between Baton Rouge and New Orleans. The lowest available federal or state acute water quality criterion is provided for detected analytes, where available, to determine dilution requirements for compliance with the Clean Water Act.

Class	Analyte	Method	Units	Acute WQC	Deep Draft Crossings: Baton Rouge Front	Red Eye	Sardine Point	Medora	Granada	Bayou Goula	Alhambra	Philadelphia	Smoke Bend	Rich Bend	Belmont
Metals	Antimony	SW 846/6020	mg/l	.	0.0003	0.0003	0.0003	0.0004	0.0002	0.0003	0.0004	0.0007	0.0008	0.0003	0.0004
	Arsenic	SW 846/6020	mg/l	0.3398	0.0025	0.0023	0.0062	0.0022	0.0027	0.0023	0.0026	0.0023	0.0024	0.0024	0.0023
	Beryllium	SW 846/6020	mg/l		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Cadmium	SW 846/6020	mg/l		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Total Chromium	SW 846/6020	mg/l	0.57 (0.016)[A]	0.0032	0.0004	0.0048	0.0024	0.0039	0.0003	0.0025	0.0026	0.0025	0.0005	0.0003
	Copper	SW 846/6020	mg/l	0.026	0.0021	0.0069	0.0042	0.0020	0.0021	0.0019	0.0018	0.0022	0.0032	0.0026	0.0018
	Lead	SW 846/6020	mg/l	0.036	< 0.0002	< 0.0002	0.0008	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Nickel	SW 846/6020	mg/l	0.47	0.0028	0.0036	0.0084	0.0023	0.0036	0.0029	0.0025	0.0026	0.0031	0.0027	0.0025
	Selenium	SW 846/6020	mg/l	.	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.001	0.002	0.002	0.002
	Silver	SW 846/6020	mg/l	0.0032	< 0.0002	< 0.0002	0.0005	0.0003	0.0003	< 0.0002	0.0003	0.0006	0.0005	< 0.0002	< 0.0002
	Thallium	SW 846/6020	mg/l		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Zinc	SW 846/6020	mg/l	0.12	0.063	0.046	**0.131**[B]	0.054	0.010	0.065	0.029	0.072	0.046	0.053	0.028
	Mercury	EPA 7474	µg/l	1.4	0.007	< 0.005	0.012	0.015	< 0.005	< 0.005	0.008	0.025	0.008	< 0.005	< 0.005
Conv.	Ammonia as N	EPA 350.1	mg/l	.	0.0826	0.0728	0.246	0.0669	0.0908	0.0283	0.0773	0.072	0.0699	0.0449	0.0307
	Total Cyanide	SW9012	mg/l		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
LPAH	Naphthalene	SW8270D	µg/l		< 0.014	< 0.013	< 0.014	< 0.014	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013
	Acenaphthylene	SW8270D	µg/l		< 0.015	< 0.014	< 0.016	< 0.015	< 0.015	< 0.015	< 0.016	< 0.015	< 0.015	< 0.014	< 0.015
	Acenaphthene	SW8270D	µg/l		< 0.014	< 0.014	< 0.015	< 0.014	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014	< 0.014	< 0.014
	Fluorene	SW8270D	µg/l		< 0.021	< 0.02	< 0.022	< 0.022	< 0.022	< 0.021	< 0.022	< 0.022	< 0.021	< 0.021	< 0.021
	Phenanthrene	SW8270D	µg/l		< 0.041	< 0.04	< 0.044	< 0.043	< 0.043	< 0.041	< 0.044	< 0.043	< 0.041	< 0.041	< 0.041
	Anthracene	SW8270D	µg/l		< 0.015	< 0.015	< 0.016	< 0.015	< 0.015	< 0.015	< 0.016	< 0.015	< 0.015	< 0.015	< 0.015

A = Water Quality Criteria for Chromium III and Chromium VI (in parenthesis) for comparison to measured Total Chromium.

B = A dilution factor of 0.1 would be required to meet the zinc water quality criterion. Such minimal dilution would be near instantaneous after discharge, and would occur entirely within an allowable mixing zone.

Table 2, Continued. Analytes detected in the liquid fraction of dredged material (shaded values) collected from 11 Deep Draft Crossings of the Mississippi River between Baton Rouge and New Orleans. The lowest available federal or state acute water quality criterion is provided for detected analytes, where available, to determine dilution requirements for compliance with the Clean Water Act.

					Deep Draft Crossings										
Class	Analyte	Method	Units	Acute WQC	Baton Rouge Front	Red Eye	Sardine Point	Medora	Granada	Bayou Goula	Alhambra	Philadelphia	Smoke Bend	Rich Bend	Belmont
HPAH	Fluoranthene	SW8270D	µg/l		< 0.016	< 0.015	< 0.017	< 0.016	< 0.016	< 0.016	< 0.017	< 0.016	< 0.016	< 0.015	< 0.016
	Pyrene	SW8270D	µg/l		< 0.015	< 0.015	< 0.016	< 0.016	< 0.016	< 0.015	< 0.016	< 0.016	< 0.015	< 0.015	< 0.015
	Benzo(a)anthracene	SW8270D	µg/l		< 0.014	< 0.014	< 0.015	< 0.015	< 0.015	< 0.014	< 0.015	< 0.015	< 0.014	< 0.014	< 0.014
	Chrysene	SW8270D	µg/l		< 0.014	< 0.013	< 0.014	< 0.014	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013	< 0.013	< 0.013
	Benzo (b) fluoranthene	SW8270D	µg/l		< 0.015	< 0.015	< 0.016	< 0.016	< 0.016	< 0.015	< 0.016	< 0.016	< 0.015	< 0.015	< 0.015
	Benzo(k)fluoranthene	SW8270D	µg/l		< 0.053	< 0.052	< 0.056	< 0.055	< 0.055	< 0.053	< 0.056	< 0.055	< 0.053	< 0.052	< 0.053
	Benzo(a)pyrene	SW8270D	µg/l		< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.013
	Indeno(1,2,3-cd)pyrene	SW8270D	µg/l		< 0.019	< 0.019	< 0.021	< 0.020	< 0.020	< 0.019	< 0.020	< 0.020	< 0.019	< 0.019	< 0.019
	Dibenz(a,h)anthracene	SW8270D	µg/l		< 0.015	< 0.015	< 0.016	< 0.016	< 0.016	< 0.015	< 0.016	< 0.016	< 0.015	< 0.015	< 0.015
	Benzo(g,h,i)perylene	SW8270D	µg/l		< 0.015	< 0.014	< 0.016	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.014	< 0.015
Organonitrogen	Benzidine	SW8270D	µg/l		< 3.4	< 3.3	< 3.6	< 3.5	< 3.5	< 3.3	< 3.5	< 3.5	< 3.3	< 3.3	< 3.3
	3,3´-Dichlorobenzidine	SW8270D	µg/l		< 0.11	< 0.11	< 0.12	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11
	2,4-Dinitrotoluene	SW8270D	µg/l		< 0.052	< 0.051	< 0.055	< 0.054	< 0.054	< 0.052	< 0.055	< 0.054	< 0.052	< 0.051	< 0.052
	2,6-Dinitrotoluene	SW8270D	µg/l		< 0.077	< 0.075	< 0.082	< 0.08	< 0.08	< 0.077	< 0.081	< 0.08	< 0.077	< 0.076	< 0.077
	1,2-Diphenylhydrazine	SW8270D	µg/l		< 0.064	< 0.062	< 0.068	< 0.066	< 0.066	< 0.063	< 0.067	< 0.066	< 0.063	< 0.063	< 0.063
	Nitrobenzene	SW8270D	µg/l		< 0.082	< 0.08	< 0.087	< 0.084	< 0.084	< 0.081	< 0.086	< 0.084	< 0.081	< 0.08	< 0.081
	N-Nitrosodimethylamine	SW8270D	µg/l		< 0.071	< 0.069	< 0.076	< 0.074	< 0.074	< 0.071	< 0.075	< 0.074	< 0.071	< 0.07	< 0.071
	N-Nitroso-di-n-propylamine	SW8270D	µg/l		< 0.03	< 0.029	< 0.032	< 0.031	< 0.031	< 0.03	< 0.031	< 0.031	< 0.03	< 0.029	< 0.03
	N-Nitrosodiphenylamine	SW8270D	µg/l		< 0.083	< 0.08	< 0.088	< 0.085	< 0.085	< 0.082	< 0.087	< 0.085	< 0.082	< 0.081	< 0.082
Polychlorinated Biphenyls	PCB-1016	EPA 8082	µg/l		< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006
	PCB-1221	EPA 8082	µg/l		< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006
	PCB-1232	EPA 8082	µg/l		< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006
	PCB-1242	EPA 8082	µg/l		< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006
	PCB-1248	EPA 8082	µg/l		< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006
	PCB-1254	EPA 8082	µg/l		< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006
	PCB-1260	EPA 8082	µg/l		< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006

Table 2, Continued. Analytes detected in the liquid fraction of dredged material (shaded values) collected from 11 Deep Draft Crossings of the Mississippi River between Baton Rouge and New Orleans. The lowest available federal or state acute water quality criterion is provided for detected analytes, where available, to determine dilution requirements for regulatory compliance.

Class	Analyte	Method	Units	Acute WQC	Deep Draft Crossings										
					Baton Rouge Front	Red Eye	Sardine Point	Medora	Granada	Bayou Goula	Alhambra	Philadelphia	Smoke Bend	Rich Bend	Belmont
Pesticides	Aldrin	EPA 8081A	µg/l	3.0	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0008	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	alpha-Chlordane	EPA 8081A	µg/l		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	gamma-Chlordane	EPA 8081A	µg/l		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Dieldrin	EPA 8081A	µg/l		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	4,4´-DDD	EPA 8081A	µg/l		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	4,4´-DDE	EPA 8081A	µg/l		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	4,4´-DDT	EPA 8081A	µg/l		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Endosulfan I	EPA 8081A	µg/l		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Endosulfan II	EPA 8081A	µg/l		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Endosulfan sulfate	EPA 8081A	µg/l		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Endrin	EPA 8081A	µg/l		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Endrin aldehyde	EPA 8081A	µg/l		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Endrin ketone	EPA 8081A	µg/l	.	0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Heptachlor	EPA 8081A	µg/l		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Heptachlor epoxide	EPA 8081A	µg/l		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	alpha-BHC	EPA 8081A	µg/l	.	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0060	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	beta-BHC	EPA 8081A	µg/l		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	delta-BHC	EPA 8081A	µg/l		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	gamma-BHC (Lindane)	EPA 8081A	µg/l		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Toxaphene	EPA 8081A	µg/l		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chlorinated Hydrocarbons	1,3-Dichlorobenzene	SW8270D	µg/l		< 0.072	< 0.070	< 0.077	< 0.074	< 0.074	< 0.071	< 0.076	< 0.074	< 0.071	< 0.071	< 0.071
	1,4-Dichlorobenzene	SW8270D	µg/l		< 0.072	< 0.070	< 0.077	< 0.074	< 0.074	< 0.072	< 0.076	< 0.074	< 0.072	< 0.071	< 0.072
	1,2-Dichlorobenzene	SW8270D	µg/l		< 0.073	< 0.071	< 0.077	< 0.075	< 0.075	< 0.072	< 0.076	< 0.075	< 0.072	< 0.071	< 0.072
	1,2,4-Trichlorobenzene	SW8270D	µg/l		< 0.069	< 0.067	< 0.073	< 0.071	< 0.071	< 0.068	< 0.073	< 0.071	< 0.068	< 0.068	< 0.068
	Hexachlorobenzene	SW8270D	µg/l		< 0.018	< 0.017	< 0.019	< 0.018	< 0.018	< 0.018	< 0.019	< 0.018	< 0.018	< 0.017	< 0.018
	2-Chloronaphthalene	SW8270D	µg/l		< 0.015	< 0.014	< 0.016	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.014	< 0.015
	Hexachlorocyclopentadiene	SW8270D	µg/l		< 0.050	< 0.049	< 0.053	< 0.052	< 0.052	< 0.050	< 0.053	< 0.052	< 0.050	< 0.049	< 0.050
	Hexachloroethane	SW8270D	µg/l		< 0.061	< 0.059	< 0.065	< 0.063	< 0.063	< 0.060	< 0.064	< 0.063	< 0.060	< 0.060	< 0.060
	Hexachlorobutadiene	SW8270D	µg/l		< 0.016	< 0.016	< 0.017	< 0.017	< 0.017	< 0.016	< 0.017	< 0.017	< 0.016	< 0.016	< 0.016

United States Department of the Interior

FISH AND WILDLIFE SERVICE
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Lafayette, Louisiana 70506
May 23, 2016

Colonel Richard L. Hansen
District Commander
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Colonel Hansen:

Please refer to the May 10, 2016, Corps of Engineers (Corps) proposed Fiscal Year (FY) 2017 Operations and Maintenance Dredging and Disposal Plans (Plans) for federally-maintained navigation channels in the New Orleans District. We provide the following comments in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), the Bald and Golden Eagle Protection Act (BGEPA) (54 Stat. 250, as amended, 16 U.S.C. 668a-d), and the Migratory Bird Treaty Act (MBTA) of 1918 (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.). Section I of this report provides technical comments and recommendations for projects presented in that plan. Section II provides project-specific information regarding species protected under the ESA that should be considered as early as possible in annual program planning. Section III provides comments on potential project impacts to bald eagles, Louisiana black bears and colonial nesting waterbirds.

We commend the cooperative efforts between the Corps and the non-Federal sponsors to identify potential beneficial use of dredge material projects under the Louisiana Coastal Area (LCA), Beneficial Use of Dredge Material (BUDMAT) program and the Corps' Operations and Maintenance program and continue to support the beneficial use of dredge material to the greatest extent possible. We look forward to participating in the planning and selection of BUDMAT projects as a member of the Maintenance Dredging Beneficial Use Group (MDBUG).

The Fish and Wildlife Service (Service) has previously consulted on several maintenance dredging projects that included beneficial use of dredged material in areas designated as critical habitat for the piping plover (*Charadrius melodus*). While the intent of these projects is to restore coastal habitats, these areas have been designated as critical habitat under the ESA; therefore, project-associated impacts to critical habitat should be addressed. In an effort to address impacts associated with the implementation of coast-wide dredged material beneficial-use projects on the piping plover and its critical habitat, the Corps initiated consultation with the Service. We received the Corps' June 18, 2013, biological assessment and concurred with your "not likely to adversely affect" determination in our July 22, 2013, letter. The resulting recommendations are included in the comments by dredging project in section I of this report. The Service recommends that the Corps and the Service jointly re-examine projects addressed in that BO to determine the potential to develop a Section 7(a)(1) conservation program for the piping plover and the recently listed red knot (*Calidris canutus rufa*).

SECTION I

Atchafalaya Basin

Three Rivers – The endangered pallid sturgeon (*Scaphirhynchus albus*) is found in the Mississippi River and its major tributaries, including the Atchafalaya and Red Rivers. Known concentrations of pallid sturgeon occur in the vicinity of the Old River Control Structure, and they are believed to spawn in that area. The Corps has conducted research on pallid sturgeon habitat within the Atchafalaya River and information from that study was used to develop the following restrictions that would permit dredging and spoil disposal operations at the Old River Control Structure without adversely affecting the pallid sturgeon:

1. No dredging or spoil disposal activities will occur in the Atchafalaya River or Old River during April, May, and June; and,

2. All spoil disposal operations in the Atchafalaya River will be conducted at midstream and at the surface.

Accordingly, the Service recommends that the Corps adhere to the above conditions to avoid impacts to pallid sturgeon eggs or larvae when dredging within the Three Rivers area. Please refer to Section II of this letter for further information and recommendations regarding pallid sturgeon.

The endangered interior least tern (*Sterna antillarum*) is known to occur in this reach of the Mississippi River and inhabits sparsely and /or non-vegetated areas of sand or gravel bars both midstream and along the shoreline of the river. The Service recommends that the Corps determine presence/absence of interior least terns prior to dredging activities. If nesting interior least terns are observed adjacent to the project area during breeding season (May 15 to August 31, depending on river stages), further consultation with this office is recommended. Please refer to Section II of this letter for further information and recommendations regarding the interior least tern.

The recently delisted Louisiana black bear (*Ursus americanus luteolus*) occurs in the vicinity of the Three Rivers dredging project area. Although ESA consultation is no longer required regarding project impacts on this subspecies, the subspecies is still protected under Louisiana state law. In the interest of conserving the Louisiana black bear, projects proposed in areas of the state that are inhabited by bears should be designed to avoid adversely affecting this subspecies or its habitat. Please refer to Section III of this letter for further information and recommendations regarding this species.

<u>Berwick Bay Harbor</u> –The Service recommends that the Corps place dredged material in the commercial sand pit disposal sites before placing any material in the open-water disposal areas to avoid adverse impacts to pallid sturgeon. Please refer to the information concerning the pallid sturgeon in Section II of this report.

Atchafalaya River

The Corps and the Louisiana Department of Natural Resources (LDNR), through the MDBUG have identified the Shell Island Sediment Delivery project in their near-term beneficial use program. That proposed project would pump dredge material via a pipeline through Shell Island Pass to Little Bay in the Atchafalaya Delta Wildlife Management Area (WMA) enhancing the existing delta formation process. The Service recommends that the Corps consider the Shell Island Sediment Delivery project as an alternate sediment disposal opportunity, and we look forward to further coordination with the Corps and the Louisiana Department of Wildlife and Fisheries' (LDWF) Atchafalaya Delta Wildlife Management Area office in New Iberia, Louisiana.

<u>Bay and Bar Channel</u> – We continue to recommend that the Corps coordinate all Atchafalaya Bay activities with the LDWF Atchafalaya Delta WMA office. In addition, we support the Corp's continuing efforts to beneficially use dredged material to create vegetated wetlands in the area, including expansion of beneficial spoil deposition areas to the northwest side of the channel on Atchafalaya Delta WMA. We also support (where dredged material composition allows) creation of new, or maintenance of existing, bird islands adjacent to the Atchafalaya Bay and Bar Channel. Dredged material should be placed to an elevation that allows marsh vegetation to colonize, except when the material is utilized for bird island creation. Disposal of dredged material in the Ocean Dredged Material Disposal Site (ODMDS) should only be considered when all other beneficial options have been exhausted. We recommend that the suitability of lower reach Bar Channel-dredged material for beneficial use be reexamined each time dredging is

conducted due to the dynamic nature of the soil properties associated with this reach of the project.

Federally listed as a threatened species, the piping plover, as well as its designated critical habitat, occur along the Louisiana coast, including most of the Atchafalaya River Delta. Please refer to the information concerning this species, and its designated critical habitat, in Section II of this report.

As of December 2014, the red knot is federally listed as a threatened species. The species is known to occur along the Louisiana coast and may occur in the Atchafalaya River Delta. Although critical habitat has not been designated, we encourage you to avoid project activities that would adversely affect its habitat. Please refer to the information concerning this species in Section II of this report.

Disposal of dredged material resulting from the Corps' proposed O&M activities in the Atchafalaya River and Bayous Chene, Boeuf, and Black would occur in piping plover critical habitat Unit LA-2. This unit is located in the eastern portion of the LDWF's Atchafalaya Delta Wildlife Management Area and "...includes all exposed land and islands where primary constituent elements occur east and southeast of the main navigation channel of the Atchafalaya River to the MLLW. The islands located south and southeast of the deltaic splay, Donna, T-Pat, and Skimmer Islands and the unnamed bird island, are also included in this unit. This unit includes the entire islands where primary constituent elements occur to the MLLW." (Federal Register, Volume 66, No. 132). The islands included as critical habitat were created by dredged material, and since the time of designation, the Corps has named and/or added islands in the same general area (e.g., Avocet Island, Bird Island West, and Bird Island East).

Maintenance dredging in the Atchafalaya River and Bayous Chene, Boeuf, and Black occurs annually. Placement of material is closely coordinated with the LDWF to avoid disturbance to colonial nesting wading birds and shorebirds. The dredged material is deposited in shallow open water to create coastal habitat (i.e., deltaic peninsulas) and bird islands, and is placed in such a manner to avoid existing emergent marsh, channel banks, or other sensitive areas. New material is generally placed in open water to create new peninsulas. Often the placement of dredged material results in newly formed sub-aerial sand and mud flats along the edges of the newly created peninsulas. Material that is not suitable for creating marsh or island habitat is deposited in a designated offshore disposal site.

Piping plover critical habitat on the islands within this unit tends to become densely vegetated over time, and thus, unsuitable for the piping plover except for narrow sand strips along the edges of the islands that may provide suitable foraging habitat. Dredged material is sometimes placed on existing islands to suppress dense vegetation, which may also cover any suitable foraging habitat, but restores the primary constituent elements (PCEs) of critical habitat on the remainder of the islands. New sand and mud flat habitat may also be created in adjacent open water as excess material flows off the islands during placement or shaping and grading of the dredged material. Material placement maintains piping plover critical habitat in an early successional stage and prevents loss of PCEs due to dense vegetation growth. The disturbance to any existing suitable habitat is temporary and does not occur at every dredging event. In addition, there is an abundance of suitable foraging habitat nearby into which birds can disperse until the benthic fauna recovers at the disposal site.

Should placement of material occur when piping plovers are present in the area, they may be temporarily displaced to nearby suitable habitat, but they would not be excluded from the area. Because material is deposited in different locations from one dredging event to the next and because material is placed either in open water or on dense vegetation, disposal areas can be re-colonized with benthic prey prior by the next placement event, so disturbance to existing critical habitat is temporary. Such temporary disturbance to piping plovers and their critical habitat is discountable and insignificant in nature, and critical habitat is benefitted by the maintenance of PCEs across the islands as stated in our July 22, 2013, letter.

The endangered West Indian manatee (*Trichechus manatus*) occurs in this reach of the Atchafalaya River to include canals within adjacent marshes and associated coastal waters. Manatee occurrences in Louisiana appear to be increasing and they have been regularly reported in southeastern Louisiana. Human activity is the primary cause for declines in species number due to collisions with boats and barges, entrapment in flood control structures, poaching, habitat loss, and pollution.

During in-water work in areas that potentially support manatees all personnel associated with the project should be instructed about the potential presence of manatees, manatee speed zones, and the need to avoid collisions with and injury to manatees. All on-site personnel are responsible for observing water-related activities for the presence of manatees. The Service recommends that the Corps cease all dredging and associated dredging activities, to include vessel operation, if a manatee is observed within 50 feet of an active work area. Please refer to Section II of this report for information and additional recommendations regarding the manatee.

The Service is responsible for two of the five species of federally listed sea turtles that occur in the estuaries, bays, and coastal waters of Louisiana. The two species, the threatened loggerhead sea turtle (*Caretta caretta*) and the endangered Kemp's Ridley sea turtle (*Lepidochelys kempii*), have been known to nest along the northern Gulf coast during the summer months (i.e., May through November) and may nest in this reach of the Atchafalaya River and associated shoreline.

Threats to sea turtle nesting attempts include beach nourishment, pollution, erosion control structures, vehicular and pedestrian traffic, coastal development and construction, and beachfront lighting (USFWS 2007). Destruction and over-exploitation of nesting habitat, drowning in fishing nets, and pollution are the greatest threats to sea turtles. Therefore, the Service recommends that you contact this office if your activities would occur on coastal beaches during the summer nesting months (i.e., May through November). Please refer to Section II of this report for additional information and recommendations regarding these species.

The pallid sturgeon is known to occur in this reach of the Atchafalaya River. Please refer to the information concerning the pallid sturgeon in Section II of this report.

The Atchafalaya River Delta and bird islands along the bar channel also provide suitable habitat for numerous waterbird nesting colonies. Accordingly, the Corps should closely follow the survey and restriction recommendations found in Section III of this report.

The Corps is currently in the Preliminary Assessment phase of the Atchafalaya River Dredged Material Management Plan development. We look forward to coordinating with the Corps in the development of that plan.

Bayou Lafourche

The Corps intends to dredge the inland reach and channel from Miles 3.4 to -1.8 and place the material adjacent to the Belle Pass east and/or west jetties along the Gulf of Mexico shoreline. The Service generally supports the beneficial use of dredged material for beach nourishment when impacts to piping plover and its designated critical habitat are avoided.

Maintenance dredging in Bayou Lafourche occurs as needed varying from one to four years between events. The dredged material is deposited unconfined along the Gulf shoreline to the east and west of the channel adjacent to the jetties. The discharge points are located at the beach intertidal zone and the dredged material is placed unconfined, parallel to the shoreline, into the surf zone no closer than 100 feet from the top bank of the shoreline. The Corps anticipates that, between maintenance events, dredged material that is placed in such a manner would be dispersed gradually onto the shoreline, into the littoral drift, and offshore by wind and wave action and storm events.

The majority of material removed from the Port Fourchon channel will be placed on the west side of the channel during future maintenance events to abate erosion along the western Gulf shoreline (i.e., Belle Pass West). The western disposal area currently consists of rock shoreline protection in front of a vegetated saline marsh. During extreme low tide events sand and/or mud flats (created from previous disposal events) may be temporarily exposed Gulf-ward of the rock protection feature and may provide suitable foraging habitat for piping plover during that one tidal event. The Corps would dispose of material in the shallow open water adjacent to the rock protection feature. Although this area is located within the geographical boundary of designated critical habitat, PCEs rarely exist adjacent to the rock protection feature except during extreme low tide events, and therefore, no adverse effects to the piping plover or its critical habitat are anticipated since the area is often inundated and rarely exposed. Further, it is likely that placement of dredged material in this area would result in restoration and/or creation of PCEs during future placement events by slowly increasing the elevation of that shoreline reach over time to the extent that sub-aerial sand flat or beach habitat may be created.

The second disposal area located on the east side of the jetties does contain PCEs of critical habitat. Material placement at the eastern disposal site would involve placement of a dredge pipeline within the surf zone in order to nourish the beach profile without the need for heavy machinery on the beach. Installation of the dredge pipeline would occur from the Gulf in open water. There would be no disturbance to the beach habitat since wind and wave action would carry the material onshore. As wave action carries fine sediment onto the beach face and deposits it, Aeolian transport can move the fine sands up the beach and onto the dune. Therefore, the fine-grained sediment that will be placed in the surf zone would move onto the beach face in a gradual and more natural manner. The discharge of dredged material is not expected to cause extensive stacking of sediment on the beach which means that the benthic fauna would not be smothered and the added material would not stress the benthic community within piping plover critical habitat. Similarly, since there would be no heavy machinery onshore, it is less likely that any plovers using the area during disposal activities would be disturbed.

The Corps should also consider placing dredged material behind the west Belle Pass headland on the west side of the channel to enhance the marsh habitat and nourish habitat associated with the completed Coastal Wetland Planning, Protection and Restoration Act (CWPPRA) West Bell Pass Headland Restoration Project (TE-23). The continued presence of a land mass in that area would help to trap beach sediments that periodically wash over from storms and high water events and strengthen the headland. The Service also recommends that the Corps consider using dredged material to restore and nourish the completed CWPPRA West Bell Pass Barrier Headland Restoration Project (TE-52) which will strengthen and improve the resilience of the headland as well as help protect interior marshes.

At least one wading bird colony is located along the east bank of Belle Pass in the vicinity of the proposed dredging. In past correspondence, the Corps proposed to restrict dredging operations in the vicinity of those nesting areas until the incubation period (i.e., February 15 to June 14) is complete. During the restricted period, no work will occur within 750 feet of the colonies. After June 14, dredging operations and related activities would occur no less than 200 feet from the colonies. The Service previously concurred with those restrictions, based on the evidence of continued nesting along that heavily used waterway. We recommend, however, that the restricted period be extended to July 1 if incubation is not complete by June 14. We also recommend that a Corps biologist directly monitor and inspect the colonies by observation from the waterway during the late breeding season (i.e., July and August), to ensure that adult and nestling birds are not significantly disturbed by dredging activities. The project area should also be inspected for new or otherwise undocumented nesting colonies prior to project initiation, and a report summarizing the findings of those inspections and monitoring efforts should be submitted to the Service and the LDWF.

The piping plover, as well as its designated critical habitat, occur along the Louisiana coast, including the mouth of Bayou Lafourche and associated shoreline. Please refer to the information concerning this species, and its designated critical habitat, in Section II of this report.

The red knot has been observed in Port Fourchon and adjacent barrier islands [ebird.org 2015]. Although no critical habitat for the red knot has been designated, we encourage you to avoid project activities that would adversely affect its habitat. Please refer to the information concerning this species in Section II of this report.

The West Indian manatee and sea turtles are known to occur in this reach of Bayou Lafourche and associated coastal waters. Please refer to the information concerning these species in Section II of this report.

Calcasieu River and Pass

Bar Channel - The Gulf of Mexico shoreline has experienced losses on the east and west sides of the Calcasieu River and Pass (CRP) Bar Channel likely due to recent hurricane passages. Piping Plover and its designated critical habitat occur along the Gulf of Mexico shoreline adjacent to the CRP Bar Channel. The Service continues to recommend that the Corps consider the use of the dredged material from the southern reaches of this channel along the Gulf of Mexico shoreline instead of disposal in the ODMDS if it is determined that the material composition is suitable and incremental funding is available.

The piping plover, as well as its designated critical habitat, occur along the Louisiana coast, including the Calcasieu River Pass and associated shoreline. Please refer to the information concerning this species, and its designated critical habitat, in Section II of this report.

The red knot is known to occur along the Louisiana coast and has been observed at the mouth of the Calcasieu River near the east jetty [ebird.org 2015]. Although no critical habitat for the red knot has been designated, we encourage you to avoid project activities that would adversely affect its habitat. Please refer to the information concerning this species in Section II of this report.

The West Indian manatee and sea turtles are known to occur in this reach of the Calcasieu River Pass and associated coastal waters. Please refer to the information concerning these species in Section II of this report.

Miles 17 to 29 and Devil's Elbow - We commend the Corps' efforts in coordinating the beneficial use of dredged material to create marsh habitat on the Sabine National Wildlife Refuge (NWR) through the CWPPRA program, and on privately-owned, shallow open-water areas (e.g. Black Lake Disposal Area). The Service encourages the Corps to continue the beneficial use effort on the Sabine NWR in FY2017 using the CWPPRA-constructed permanent pipeline for transport of dredged material from the CRP channel to the refuge site. The Corps also proposed a demonstration project for FY2013 using previously dredged material from a confined disposal facility (CDF) along the CRP inland segment to create marsh along the western shoreline of Calcasieu Lake adjacent to that CDF. That project was completed in 2014, but the elevation of the created landform is much higher than the surrounding marsh, and significant future compaction of the material is unlikely. The Corps plans to monitor the site for evidence of tidal inundation and marsh vegetation growth; we respectfully request copies of all monitoring reports. The Service recommends that the Corps review our comments regarding the dredged material placement elevation for this project in our May 29, 2013, letter. We look forward to continued coordination with the Corps and private landowners to identify areas for long-term disposal of dredged material, and to obtain the necessary rights-of-entry to access those areas. The Service also looks forward to the full implementation of the completed Calcasieu River and Pass Dredge Material Management Plan.

The Service encourages the Corps to fully investigate funding sources that would allow beneficial use of dredged material to create/restore wetlands instead of confined upland disposal which we do not support.

Federal agencies proposing a project that includes features on a national wildlife refuge are encouraged to contact the Refuge Manager early in the planning process. The Refuge

Manager will work with the project proponent to determine if the proposed project constitutes a "refuge use" subject to a compatibility determination. If the proposed project requires a compatibility determination, a concise description of the project (refuge use) including who, what, where, when, how and why will be needed to prepare the compatibility determination. In order to determine the anticipated impacts of use, the project proponent may be required to provide sufficient data and information sources to document any short-term, long-term, direct, indirect or cumulative impacts on refuge resources. Compatibility determinations will include a public review and comment before issuing a final determination. Points of contacts for the Sabine National Wildlife Refuge (NWR) are: Christian Eggleston, Project Leader for the Service's Southwest National Wildlife Refuges and Terence Delaine (337) 762-3816, Refuge Manager.

All construction or maintenance activities (e.g., surveys, land clearing, etc.) on Sabine NWR will require the Corps of Engineers (Corps) to obtain a Special Use Permit from the Refuge Manager; furthermore, all activities on that NWR must be coordinated with the Refuge Manager. Therefore, we recommend that the Corps request issuance of a Special Use Permit well in advance of conducting any work on the refuge. Please contact Refuge Manager Terence Delaine (337) 762-3816 for further information on compatibility of flood control features, and for assistance in obtaining a Special Use Permit. Close coordination by both the Corps and its contractor must be maintained with the Refuge Manager to ensure that construction and maintenance activities are carried out in accordance with provisions of any Special Use Permit issued by the NWR.

The West Indian manatee and sea turtles are known to occur in this reach of the Calcasieu River. Please refer to the information concerning these species in Section II of this report.

Colonial nesting waterbirds are known to inhabit this area. We recommend that on-site contract personnel be informed of the need to identify colonial nesting birds and their nests during the breeding season and follow the work restrictions listed in Section III.

Gulf Intracoastal Waterway

Port Allen to Morgan City Alternate Route (Vicinity of Bayou Sorrel Lock) - The Service recommends that the Corps continue to incorporate the following disposal plan modifications to minimize potential impacts to water quality and terrestrial habitats:

1. New disposal sites within the Atchafalaya Basin should not exceed 2,000 feet in length (as measured parallel to the East Atchafalaya Basin Protection Levee borrow canal or Gulf Intracoastal Waterway [GIWW])

and a 200-foot-wide gap should be left between adjacent disposal sites to maintain adequate overbank flows and water circulation.

2. Expansion of existing disposal sites should also adhere to the above length and gap specifications. During initial construction of confined disposal sites, all levee borrow should be excavated from outside the borrow pit whenever practicable to improve water circulation.

3. Borrow for construction of containment dikes that are adjacent to channels other than the GIWW should be taken from those channels if the Corps' required 100-foot offset can be decreased.

4. Outside borrow ditches or effluent return ditches should include a sediment trap that can be easily excavated with the equipment used to refurbish the disposal site dikes.

5. At all disposal sites, plugs should be installed in any inside borrow ditches to facilitate maximum sediment retention within the disposal areas prior to the effluent reaching the spill boxes.

6. Existing confined disposal areas should be surveyed to ensure they have been filled to capacity prior to expanding into new areas.

The pallid sturgeon and manatee and sea turtles are known to occur in the Gulf Intracoastal Waterway. Please refer to the information concerning these species in Section II of this report.

Wax Lake Crossover –The recently delisted Louisiana black bear occurs in the vicinity of the Wax Lake Crossover dredging project area. Although ESA consultation is no longer required regarding project impacts on this subspecies, the subspecies is still protected under Louisiana state law. In the interest of conserving the Louisiana black bear, projects proposed in areas of the state that are inhabited by bears should be designed to avoid adversely affecting this subspecies or its habitat. Because all the dredging and disposal activities would occur within waterway channels, there would be no impacts to the Louisiana black bear. The Service recommends consultation with the LDWF should changes to project plans involve activities not confined to channels. Please refer to Section III of this letter for further information and recommendations regarding this species.

Houma Navigational Canal (HNC)

Terrebonne Bay – The Corps has designated an open water area in Bay Welsh as a beneficial use site along the Terrebonne Bay shoreline. This and other beneficial use sites have been identified as a priority by the MDBUG and as a disposal option under the HNC deepening study. Concurrently, the State is working towards extinguishing oyster leases in the area. We urge the Corps to make every effort to use material from the northern portion of the Terrebonne Bay reach beneficially at the Bay Welsh and other potential marsh creation areas rather than placing it in the open water disposal areas. The Service continues to recommend that the Corps use material dredged from the southern end of the Terrebonne Bay reach as well as from the Cat Island Pass reach to restore island resources such as Wine Island and Timbalier Island.

The West Indian manatee and sea turtles are known to occur in Terrebonne Bay. Please refer to the information concerning these species in Section II of this report.

Mississippi River

Deep and Shallow Draft Crossings – The Service's assessment and recommendations for the Channel Improvement Program (CIP) in the Lower Mississippi River (LMR) has been communicated to the Corps in a Biological Opinion dated December 12, 2013 (USFWS 2013). We continue to recommend that dredging activities avoid and/or minimize impacts on gravel bars, tributary mouths, backwater habitats, and affected species life cycle timing. Beneficial placement of dredged material should be utilized where appropriate and authorized. If beneficial placement cannot be utilized, the Service recommends thalwag disposal of dredge material where feasible.

The endangered fat pocketbook mussel (*Potamilus capax*) occurs in the LMR to the north of the Old River and Mississippi River junctions. Research has noted lateral movements by the fat pocketbook mussel are mostly downstream in unimpounded reaches (Peck 2010) therefore, the Service recommends periodic surveys for presence/absence of the species.

The fat pocketbook mussel occurs in backwaters and secondary channels of the Mississippi River as well as at sites of river modifications (i.e., dikes and chevrons). Best management practices developed under the CIP are focused on maintaining and enhancing overall channel habitat complexity through dike design and notching, restoration of secondary channels, and use of value engineering techniques such as hard points and chevrons that provide river training and habitat benefits simultaneously (USFWS 2013). If river training and habitat enhancement techniques (i.e., dike notching, secondary channel restoration, hardpoints, chevrons, etc.) are utilized in the proposed operations and maintenance dredging reaches of the LMR, then the Service recommends surveys for fat pocketbook mussels in proposed or existing construction sites be conducted to evaluate presence/absence of the species. Please refer to information concerning the fat pocketbook mussel in Section II of this report.

However, there are no historical occurrence records of the endangered fat pocketbook mussel in the proposed dredging sites of the LMR and the species does not occur within the active navigation channel. Therefore, in the Service's Biological Opinion (USFWS 2013) we determined that maintenance dredging in the LMR is not likely to jeopardize the continued existence of the species.

The interior least tern is known to occur in the LMR as far south as the Tunica Bend proposed maintenance dredging location. The Service recommends that the Corps determine presence/absence of interior least terns in the vicinities of the Fort Adams, Smithland, and Tunica Bend proposed shallow draft crossing dredging sites prior to O&M activities. Please refer to Section II of this letter for further information and recommendations regarding the interior least tern.

The pallid sturgeon is known to occur in this reach of the Mississippi River. Please refer to the information concerning the pallid sturgeon in Section II of this report.

Southwest Pass and HDDA– The Service's recommendations for beneficial use of the dredged material from Southwest Pass have been relayed to the Corps through several communications, including a letter to the Coastal Management Division of the Louisiana Department of Natural Resources (LDNR) regarding the FY 2009 consistency determination, and to the Corps regarding the FY 2008 consistency determination, dated December 2, 2008, and October 12, 2007, respectively. In these letters, the Corps was urged to reduce or avoid the use of the Hopper Dredge Disposal Area (HDDA), near the head of Pass-a-Loutre and South Pass, to avoid or lessen the impacts to fish and wildlife habitat in Delta National Wildlife Refuge and Pass-a-Loutre WMA. The Service commends the Corps for their habitat creation in the Mississippi River Delta using material excavated from the HDDA; however, we continue to urge the Corps to discontinue use of the HDDA as a disposal site, and instead directly place dredged material at the beneficial use sites identified in the FY 2015 Maintenance Dredging Plans. We also continue to recommend, when practicable, the expanded use of cutterhead dredges which have been used successfully in Southwest Pass to create wetland habitat along the channel.

Due to the high subsidence rates of the Mississippi River Delta (15-35mm/yr) (CPRA 2012), the Service recommends that materials excavated from the HDDA for marsh creation projects utilize containment dikes versus unconfined disposal and achieve target elevations conducive to marsh creation upon material settlement and compaction. This method of marsh creation would enhance consolidation, reduce elevation variability and material loss, increase resiliency, and ensure target elevations are achieved. The Service is ready to help the Corps determine target elevations for marsh creation that would maximize the life and sustainability of the created wetlands and provide the most benefit for our fish and wildlife resources.

Federal agencies proposing a project that includes features on a national wildlife refuge are encouraged to contact the Refuge Manager early in the planning process. The Refuge Manager will work with the project proponent to determine if the proposed project constitutes a "refuge use" subject to a compatibility determination. If the proposed project requires a compatibility determination, a concise description of the project (refuge use) including who, what, where, when, how and why will be needed to prepare the compatibility determination. In order to determine the anticipated impacts of use, the project proponent may be required to provide sufficient data and information sources to document any short-term, long-term, direct, indirect or cumulative impacts on refuge resources. Compatibility determinations will include a public review and comment before issuing a final determination. Points of contacts for the Delta NWR are: Stacy Armitage, Project Leader for the Service's Southeast National Wildlife Refuges and Shelley Stiaes (985) 822-2000, Refuge Manager.

All construction or maintenance activities (e.g., surveys, land clearing, etc.) on Delta NWR will require the Corps of Engineers (Corps) to obtain a Special Use Permit from the Refuge Manager; furthermore, all activities on that NWR must be coordinated with the Refuge Manager. Therefore, we recommend that the Corps request issuance of a Special Use Permit well in advance of conducting any work on the refuge. Please contact Refuge Manager Shelley Stiaes (985) 882-2000 for further information on compatibility of flood control features, and for assistance in obtaining a Special Use Permit. Close coordination by both the Corps and its contractor must be maintained with the Refuge Manager to ensure that construction and maintenance activities are carried out in accordance with provisions of any Special Use Permit issued by the NWR.

The MDBUG has identified the hopper dredge pump out project as a priority project. Through the hopper dredge pump out project an additional hopper dredge would be used that would allow beneficial use of dredged material while maintaining channel dimensions of Southwest Pass. Moreover, material removed from the channel by hopper dredge and placed in a designated beneficial use site would reduce the amount of material placed in the "Above Head of Passes" HDDA or the designated ocean disposal site. The Service looks forward to continued coordination with the Corps and other natural resources agencies regarding this matter.

The piping plover, as well as its designated critical habitat, occur along the Louisiana coast, including this reach of the Mississippi River Delta. Please refer to the information concerning this species, and its designated critical habitat, in Section II of this report.

The red knot is known to occur along the Louisiana coast and has been observed in the Mississippi River Delta [ebird.org 2015]. Although no critical habitat for the red knot has been designated, we encourage you to avoid project activities that would adversely affect its habitat. Please refer to the information concerning this species in Section II of this report.

The pallid sturgeon, manatee, and sea turtles may occur in this reach of the Mississippi River. Please refer to the information concerning these species in Section II of this report.

Mississippi River Outlets at Venice, LA

Baptiste Collette Bar Channel – Dredged material placement in this channel continues to provide nesting habitat for brown pelicans and other colonial nesting birds. On March 18, 2010, the Service provided to the Corps a draft Fish and Wildlife Coordination Act Report (FWCAR) for the "Integrated Feasibility Study and Environmental Assessment: Baptiste Collette Bayou Navigation Channel Deepening Section 203 Study." That channel-deepening project, if authorized, would result in greater amounts of dredged material than is currently produced from routine maintenance dredging, potentially resulting in more marsh and bird island creation opportunities. The Service is currently working with the Corps and other natural resource agencies to develop a long-term plan for beneficially using dredge material on the Baptiste Collette bird islands to provide quality habitat for colonial nesting birds with different nesting habitat requirements. The Service has also provided recommendations for marsh and bird island creation in a January 6, 2011, letter to the Corps. We continue to recommend marsh creation adjacent to existing marsh. Confinement of dredged material by supratidal earthen berms should only be temporary until the material is consolidated; barriers to tidal exchange reduce the functionality of the marsh. The addition of dredged material to bird islands should not be such that it reduces the extent of deep open water between them (2,000 feet distance recommended). Until a long-term comprehensive plan is developed, we recommend that information in that letter and Sections II and III of this report be followed prior to project initiation.

The Atlantic sturgeon (*Acipenser oxyrhynchus desotoi*), federally listed as a threatened species, is an anadromous fish that is known to occur in the riverine, estuarine, and associated marine habitats of the Mississippi River Delta. Please refer to Section II of this report for information and recommendations regarding the Atlantic sturgeon.

The piping plover and red knot occur along the Louisiana coast, including most of the Mississippi River Delta [ebird.org 2015]. Please refer to Section II of this report for information and recommendations regarding these species.

The pallid sturgeon, manatee, and sea turtles may occur in this reach of the Mississippi River. Please refer to the information concerning these species in Section II of this report.

Old River

Old River Lock Forebay and Tailbay- *See comments under Atchafalaya Basin, Three Rivers above.*

SECTION II

Pursuant to the Endangered Species Act of 1973, Table 1 details the federally-listed threatened, endangered, and candidate species (and their designated critical habitats) that could potentially be affected by the Corps' proposed FY 2016 maintenance dredging projects. Following that table are brief descriptions which include basic information regarding those threatened and endangered species that may occur in the listed project areas. Please note that those project areas which are not utilized by federally-listed species are not included in the table. Similarly, federally-listed species that may occur within the project area, but are not under the Service's jurisdiction are not included in the table. As in the past, please continue to advise us of your project-specific threatened and endangered species, as well as critical habitat, determinations in writing.

Table 1: Federally Listed Endangered and Threatened Species, Candidate Species, and Designated Critical Habitat that May Occur in the Corps of Engineers FY 2017 Maintenance Dredging/Disposal Areas.

Project	**Species**
Atchafalaya River Three Rivers	pallid sturgeon and interior least tern
Berwick Bay Harbor & Tidewater PT	pallid sturgeon

Bay Channel	piping plover, piping plover critical habitat, red knot, manatee, pallid sturgeon, and sea turtles
Bar Channel	piping plover, piping plover critical habitat, red knot, manatee, and sea turtles
Bayou Lafourche **Port Fourchon** Jetties & Bar Channel	piping plover, piping plover critical habitat, red knot, manatee, and sea turtles
Calcasieu River Mile 17 to 29 and Devil's Elbow	manatee and sea turtles
Bar Channel	piping plover, piping plover critical habitat, red knot, manatee, and sea turtles
GIWW Algiers Lock Forebay	pallid sturgeon and manatee
Harvey Lock Forebay	
INHC Lock Forebay	
Port Allen Lock Forebay	
Mile 99	
Port Allen to Morgan City Alternate Route	
Wax Lake Crossover	
Houma Navigational Channel Terrebonne Bay	manatee and sea turtles

Mississippi River Southwest Pass and HDDA	piping plover, piping plover critical habitat, red knot, manatee, pallid sturgeon, and sea turtles
Baptiste Collette	manatee, piping plover, red knot, pallid sturgeon, Atlantic sturgeon, and sea turtles
New Orleans Harbor (NOH)	pallid sturgeon and manatee
Shallow Draft Crossing	pallid sturgeon, fat pocketbook mussel, and interior least tern
Baton Rouge Harbor (Devil's Swamp)	pallid sturgeon
Deep Draft Crossing	
Old River Lock Forebay and Tailbay	pallid sturgeon and interior least tern

The endangered West Indian manatee (*Trichechus manatus*) is known to regularly occur in Lakes Pontchartrain and Maurepas and their associated coastal waters and streams. It also can be found less regularly in other Louisiana coastal areas, most likely while the average water temperature is warm. Based on data maintained by the Louisiana Natural Heritage Program (LNHP), over 80 percent of reported manatee sightings (1999-2011) in Louisiana have occurred from the months of June through December. Manatee occurrences in Louisiana appear to be increasing and they have been regularly reported in the Amite, Blind, Tchefuncte, and Tickfaw Rivers, and in canals within the adjacent coastal marshes of southeastern Louisiana. Manatees may also infrequently be observed in the Mississippi River and coastal areas of southwestern Louisiana. Cold weather and outbreaks of red tide may adversely affect these animals. However, human activity is the primary cause for declines in species number due to collisions with boats and barges, entrapment in flood control structures, poaching, habitat loss, and pollution.

During in-water work in areas that potentially support manatees all personnel associated with the project should be instructed about the potential presence of manatees, manatee speed zones, and the need to avoid collisions with and injury to manatees. All personnel should be advised that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973. Additionally, personnel should be instructed not to attempt to feed or otherwise interact with the animal, although passively taking pictures or video would be acceptable.

- All on-site personnel are responsible for observing water-related activities for the presence of manatee(s). We recommend the following to minimize potential impacts to manatees in areas of their potential presence:

- All work, equipment, and vessel operation should cease if a manatee is spotted within a 50-foot radius (buffer zone) of the active work area. Once the manatee has left the buffer zone on its own accord (manatees must not be herded or harassed into leaving), or after 30 minutes have passed without additional sightings of manatee(s) in the buffer zone, in-water work can resume under careful observation for manatee(s).

- If a manatee(s) is sighted in or near the project area, all vessels associated with the project should operate at "no wake/idle" speeds within the construction area and at all times while in waters where the draft of the vessel provides less than a four-foot clearance from the bottom. Vessels should follow routes of deep water whenever possible.

- If used, siltation or turbidity barriers should be properly secured, made of material in which manatees cannot become entangled, and be monitored to avoid manatee entrapment or impeding their movement.

- Temporary signs concerning manatees should be posted prior to and during all in-water project activities and removed upon completion. Each vessel involved in construction activities should display at the vessel control station or in a prominent location, visible to all employees operating the vessel, a temporary sign at least 8½ " X 11" reading language similar to the following: "CAUTION BOATERS: MANATEE AREA/ IDLE SPEED IS REQUIRED IN CONSRUCTION AREA AND WHERE THERE IS LESS THAN FOUR FOOT BOTTOM CLEARANCE WHEN MANATEE IS PRESENT". A second temporary sign measuring 8½ " X 11" should be posted at a location prominently visible to all personnel engaged in water-related activities and should read language similar to the following: "CAUTION: MANATEE AREA/ EQUIPMENT MUST BE SHUTDOWN IMMEDIATELY IF A MANATEE COMES WITHIN 50 FEET OF OPERATION".

The interior least tern (*Sterna antillarum*) is an endangered migratory shorebird that breeds, nests, and rears its young on sparsely or non-vegetated portions of sand or gravel bars located mid-stream or along the shoreline in the Mississippi, Missouri, Arkansas, Ohio, Red and Rio Grande river systems and the rivers of central Texas. On the lower Mississippi River, the listed interior least tern population is concentrated within approximately 500 river miles between its confluence with the Ohio River at Cairo, Illinois, and Vicksburg, Mississippi. In Louisiana, the interior least tern historically occurred along the Mississippi River north of Baton Rouge, but few birds have been observed in surveys conducted over the last few years. Interior least tern nesting colonies are known to occur along the Red River in northwestern and Central Louisiana. Major threats to this species include habitat loss, human disturbance at nesting colonies, and altered water flow patterns.

The absence of nesting interior least terns should be confirmed before initiating any work in or adjacent to the Red or Mississippi Rivers during the breeding season (May 15 to August 31, depending upon river stages). In order to minimize impacts to nesting terns, the Service recommends that no activity should be conducted within 650 feet of a nesting colony (Martin and Lester 1990) and no disturbance to suitable nesting habitat (including changes in river morphology) should result from implementation of the proposed project. If nesting least terns are observed in proximity to the project area during the breeding season, all work should cease and the Service should be contacted immediately for further consultation.

The piping plover (*Charadrius melodus*), federally listed as a threatened species, is a small (7 inches long), pale, sand-colored shorebird that winters in coastal Louisiana and may be present for 8 to 10 months annually. Piping plovers arrive from their northern breeding grounds as early as late July and remain until late March or April. They feed on polychaete marine worms, various crustaceans, insects and their larvae, and bivalve mollusks that they peck from the top of or just beneath the sand. Piping plovers forage on intertidal beaches, mudflats, sand flats, algal flats, and wash-over passes with no or very sparse emergent vegetation. They roost in unvegetated or sparsely vegetated areas, which may have debris, detritus, or micro-topographic relief offering refuge to plovers from high winds and cold weather. They also forage and roost in wrack (i.e., seaweed or other marine vegetation) deposited on beaches. In most areas, wintering piping plovers are dependent on a mosaic of sites distributed throughout the landscape, because the suitability of a particular site for foraging or roosting is dependent on local weather and tidal conditions. Plovers move among sites as environmental conditions change, and studies have indicated that they generally remain within a 2-mile area. Major threats to this species include the loss and degradation of habitat due to development, disturbance by humans and pets, and predation.

On July 10, 2001, the Service designated critical habitat for wintering piping plovers (Federal Register Volume 66, No. 132); a map of the seven critical habitat units in Louisiana can be found at http://criticalhabitat.fws.gov/crithab. Their designated critical habitat identifies specific areas that are essential to the conservation of the species. The primary constituent elements for piping plover wintering habitat are those habitat components that support foraging, roosting, and sheltering and the physical features necessary for maintaining the natural processes that support those habitat components. Constituent elements are found in geologically dynamic coastal areas that contain intertidal beaches and flats (between annual low tide and annual high tide), and associated dune systems and flats above annual high tide. Important components (or primary constituent elements) of intertidal flats include sand and/or mud flats with no or very sparse emergent vegetation. Adjacent unvegetated or sparsely vegetated sand, mud, or algal flats above high tide are also important, especially for roosting plovers

The red knot (*Calidris canutus rufa*), federally listed as a threatened species, is a medium-sized shorebird about 9 to 11 inches (23 to 28 centimeters) in length with a proportionately small head, small eyes, short neck, and short legs. The black bill tapers steadily from a relatively thick base to a relatively fine tip; bill length is not much longer than head length. Legs are typically dark gray to black, but sometimes greenish in juveniles or older birds in non-breeding plumage. Non-breeding plumage is dusky gray above and whitish below. The red knot breeds in the central Canadian arctic but is found in Louisiana during spring and fall migrations and the winter months (generally September through March).

During migration and on their wintering grounds, red knots forage along sandy beaches, tidal mudflats, salt marshes, and peat banks. Observations along the Texas coast indicate that red knots forage on beaches, oyster reefs, and exposed bay bottoms, and they roost on high sand flats, reefs, and other sites protected from high tides. In wintering and migration habitats, red knots commonly forage on bivalves, gastropods, and crustaceans. Coquina clams (*Donax variabilis*), a frequent and often important food resource for red knots, are common along many gulf beaches. Major threats to this species along the Gulf of Mexico include the loss and degradation of habitat due to erosion, shoreline stabilization, and development; disturbance by humans and pets; and predation.

There are five species of federally listed threatened or endangered sea turtles that forage in the near shore waters, bays, and estuaries of Louisiana. The National Marine Fisheries Service (NMFS) is responsible for aquatic marine threatened or endangered species that occur in the marine environment. Please contact David Bernhart (727/824-5312) at the NMFS Regional Office in St. Petersburg, Florida, for information concerning those species in the marine environment.

When sea turtles leave the marine environment and come onshore to nest, the Service is responsible for those species. Two species, the threatened loggerhead sea turtle (*Caretta caretta*) and the endangered Kemp's Ridley *(Lepidochelys kempii*) could potentially nest in Louisiana during the summer months (i.e., May through November). Historical records indicate that loggerheads nested on the Chandeleur Islands and recent data indicate rare nesting attempts along Fourchon Beach in Lafourche Parish. The Kemp's ridley is known to nest in coastal Texas and Alabama; thus, nesting attempts could possibly occur in Louisiana as that species achieves recovery. The primary threats to nesting beaches include coastal development and construction, placement of erosion control structures and other barriers to nesting, beachfront lighting, vehicular and pedestrian traffic, sand extraction, beach erosion, beach nourishment, beach pollution, removal of native vegetation, and planting of non-native vegetation (USFWS 2007). We recommend that you contact this office if your activities would occur on coastal beaches during the summer months (i.e., May through November).

Loggerhead sea turtles (*Caretta caretta*) nest within the coastal United States from Virginia to Louisiana, with major nesting concentrations occurring on the coastal islands of North Carolina, South Carolina, and Georgia, and on the Atlantic and Gulf coasts of Florida. Historically in Louisiana, loggerheads have been known to nest on the Chandeleur Islands and recent data indicate rare nesting attempts along Fourchon Beach in Lafourche Parish. Nesting and hatching dates for the loggerhead in the northern Gulf of Mexico are from May 1 through November 30. Threats to this species include destruction of nesting habitat and drowning in fishing nets.

The Kemp's Ridley (*Lepidochelys kempii*) sea turtle has a restricted distribution. Nesting is essentially limited to the beaches of the western Gulf of Mexico, primarily in Mexico. Kemp's ridleys are coastal inhabitants throughout the Gulf of Mexico and the northwestern Atlantic Ocean, as far north as the Grand Banks and Nova Scotia, Canada. Juveniles and sub-adults occupy shallow, coastal regions and are commonly associated with crab-laden, sandy or muddy water bottoms. They are generally found in near shore areas of the Louisiana coast from May through October. Adults may be abundant near the mouth of the Mississippi River in the spring and summer. Adults and juveniles move offshore to deeper, warmer water during the winter. Between the East Gulf Coast of Texas and the Mississippi River Delta, Kemp's ridleys use near shore waters, ocean sides of jetties, small boat passageways through jetties, and dredged and nondredged channels. They have been observed within both Sabine and Calcasieu Lakes. Major threats to this species include over-exploitation on their nesting beaches, drowning in fishing nets, and pollution.

The pallid sturgeon (*Scaphirhynchus albus*) is an endangered, bottom-oriented, fish that inhabits large river systems from Montana to Louisiana. Within this range, pallid sturgeon tend to select main channel habitats in the Mississippi River and main channel areas with islands or sand bars in the upper Missouri River. In Louisiana it occurs in the Atchafalaya and Mississippi Rivers, and below Lock and Dam Number 3 on the Red River (with known concentrations in the vicinity of the Old River Control Structure Complex). The pallid sturgeon is adapted to large, free-flowing, turbid rivers with a diverse assemblage of physical characteristics that are in a constant state of change. Many life history details and subsequent habitat requirements of this fish are not known. However, the pallid sturgeon is believed to utilize Louisiana riverine habitat during reproductive stages of its life cycle. Habitat loss through river channelization and dams has adversely affected this species throughout its range.

The density of pallid sturgeon in the Lower Mississippi River Delta is thought to be extremely low; however, there have been limited sampling efforts in that area. The nearest recorded capture of a pallid sturgeon was at River Mile 99 to River Mile 80. The frequency of pallid sturgeon occurrence in the river (based on capture data) decreases from New Orleans south towards the mouth of the river. As river morphology changes moving south, habitat suitability for this species is generally thought to also gradually decrease towards the river mouth. Furthermore, the pallid sturgeon is believed to be a strictly freshwater fish, and is probably completely absent from the Lower Mississippi River Delta during low river flows when salt water from the Gulf of Mexico intrudes upriver along the bottom of the channel (salt water wedge). Dredging projects should be scheduled during those events if possible. Similarly, pallid sturgeon are also thought to occur infrequently in the Atchafalaya River Delta.

The Atlantic sturgeon (*Acipenser oxyrhynchus desotoi*); formerly the Gulf sturgeon, federally listed as a threatened species, is an anadromous fish that occurs in many rivers, streams, and estuarine and marine waters along the northern Gulf coast between the Mississippi River and the Suwannee River, Florida. In Louisiana, Atlantic sturgeon have been reported at Rigolets Pass, rivers and lakes of the Lake Pontchartrain Basin, the Pearl River System, and adjacent estuarine and marine areas. Spawning occurs in coastal rivers between late winter and early spring (i.e., March to May). Adults and sub-adults may be found in those rivers and streams until November, and in estuarine or marine waters during the remainder of the year. Atlantic sturgeon less than two years old appear to remain in riverine habitats and estuarine areas throughout the year, rather than migrate to marine waters. Habitat alterations such as those caused by water control structures and navigation projects that limit and prevent spawning, poor water quality, and over-fishing have negatively affected this species. In riverine waters, the Service is responsible for all consultations regarding Atlantic sturgeon and critical habitat, while in marine waters the NMFS is responsible for consultation.

Entrainment issues associated with dredging operations in the Mississippi and Atchafalaya Rivers and through diversion structures off the Mississippi River are two potential effects that should be addressed in future planning studies and/or in analyzing current project effects. We recommend the following to minimize potential impacts to Atlantic and pallid sturgeon associated with dredging to ensure the protection of the sturgeon: (1) the cutterhead should remain completely buried in the bottom material during dredging operations. If pumping water through the cutterhead is necessary to dislodge material or to clean the pumps or cutterhead, etc., the pumping rate should be reduced to the lowest rate possible until the cutterhead is at mid-depth, where the pumping rate can then be increase; (2) during dredging, the pumping rates should be reduced to the slowest speed feasible while the cutterhead is descending to the channel bottom.

Federally listed as an endangered species, the fat pocketbook pearly mussel (*Potamilus capax*) inhabits the Mississippi River in Concordia, East Carroll, Madison, and Tensas Parishes, Louisiana. The fat pocketbook mussel has a smooth, rayless, shiny yellow to brown shell measuring up to 5 inches long. Although little is known about the ecology of this species, the fat pocketbook is a large river species and suitable habitat is most likely a mixture of stable sand, silt, and clay substrates with flowing water (e.g., old dike fields, secondary channels). The life history of this species is believed to be similar to that of other members of the Unionidae family, and the host fish is likely to be one or more species of large river fish. The greatest threats to this species include habitat alteration caused by activities related to navigation (e.g., channel maintenance dredging) and flood control, and reduction in water quality due to siltation.

SECTION III

Under the authority of the Endangered Species Act of 1973, as amended, the Service removed the brown pelican (*Pelecanus occidentalis*) from the Federal List of Endangered and Threatened Wildlife due to recovery. The final rule was published in the Federal Register on November 17, 2009, and was effective on December 17, 2009. This action is based on a review of the best available scientific and commercial data, which indicate that the species is no longer in danger of extinction, or likely to become so within the foreseeable future. The brown pelican will remain protected under the provisions of the MBTA.

Louisiana black bears are primarily associated with forested wetlands, however, they utilize a variety of other habitat types, including scrub-shrub, marsh, spoil banks, and upland forests. They normally den from December through April and preferred den sites include large, hollow trees (36 inches or more in diameter at breast height) with sufficiently sized openings that allow access to interior cavities. Due to recovery, the Louisiana black bear was officially removed from the List of Endangered and Threatened Species on March 11, 2016 (effective April 11, 2016); critical habitat designation for this subspecies has also been withdrawn. Because the Louisiana black bear is no longer protected under the Endangered Species Act (ESA), consultation with the Service is not required for this subspecies. The Louisiana black bear remains protected, however, under Louisiana state law, and the Louisiana Department of Wildlife and Fisheries (LDWF) will continue to actively manage this subspecies. The Service and LDWF have developed a plan to extensively monitor the status of the Louisiana black bear for 7 years following its delisting (until year 2022). That monitoring will be undertaken to detect any potential population decreases or threat increases that may warrant the implementation of measures to ensure that the Louisiana black bear remains secure from risk of extinction.

Although ESA consultation is no longer required regarding project impacts on this subspecies, in the interest of conserving the Louisiana black bear, projects proposed in areas of the state that are inhabited by bears should be designed to avoid adversely affecting this subspecies or its habitat. Conservation measures for the Louisiana black bear include reducing the footprint of proposed actions to the maximum extent feasible, avoiding impacts to trees that are 36 inches or more in diameter at breast height, implementing programs to prevent the habituation of bears to human-associated food sources (e.g., use of "bear-proof" waste disposal containers or daily removal of food and garbage), and avoiding vegetative clearing during the black bear denning season (i.e., December 1 through April 30). For additional information regarding the Louisiana black bear and conservation measures that may be required by the LDWF, please contact Maria Davidson (Large Carnivore Program Manager) at (337) 948-0255.

The Service strongly urges employees and contractors to avoid bears, if at all possible. Bears will typically avoid humans; however, with this type of activity and its encroachment into breeding habitat, bear sightings may occur. In order to prevent sightings from becoming confrontations, workers should be cautioned to not leave food or garbage in the field, as bears can become attracted and accustomed to human food quite easily. Once bears become habituated to human food sources, they often learn to associate areas of higher human density (i.e., residential, commercial, and industrial areas) with a readily available food source. As a result, human-bear conflicts occur, and it becomes difficult, if not impossible, to deter nuisance behavior even through forced relocation of the offending animal. In such cases, the only alternatives are to place the animal in permanent captivity or destroy it.

The bald eagle (*Haliaeetus leucocephalus*) was officially removed from the List of Endangered and Threatened Species as of August 8, 2007. However, the bald eagle remains protected under the MBTA and the BGEPA. Comprehensive bald eagle survey data have not been collected by the Louisiana Department of Wildlife and Fisheries (LDWF) since 2008, and new active, inactive, or alternate nests may have been constructed within the proposed project area since that time. Therefore, the Service recommends the Corps determine bald eagle nest status in the vicinity of proposed maintenance dredging projects where nesting is known to occur prior to dredging activities.

Bald eagles typically nest in large trees located near coastlines, rivers, or lakes that support adequate foraging from October through mid-May. In southeastern Louisiana parishes, eagles typically nest in mature trees (e.g., bald cypress, sycamore, willow, etc.) near fresh to intermediate marshes or open water. Major threats to this species include habitat alteration, human disturbance, and environmental contaminants. Furthermore, bald eagles are vulnerable to disturbance during courtship, nest building, egg laying, incubation, and brooding. Disturbance during this critical period may lead to nest abandonment, cracked and chilled eggs, and exposure of small young to the elements. Human activity near a nest late in the nesting cycle may also cause flightless birds to jump from the nest tree, thus reducing their chance of survival.

Table 2: Corps of Engineers' FY 2017 Maintenance Dredging Projects that would occur in the vicinity of known Bald Eagle Nests.

Project	Reach
Atchafalaya Basin	Berwick Bay Harbor
GIWW	Alternate Route Below Bayou Sorrel Lock Mile 99 Wax Lake Crossover

The Service developed the National Bald Eagle Management (NBEM) Guidelines to provide landowners, land managers, and others with information and recommendations to minimize potential project impacts to bald eagles, particularly where such impacts may constitute "disturbance," which is prohibited by the BGEPA. A copy of the NBEM Guidelines is available at: http://www.fws.gov/southeast/es/baldeagle/NationalBaldEagleManagementGuidelines.pdf. Those guidelines recommend: (1) maintaining a specified distance between the activity and the nest (buffer area); (2) maintaining natural areas (preferably forested) between the activity and nest trees (landscape buffers); and (3) avoiding certain activities during the breeding season. On-site personnel should be informed of the possible presence of nesting bald eagles within the project boundary, and should identify, avoid, and immediately report any such nests to this office. If a bald eagle nest is discovered within 1,500 feet of the proposed project area, then an evaluation must be performed to determine whether the project is likely to disturb nesting bald eagles. That evaluation may be conducted on-line at: http://www.fws.gov/southeast/es/baldeagle. Following completion of the evaluation, that website will provide a determination of whether additional consultation is necessary.

On September 11, 2009, the Service published two federal regulations establishing the authority to issue permits for non-purposeful bald eagle take (typically disturbance) and eagle nest take when recommendations of the NBEM Guidelines cannot be achieved. Permits may be issued for nest take only under the following circumstances where: 1) necessary to alleviate a safety emergency to people or eagles, 2) necessary to ensure public health and safety, 3) the nest prevents the use of a pre-existing human-engineered structure, or 4) the activity or mitigation for the activity will provide a net benefit to eagles. Except in emergencies, only inactive nests may be permitted to be taken. The Division of Migratory Birds for the Southeast Region of the Service (phone: 404/679-7051, e-mail: SEmigratorybirds@fws.gov) has the lead role in conducting such consultations. Should you need further assistance interpreting the guidelines or performing an on-line project evaluation, please contact this office.

In accordance with the Migratory Bird Treaty Act of 1918 (as amended), please be advised that some of the proposed dredged material disposal projects (as noted in Section I) are located in habitats which are commonly inhabited by colonial nesting wading birds and seabirds. Colonies may be present that are not currently listed in the database maintained by the LDWF. That database is updated primarily by monitoring the colony sites that were previously surveyed during the 1980s. Until a new, comprehensive coast-wide survey is conducted to determine the location of newly-established nesting colonies, we recommend that a qualified biologist inspect the proposed work site prior to dredging activities for the presence of undocumented nesting colonies during the nesting season. To minimize disturbance to colonial nesting birds, the following restrictions on activity should be observed if such colonies are found:

1. For colonies containing nesting brown pelicans, all activity occurring within 2,000 feet of a rookery should be restricted to the non-nesting period (i.e., September 15 through March 31). Nesting periods vary considerably among Louisiana's brown pelican

colonies, however, so it is possible that this activity window could be altered based upon the dynamics of the individual colony. The LDWF's Fur and Refuge Division should be contacted to obtain the most current information about the nesting chronology of individual brown pelican colonies. Brown pelicans are known to nest on barrier islands and other coastal islands in St. Bernard, Plaquemines, Jefferson, Lafourche, and Terrebonne Parishes, and on Rabbit Island in lower Calcasieu Lake, in Cameron Parish.

2 For colonies containing nesting wading birds (i.e., herons, egrets, night-herons, ibis, and roseate spoonbills), anhingas, and/or cormorants, all activity occurring within 1,000 feet of a rookery should be restricted to the non-nesting period (i.e., September 1 through February 15, exact dates may vary within this window depending on species present).

3 For colonies containing nesting gulls, terns, and/or black skimmers, all activity occurring within 650 feet of a rookery should be restricted to the non-nesting period (i.e., September 16 through April 1, exact dates may vary within this window depending on species present).

All contracts should also contain a statement prohibiting work within the appropriate species-specific distance (referenced above) of any nesting colonies unless project-specific discussions with the Service indicate buffer zones may be reduced on a species-specific basis. We look forward to assisting your staff in identifying nesting colonies via pre-construction site inspections where needed.

We appreciate this opportunity to comment on the Corps' proposed FY 2016 maintenance dredging program. Should you or your staff have any questions about our recommendations, please contact Mr. John Savell (337/291-3144) of this office.

Sincerely,

Darryl Clark
Acting Field Supervisor
Louisiana Ecological Services Office

cc: Southwest LA Refuges, FWS, Bell City, LA
Southeast LA Refuges, FWS, Lacombe, LA
NMFS, Baton Rouge, LA
EPA, Dallas, TX
LA Dept. of Wildlife and Fisheries, Baton Rouge, LA
LA Dept. of Wildlife and Fisheries, New Iberia, LA
LA Dept. of Natural Resources (CMD), Baton Rouge, LA
CPRA, Baton Rouge, LA

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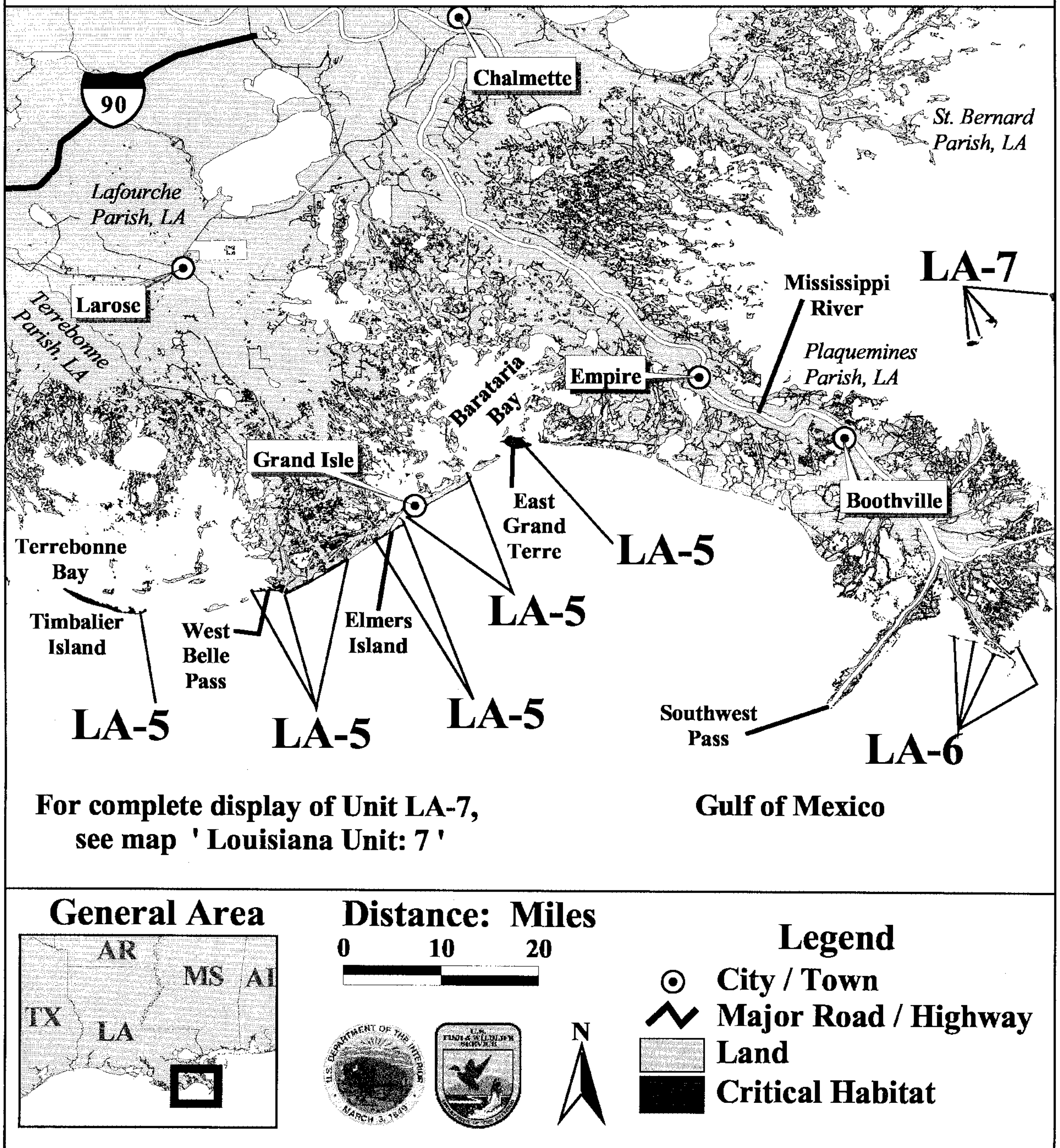
General locations of the designated critical habitat for the Wintering Piping Plover.



Use Constraints: This map is intended to be used as a guide to identify the general areas where Wintering Piping Plover critical habitat has been designated. Included within the designation of critical habitat are all land areas to the mean lower low water. Refer to the narrative unit descriptions as the precise legal definition of critical habitat.

Louisiana Units: 5 and 6

Appendix A-16. Piping Plover critical habitat Unit 6 is 259 acres of unnamed spoil.

Delta and Breton National Wildlife Refuges

Comprehensive Conservation Plan

U.S. Department of the Interior
Fish and Wildlife Service
Southeast Region

November 2008

Submitted by: Signed *Jack Bohannan, Refuge Manager* *Delta and Breton NWR's*		*Date:* 9/4/2008
Concur: Signed *Kennith Litzenberger, Project Leader* *Southeast Louisiana Refuge Complex*		*Date:* 9/4/2008
Concur: Signed Acting supv *Ricky Ingram, Refuge Supervisor* *Southeast Region*		*Date:* 9/19/08
Concur: Signed *Jon Andrew, Regional Chief* *Southeast Region*		*Date:* 9/19/08
Approved by: Signed *Sam Hamilton, Regional Director* *Southeast Region*		*Date:* 9/19/08

Kenneth Litzenberger
Refuge Manager

Delta and Breton National Wildlife Refuges
61389 Highway 434
Lacombe, LA 70445

Phone: 985-882-2000

U.S. Fish & Wildlife Service
1 800/344 WILD
http://www.fws.gov

November 2008

Delta and Breton National Wildlife Refuges Comprehensive Conservation Plan

U.S. Fish & Wildlife Service

Delta and Breton National Wildlife Refuges

Comprehensive Conservation Plan


USFWS Photo

Comprehensive Conservation Plans provide long-term guidance for management decisions; set forth goals, objectives, and strategies needed to accomplish refuge purposes; and identify the Fish and Wildlife Service's best estimate of future needs. These plans detail program planning levels that are sometimes substantially above current budget allocations and, as such, are primarily for Service strategic planning and program prioritization purposes. The plans do not constitute a commitment for staffing increases, operational and maintenance increases, or funding for future land acquisition.

Delta and Breton National Wildlife Refuges

Comprehensive Conservation Plan

U.S. Department of the Interior
Fish and Wildlife Service
Southeast Region

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Submitted by: ______________________ *Date:* 9/4/2008
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Southeast Region

Concur: ______________________ *Date:* 9/19/08
Jon Andrew, Regional Chief
Southeast Region

Approved by: ______________________ *Date:* 9/19/08
Sam Hamilton, Regional Director
Southeast Region

COMPREHENSIVE CONSERVATION PLAN

DELTA AND BRETON NATIONAL WILDLIFE REFUGES

ST. BERNARD AND PLAQUEMINES PARISHES, LOUISIANA

U.S. Department of the Interior
Fish and Wildlife Service

Southeast Region
Atlanta, Georgia

November 2008

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I. Background

INTRODUCTION

This Comprehensive Conservation Plan (CCP) for Delta and Breton National Wildlife Refuges (NWRs) was prepared to guide management actions and direction for the refuges. Fish and wildlife conservation will receive first priority in refuge management; wildlife-dependent recreation will be allowed and encouraged as long as it is compatible with, and does not detract from, the mission of the refuges or the purposes for which they were established.

A planning team developed a range of alternatives that best met the goals and objectives of the refuges and that could be implemented within the 15-year planning period. The draft of this CCP was made available to state and federal government agencies, conservation partners, and the general public for review and comment. The comments from each entity were considered in the development of this CCP, describing the Fish and Wildlife Service's (Service) preferred plan.

PURPOSE AND NEED FOR THE PLAN

The purpose of this CCP is to identify the role that Delta and Breton NWRs will play in support of the mission of the National Wildlife Refuge System (Refuge System), and to provide long-term guidance to the refuges' management programs and activities for the next 15 years.

The CCP will:

- provide a clear statement of the desired future conditions when refuge purposes and goals are accomplished;
- provide refuge neighbors, visitors, and government officials with an understanding of Service management actions on and around the refuges;
- ensure that Service management actions, including land protection and recreation/education programs, are consistent with the mandates of the Refuge System; and
- provide a basis for the development of budget requests for operations, maintenance, and capital improvement needs.

FISH AND WILDLIFE SERVICE

The Service traces its roots to 1871 and the establishment of the Commission of Fisheries involved with research and fish culture. The once independent Commission was renamed the Bureau of Fisheries and placed in the Department of Commerce and Labor in 1903.

The Service also traces its roots to 1886 and the establishment of a Division of Economic Ornithology and Mammalogy in the Department of Agriculture. Research on the relationship of birds and animals to agriculture shifted to delineation of the range of plants and animals so the name was changed to the Division of the Biological Survey in 1896.

The Department of Commerce, Bureau of Fisheries was combined with the Department of Agriculture, Bureau of Biological Survey on June 30, 1940 and transferred to the Department of the Interior as the Fish and Wildlife Service. The name was changed to the Bureau of Sport Fisheries and Wildlife in 1956, and finally to the U.S. Fish and Wildlife Service in 1974.

The Service is responsible for conserving, enhancing, and protecting fish and wildlife and their habitats for the continuing benefit of the American people through federal programs relating to wild birds, endangered species, certain marine mammals, inland sport fisheries, and specific fishery and wildlife research activities (142 DM 1.1).

As part of its mission, the Service manages more than 540 national wildlife refuges, covering over 95 million acres. These areas comprise the National Wildlife Refuge System, the world's largest collection of lands set aside specifically for fish and wildlife. The majority of these lands, 77 million acres, is in Alaska. The remaining acres are spread across the other 49 states and several U.S. territories. In addition to refuges, the Service manages thousands of small wetlands, national fish hatcheries, 64 fishery resource offices, and 78 ecological services field stations. The Service enforces federal wildlife laws, administers the Endangered Species Act, manages migratory bird populations, restores nationally significant fisheries, conserves and restores wildlife habitat, and helps foreign governments with their conservation efforts. It also oversees the Federal Aid program that distributes hundreds of millions of dollars in excise taxes on fishing and hunting equipment to state fish and wildlife agencies.

NATIONAL WILDLIFE REFUGE SYSTEM

The mission of the Refuge System, as defined by the National Wildlife Refuge System Improvement Act of 1997 is:

> "...to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans."

The National Wildlife Refuge System Improvement Act of 1997 (Improvement Act) established, for the first time, a clear legislative mission of wildlife conservation for the Refuge System. Actions were initiated in 1997 to comply with the direction of this new legislation, including an effort to complete comprehensive conservation plans for all refuges. These plans, which are completed with full public involvement, help guide the future management of refuges by establishing natural resources and recreation/education programs. Consistent with the Improvement Act, approved plans will serve as the guidelines for refuge management for the next 15 years. The Improvement Act states that each refuge shall be managed to:

- Fulfill the mission of the Refuge System;
- Fulfill the individual purposes of each refuge;
- Consider the needs of wildlife first;
- Fulfill requirements of comprehensive conservation plans that are prepared for each unit of the Refuge System;
- Maintain the biological integrity, diversity, and environmental health of the Refuge System; and

- Recognize that wildlife-dependent recreation activities including hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation are legitimate and priority public uses; and allow refuge managers authority to determine compatible public uses.

The following are just a few examples of your national network of conservation lands. Breton National Wildlife Refuge, the second oldest refuge, was established in 1904 for the protection of colonial nesting birds in Louisiana, such as sandwich and royal terns, and the brown pelican. Western refuges were established for American bison (1906), elk (1912), prong-horned antelope (1931), and desert bighorn sheep (1936) after over-hunting, competition with cattle, and natural disasters decimated once-abundant herds. The drought conditions of the 1930s Dust Bowl severely depleted breeding populations of ducks and geese. Refuges established during the Great Depression focused on waterfowl production areas (i.e., protection of prairie wetlands in America's heartland). The emphasis on waterfowl continues today but also includes protection of wintering habitat in response to a dramatic loss of bottomland hardwoods. By 1973, the Service began to focus on establishing refuges for endangered species.

Each year approximately 40 million visitors enjoy wildlife refuges, most to observe wildlife in their natural habitats, and that number continues to grow. As the number of visitors grows, there are significant economic benefits to local communities. In 2001, 82 million people, 16 years and older, either fished, hunted, or observed wildlife, generating $108 billion. In a study completed in 2002 on 15 refuges, visitation had grown 36 percent in 7 years. At the same time, the number of jobs generated in surrounding communities grew to 120 per refuge, up from 87 jobs in 1995, pouring more than $2.2 million into local economies. The 15 refuges in the study were Chincoteague (Virginia); National Elk (Wyoming); Crab Orchard (Illinois); Eufaula (Alabama); Charles M. Russell (Montana); Umatilla (Oregon); Quivira (Kansas); Mattamuskeet (North Carolina); Upper Souris (North Dakota); San Francisco Bay (California); Laguna Atacosa (Texas); Horicon (Wisconsin); Las Vegas (Nevada); Tule Lake (California); and Tensas River (Louisiana) -- the same refuges identified for the 1995 study. Other findings also validate the belief that communities near refuges benefit economically. Expenditures on food, lodging, and transportation grew to $6.8 million per refuge, up 31 percent from $5.2 million in 1995. For each federal dollar spent on the Refuge System, surrounding communities benefited with $4.43 in recreation expenditures and $1.42 in job-related income (Caudill and Laughland, unpubl. data).

Volunteers continue to be a major contributor to the success of the Refuge System. In 2005, 37,996 volunteers contributed more than 1.5 million hours on refuges nationwide, a service valued at more than $26 million.

The wildlife and habitat vision for national wildlife refuges stresses that wildlife comes first; that ecosystems, biodiversity, and wilderness are vital concepts in refuge management; that refuges must be healthy and growth must be strategic; and that the Refuge System serve as a model for habitat management with broad participation from others.

The Improvement Act stipulates that comprehensive conservation plans be prepared in consultation with adjoining federal, state, and private landowners, and that the Service develop and implement a process to ensure an opportunity for active public involvement in the preparation and revision (every 15 years) of the plans.

All lands of the Refuge System will be managed in accordance with an approved CCP that will guide management decisions and set forth strategies for achieving refuge unit purposes. The CCP will be consistent with sound resource management principles, practices, and legal mandates, including Service compatibility standards, policies, guidelines, and planning documents (602 FW 1.1).

LEGAL AND POLICY CONTEXT

Legal Mandates, Administrative and Policy Guidelines, and Other Special Considerations

Administration of national wildlife refuges is guided by the mission and goals of the Refuge System, congressional legislation, presidential executive orders, and international treaties. Policies for management options of refuges are further refined by administrative guidelines established by the Secretary of the Interior and by policy guidelines established by the Director of the Fish and Wildlife Service. Select legal summaries of treaties and laws relevant to administration of the Refuge System and management of the Delta and Breton NWRs are provided in Appendix C.

Treaties, laws, administrative guidelines, and policy guidelines assist the refuge manager in making decisions pertaining to soil, water, air, flora, fauna, and other natural resources; historical and cultural resources; research and recreation on refuge lands; and provide a framework for cooperation between Delta and Breton NWRs and other partners, such as the Louisiana Department of Wildlife and Fisheries, Louisiana Department of Natural Resources, U.S. Army Corps of Engineers, and private landowners, etc.

Lands within the Refuge System are closed to public use unless specifically and legally opened. No refuge use may be allowed unless it is determined to be appropriate and compatible. The refuge manager determines if a use is appropriate based on sound professional judgment; uses that are illegal, inconsistent with existing policy, or unsafe may not be found appropriate. When a use is found appropriate, it must then be determined to be compatible before it is allowed on a refuge. A compatible use is a use that, in the sound professional judgment of the refuge manager, will not materially interfere with or detract from the fulfillment of the mission of the Refuge System or the purposes of the refuge. All programs and uses must be evaluated based on mandates set forth in the Improvement Act. Those mandates are to:

- contribute to ecosystem goals, as well as refuge purposes and goals;
- conserve, manage, and restore fish, wildlife, and plant resources and their habitats;
- monitor the trends of fish, wildlife, and plants;
- manage and ensure appropriate visitor uses as those uses benefit the conservation of fish and wildlife resources and contribute to the enjoyment of the public; and
- ensure that visitor activities are compatible with refuge purposes.

The Improvement Act further identifies six priority wildlife-dependent recreational uses: hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation. As priority public uses of the Refuge System, they receive priority consideration over other public uses in planning and management.

Biological Integrity, Diversity, and Environmental Health Policy

The Improvement Act directs the Service to ensure that the biological integrity, diversity, and environmental health of the Refuge System are maintained for the benefit of present and future generations of Americans. The policy is an additional directive for refuge managers to follow while achieving refuge purpose(s) and Refuge System mission. It provides for the consideration and protection of the broad spectrum of fish, wildlife, and habitat resources found on refuges and associated ecosystems. When evaluating the appropriate management direction for refuges, refuge managers will use sound professional judgment to determine their refuges' contribution to biological integrity, diversity, and environmental health at multiple landscape scales. Sound professional judgment incorporates field experience, knowledge of refuge resources, the refuge’s role within an ecosystem, applicable laws, and best available science, including consultation with others both inside and outside the Service.

The Coastal Barrier Resources Act of 1982

The Coastal Barrier Resources Act of 1982 (CBRA) identifies undeveloped coastal barrier lands along the Atlantic and Gulf coasts and includes them in a coastal barrier resource system. Objectives of CBRA are to restrict most federal expenditures that encourage development within the system to minimize loss of human life, reduce wasteful federal expenditures, and minimize damage to natural resources. Breton NWR is located in Unit LA-03P under the CBRA and is classified as an “otherwise protected area.”

The Energy Policy Act of 2005

The Energy Policy Act of 2005 (Public Law 109-58) was signed into law by President Bush on August 8, 2005. Section 384 of the Act establishes the Coastal Impact Assistance Program (CIAP), which authorizes funds to be distributed to Outer Continental Shelf oil and gas producing states to mitigate the impacts of Outer Continental Shelf oil and gas activities. States to share these funds are Alabama, Alaska, California, Louisiana, Mississippi, and Texas.

NATIONAL AND INTERNATIONAL CONSERVATION PLANS AND INITIATIVES

Multiple partnerships have been developed among government and private entities to address the environmental problems affecting regions. There is a large amount of conservation and protection information that defines the role of the refuge at the local, national, international, and ecosystem levels. Conservation initiatives include broad-scale planning and cooperation between affected parties to address declining trends of natural, physical, social, and economic environments. The conservation guidance described below, along with issues, problems, and trends, was reviewed and integrated where appropriate into this CCP.

This CCP supports, among others, the Partners in Flight Plan, the North American Waterfowl Management Plan, the Western Hemisphere Shorebird Reserve Network, and the National Wetlands Priority Conservation Plan.

North American Bird Conservation Initiative

Started in 1999, the North American Bird Conservation Initiative (NABCI) is a coalition of government agencies, private organizations, academic institutions, and private industry leaders in the United States, Canada, and Mexico, working to ensure the long-term health of North America's native bird populations by fostering an integrated approach to bird conservation to benefit all birds in all habitats. The international and national bird initiatives include the North American Waterfowl Management Plan, Partners In Flight, Waterbird Conservation for the Americas, and the U.S. Shorebird Conservation Plan.

North American Waterfowl Management Plan

The North American Waterfowl Management Plan is an international action plan to conserve migratory birds throughout the continent. The plan's goal is to return waterfowl populations to their 1970s levels by conserving wetland and upland habitat. Canada and the United States signed the Plan in 1986 in reaction to critically low numbers of waterfowl. Mexico joined in 1994 making it a truly continental effort. The plan is a partnership of federal, provincial/state and municipal governments, non-governmental organizations, private companies, and many individuals, all working towards achieving better wetland habitat for the benefit of migratory birds, other wetland-associated species and people. Plan projects are international in scope, but implemented at regional levels. These projects contribute to the protection of habitat and wildlife species across the North American landscape.

Partners in Flight Bird Conservation Plan

Managed as part of the Partners in Flight Plan, the Coastal Prairies physiographic area represents a scientifically based land bird conservation planning effort that ensures long-term maintenance of healthy populations of native land birds, primarily non-game land birds. Non-game land birds have been vastly under-represented in conservation efforts, and many are exhibiting significant declines. This plan is voluntary and non-regulatory, and focuses on relatively common species in areas where conservation actions can be most effective, rather than the frequent local emphasis on rare and peripheral populations.

U.S. Shorebird Conservation Plan

The U.S. Shorebird Conservation Plan is a partnership effort throughout the United States to ensure that stable and self-sustaining populations of shorebird species are restored and protected. The plan was developed by a wide range of agencies, organizations, and shorebird experts for separate regions of the country, and identifies conservation goals, critical habitat conservation needs, key research needs, and proposed education and outreach programs to increase awareness of shorebirds and the threats they face.

Northern American Waterbird Conservation Plan

This plan provides a framework for the conservation and management of 210 species of waterbirds in 29 nations. Threats to waterbird populations include destruction of inland and coastal wetlands, introduced predators and invasive species, pollutants, mortality from fisheries and industries, disturbance, and conflicts arising from abundant species. Particularly important habitats of the southeast region include pelagic areas, marshes, forested wetlands, and barrier and sea island complexes. Fifteen species of waterbirds are federally listed, including breeding populations of wood storks, Mississippi sandhill cranes, whooping cranes, interior least terns, and Gulf coast populations of brown pelicans. A key objective of this plan is the standardization of data collection efforts to better recommend effective conservation measures.

Coastal Impact Assistance Program (CIAP)

A Federal law, signed in 2005, authorizes the Secretary of the Interior to distribute $250 million for each of the fiscal years 2007 through 2010 to oil and gas producing states (Alabama, Alaska, California, Louisiana, Mississippi, and Texas) and coastal political subdivisions to be used for one or more of the following purposes:

- Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands;
- Mitigation of damage to fish, wildlife, or natural resources;
- Planning assistance and the administrative costs of complying with this section;

- Implementation of a federally approved marine, coastal, or comprehensive conservation management plan;
- Mitigation of the impact of Outer Continental Shelf activities through funding or onshore infrastructure projects and public service needs.

In a Continuing Resolution dated February 16, 2007, Congress approved a three percent appropriation of the CIAP funds to be used by Minerals Management Service (MMS) to administer the CIAP program. MMS will lead the CIAP by establishing an environment that will enhance partner communications and an effective business relationship. Each eligible state will be allocated their share based on the state's Qualified Outer Continental Shelf Revenue generated off of its coast in proportion to total revenue generated off the coasts of all eligible states. MMS will respond to recipient needs and provide advice through guidance, direction, training, and by ensuring that monitoring and evaluation are incorporated into a system of accountability designed to accomplish the results intended by the Energy Policy Act of 2005.

RELATIONSHIP TO STATE WILDLIFE AGENCY

A provision of the Improvement Act, and subsequent agency policy, is that the Service shall ensure timely and effective cooperation and collaboration with state fish and game agencies and tribal governments during the course of acquiring and managing refuges. State wildlife management areas and national wildlife refuges provide the foundation for the protection of species, and contribute to the overall health and sustainment of fish and wildlife populations in the State of Louisiana.

The Louisiana Department of Wildlife and Fisheries (LDWF) (http://www.wlf.louisiana.gov) is vested with responsibility for conservation and management of wildlife in the state, including aquatic life. LDWF is authorized to execute the laws enacted for the control and supervision of programs relating to the management, protection, conservation, and replenishment of wildlife, fish, and aquatic life, and the regulation of the shipping of wildlife fish, furs, and skins. LDWF's mission is to manage, conserve, and promote wise utilization of Louisiana's renewable fish and wildlife resources and their supporting habitats through replenishment, protection, enhancement, research, development, and education for the social and economic benefit of current and future generations; to provide opportunities for knowledge of and use and enjoyment of these resources; and to promote a safe and healthy environment for the users of the resources. LDWF is divided into seven divisions for management of the state's resources: Enforcement, Fur and Refuge, Public Information, Inland Fisheries, Marine Fisheries, Management and Finance, and Wildlife.

The participation of LDWF throughout this comprehensive conservation planning process has been valuable. Not only have LDWF personnel participated in the biological reviews, they are also active partners in annual hunt coordination, planning, and various wildlife and habitat surveys. A key part of the planning process is the integration of common objectives between the Service and LDWF. Both Delta and Breton NWRs are located adjacent to or in close proximity to lands managed by LDWF; a Memorandum of Understanding between LDWF and the Service exists relating to management of some of the state-owned barrier islands as part of Breton NWR.

The state's participation and contribution throughout this planning process will provide for ongoing opportunities and open dialogue to improve the ecological sustainment of fish and wildlife in the State of Louisiana. An essential part of comprehensive conservation planning is integrating common mission objectives where appropriate.

II. Refuge Overview

INTRODUCTION

Delta NWR is in Plaquemines Parish, in extreme southeast Louisiana, at the mouth of the Mississippi River (Figure 1). Access to the refuge is by boat only; the nearest town is Venice, across the Mississippi River from refuge lands. The refuge office is located in Venice, Louisiana.

Breton NWR consists of a chain of barrier islands in Plaquemines and St. Bernard Parishes in southeast Louisiana (Figure 2). Access is limited to seaplanes or to boats that are able to venture offshore.

Both Delta and Breton NWRs are administered by the Southeast Louisiana NWR Complex, Lacombe, Louisiana.

DELTA REFUGE HISTORY AND PURPOSE

Delta Migratory Waterfowl Refuge was established by Executive Order No. 7229 on November 19, 1935, under the authority of the Migratory Bird Conservation Act. The initial acres forming Delta NWR were purchased from Joseph Leiter and the Delta Duck Club in 1935, to provide sanctuary and habitat for wintering and migrating waterfowl. The name was changed from Delta Migratory Waterfowl Refuge to Delta National Wildlife Refuge in 1940. Subsequent land purchases enlarged the refuge to its current acreage of 48,799.

The land development of the area began in 1862 when a breach in the natural levee of the Mississippi River occurred approximately 100 miles below New Orleans. The breach, called a crevasse, was supposedly cut in a narrow portion of the levee by three daughters of a man named Cubit, and is called Cubits Gap. The crevasse was cut to permit access to a large open water area known as Bay Rhondo and to attract fish to nets set in the cut. Tons of sediment were carried through the cut into Bay Rhondo, forming huge splays. Splay in biological terms is a vegetated, emergent marsh that develops from sediments deposited in open water as a result of overflow of the natural banks or levees of a river or channel or as the result of a natural or created crevasse or sediment diversion. As it expanded, the Cubits Gap delta attracted large concentrations of wintering and migratory waterfowl; peak populations in excess of 400,000 ducks and 500,000 geese have been recorded. Drawn by the abundant wildlife resources, the area has attracted waterfowl hunters for many years. Today, the primary public use remains hunting, with less significant use by anglers.

The purposes of Delta NWR, based upon land acquisition documents and its establishing authority, are as follows:

Executive Order 7229, dated November 19, 1935 - as a refuge and breeding ground for migratory birds and other wildlife.

Executive Order 7383, dated June 5, 1936 - as a migratory waterfowl refuge, is subject to the use…for quarantine purposes;

Figure 1. Boundaries of Delta NWR, Plaquemines Parish, Louisiana 2005

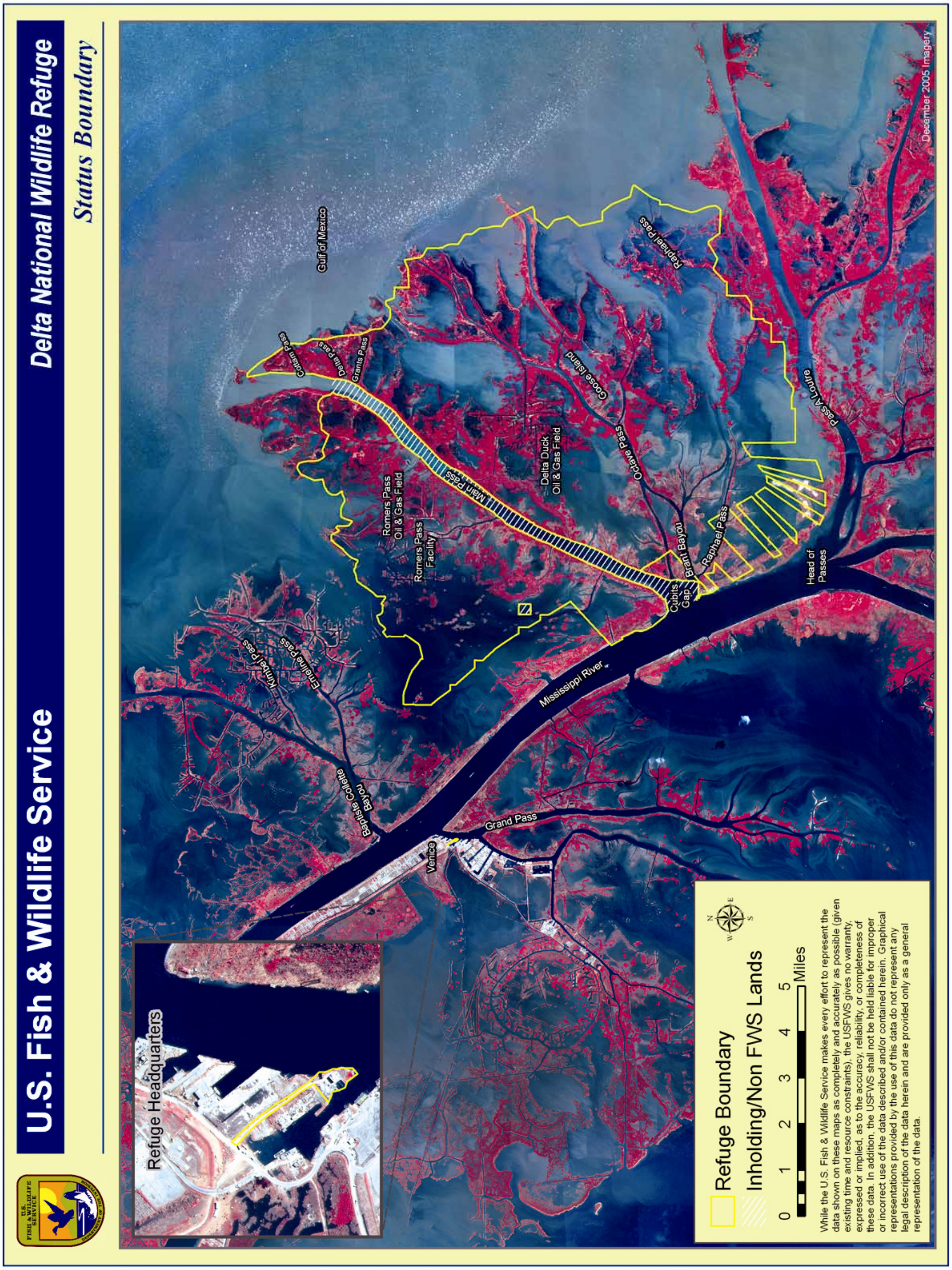
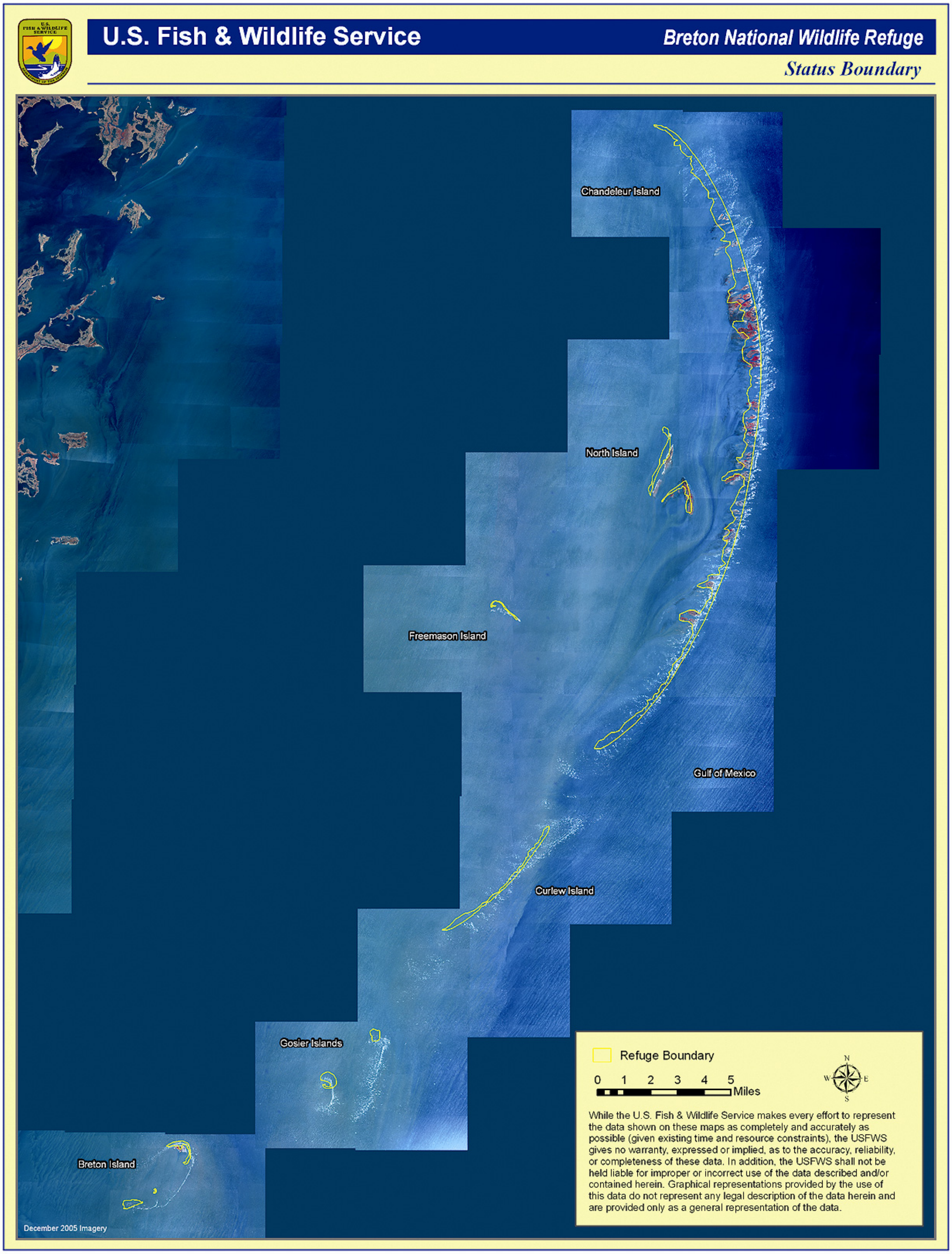


Figure 2. Boundaries of Breton NWR, Plaquemines and St. Bernard Parishes, Louisiana 2005



Executive Order 7538, dated January 19, 1937 - for waterfowl refuge purposes, is subject to use… with the improvement of navigation in the Mississippi River and the uses thereof, and the administration of the area for wildlife conservation purposes by the Department of Agriculture (now Interior) shall be without interference with any existing or future uses or regulations of the War Department (now Army Corps of Engineers).

Migratory Bird Conservation Act - for use as an inviolate sanctuary, or for any other management purpose, for migratory birds. 16 U.S.C.

BRETON REFUGE HISTORY AND PURPOSE

Breton NWR, established on October 4, 1904 by an unnumbered Executive Order signed by President Theodore Roosevelt, is the second oldest refuge in the United States. It encompasses Breton Island and the Chandeleur Island chain. Executive Order 369-A , signed on November 11, 1905, established the Breton Island Reservation. The name was changed to Breton Island National Wildlife Refuge on October 4, 1938, by Executive Order 7938 signed by Franklin D. Roosevelt. Throughout history, the islands have been continually reconfigured due to tidal action, winds, and tropical storms. The islands were once home to a fishing community that included a school until 1915, when a hurricane forced residents to evacuate the settlement. Then an unnamed hurricane destroyed the settlement and it was never rebuilt. More recently, a series of storms starting in the late 1990s have caused devastating erosion to the islands. Hurricane Katrina destroyed the historic lighthouse located on the northern end of the Chandeleurs. Subsidence, tropical storms, and hurricanes have drastically reduced the dune and beach habitat that formerly supported thousands of colonial nesting seabirds.

The purposes of Breton NWR are as follows:

Executive Order 7983, dated October 4, 1938 - as a refuge and breeding ground for migratory birds, and other wildlife; Provided, that nothing herein shall affect the recovery of the oil and gas deposits from any of the island areas under the mineral leasing act….or the necessary operations pertaining to such recovery.

Public Law 93-632, dated January 3, 1975 - designated all of the federally owned lands in Breton NWR, with the exception of North Breton Island, as part of the National Wilderness Preservation System.

Refuge management objectives are to provide sanctuary for nesting and wintering seabirds; protect and preserve the wilderness character of the islands; and, provide sandy barrier beach habitat for a variety of wildlife species.

Public use centers on fishing from the beaches and in the shallow water surrounding the islands.

SPECIAL DESIGNATIONS

Delta NWR has no special designations.

Breton NWR, except for North Breton, has been designated as part of the National Wilderness Preservation System; all of the refuge is designated as part of the critical habitat for wintering piping plovers, and as a Globally Important Bird Area by the American Bird Conservancy in association with The Nature Conservancy.

ECOSYSTEM CONTEXT

In the mid-1990s, the Service developed a landscape level approach to natural resource management based on watersheds named the Ecosystem Approach to Fish and Wildlife Conservation. Delta and Breton NWRs are located within the Lower Mississippi River Ecosystem (LMR). The dominant land forms of the LMR ecosystem are the alluvial plain of the Mississippi River and the deltaic plain and associated marshes and swamps created by the meanderings of the Mississippi River and its distributaries. Refuge management projects reflect and support ecosystem goals.

A team of resource managers assigned to the LMR ecosystem developed the following resource goals to address the natural resources and their habitats of concern to the Service:

- Conserve, enhance, protect, and monitor migratory bird populations and their habitats;
- Protect, restore, and manage the wetlands;
- Protect and/or restore imperiled habitats and viable populations of all threatened, endangered, and candidate species and species of concern;
- Protect, restore, and manage the fisheries and other aquatic resources historically associated with the wetlands and waters of the ecosystem;
- Restore, manage, and protect national wildlife refuges and national fish hatcheries.

The following are support goals which are essential to the overall accomplishment of the ecosystem resource goals listed above:

- Increase public awareness and support for the LMR ecosystem resources and their management;
- Enforce natural resource laws;
- Protect, restore, and enhance water and air quality.

REGIONAL CONSERVATION PLANS AND INITIATIVES

In the Louisiana Comprehensive Wildlife Conservation Strategy, developed by LDWF, Delta and Breton NWRs are located in the Gulf Coast Prairies and Marshes ecoregion. Delta NWR is situated in the fresh and intermediate marshes of the Mississippi management basin; Breton NWR is located in the Pontchartrain basin, constituting the most rapidly eroding area along the Louisiana coast. Although no specific strategies for partnering with the Service are listed for the habitats on Delta and Breton NWRs, more general strategies on which the Service can partner with LDWF include:

- partner to promote protection and support efforts for shoreline stabilization and habitat restoration of barrier islands;
- work with interested groups to promote appropriate use of dredge material and to develop improved management techniques for vegetated pioneer emerging delta habitat.

The Coastal Wetlands Planning, Protection, and Restoration Act program (CWPPRA or “Breaux Act”) provides for targeted funds to be used for planning and implementing projects that create, protect, restore, and enhance wetlands in coastal Louisiana. Passed in 1990, and authorized until 2019, the federal funds created by this Act are managed by the CWPPRA Task Force, a group composed of five federal agencies, including the Service and the State of Louisiana.

To address larger wetland restoration projects with more ecosystem-scale impacts than CWPPRA, the Louisiana Coastal Area Ecosystem Restoration Study (LCA) began in 2001. LCA seeks future Water Resources Development Act (WRDA) authorization and funding to identify critical human and natural ecological needs for coastal Louisiana, seeks alternatives to meet the needs including restoration priorities, and presents long-term large-scale strategies named the LCA Plan. Delta and Breton NWRs are located in the Deltaic Plain area of LCA. Neither Delta nor Breton NWRs are included directly in the five critical restoration areas. The refuges may be affected by long-term studies such as the Mississippi River Hydrodynamic Study and the Mississippi River Delta Management Study. Presently, the LCA emphasis is on areas west of Delta and Breton NWRs.

Coast 2050: Toward a Sustainable Coastal Louisiana was approved in 1998 by the State of Louisiana and its federal partners. Coast 2050 is a joint planning initiative among the Louisiana Wetland Conservation and Restoration Authority, Louisiana Department of Natural Resources Coastal Zone Management (CZM) Authority, and the CWPPRA Task Force for protecting and sustaining the state's coastal resources for future generations in a manner consistent with the welfare of the people. In this plan, Delta and Breton NWRs are located in Region 2 (Breton, Barataria, and the Mississippi River). The plan emphasizes that immediate attention should be placed in the Barataria Basin, an area west of the refuges.

In 1989, the Louisiana State Legislature passed Act 6 (LA R.S. 49:213.1 *et seq.* of the Second Extraordinary Session of the Legislature, Appendix A), recognizing the catastrophic nature of Louisiana's coastal land loss and expanded the state's capacity to respond to the crisis by creating the Wetlands Conservation and Restoration Authority (State Wetlands Authority); the Wetlands Conservation and Restoration Fund (the Fund); the Governor's Office of Coastal Activities (GOCA); and the Office of Coastal Restoration and Management. The State Wetlands Authority is a policy level decision-making group made up of the Governor's Executive Assistant for Coastal Activities, the Commissioner of the Division of Administration, and the secretaries of five state agencies - the Department of Wildlife and Fisheries, Environmental Quality, Natural Resources, Transportation and Development, and Agriculture and Forestry. The State Wetlands Authority is the sponsor and official author of the State Plan, an annual summary of coastal restoration projects and recommendations for funding from the Fund. The Fund's income is from a portion of the state's mineral income and severance taxes from oil and gas production on state lands and is dedicated to state-sponsored coastal restoration projects. The GOCA coordinates policy among the many agencies involved in Louisiana's coastal restoration effort while the Office of Coastal Restoration and Management within DNR handles day-to-day implementation of coastal restoration in coordination with the Coastal Zone Management Office.

ECOLOGICAL THREATS AND PROBLEMS

Several major ecological threats that cause land loss and damage to both Delta and Breton NWRs are tropical storms, subsidence, sea level rise, and oil and gas development. Both refuges are in an area frequently in the path of tropical storms and hurricanes. Out of the 92 major hurricanes (category 3 or higher) recorded making landfall between Texas and Maine from 1851 through 2004, 85 entered the Gulf of Mexico. Even storms coming onshore in states other than Louisiana can affect Breton and the Chandeleur Islands, which are located off the mainland in the Gulf of Mexico. The marshes of Delta NWR absorb frequent storm surges not affecting the higher elevated lands. Although even tropical storms can cause impacts ,such as nest loss of ground nesting birds, much vegetation and land loss have been caused by such notable hurricanes as the unnamed storm of 1947, Camille in 1969, Georges in 1998, Ivan in 2004, and Katrina and Rita in 2005.

A comparison of images of the Bulls Bay area of Delta NWR taken before and after the summer of 2005 depicts the alteration and loss of land (Figure 3). No studies are yet complete to give exact wetland loss on Delta NWR caused by Hurricane Katrina, but the satellite imagery illustrates it is substantial.

Breton NWR was slowly rebuilding after a series of hurricanes and tropical storms that began occurring in the late 1990s. Several storms affected the islands during 2005, especially hurricanes Katrina and Rita. Some estimates calculate up to 70 percent of the islands existing land form was lost. The storms' effects on Breton NWR are depicted in satellite imagery taken in 2004 and 2005 (Figures 4 and 5).

The land that forms Delta and Breton NWRs is located in a delta lobe created 3,000-4,000 years ago in the St. Bernard deltaic plain of the Mississippi River. Approximately 2,000 years ago, the Mississippi River abandoned the St. Bernard delta complex and moved to the west, forming the LaFourche delta complex. As the cycle of land loss changes progressed in the abandoned delta, the Chandeleur Islands started to form. This land loss continues today and threatens the existence of the Chandeleur Islands and other lands located in the relic deltaic plain not presently receiving sediment input. The natural processes of land formation, subsidence, and sea level rise have been accelerated and altered by man's activities, such as building levees, digging canals, and our use of fossil fuels.

Active oil and gas development and exploration occur on Delta NWR and in areas adjacent to both refuges. Mineral rights are owned by both private companies and the government. While impacts on the riverine and marine ecosystems are minimized and mitigated when possible, accidents do occur that cause biological and ecological damage. Waterfowl and other water birds are susceptible to oiling and are especially vulnerable during nesting. Vegetation and soil soak up oil and, depending on type, severity and amount of oiling, have to be removed from the site. Assess to structures and facilities cause loss of habitat and hydrological changes to the ecosystem.

One emerging threat to Delta NWR is the proposed abandonment of the current birds foot delta (so named because of its shape) in favor of sediment diversions and other restoration activities closer to New Orleans. While the Service certainly understands the need for restoration activities throughout the coastal zone, and that the abandonment of the current delta may be in the best interest of the resource, many factors must be considered. Of primary importance to the Service is that current refuge resource values be compensated/mitigated for if lost due to activities upstream from the refuge. Consideration should be given to the establishment of a new national wildlife refuge if Delta NWR is sacrificed in the name of coastal restoration. This would ensure that resource values are not only replaced, but that they remain available for use by the public.

PHYSICAL RESOURCES

CLIMATE

The climate in southeast Louisiana is relatively mild due to the subtropical influence of the Gulf of Mexico and cooler, drier air from the central plains. Summers tend to be hot and humid, and winters are mild. Average yearly precipitation is 66 inches. Louisiana is impacted by tropical weather disturbances with an average frequency of one tropical storm every 1.6 years, one hurricane every 3.3 years, and a major hurricane every 14 years (Roth 1998).

Figure 3. Satellite imagery of Delta NWR taken before and after Hurricane Katrina struck on August 29, 2005

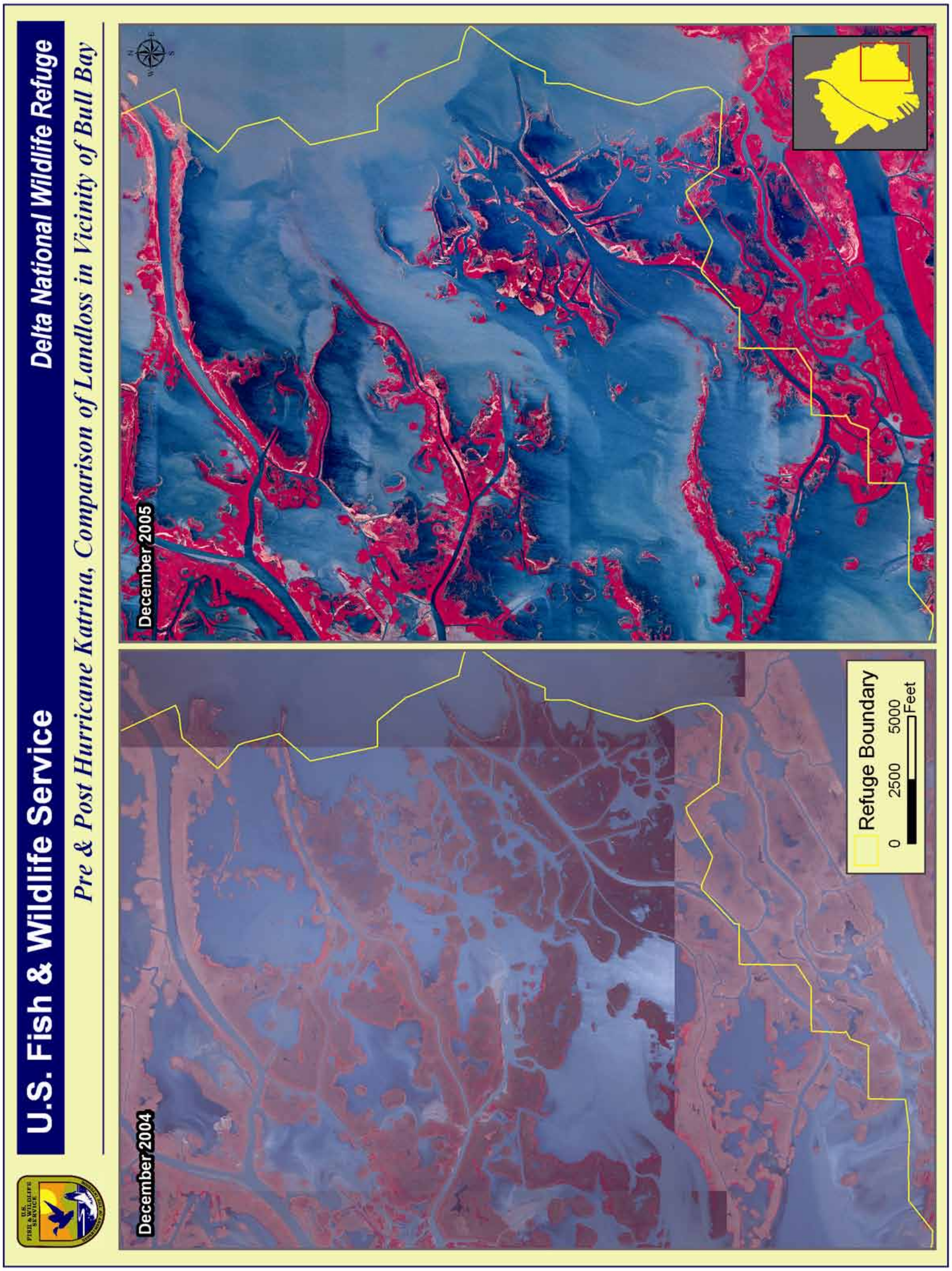


Figure 4. Satellite imagery of the northern islands in Breton NWR in 2004 and after the hurricanes in 2005

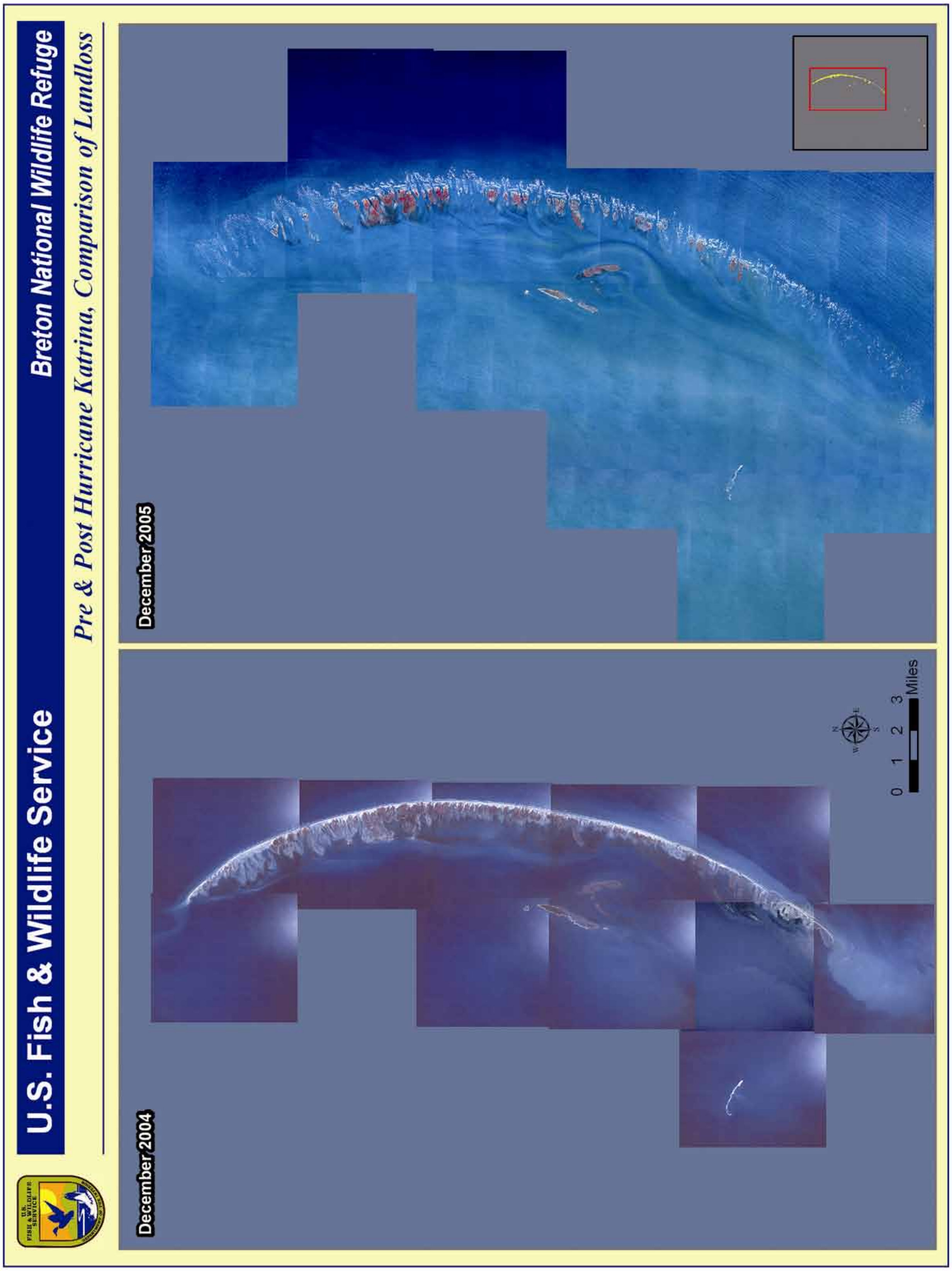
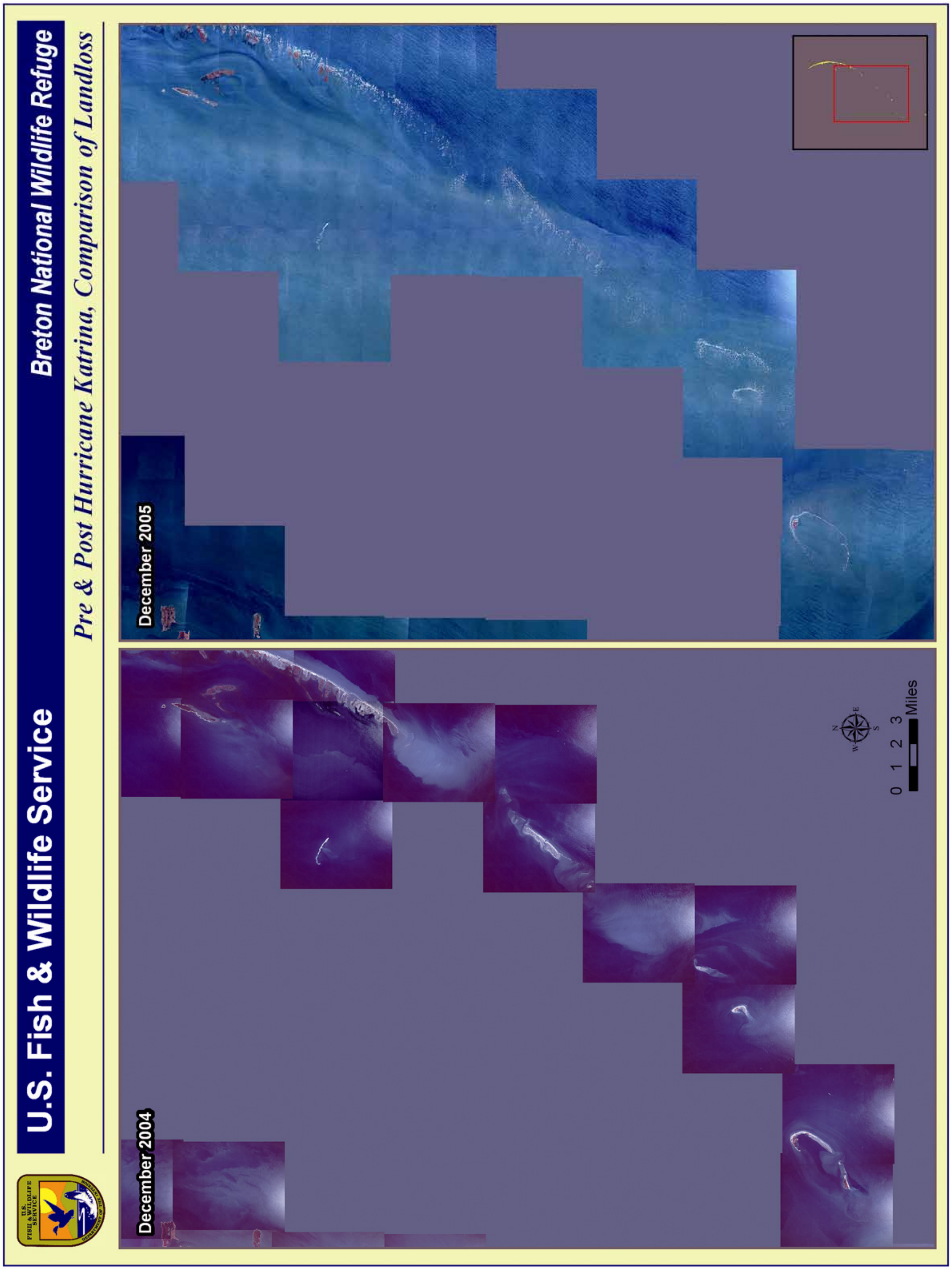


Figure 5. Satellite imagery of the southern islands in Breton NWR in 2004 and after the hurricanes in 2005



The Intergovernmental Panel on Climate Change (IPCC) recently concluded that warming of the climate is undeniable and could cause changes in our stewardship of land. Examples of potential changes are altered fire regimes, rain and snowfall patterns, access to water resources, hydrology in rivers and wetlands, frequency of extreme weather events, and rising sea levels at coastal refuges.

GEOLOGY AND TOPOGRAPHY

Geologic processes creating the current landform were built by the Mississippi River as it shaped its deltaic plain. The northern boundary of the St. Bernard delta complex coincided with the south shore of the modern day Lake Pontchartrain. The Mississippi River abandoned the St. Bernard delta complex about 2,000 years ago. Development slowed and the natural progression of coastal land loss began in the abandoned delta.

Delta NWR consists of low-lying marshlands formed by sediments deposited by the current of the Mississippi River as it flowed through Cubits Gap and breached its natural levee. Remnants of natural ridges can be found along the existing or abandoned courses of river distributaries or abandoned coastlines. Breton NWR consists of the barrier islands created at the edge of the old St. Bernard delta. These islands are dynamic and are constantly altered and worn down by tropical storms, wind, and tidal action. Early literature on Breton and the Chandeleur Islands mentions trees and a generally higher elevation than exists today. Present elevations of the existing islands are not much higher than sea level.

HYDROLOGY

The marshes and ponds of Delta NWR range from fresh where influenced by the Mississippi River to brackish closer to the shoreline with the Gulf of Mexico and Breton Sound. The system is open and not managed by any control structures on the refuge. Breton and the Chandeleur Islands are surrounded by shallow sea water and contain interior ponds that can be somewhat fresher from rainfall.

AIR QUALITY

Breton NWR’s status as a Class I Wilderness Area confers additional protection for air quality. Air quality issues are coordinated with and overseen by the Service’s Air Quality Branch in Denver, Colorado.

BIOLOGICAL RESOURCES

HABITAT

The marshes, shallow ponds, and mud flats of Delta NWR attract large concentrations of wintering and migratory waterfowl, other wetland dependent birds, and reptiles and amphibians. Two basic marsh zones occur within the marsh habitat - fresh marsh nearest the main tributaries and the brackish marsh zone nearest the Gulf of Mexico. The fresh marsh zone is located primarily on mineral soil and to a very limited extent on flotant (floating mats of emergent vegetation). Approximately 60 percent of the refuge consists of the fresh marsh zone. The predominant plants are delta duck potato, elephant ear, wild millet, and three-square. The marsh is tidally flooded in depths ranging from a few inches to a foot. The fertile soil, vegetative composition, and shallow water environment result in a highly productive habitat for fish and wildlife. Land loss causes the conversion of marsh into open freshwater ponds. A few hundred acres of forested wetlands occur on Delta NWR on the Mississippi River natural levees. Soils are very coarse and are less frequently flooded, resulting in vegetation communities dominated by trees and low shrubs. Predominant trees are black willow and red maple. Low shrubs include groundsel, wax myrtle, and marsh elder. Scattered throughout the understory where sunlight reaches the forest floor is a herbaceous community of elephant ear and sedges. This habitat is valuable for cover for deer and small mammals. The trees provide an important staging area for migratory birds because of the proximity to the Gulf of Mexico.

Most of the islands of Breton NWR provide sandy beach habitat. Islands wide enough to receive some protection from Gulf-side wind and tides provide vegetative cover of black mangrove, grounsel bush, and wax myrtle. Shallow bay waters around the islands support beds of manateegrass, shoalgrass, turtlegrass, and widgeongrass.

WILDLIFE

Both Delta and Breton NWRs are in an extremely rich estuary system that is important to wading, sea and shore birds, migratory waterfowl and songbirds, crabs, shrimp, and both fresh and saltwater fish.

Wintering waterfowl populations begin building on Delta NWR in the fall and peak in mid-December and January. Recent surveys document 30,000 to 50,000 snow geese and 80,000 to 150,000 ducks. The most common species observed are gadwall, northern pintail, American wigeon, green-winged teal, and snow geese. The most common resident marsh and waterbirds are great blue heron, little blue heron, white ibis, glossy /white-faced ibis, great egrets, snowy egrets, tricolored herons, yellow-crowned night-herons, and black-crowned night-herons. The refuge serves as a staging area for many passerine birds during migration, and large concentrations of shorebirds are sometimes observed feeding in the mudflats.

Because of the lack of high ground, no large numbers of mammals exist on Delta, but a few white-tailed deer, rabbits, and raccoons survive the harsh environment. Nutria is probably the most abundant mammal on the refuge.

In the past, Breton NWR has supported large colonies of colonial nesting seabirds and still provides some nesting habitat, although very limited in comparison to previous years. Before hurricane Katrina, terns numbered 35,000 to 50,000 nests; brown pelicans averaged 6,000 to 8,000 nests and peaked at approximately 12,000 nests; and black skimmers averaged 3,000 nests. In the nesting seasons following Katrina, terns numbered 7,000 nests; brown pelicans produced 2,500 nests; and black skimmers numbered 450-500 nests in 2007.

CULTURAL RESOURCES

There are no known cultural resources on Delta or Breton NWRs. Geologically, Delta NWR is relatively young and since formation little to no human habitation or development has occurred. Infrastructure has been associated with the oil and gas industry. Early settlements and a lighthouse that were constructed on the Chandeleur Islands were destroyed by past severe weather events.

SOCIOECONOMIC ENVIRONMENT

Delta NWR is not located near any urban centers; the closest town is Venice, which is across the Mississippi River from actual refuge lands. The refuge is in Plaquemines Parish, Louisiana’s most southern parish, where the Mississippi River meets the Gulf of Mexico. There are no incorporated communities anywhere within the parish. The parish is bisected by the Mississippi River. Most of the population is distributed along a narrow band of land on each bank of the river. Sources of income are the seafood industry, the off-shore oil industry, shipping, and citrus groves. Millions of pounds of shrimp, oysters, crab, and fish are produced annually by the commercial fishing industry. The parish is also considered a “sportsman’s paradise” for sports fishing. Encompassing seventy miles of the Mississippi River, Plaquemines Parish is the eighth largest port in the United States and is noted for exporting coal, petro-chemicals, and grain. In 2005, the parish population was 28,995 and the 2003 median income was $38,173 for a household. In August 2005, the entire parish was devastated by Hurricane Katrina which caused extensive structural damages and flooding, major losses to the commercial fishing industry, and a substantial decrease in population. The decrease is not from hurricane-related deaths so much as from people not returning to the area after evacuating. Residents are trickling back as housing and other infrastructure are repaired or replaced, but major questions remain about levee protection and the viability of local communities.

Breton NWR is a remote chain of islands off the Louisiana and Mississippi mainland and is considered part of Plaquemines and St. Bernard Parishes. St. Bernard Parish contains no incorporated communities, but is immediately adjacent to New Orleans. Many of the communities have rich historical backgrounds which began as large sugar cane plantations. Seventy-four percent of the parish is some form of wetland and approximately two-thirds of the parish is surrounded by water. In the past, economic activities were associated with wildlife, fisheries, and agricultural pursuits, but within the past thirty to forty years, economic development has become based more on suburban and industrial activities in support of New Orleans. The 2005 population of the parish was 65,364 and in 2003 the median household income was $36,156. Later in 2005, Hurricane Katrina flooded the entire parish when the massive 25’ storm surge coursed through Lake Borgne and the Mississippi River Gulf Outlet, a shipping channel. The 14- to 15-foot high levees were destroyed and every structure in the parish was affected. In 2006, because of the effects of Hurricane Katrina, its population was estimated to be 25,489. The parish is presently in a phase of rebuilding and growth.

REFUGE ADMINISTRATION AND MANAGEMENT

LAND PROTECTION AND CONSERVATION

The major management activities on Delta and Breton NWRs include wetland restoration projects, law enforcement, wildlife monitoring, and monitoring oil and gas operations. Marsh restoration projects on Delta NWR mainly rely on creating emergent marsh through crevasses (breaches in the natural levee). Water flowing through the crevasse carries sediments which are deposited in the shallow ponds behind the levee. Over time, the splays created by the deposited sediments become vegetated. The majority of the crevasses are funded by mitigation dollars paid by oil and gas companies in compensation for loss of wetlands. No sediment carrying currents are available for restoration on the islands. Beach nourishment is possible only if dredged materials from a nearby source are available because transportation costs are prohibitive.

At present, no law enforcement position exists for Delta and Breton NWRs, although law enforcement staff from the Southeast Louisiana NWR Complex patrol the areas periodically and partner with LDWF agents for coverage. Law enforcement issues involve oil and gas concerns, illegal hunting and commercial fishing, general trespassing, and controlled substance use. Monitoring of wildlife is restricted to winter waterfowl surveys, summer bird colony and production assessments, periodic alligator surveys, and coordination with universities in conducting specific wildlife related studies. Monitoring oil and gas activities requires diligence and is very time consuming. Duties involve not only emergency procedures and supervision during spills, but dealing with legal matters after spill events, and constant permitting and mitigation actions for ongoing activities such as flowline routes (installation and removal), night activities, equipment use, drilling, seismic exploration, and plugging and abandonment of structures.

VISITOR SERVICES

Both refuges are accessible by boat only. Hunting and fishing are the primary public uses on these refuges. Delta NWR is open to waterfowl, archery deer, and rabbit hunting. Sport fishing is permitted year-round during day-light hours, and only after 12 p.m. in the waterfowl hunting areas during the state waterfowl hunting season. Species caught most are freshwater catfish, largemouth bass, and sunfish during the spring and speckled trout and redfish in the fall.

Public use on the islands centers on fishing for speckled trout and redfish from the beaches and in the shallow waters, and primitive camping associated with fishing. Both refuges offer excellent bird watching opportunities, but due to inaccessibility, few bird and other wildlife observation visits are made.

PERSONNEL, OPERATIONS, AND MAINTENANCE

Refuge personnel are not assigned solely to Delta or Breton NWRs, but rather support all eight refuges in the Southeast Louisiana NWR Complex. Six positions share responsibility for Delta, Breton, and Bayou Sauvage NWRs. The Complex staff consists of 27 permanent full-time employees (see staffing chart, Chapter V). The refuges also benefit from the help of interns and volunteers. Most Complex staff work out of the headquarters office in Lacombe, Louisiana. A satellite office for Delta and Breton NWRs is located in Venice, Louisiana. One maintenance staff position works out of the Venice office.

III. Plan Development

SUMMARY OF ISSUES, CONCERNS, AND OPPORTUNITIES

The planning team identified a number of issues, concerns, and opportunities related to fish and wildlife protection, habitat restoration, recreation, and management of threatened and endangered species. Additionally, the planning team considered federal and state mandates, as well as applicable local ordinances, regulations, and plans. The team also directed the process of obtaining public input through public scoping meetings and personal comments. All public and advisory team comments were considered; however, some issues important to the public fall outside the scope of the decisions to be made within this planning process. The team has considered all issues that arose through this planning process, and has developed a CCP that attempts to balance the competing opinions regarding important issues. The team identified those issues that, in the team’s best professional judgment, are most significant to the refuge. A summary of the significant issues for Delta and Breton NWRs follows.

FISH AND WILDLIFE POPULATION MANAGEMENT - DELTA NWR

Delta NWR is recognized as an important area for migratory birds. For migratory waterfowl, an average of 35,000 (peaks of 60-80,000) snow geese and 80-90,000 (peaks of 100-150,000) ducks have historically used the area during winter. Many more ducks, especially blue-winged teal, migrate through in fall and spring. Snow geese and northern pintail are the most numerous of the high-priority wintering waterfowl species utilizing the refuge. About 65 percent of the refuge provides sanctuary that is critical in an area that is heavily hunted for waterfowl. A portion of the refuge is open for waterfowl hunting four mornings a week during the state waterfowl season. It is possible that the snow geese wintering on the Mississippi River delta are a subpopulation that may have unique morphological features and perhaps remain somewhat isolated from the large population during reproduction and migration as it does on the wintering grounds. Delta NWR is an open system with no controlled water management. Wintering populations are closely tied to availability of natural food resources; no direct waterfowl management other than habitat management is possible.

Delta NWR is an important area in the eastern half of Louisiana for mottled ducks. Nesting is reportedly boom or bust depending on river stages in the spring. Although mottled ducks are common on the refuge in summer, there are few documented nests. Delta NWR could be a contributor to mottled duck population management efforts by participating in the preseason banding program and by managing vegetation on the spoil banks and dredge spoil sites to develop and maintain better mottled duck nesting habitat.

The shallow water and mudflat habitats of Delta NWR attract shorebirds, marsh birds, and wading birds. The location of the refuge makes it one of the first and last land forms available to trans-Gulf migratory songbirds. Management to encourage the development of trees would be beneficial and could be replanted following devastating hurricanes.

The Mississippi River delta is one of the largest, most productive estuaries in the world. The area supports a wide variety of fish from fresh to salt tolerant depending on the time of the year, and is an important nursery area.

Currently, a small number of wildlife surveys and monitoring programs are implemented on the refuge. Waterfowl surveys are conducted during winter months and occasionally alligator surveys are accomplished in the fall. Specific knowledge of wildlife resources, including migratory songbirds, fish resources, and mottled ducks, has been gained through research conducted in cooperation with universities and the U.S. Geological Survey.

FISH AND WILDLIFE POPULATION MANAGEMENT - BRETON NWR

Breton NWR, including the Chandeleur Island chain, has been designated as a Globally Important Bird Area by the American Bird Conservancy in association with The Nature Conservancy. Historically, Breton NWR has supported thousands of colonial nesting birds. Large nesting colonies of brown pelicans; laughing gulls; and royal, Caspian and sandwich terns used the islands. Less abundant, but still in impressive numbers, were nesting black skimmers and sooty terns, with occasional common, least, Forster's, and gullbilled terns within the colonies. Hurricanes and tropical storms have been devastating to the fragile island chain. In the past, the storms and hurricanes would significantly rearrange the islands, but usually the bird colonies would rebound as the dynamic islands rebuilt after storms. After the destructive 2005 hurricane season, which included Katrina and Rita, it is doubtful the islands will ever regain enough land above the waterline to provide safe nesting sites for significant numbers of birds. All nesting colonies are posted as closed areas where they occur.

The Eastern and Caribbean subspecies of the brown pelican remain endangered in California, Louisiana, Mississippi, Oregon, Puerto Rico, Texas, Virgin Islands, Washington, and Central and South America. It was extirpated from Louisiana during the 1960s and later reintroduced at three sites, one of which was North Island of the Chandeleurs. The Louisiana population grew exponentially after the reintroductions and Breton NWR had the largest number of nesting pelicans in the state for a period of time. In order to learn more about nesting site fidelity and migratory movements of the Breton NWR brown pelicans, 6,700 juvenile brown pelicans were banded from 2000 through 2004. Several adults were monitored by satellite telemetry placed on them in 2004. Both the banding and satellite telemetry studies were discontinued after the devastation of nesting habitat by hurricanes in 2005.

Wading birds, such as reddish and snowy egrets, clapper rails, white ibis, and herons, such as Louisiana, black-crowned night, and little blue, have been observed in small rookeries in the past. Red-winged blackbirds also nest on the islands. A non-breeding group of magnificent frigate birds persistently resides near North Island.

Waterfowl, primarily redhead and scaup, use the islands as a wintering and migration stop-over site. The Chandeleur Islands are one of only four Gulf of Mexico wintering grounds for redheads, which primarily winter where they can feed in the seagrass beds. Aerial survey records from 1992 through 2004 document a high of 166,000 ducks, which were primarily scaup. Average numbers for redheads have been approximately 10,000, with highs of up to 20,000. A small number of buffelhead, gadwall, and blue-winged teal have been observed using the shallows and sounds adjacent to the islands and interior marshes for feeding and protection during inclement weather.

There is never a time when small shorebirds are absent from the sandy beaches which supply foraging habitat. Federally listed in 1985, the piping plover is considered threatened throughout its wintering range along the south Atlantic and Gulf coasts, and Caribbean beaches and barrier islands. Breton NWR is internationally recognized as a critically important wintering site for the piping plover by the Western Hemisphere Shorebird Reserve Network. Presently, no special management considerations are made on Breton NWR because of the remoteness and lack of visitation during winter. Shorebirds of interest observed on Breton NWR are Wilson's plover, American oystercatcher, snowy plover, dowitchers, sanderling, dunlin, red knot, and least and western sandpipers.

HABITAT MANAGEMENT - DELTA NWR

Located at the mouth of the Mississippi River, Delta NWR is part of the active delta, a dynamic system that is vulnerable to natural forces, including salinity fluctuation, seasonally high volumes of fresh water and sediment, subsidence, and frequent and sometimes very severe storms. The most critical issue facing the refuge is land loss due to subsidence, erosion, major storm events, sea level rise, salt-water intrusion, and the proposed abandonment of the existing delta from restoration projects upriver.

For the past several decades, the refuge staff has implemented the crevasse program to counter the land loss. Cuts (crevasses) in the natural levee are strategically located so that water from the Mississippi River and its distributaries spills through the cuts and deposits sediment in shallow bays. The sediment builds to form splays or mudflats that are quickly vegetated and become emergent marsh. Opportunities to use this method have been largely exhausted for the most effective locations. Other options, methods, or locations should be explored. Beneficial deposition of dredged materials from the Mississippi River is one option to be investigated.

HABITAT MANAGEMENT - BRETON NWR

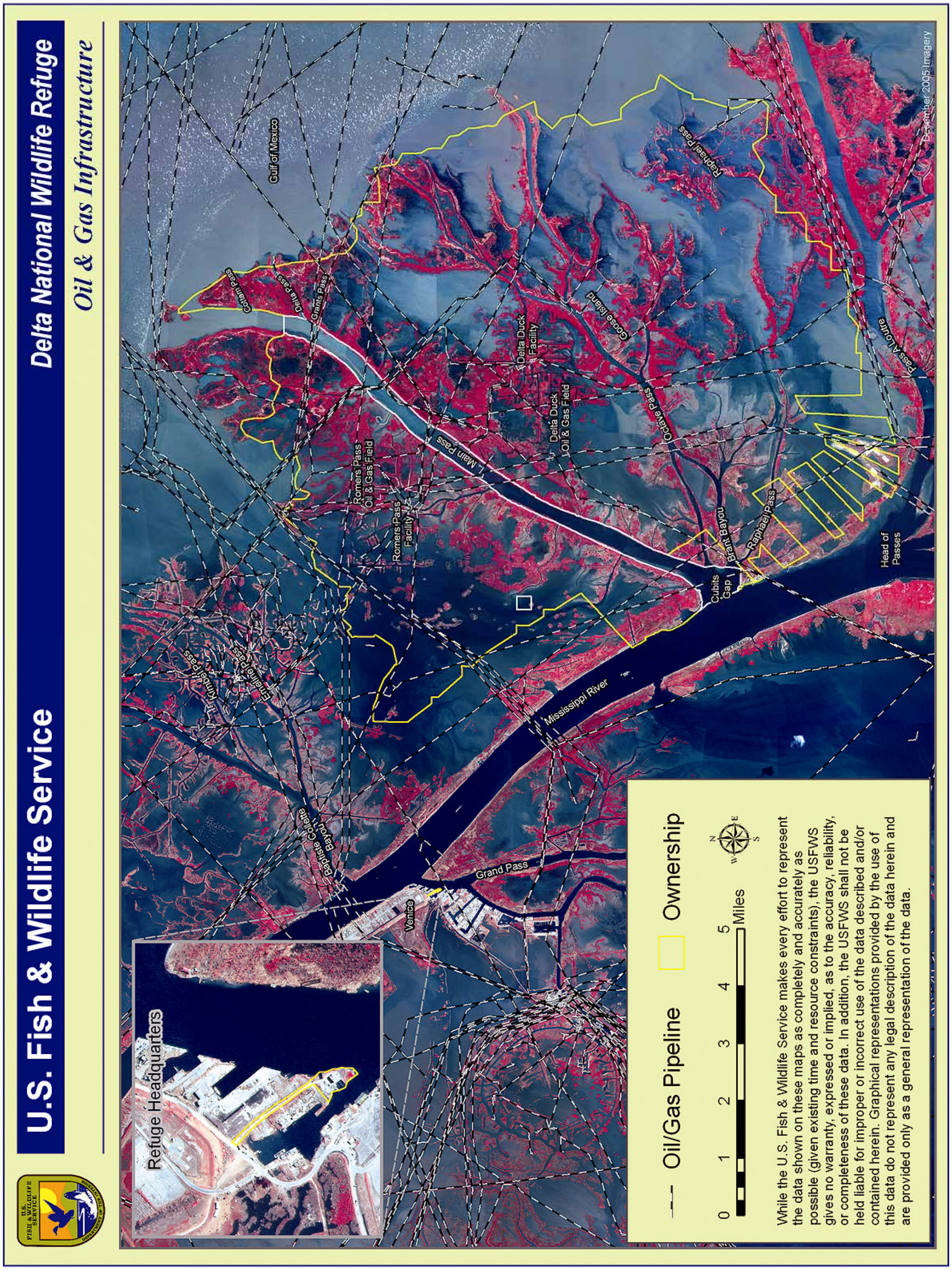
During the past decade, vegetative plantings, sand fencing, and beach nourishment using materials dredged from the Mississippi River Gulf Outlet (MRGO) were methods used to assist rebuilding of the islands. Results were positive with accumulations of up to 4' of sand in some locations. Although the long-term projection for the future of the islands was still problematic, the success of these management actions gave hope for short-term elevation increases, creating safer nesting areas. Based on early analyses, it is believed that so much material was permanently removed from the island system with the strong hurricanes in 2005, that there is not enough material to rebuild the islands, which is what occurred after storms in the past. A source of dredged materials for island rebuilding has been the MRGO, however, it is generally thought that the MRGO increased the velocity of Hurricane Katrina's storm surge, thus increasing damages to infrastructure in its path. All dredging has been halted and the opposition to its existence as a shipping channel has increased significantly. This source of beneficial spoil for future nourishment of Breton NWR is doubtful.

Given the current circumstances, future habitat management depends on the amount and sources of sediment and funding available, and any new technologies which can be developed. The Service has contracted with U.S. Geological Survey to obtain information on sediment loss at the Chandeleurs and the availability of suitable dredge material for restoration. This information will be used to determine the feasibility of restoration options and the sustainability of restoration efforts.

RESOURCE PROTECTION - DELTA NWR

The oil and gas operations on the refuge began in 1942, and continue today with five operators and three major pipelines (Figure 6). The fields producing the oil and gas have considerable age on the equipment and flowlines. This requires constant monitoring by refuge staff. Releases or spill events have occurred numerous times and have the potential to impact huge numbers of waterfowl and large expanses of habitat if not controlled immediately. Working with the Coast Guard, refuge staff must determine the best approach to clean up spills. In addition, violations pertaining to illegal hunting and fishing, general trespassing, and controlled substances are prosecuted.

Figure 6. Location of oil and gas pipelines on Delta NWR



RESOURCE PROTECTION - BRETON NWR

Law enforcement is involved with every release or spill event involving oil and gas on the refuge. They work cooperatively with the State of Louisiana and federal agencies to investigate each event to determine if charges will be filed. Other violations involve illegal fishing.

VISITOR SERVICES - DELTA NWR

Hunting and fishing are traditional recreational uses in Louisiana and are the primary reasons the public visits the refuge. The refuge is accessible by boat only and travel may be hazardous due to the required crossing of the Mississippi River channel where rough water, fog, and swells from ships and crew boats are common. Most hunting is for waterfowl. Deer hunting is minimal since the deer population is small and limited small game hunting is attempted. A portion of the refuge is open to waterfowl hunting until noon on Wednesday, Thursday, Saturday, and Sunday during the state teal, general waterfowl, and special “light” goose conservation seasons (Figure 7).

An archery deer either sex hunting season is offered during October and after the close of the waterfowl season. Rabbits can be hunted using shotguns and dogs during the state season after the end of the waterfowl season. These hunts have been offered for many years and presently there are no critical issues or reasons for any changes. This CCP includes discontinuing primitive camping because no adequate areas exist.

Sport fishing is allowed year-round during daylight hours except in the area open for waterfowl hunting; in the refuge waterfowl hunting area, fishing is permitted only after noon during the state waterfowl hunting seasons. Most months, the refuge waters are muddy with only bass and catfish being caught. When the Mississippi River is low and brackish water flows into the refuge during fall and early winter, speckled trout and redfish come into the refuge. No commercial fishing is allowed.

The headquarters for Delta NWR is located in Venice, Louisiana. The headquarters consists of office space, boat and equipment storage, and a maintenance area, all located inside a security fence. There are no public restrooms or visitor center. A kiosk offering general information was located outside the gate, but was destroyed by Hurricane Katrina in 2005. Developing an outdoor visitor contact area at the Venice site would provide important outreach information.

VISITOR SERVICES - BRETON NWR

Due to the remoteness of the islands, public use opportunities are limited. The primary public use is recreational fishing. Charter fishing boats are available for users to visit the refuge. Adjacent state waters are open for waterfowl hunting, but the number of waterfowl hunters is minimal. A small number of visitors enjoy bird watching and photography; the number of trips for these uses is very few. This CCP includes discontinuing primitive camping on the islands. Primitive camping has been permitted in the past. Due to the extreme loss of land and the critical need for feeding, loafing, and nesting areas by colonial seabirds on the remaining land above water, camping will not be allowed until sufficient land area is available to accommodate the needs of wildlife and camping.

*REFUGE ADMINISTRATION - DELTA AND BRETON NWR*s

Presently, six positions cover the administration of Delta, Breton, and Bayou Sauvage NWRs with support from other staff of Southeast Louisiana NWR Complex. All Delta NWR staff but one are stationed at the Complex headquarters in Lacombe, Louisiana, a two-hour drive from the Venice sub-office. A maintenance worker works full-time out of the Venice sub-office.

Figure 7. Location of areas open to waterfowl hunting on Delta NWR

Funding is administered through the Southeast Louisiana NWR Complex; neither Delta NWR nor Breton NWR have separate budgets. Mitigation funds based on payments by private companies for loss of wetlands during oil and gas operations occurring on Delta NWR provide partial financing for habitat restoration and monitoring efforts on Delta NWR.

Wilderness Review

Refuge planning policy requires a wilderness review as part of the comprehensive conservation planning process. The results of the wilderness review are included in Appendix H.

IV. *Management Direction*

INTRODUCTION

The Service manages fish and wildlife habitats considering the needs of all resources in decision-making. But first and foremost, fish and wildlife conservation assumes priority in refuge management. A requirement of the Improvement Act is for the Service to maintain the ecological health, diversity, and integrity of refuges. Public uses are allowed if they are appropriate and compatible with wildlife and habitat conservation. The Service has identified six priority wildlife-dependent public uses. Hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation are therefore emphasized in this CCP.

Described below is the CCP for managing the refuges over the next 15 years. This management direction contains the goals, objectives, and strategies that will be used to achieve the vision of each refuge.

Three alternatives for managing each refuge were considered. Because different alternatives were considered for Delta and Breton NWRs, these alternatives will be listed and discussed separately. Each set of alternatives was described in the Alternatives section of the Environmental Assessment, which was Section B of the Draft Comprehensive Conservation Plan.

ALTERNATIVES FOR MANAGING DELTA NWR

The three alternatives considered for managing Delta NWR are as follows:

A - No Action (Current Management)

B - User-Focused Management

C - Improved Habitat Restoration and Public Outreach Management (Preferred)

Implementing the preferred alternative will result in expanding current habitat restoration efforts to include not only interior marsh, but also Gulf shoreline; activities open to the public will remain at present levels with the exception of eliminating the primitive camping location; public outreach will be improved with kiosks and a wayside exhibit, updated brochures and maps, and establishing communication with and providing information within the school systems and in surrounding parishes.

VISION FOR DELTA NWR

Delta NWR will continue to serve as a haven of prime habitat managed for the conservation of migratory birds and other wildlife. The refuge will serve as a showcase of land management stewardship and coastal habitat restoration, demonstrating a balance between intensive wildlife management strategies and safeguarding the refuge's ecological integrity. Visitors to the refuge will enjoy a quality outdoor experience centered on the traditional uses of hunting and fishing, while cultivating a conservation ethic that promotes stewardship of this and other important wildlife habitat.

GOALS, OBJECTIVES, AND STRATEGIES FOR DELTA NWR

The goals, objectives, and strategies presented for Delta NWR are the Service's response to the issues, concerns, and needs expressed by the planning team, the refuge staff and partners, and the public and are presented in hierarchical format. Chapter V, Plan Implementation, identifies the projects associated with the various strategies.

These goals, objectives, and strategies reflect the Service's commitment to achieve the mandates of the Improvement Act, the mission of the Refuge System, and the purposes and vision of Delta NWR. With adequate resources, as outlined in Chapter V, the Service intends to accomplish these goals, objectives, and strategies within the next 15 years.

HABITAT MANAGEMENT (DELTA NWR)

Goal 1. Manage, conserve, and restore the physical and ecological functions of coastal wetland habitats for fish and wildlife resources.

Discussion: Delta NWR is located in the active Mississippi River delta and contains marsh, shallow ponds, channels, and bayous. Trees and scrub/shrub habitat exist on the higher ground along the banks of passes and the river. These lands are formed from sediments deposited from the water as it drains toward the Gulf of Mexico. The natural levees and embankments slope gradually away from the water flow and quickly give way to large, open water ponds and mudflats.

Objective 1.1: Continue to maintain quality interior emergent marsh, and initiate a restoration program that focuses on restoration of the Gulf shoreline, which will aid in protecting interior marsh.

Discussion: The land forming Delta NWR is new geologically. This dynamic system is vulnerable to natural forces, such as salinity fluctuation, seasonally high volumes of fresh water and sediment, subsidence, and frequent and sometimes very severe storms. Water within the river system is fresh, but becomes more brackish toward Breton Sound and the Gulf of Mexico. The most critical issue facing the refuge is land loss due to subsidence, erosion, major storm events, sea level rise, and salt-water intrusion. Refuge staff has been effectively countering these natural forces by strategically locating crevasses (cuts) through the natural levees. During high river stages, water from the Mississippi River spills through the crevasses and deposits sediment in shallow bays, creating first submerged mud flats that are quickly vegetated by submerged aquatics and later by emergent marsh plants as elevation increases. Creation of delta splays has been a very effective technique to build interior marsh, but opportunities to use this method have largely been exhausted. The refuge continues to search for other locations and options for marsh creation and protection, one of which is to use beneficial deposition of dredged materials along the Breton Sound and Gulf of Mexico shoreline. This area is experiencing rapid erosion and subsidence since it is further from the river's sediment source and bears the brunt of severe weather events.

Strategies:

- Proactively seek funding and partners, and explore new technologies for restoration projects such as dedicated dredge disposal to rebuild the Gulf shoreline.
- Continue to monitor existing crevasses, reconstruct vital crevasses that have silted in, and identify potential sites for new crevasses.

- Develop a Habitat Management Plan by 2018.
- Seek research opportunities through universities, conservation agencies, and other interested parties.

FISH AND WILDLIFE POPULATION MANAGEMENT (DELTA NWR)

Goal 2. Manage, conserve, and protect coastal fish and wildlife species with special emphasis on migratory birds and threatened and endangered species.

Discussion: Based on its location and habitat, Delta NWR is recognized as an important area for migratory birds, including many species of waterfowl, shorebirds, marsh birds, wading birds, gulls and terns, and songbirds. The refuge is one of the first and last land forms available to trans-Gulf migratory birds. Refuge resources provide critical cover and foraging areas to resident species such as mottled ducks, nesting marsh and wading birds such as rails, bitterns, herons and ibis.

Objective 2.1: Protect and monitor federal trust species and targeted species of management concern and interest.

Discussion: The Service is the principle federal agency charged with protecting and enhancing more than 800 species of migratory birds that spend all or part of their lives in the United States. In addition, the Service and the National Oceanic and Atmospheric Administration (NOAA) Fisheries share responsibility for administration of the Endangered Species Act of 1973, which combines both U.S. and foreign species. “Trust species” for the Service are those covered by the many laws and mandates designating federal responsibility for their protection and conservation. In addition, plans such as bird conservation plans for waterfowl, shorebirds, songbirds, etc., contain lists of birds of concern which are targeted for management purposes. Management programs on Delta NWR target those migratory and resident birds that depend on marsh, mud-flats, and other habitats occurring on the refuge. No critical habitat or federally listed threatened or endangered species reside on the refuge, although some species may use the area temporarily.

Strategies:

- Continue monthly waterfowl surveys during November through February, and the mid-winter waterfowl survey.
- Continue to maintain a closed area “sanctuary” to provide protection and rest for wintering and migrating waterfowl.
- Provide nesting, brood rearing, and molting habitat for mottled ducks with material from dedicated dredging and protect nests from predators.
- Partner with LDWF in surveying, monitoring nesting and broods, and banding mottled ducks.
- Continue to monitor bird rookeries.
- Initiate secretive marsh bird surveys.
- Initiate predator control to protect nesting birds.
- Monitor shorebirds and other neotropical migratory birds during peak migration periods.
- Continue monitoring and research projects on alligators, deer, and other endemic species.
- Continue to monitor exotic species such as nutria and assess any related environmental damage.
- Create and maintain data bases on research and monitoring projects.
- Monitor any occurrences or reports of threatened or endangered species.
- Periodically monitor fisheries.
- Revise the Wildlife Inventory Plan by 2022.

Goal 3. Provide the public with quality recreation activities, environmental education and interpretation, and outreach opportunities that lead to enjoyment and greater understanding of and appreciation for the fish, wildlife, cultural resources, and natural systems of the Mississippi River delta system.

Discussion: Other than the office in Venice, access to the refuge is restricted to boat and can be hazardous due to rough water, fog, and the wakes caused by other large vessels, such as ships and crew boats, traveling the Mississippi River. After navigating the busy Mississippi River to reach the refuge, the visitor must travel an intricate and often confusing network of canals, passes, and marshes. Most visitor use centers on hunting and fishing. While Delta NWR attracts waterfowl hunters from a wide geographic area, fishing is more limited. During most months refuge waters are muddy and mainly bass and catfish are caught. However, in the fall, when the Mississippi River is low and brackish water flows into the refuge, speckled trout and redfish can be caught and fishing visits increase. Non-consumptive uses are offered during daylight hours, but because of difficult access, few visits are made specifically for wildlife observation and photography. Wildlife observation is an incidental use that occurs in association with hunting and fishing and while traveling through the refuge to the Gulf. No roads or hiking trails exist on the refuge.

Objective 3.1: Offer visitors fresh and salt water recreational fishing, recreational crabbing, wildlife observation and photography, and hunting for waterfowl, deer, rabbit, and hogs. (Hogs may be taken with bow and arrow during deer archery season.)

Discussion: Hunting and fishing regulations specific to the Refuge are available in a brochure that is obtainable online, at the Lacombe and Venice offices, and can be mailed by request. Hunters are required to have in their possession a signed refuge hunting regulations brochure which serves as a refuge hunt permit. Sport fishing is allowed year-round during daylight hours with the exception that during the State waterfowl hunting season, fishing is only permitted after 12:00 pm in the hunting areas.

Strategies:

- Continue waterfowl hunting on Wednesday, Thursday, Saturday, and Sunday mornings; archery deer hunting; marsh bird harvest; and rabbit hunting.
- Review and update hunt plans as required.
- Maintain the recreational fishing program with additional outreach on kiosks at area marinas to promote fishing opportunities on the refuge and familiarize anglers with species found seasonally.

Objective 3.2: Improve visitor services and the outreach program.

Discussion: Because of the lack of access to the refuge and the limited facilities on site, environmental education and outreach activities involve refuge staff going to schools and providing materials, exhibits, etc., to the public. All informational facilities at the Venice office were destroyed by Hurricane Katrina. Historically, little to no staff is present at the refuge; it is 8 miles from the Venice office and a 2-hour drive from the Lacombe headquarters. Presently, one person works out of the Venice office. For security purposes, the building is located behind a fence with the gate locked when staff is not present. Improving methods of communication and accessibility to refuge information within limited options is desirable.

Strategies:

- Write a Visitor Services Plan by 2013.
- Initiate an environmental education/outreach program in the form of classroom presentations about Delta NWR to be offered in Plaquemines and surrounding parishes. Augment with items such as a "traveling trunk" which teachers can arrange to borrow and which would feature hands-on items such as furs, skulls, water and silt samples, duck wings, etc., to illustrate refuge resources.
- Complete the Delta NWR interactive CD Rom project and distribute copies to area schools and teachers.
- Install interpretive and orientation kiosk and wayside exhibits at the Venice headquarters building to orient visitors to Delta NWR and the primary resources
- Place visitor information kiosks with Delta NWR information at the commercial marinas in the Venice area; consider partnering with LDWF at Pass-a-Loutre Wildlife Management Area.
- Develop a Delta NWR brochure and/or tear sheet with map.
- Regularly update and improve refuge information on the web site.
- Explore web-based interaction methods between visitors and law enforcement such as wildlife sightings, bag reports, or current refuge conditions and regulations.
- Explore setting up and offering a special wildlife viewing tour or opportunity, possibly in conjunction with the Friends of Louisiana Refuges, LDWF, or sponsored by a local oil field related business that might have boats available.

REFUGE ADMINISTRATION AND PROTECTION (DELTA NWR)

Goal 4: Provide sufficient administration and protection to conserve trust resources on Delta NWR.

Discussion: Delta NWR is administered as one of eight refuges under the Southeast Louisiana Refuge Complex. Presently six staff members share direct responsibility for Delta, Breton, and Bayou Sauvage NWRs, with assistance from approximately 20 other staff members working on the Complex of refuges. One of the six positions, a maintenance position, is located out of the Venice office and the rest work out of the Complex headquarters in Lacombe, Louisiana. Law enforcement is an important tool for protection of the natural resources of the refuge as is supervision of the intensive oil and gas activities occurring on the refuge. To develop and increase outreach, environmental education, and interpretation is time consuming; improved communication with the public will require consistency and follow-up.

Objective 4.1: Enforce all federal and state laws applicable to the refuge.

Discussion: No law enforcement position is dedicated to patrolling the refuge. The four refuge officers working on the Southeast Louisiana NWR Complex, along with assistance from agents of LDWF, intermittently check Delta NWR. Most violations involve hunting out of season, using lead shot, over possession, and controlling commercial activities.

Strategies:

- Update the Law Enforcement Plan by 2012.
- Hire a full-time law enforcement officer and share position with Breton NWR.
- Continue to partner with LDWF to provide protection to resources and visitors.
- Maintain refuge boundaries by posting or inspecting 20 percent of the boundary annually.

Objective 4.2: Follow national Service policies for managing oil and gas activities on a national wildlife refuge.

Discussion: Oil and gas activities on Delta NWR are among the most complex of any national wildlife refuge, with an active and spread-out field of operations and aging infrastructure. The issue is further complicated by the existence of a mix of mineral ownerships, which change frequently. Monitoring and permitting these activities claim a significant portion of management time and resources. Spills and other accidents only complicate an already challenging responsibility.

Strategies:

- Work with the Service Regional Office Realty personnel and Bureau of Land Management to clarify federal mineral ownership and authorities.
- Monitor oil and gas activities; use special use permits to set conditions in area of non-federal mineral ownership.
- Use mitigation to lessen impacts.
- Continue to work with the U.S. Coast Guard, the Louisiana Oil Spill Coordinators Office, and the legal system in the event of oil spills.

Objective 4.3: Maintain refuge equipment in good condition and appearance.

Discussion: More than $3,000,000 worth of capitalized equipment exists for the complex of eight refuges to be used in all aspects of refuge administration, including habitat, wildlife, public use, and protection projects and management. Equipment is shared among the refuges instead of being assigned solely to one refuge. Project efficiency depends largely on age, condition, and maintenance of the equipment needed to accomplish projects.

Strategies:

- Maintain a current data base of all capitalized equipment and a maintenance schedule.
- Replace or purchase additional equipment as needed in order to have well-maintained and working equipment for all force account work planned

ALTERNATIVES FOR MANAGING BRETON NWR

The three alternatives considered for managing Breton NWR are as follows:

A - No Action (Current Management)

B - Custodial Management

C - Large-scale Habitat Restoration and Improved Public Outreach Management (Preferred)

Each of these alternatives was described in the Alternatives section of the Environmental Assessment, which was Section B of the draft comprehensive conservation plan. The Service chose Alternative C (Large-scale Habitat Restoration and Improved Public Outreach Management) as the preferred management direction.

Implementing the preferred alternative will result in partnering with other conservation agencies and large corporations to carry out restoration projects based on dedicated dredging, vegetation restoration, and exploring landscape scale efforts to restore the barrier islands. Activities open to the public will remain at present levels with the exception of eliminating primitive camping. Public outreach will be improved with kiosks and a wayside exhibit at the Venice headquarters, updated brochures and maps, and establishing communication with and providing information within the school system and surrounding parishes.

VISION FOR BRETON NWR

Breton NWR was the second national wildlife refuge established by President Roosevelt and the only refuge that he actually visited. It will continue to serve the purpose for which it was established, which is to provide habitat for the conservation of colonial nesting seabirds and other wildlife. The wilderness character of the refuge will be maintained. The refuge will partner with other agencies, organizations, and individuals to protect and restore the fragile and dynamic coastal barrier island habitat. Public use activities will emphasize fishing, wildlife observation, and wildlife photography; outreach will focus on environmental education and interpretation; environmental education programs will be based on the refuge's natural resources. Visitors to the refuge will enjoy a quality outdoor experience resulting in an enhanced appreciation for wildlife and their habitats and for the Refuge System.

GOALS, OBJECTIVES, AND STRATEGIES FOR BRETON NWR

The goals, objectives, and strategies presented for Breton NWR are the Service's response to the issues, concerns, and needs expressed by the planning team, the refuge staff and partners, and the public and are presented in hierarchical format. Chapter V identifies the projects associated with the various strategies.

These goals, objectives, and strategies reflect the Service's commitment to achieve the mandates of the Improvement Act, the mission of the Refuge System, and the purposes and vision of Breton NWR. With adequate resources, as outlined in Chapter V, the Service intends to accomplish these goals, objectives, and strategies within the next 15 years.

HABITAT MANAGEMENT (BRETON NWR)

Goal 5. Manage, conserve, and, if feasible, restore the physical and ecological functions of barrier island habitats for fish and wildlife resources.

Discussion: The islands are highly dynamic and constantly evolving. The most influential effect on the islands is their transformations resulting from strong storms and overwash. Over the years, hurricanes and severe storms have changed the face of the islands in both dramatic and subtle ways. Severe storms in recent history have resulted in significant loss of the land existing above water such as Hurricane Andrew (1992), Hurricane Danny (1998), Hurricane Georges (1998), Tropical Storm Isidore (2002), Hurricane Lili (2002), and Hurricanes Katrina and Rita (2005). Usually, there is post-storm recovery to some extent. After the devastating 2005 storm season, serious concerns now exist regarding the amount of recovery possible. The Intergovernmental Panel on Climate Change (IPCC) recently concluded that warming of the climate is undeniable and could cause changes in our stewardship of land. Examples of potential changes are frequency of extreme weather events and rising sea levels at coastal refuges. Refuge staff has learned from the past that small-scale restoration projects can no longer achieve lasting benefits. It will take working in partnership with others to achieve large-scale and costly restoration of the barrier islands. Information to be provided by U.S. Geological Survey on sediment loss and the availability of suitable dredge material will be used to determine the feasibility of restoration options.

Objective 5.1: Monitor and maintain island habitat with large-scale restoration projects.

Strategies:

- Develop and maintain partners such as USGS, TNC, UNO, Gulf of Mexico Foundation, Conoco Phillips, Shell Oil, and local schools for conservation projects.
- Seek funding and partners for dedicated dredge disposal projects to create 2,000 acres of restored sandy beach and bayside emergent habitat.
- If restoration is successful or land rebuilds, proactively search for funding and partners for sand fencing and vegetative planting projects. Construct approximately 1,000 linear feet of sand fencing and plant 20,000 plants of species such as sea oats, bitter panicum, seaside blue stem, and additional appropriate species for the site.
- Participate in landscape level coastal initiatives such as CWPPRA, LCA, CIAP, and Coast 2050

Objective 5.2: Protect the islands that are under Wilderness status in accordance with the laws and regulations of the Wilderness Act of 1954.

Discussion: On January 3, 1975, Chandeleur and the west Breton Islands became part of the National Wilderness Preservation System. The Breton Wilderness, according to the Clean Air Act, is listed as a Class 1 Prevention of Significant Deterioration Area. This means that the islands are given special consideration and protection from pollutants. The main result of this designation is the responsibility of new point sources to consult with the Service on proposed releases and how these releases will impact the overall air quality ‘budget’ for the area of the refuge. Refuge personnel work closely with the Air Quality Branch of the Service, located in Lakewood, Colorado, on this issue.

The 1964 Wilderness Act, directly and by reference in subsequent wilderness legislation, generally prohibits commercial activities, motorized access, and roads, structures, and facilities in units of the National Wilderness Preservation System.

Objective 5.3: Seek research possibilities with universities and conservation agencies.

Discussion: The Service has partnered in the past with such agencies as Louisiana Department of Natural Resources, Corps of Engineers, and the Coastal Research Lab at the University of New Orleans for restoration projects and resource information needs, and will continue in the future to seek partners to sponsor and support beneficial projects.

Objective 5.4: Develop a Habitat Management Plan by 2018.

Discussion: A Habitat Management Plan (HMP) is one of several step-down plans developed in conjunction with a CCP. The HMP provides a detailed description of all refuge habitats; identifies refuge priority species, species groups, and communities, and their habitat requirements; assesses the refuge’s potential contribution to the habitat needs of the resources of concern and reconciles conflicts among them; and, develops desired habitat goals and objectives.

FISH AND WILDLIFE POPULATION MANAGEMENT (BRETON NWR)

Goal 6. Manage, conserve, and protect coastal fish and wildlife species with special emphasis on migratory birds, colonial nesting waterbirds, and threatened and endangered species.

Discussion: Because of their location, the islands serve as habitat for many migratory bird species either for an entire season or only a matter of hours or days. The islands give refuge to migratory birds on a regular basis or may serve as a haven to birds blown off course and not following normal migration patterns. Breton NWR, including the Chandeleur Islands chain, has been designated as a Globally Important Bird Area by the American Bird Conservancy in association with The Nature Conservancy. The refuge is used by ducks, primarily redhead and scaup, as a wintering and migration stop-over site. The Chandeleur Islands are one of only four Gulf of Mexico wintering grounds for redhead, which primarily winter where they can feed in the seagrass beds.

In the past, large colonies of nesting brown pelicans; laughing gulls; black skimmers; and royal, Caspian, sandwich, sooty, common, least Forster's, and gullbilled terns used the islands. It is unknown if the islands will rebuild or be restored to the extent that the colonies can return.

Threatened and endangered species using the refuge are the eastern brown pelican (nesting) and the piping plover (wintering). Several species of sea turtles are commonly observed in the vicinity of the refuge and are considered threatened or endangered, depending on the species. The most common of these is the loggerhead, but other species occur including green, leatherback, and Kemp's ridley.

Objective 6.1: Depending on the quantity and success of habitat restoration and recovery, continue to protect and monitor colonial nesting seabirds, federally listed threatened and endangered species, and other targeted species and species of federal responsibility.

Discussion: The amount of biological projects that can be accomplished on the islands largely depends on whether or not any of the land and bird populations rebound after hurricanes Katrina and Rita. If restoration is attempted and is successful, on-going projects underway before the storms can be resumed and expanded. Until that unknown issue is resolved, refuge staff will continue to monitor developments.

Strategies:

- If the brown pelican nesting population increases in response to habitat recovery and restoration, resume banding juveniles and begin a telemetry study on adult brown pelicans.
- If the nesting population of terns increases in response to habitat recovery and restoration, begin a banding program to determine migration patterns.
- Continue to conduct winter surveys of piping plover.
- Continue surveys of colonial nesting birds.
- Continue aerial waterfowl survey of wintering diving ducks.
- Monitor shore bird populations during peak migration periods.
- Monitor wading birds during peak breeding season.
- Record observations of sea turtles and any nesting activity.
- Develop and maintain a data base of survey information.
- Determine effective methods of and initiate predator control in ground nesting bird colonies.
- Revise Breton NWR's wildlife inventory plan as part of Delta NWR's plan by 2022

VISITOR SERVICES (BRETON NWR)

Goal 7. Provide the public with quality recreational activities, environmental education, interpretation, and outreach opportunities that lead to enjoyment and greater understanding of, and appreciation for, fish, wildlife, and barrier islands.

Discussion: Recreational activities on Breton NWR revolve around fishing, principally wade fishing in the shallow waters. Access is either by boat or float plane. Disturbance to the nesting colonies is discouraged by posting them as closed to prevent anglers and other visitors from walking through the nesting birds. Wildlife observation and photography are allowed but are not common because of the harshness of the environment, remoteness, insects, and rapidly changing weather patterns. The refuge does not offer transportation to the islands for any of the uses open to the public; visitors must rely on privately owned boats and charter fishing businesses.

Objective 7.1: Maintain current visitor services and programs of fishing, wildlife observation, and photography, except in certain portions identified with "Area Closed" signs to protect bird nesting areas. Primitive camping will be discontinued.

Discussion: Breton NWR was established over 100 years ago. At this time, there are no plans to change management of the recreational uses other than the elimination of primitive camping because so little of the islands remain above water.

Strategies:

- Maintain existing fishing program; partner with LDWF for enforcement of regulations.
- Explore possibilities of providing a tour of the islands for wildlife observation and interpretation as part of a Delta NWR special event.
- Develop a visitor services' plan as part of Delta NWR's visitor service's plan within six years of CCP implementation.

Objective 7.2: Improve the quality and quantity of information about Breton NWR offered to the public.

Discussion: No facilities or staff exist on the islands and, as already discussed, access is limited. Therefore, most of the public does not experience the refuge and what it has to offer. Information can be presented in association with Delta NWR. Although the two refuges are dissimilar in habitat, hydrology, and priority species, they are logistically close. Improving methods of communication and accessibility to refuge information within limited options is desirable

Strategies:

- Include information about Breton NWR at wayside panels and kiosk at Venice headquarters.
- Improve and maintain current information on the web page and make it interactive so that information is two-way; include interpretive information.
- Update the Breton NWR general brochure as needed.
- Include maps on kiosks; place fishing information and maps at local marinas; place small kiosk or panel at marina to include fish identification.
- Include information about the Refuge System, colonial nesting birds, and wading birds on kiosks.

- Ensure staff located at the Delta/Breton NWR office receive appropriate training to properly represent the Service to the public.
- Communicate key issues in articles in local newspapers, Plaquemines Parish special events and festivals, and Southeast Louisiana Refuge Headquarters special events.

Objective 7.3: Improve environmental education program in conjunction with Delta NWR's environmental education program.

Discussion: Because of the lack of staff and access to the refuge, environmental education and outreach activities involve refuge staff going to schools and providing materials, exhibits, etc., to the public in venues such as festivals and other special events.

Strategies:

- Develop classroom programs for students in Plaquemines and St. Bernard Parishes.
- Conduct teacher workshops.
- Partner with corporations for funding of specific programs.
- Create a power point program on a CD with lesson plans for teachers.

Objective 7.4: Build a volunteer program.

Discussion: In the past, Plaquemines Parish 4-H, school groups, corporations, and individuals assisted refuge staff with restoration projects, banding pelicans, and beach sweeps; however, all volunteer contacts ended when Hurricanes Katrina and Rita devastated the islands and adjacent parishes. The volunteer program needs to be rebuilt.

Strategies:

- Detail Southeast Louisiana NWR Complex volunteers to Breton NWR.
- Explore the possibility of asking retired teachers to assist with environmental education in schools.
- Orient Friends of Louisiana Wildlife Refuges, Inc., to Breton NWR and identify projects for the group.
- Use students, youth groups, and college interns to develop Grade Level Expectations-linked lesson plans and other projects.
- Continue to develop corporate sponsors to partner with in creating environmental education educator kits.

REFUGE ADMINISTRATION AND PROTECTION (BRETON NWR)

Goal 8. Provide sufficient administration and protection to conserve trust resources on Breton NWR.

Discussion: Breton NWR is administered as one of eight refuges under the Southeast Louisiana NWR Complex. Presently six staff members share direct responsibility for Delta, Breton, and Bayou Sauvage NWRs, with assistance from approximately 20 other staff members working on the Complex. All personnel work out of the Complex headquarters in Lacombe, Louisiana. Law enforcement is an important tool for protection of the natural resources of the refuge.

Objective 8.1: Enforce all federal and state laws applicable to the refuge.

Discussion: No law enforcement position is dedicated to patrolling the refuge. The four refuge officers working on the Southeast Louisiana NWR Complex, along with assistance from agents of LDWF, intermittently check Breton NWR. Most violations involve fishing violations.

Strategies:

- Update Law Enforcement Plan by 2012.
- Hire a full-time law enforcement officer to share with Delta NWR.
- Partner with LDWF to provide protection to resources and visitors.
- Maintain refuge boundaries by posting or inspecting 20 percent of the boundary annually.

Objective 8.2: Follow national Service policies for managing oil and gas activities as they relate to national wildlife refuges.

Discussion: Compared to Delta NWR, oil and gas issues are not as complicated on Breton NWR. Ownership of minerals under the federally owned islands belongs to the Service. Occasionally, requests are received regarding seismic and other exploratory methods in the area. Monitoring and enforcement is involved with every release or spill event that affects or potentially will affect the refuge and its resources.

Strategies:

- Monitor oil and gas activities; use special use permits to set conditions.
- Use mitigation to lessen impacts.
- Continue to work with the U.S. Coast Guard, the Louisiana Oil Spill Coordinators Office, and the legal system in the event of oil spills.

Objective 8.3: Maintain refuge equipment in good condition and appearance.

Discussion: More than $3,000,000 worth of capitalized equipment exists for the Complex of eight refuges to be used in all aspects of administration, including habitat, wildlife, public use, and protection projects and management. Equipment is shared among the refuges of the Complex instead of being assigned solely to one refuge. Project efficiency depends largely on age, condition, and maintenance of the equipment needed to get work projects accomplished.

Strategies:

- Maintain a current data base containing all capitalized equipment and a maintenance schedule.
- Replace or purchase additional equipment as needed in order to have well-maintained and working equipment for all force account (staff) work planned.

V. Plan Implementation

INTRODUCTION

Refuge lands are managed as defined under the Improvement Act. Congress has distinguished a clear legislative mission of wildlife conservation for all national wildlife refuges. National wildlife refuges, unlike other public lands, are specifically dedicated to the conservation of the Nation's fish and wildlife resources and wildlife-dependent recreational uses. Priority projects emphasize the protection and enhancement of fish and wildlife species first and foremost, but considerable emphasis is placed on balancing the needs and demands for wildlife-dependent recreation and environmental education.

To accomplish the purpose, vision, goals, and objectives contained in this CCP for Delta and Breton NWRs, this section identifies specific projects, funding and personnel needs, along with partnership opportunities, and required step-down management plans.

This CCP focuses on the importance of funding the operations and maintenance needs of the refuges to ensure the staff can achieve the goals and objectives identified and are crucial to fulfill the purpose for which each refuge was established. The refuge's role in protecting and providing habitat for migratory waterfowl, birds, and endangered species is critical. Proposed priority public use programs will establish and expand opportunities for wildlife-dependent recreation, but not without specialized staff and resources for operations and maintenance.

PROPOSED PROJECTS

Listed below are the proposed project summaries and their associated costs for fish and wildlife population management, habitat management, resource protection, visitor services, and refuge administration over the next 15 years. This proposed project list reflects the priority needs identified by the public, planning team, and refuge staff based upon available information. These projects were generated for the purpose of achieving refuge-specific objectives and strategies. The primary linkages of these projects to those planning elements are identified in each summary.

FISH AND WILDLIFE POPULATION MANAGEMENT - DELTA NWR

The refuge attracts 15 species of waterfowl, of which mottled ducks nest on the refuge. Over 400,000 waterfowl have been documented to use the refuge for resting and feeding during peak migrations. Shorebirds, wading birds, neotropical migratory songbirds, raptors, mammals, reptiles and amphibians, and numerous fisheries exist on the refuge. Threatened species occurring on the refuge include the Gulf sturgeon and piping plovers. Endangered species occurring on the refuge include eastern brown pelicans and interior least terns. The refuge marsh wetlands are spawning, nursery, and feeding grounds for many aquatic species.

Project 1 – Monitor waterfowl use on refuge

Hunting is offered on a portion of the refuge four days a week until noon during the State of Louisiana State Waterfowl Season. Another portion of the refuge area remains closed to public entry during the waterfowl season and it is the only designated area closed to hunting within the Mississippi River delta area. This provides "safe" habitat for resting and feeding to thousands of migratory waterfowl without hunting pressure. Refuge staff will monitor migrating and wintering waterfowl use.

- Conduct annual waterfowl aerial surveys consisting of four to six aerial surveys contingent on weather conditions. Initial survey will be performed before the state waterfowl hunting season begins and last survey will be conducted after the state waterfowl hunting season ends.
- Coordinate with LDWF on migration numbers on the refuge.

One Service biologist will be required to conduct aerial surveys on the refuge. The annual cost will be $20,000, most of which is for airplane flight-time rental.

Project 2 – Monitor species of concern, targeted species, and species of federal responsibility.

National wildlife refuges are mandated to manage for threatened and endangered species if they occur on the refuge. However, refuges are also responsible for management of other wildlife species if the action does not negatively impact the threatened or endangered species. Refuge management is geared toward managing the ecosystem as a whole.

- A faunal species list will be compiled from surveys conducted by Service biologists and other researchers. This list will be made available to the public through the refuge website. Within the list, staff will prioritize species based on regional and state lists of species of concern, at risk/target species identified by Partners in Flight, and other plans.
- Develop a wildlife inventory plan based on species selected as priority species.
- Secretive marsh birds will be surveyed and monitored as species of concern. Adaptive management actions will reflect data collected.
- Partner with college and university researchers to record micro and macro invertebrate use associated with crevasse work and established splay sites.

The initial cost for researchers and planning documents will be approximately $75,000. The annual survey cost for one biologist's time is $5,000.

FISH AND WILDLIFE POPULATION MANAGEMENT - BRETON NWR

The refuge attracts twenty-three species of shore and sea birds, of which thirteen species nest on the refuge. Historically, over twelve thousand brown pelican nests were documented annually on the refuge. Shorebirds, sea birds, reptiles, and numerous fish exist on and around the refuge. Threatened species occurring on the refuge are piping plovers. Endangered species occurring on the refuge include eastern brown pelicans and interior least terns. The sandy beach habitat is crucial for many species of sea and shore birds' nesting, resting, and feeding activities.

Project 3 – Perform banding on juvenile brown pelicans.

The refuge provides important nesting habitat for endangered brown pelicans. They use the refuge because of the abundant food resource in nearby waters and the high elevation of the islands that provide small woody or grassy areas desirable for nesting. Important research is gathered by the banding of juvenile brown pelicans to determine if the birds return to the islands for nesting and to monitor their travels. Refuge staff will:

- Conduct annual monitoring and nest counts prior to banding activities.
- Conduct banding activities with no fewer than one hundred juveniles banded yearly.
- Coordinate with LDWF on nesting numbers on the refuge.

Staff required will be a minimum of six to perform bandings and two to conduct nest counts. Annual costs are estimated to be $5,000 for banding and $2,000 for nest counts.

Project 4 – Monitor species of concern, targeted species, and species of federal responsibility.

National wildlife refuges are mandated to manage for threatened and endangered species if they occur on the refuge. However, refuges are also responsible for management of other wildlife species if the action does not negatively impact the threatened or endangered species. Refuge management is geared toward managing the ecosystem as a whole.

- Develop a wildlife inventory plan based on species selected as priority species.
- Partner with local colleges or universities to conduct research concerning remaining available nesting habitat since Hurricane Katrina, with carrying capacity estimates provided for nesting usage per species.
- Threatened and endangered species will be surveyed and monitored. Adaptive refuge management actions will reflect data collected.

The initial cost for researchers and planning documents will be approximately $75,000. The annual survey cost for one biologist's time is $5,000.

HABITAT MANAGEMENT - DELTA NWR

Refuge wetlands are highly productive and they offer a lush vegetative habitat that is important to wildlife resources. The palustrine emergent marsh offers fresh and brackish habitats for many resident and migratory species. It also provides important aquatic habitat for many sport and commercial fish species. The primary purpose of the refuge is to provide sanctuary and habitat for wintering waterfowl. This purpose is threatened by the loss of coastal Louisiana wetlands. The rate of marsh loss due to erosion and subsidence is increasing each year and the following projects will greatly reduce marsh habitat loss.

Project 5 – Construction of ten crevasses at key locations to allow sediment-loaded water to flow into ponds or bays formerly closed off to sediment flow that will build new splays allowing these areas to become vegetated habitat. Refuge staff will:

- Identify ten areas with sufficient water flow nearby that have been closed off or a levee is prohibiting the influx of sediment-enriched water into an open bay or pond.
- Ensure these ponds or bays have access for the sediment enriched water to exit the pond or bay to increase flow through the area which increases sediment stacking elevations.
- Seek creative funding through partnerships or work within mitigation circumstances to accomplish these crevasses.

Each crevasse established will be designed so that it will continue to produce elevated marsh for a period of twenty years minimum. The coastline will continue to subside and these crevasses will help compensate for the natural loss and increase beneficial vegetation resources for waterfowl and other wildlife and fish on the refuge. The size of splay and acres of emergent marsh created by each crevasse will depend on location, water sediment load, and river flows.

The one-time construction of these smaller crevasses will cost an estimated $700,000

Project 6 – Use beneficial dredged materials from the Mississippi River to fill an open water bay and create new emergent marsh on the refuge just north of Pass-a-loutre. This partnership with the Army Corps of Engineers can create and restore hundreds of acres lost to erosion and subsidence on the refuge with no cost to the refuge.

- Partner with the Army Corps of Engineers to plan location and elevation of material to be stacked on the refuge.
- Stack sediment at elevation of 7' +MLG to ensure compaction does not put sediment under water, allowing it to become vegetated.
- Plan locations of sediment to ensure tidal movement will reach all areas. No areas of stagnated water shall exist.
- Monitor areas for vegetation growth and inventory species.
- Once new lands are formed, plant desired marsh grass if necessary.
- Identify wildlife use and monitor their use of the new area.

The cost for sediment placement will be $20,000,000; the funds will be through the Army Corps of Engineers navigation projects and no immediate cost to the refuge. The inventory of plants and wildlife can be accomplished by one Service biologist for $5,000 annually. Planting can be accomplished using volunteers and a one-time cost of $40,000 for plants, travel, and supplies.

The reduction or attempted halt of marsh subsidence and marsh loss is considered critical through marsh creation projects and plantings for marsh stabilization.

Project 7 – Dredge Main Pass to increase flow of sediment to canals and crevasses on the refuge to build marsh and create beneficial splays.

These splays are critical habitat and the filling in of the open bays and ponds will generate new vegetation growth needed by migratory waterfowl and other species of wildlife on the refuge.

- Propose Main Pass dredge as a CWPRA project.
- Dredge the first eight miles of the pass from the Mississippi River to a depth of twenty feet and a width of two hundred feet.
- Stack sediment at elevation of 7' +MLG to ensure compaction does not put sediment under water, allowing it to become vegetated.
- Use spoil generated from a suction dredge and place the spoil as beneficial fill in available open ponds or bays, creating hundreds of acres of new emergent marsh and reducing erosion.
- Plan locations of sediment to ensure tidal movement will reach all areas. No areas of stagnated water shall exist.
- Monitor areas for vegetation growth and inventory species.
- Once new lands are formed, plant desired marsh grass if necessary.
- Identify wildlife and monitor their use of the new area.

The cost of this project would be an estimated $40,000,000, but would increase new emergent marsh for a minimum of twenty years, creating potentially hundreds or more acres of marsh. The inventory of plants and wildlife can be accomplished by one Service biologist for $5,000 annually. Marsh planting can be accomplished with volunteers and $20,000 for the cost of plants and supplies.

Project 8 – Dredge Pass-a-loutre and place mined sediment on refuge to fill open bay and create hundreds of acres of new emergent marsh.

- Plan placement of sediment to the east side of the bay away from the area used by the Corps of Engineers for dredge work in the Mississippi River.
- Stack sediment at elevation of 7' +MLG to ensure compaction does not put sediment under water, allowing it to become vegetated.
- Use generated spoil from suction dredge and place as beneficial fill in available open ponds or bays, creating hundreds of acres of new emergent marsh and reducing erosion.
- Plan locations of sediment to ensure tidal movement will reach all areas. No areas of stagnated water shall exist.
- Monitor areas for vegetation growth and inventory species.
- Once new lands are formed, plant desired marsh grass if necessary.
- Identify wildlife use and monitor their use of the new lands.
- Improve flow for the area south of the refuge to create hundreds of acres of emergent marsh on the State WMA that could provide stability to the marsh area and have benefits for the refuge.

Although there is no immediate cost to the refuge for the sediment placement, the cost is $30,000,000 for the sediment work. The inventory of plants and wildlife can be accomplished by one Service biologist for $5,000 annually. Marsh planting can be accomplished with volunteers and $20,000 for the cost of plants and supplies.

The inventory of plants and wildlife can be accomplished by one Service biologist for $50,000. Planting can be accomplished using volunteers and $20,000 for the cost of plants and supplies.

Project 9 – Dredge section of Main Pass in bend of the pass that is restricting flow of sediment to established crevasses and canals approximately 7 miles west of the Mississippi River.

- Use Tennessee Valley Authority to plan and perform placement of dredged sediment to the south side of Main Pass in an open bay to create beneficial fill and establish new emergent marsh habitat. Also create one new crevasse to the east of the dredged site.
- Use spoil generated from suction dredge and place it as beneficial fill in available open ponds or bays, creating several acres of new emergent marsh and reducing erosion.
- Stack sediment at elevation of 7' +MLG to ensure compaction does not put sediment under water, allowing it to become vegetated.
- Plan locations of sediment to ensure tidal movement will reach all areas. No areas of stagnated water shall exist.
- Monitor areas for vegetation growth and inventory species.
- Once new lands are formed, plant desired marsh grass if necessary.
- Identify wildlife and monitor their use of the new marsh.
- Improve flow for a new crevasse east and south of the dredged site to create a minimum of twenty acres of emergent marsh on the refuge over the next twenty years.

The immediate cost to the refuge for the sediment placement is $5,000,000 for the sediment work and crevasse creation. The inventory of plants and wildlife can be accomplished by one Service biologist for $5,000. Planting can be accomplished using volunteers and $10,000 for the cost of plants and supplies.

Project 10 – Shoreline protection along the Breton Sound and Gulf of Mexico—propose as a CWPPRA project.

- Plan and construct a reef block around perimeter of the refuge to establish erosion barrier.
- Fill behind barrier to the vegetated marsh with dredged material to a height of 5 to 6 feet, which will support the reef block.
- Plant area behind reef block to provide additional erosion protection.

Erosion from the Breton Sound and the Gulf of Mexico is a serious threat to protection of the delta marsh. The outer boundaries of the refuge have eroded and water depths have increased, making any regeneration of vegetation impossible. These areas are a priority to address or the refuge will continue to shrink in size until the refuge is absorbed by the Gulf of Mexico.

The cost to the refuge for the reef block and dredge stacking will be significant, estimated at $75,000,000.

Project 11 – Develop monitoring programs for marsh loss, change in water depths, submerged aquatic plants, and the impacts of public use activities on the resources. Evaluate long-term effects of restoration and shoreline fortification projects.

- Develop historic GIS maps of soils, habitats, and boundaries.
- Establish salinity monitoring points and monitor monthly by taking readings, develop a spreadsheet database, and evaluate changes. Coordinate with marsh survivability plots and vegetation composition changes.
- Map vegetation types with the use of GPS and GIS to inventory special and unique areas of the refuge requiring special management or protection.
- Implement a marsh subsidence monitoring plan to monitor the effects of refuge habitat manipulations and the encouragement of wildlife plants, such as three-square and duck potato in the marsh. These plans will show impacts of higher salinity to freshwater marsh resources and impacts to resources for wildlife on the refuge.

Operational funds should be dedicated for trained personnel performing basic wildlife inventorying and monitoring. One biologist and one technician are needed to perform inventorying and monitoring, and to manage restoration programs. Sampling schemes will use photo points and transects to monitor changes resulting from management actions. These monitoring programs will employ the use of field computers, data collectors, boats, and GIS technology for documentation. A cost estimate per year of $120,000 will be required for this work to be achieved. This is primarily salary costs.

HABITAT MANAGEMENT - BRETON NWR

The refuge is valuable as important habitat to several species of threatened and endangered species. The sandy beach habitat is used for nesting by sea and shore birds and it provides abundant food sources year-round. The primary purposes of the refuge are to provide sanctuary for nesting and wintering seabirds, protect and preserve the wilderness character of the islands, and provide sandy beach habitat for a variety of wildlife species. Through natural succession, these islands were estimated to disappear in 300 years. However, the rate of island loss due to erosion and subsidence was greatly increased from Hurricane Katrina. It is estimated that unless action can be undertaken to restore the islands, they may be lost permanently in ten years.

Project 12 – Plan and coordinate a research project that will determine if the islands are able to be saved and restored. Refuge staff will:

- Develop a scope of work and contract with the U.S. Geological Survey and the University of New Orleans to determine current status of islands and the ability to rebuild without restoration; if unable to recover without restoration efforts, address recommendations or actions that would be proposed, if any.
- Work within mitigation circumstances to accomplish restoration work with no cost to Service.

A beneficial use of dredged material was used on north Breton Island three times from dredge work nearby of the Mississippi River Gulf Outlet (MRGO) by the Army Corps of Engineers. However the MRGO has been closed and no future maintenance is planned. Other sources of dredge material will be explored.

Project 13 – Perform dedicated dredge disposal and restore the refuge to pre-Hurricane Katrina levels. This restoration will greatly benefit sea and shore birds in regard to nesting, loafing, and feeding habitat into the future.

- Propose dredge and placement as a CWPPRA project.
- Stack sediment at elevation of 5' +MLG to ensure compaction does not put sediment under water, allowing it to become vegetated.
- Plan locations of sediment to ensure tidal movement will reach all areas.
- Monitor areas for vegetation growth and inventory species.
- Once new lands are formed, plant desired marsh grass if needed

The estimated cost is $150,000,000 for the dedicated dredging and placement work. This is a one time rebuilding of the entire Chandeleur Island chain. Individual islands based on priority use of migratory birds can be rebuilt for less. Project #12 will better determine if the life expectancy and natural process of building and declining will make this project feasible. Once the islands have rebuilt, planting beach and dune plant species along with sand fencing can be accomplished using volunteers and $90,000 for the cost of plants and supplies.

RESOURCE PROTECTION AND REFUGE ADMINISTRATION – DELTA NWR AND BRETON NWR

Project 14 – Provide adequate law enforcement protection for refuge resources, federal trust species, personnel, and the visiting public.

Annually, Delta NWR hosts approximately 12,000 visitors for hunting, fishing, and other wildlife-dependent recreation while Breton NWR hosts approximately 9,000 visitors. Visitation has been down for the last two years but is expected to increase as recovery from Hurricane Katrina occurs. General services are now returning to the area, such as restaurants, lodging, marinas, and grocery stores. The refuge will conduct a law enforcement program review and revise the Law Enforcement Plan. A full-time law enforcement position is needed to cooperate with state wildlife officers, the local sheriff and city officers to:

- Protect hunters, fishermen, and other visitors and otherwise provide a safe experience while they are on the refuges.
- Enforce refuge regulations and reduce unapproved and illegal activities.
- Rescue lost or stranded hunters, fishermen, and aid visitors in need.
- Protect refuge infrastructure, equipment, and cultural and natural resources.
- Conduct patrols in the refuge-owned bays or ponds for illegal commercial fishing activities.

One refuge officer is needed to achieve goals and perform law enforcement duties on both refuges. Cost would be $90,000 per year for salary, equipment and supplies.

Project 15 – Maintain marked refuge boundary and other identifying and regulating signs.

- Conduct refuge boundary surveys on all lands and any new lands acquired and post accordingly.
- All existing refuge boundaries will be inspected and reposted by annually inspecting and reposting 20 percent of the boundary.
- Signs will be placed at all refuge entrance points along trails, water courses, and roads.
- Post signs to mark the portions of the refuge as “closed” so they are visible at all entrances.
- Replace all faded or damaged signs as observed.

The one time cost for boundary surveys will be $100,000 due to travel constraints and logistics. The annual boundary maintenance cost will be $5,000.

Project 16 – Maintain Wilderness designation on Breton NWR.

- Ensure all actions on Breton NWR are in compliance with the Wilderness Act.

Project 17 – Meet current and expanded ability to maintain infrastructure for public use and management capabilities of the refuge.

A maintenance and field headquarters for both refuges is located in Venice, Louisiana. From the office, it is an 8-mile boat ride to Delta NWR and a 16-mile boat ride to Breton NWR. There is only one maintenance employee stationed in Venice. All other employees are stationed at Southeast Louisiana NWR Complex in Lacombe, Louisiana.

- The staff shares responsibilities with other refuges for equipment, office space, roads, boat launch, parking areas, refuge facilities, equipment, boats, and vehicles—all which must be maintained regularly through a maintenance management system.

Project 18 – Administer oil and gas program with efforts guided to protect surface habitat and wildlife on the refuges.

Delta NWR has one of the oldest oil and gas programs on any national wildlife refuge with 489 wells drilled since 1942. Many of these wells are inactive but reserved for future potential and have been shut in but not plugged and abandoned. Numerous flowlines are located throughout the refuge, some have been cleaned and some are still active. Spill events and releases are common occurrences.

Breton NWR has several oil and gas transmission lines under the refuge from off-shore activities. The minerals are federally owned and currently have a moratorium against drilling. However, the refuge is within miles of several platforms and facilities and can be greatly impacted with any release or spill event.

All activities relating to oil and gas on the refuges must be requested as a special use permit for review.

- Ensure all companies operating on the refuges are permitted, identified, and in compliance with refuge, state, and industry regulations.
- All activities are submitted for review and a determination is made by the refuge manager if a special use permit is required for activities requested or performed.

- Issue special use permits and assess mitigation for impacts to the surface of the refuges if they cannot be avoided.
- Response to all spill events and releases are conducted immediately after located; however, before work is performed, the response/clean-up company must consult with the refuge manager to ensure methods are approved.
- Conduct routine inspections of field and facility to ensure proper operating procedures are in place and no releases are occurring.
- Provide guidance for wildlife-oriented protection methods such as bird cannons, mylar steamers, and predator eyes during spill events.

VISITOR SERVICES – DELTA NWR AND BRETON NWR:

Access to both refuges is by boat only. The Delta/Breton NWR office has been repaired since Hurricane Katrina and is open for use by visitors. Plaquemines Parish was hit hard by Hurricane Katrina, and many residents have relocated and will not return. The infrastructure of the parish is still recovering, and it will be a slow recovery due to the high cost of living and lack of confidence in the levee system. Two of the schools have reopened and have minimal attendance due to low population numbers. The area is known across the United States as one of the premier waterfowl and fishing destinations that will continue to draw visitors from out of Louisiana for opportunities for outdoor recreation.

Project 19 – Maintain facilities at the Delta/Breton NWR facility.

The Delta/Breton NWR facility was moved from the refuge to the new location in Venice, Louisiana, in 1979. It was severely damaged by Hurricane Georges and the decision was made to replace it in 2001. The building was complete and had a staff of three employees before Hurricane Katrina hit in August 2005 and severely damaged the facility. It has been repaired but only one maintenance position remains for maintenance items at the facility. The facility is used for lodging of staff members who conduct work on the refuge and require overnight accommodations. The office has established a visitor parking area and viewing area of the historic Mississippi River. It offers a viewing area of the river at the south foremost point. A large kiosk offers information about the Service, wildlife on the refuges, and information about hunting permits.

- Maintenance of facilities and all equipment located at site is performed by one maintenance employee.
- Continue managing the refuge from the Southeast Louisiana NWR Complex.

A refuge operations' specialist is needed to be stationed at Venice, Louisiana. The cost will be $90,000 per year for salary, benefits, equipment, and supplies.

Project 20 – Improve visitor services and interpretation.

Established in 1935, Delta NWR, due to its remoteness, has never been able to reach its potential regarding programs, facilities, and staff to best support visitor services and wildlife-dependent recreation.

Established in 1904, Breton NWR is the second oldest refuge and the only one known to have been visited by President Theodore Roosevelt. However, due to its remoteness, it, too, has never been able to reach its potential regarding programs, facilities, and staff to best support visitor services and wildlife-dependent recreation.

One of the first and primary duties is to develop a step-down Visitor Services' Plan with services that include wildlife-dependent recreation and education. Refuge staff will:

- Post visitor hours and contact information; have a staff person available throughout those hours to assist the visiting public. At a minimum, this could be accomplished by telephone.
- Staff will develop, maintain, and improve interpretive exhibits for the new kiosk and develop interpretive talks specific to each refuge.
- Interactive CD/ROM will be developed and distributed to educate students about the Mississippi River Delta Region and the refuge.
- Volunteers will be used to supplement the education programs and visitor contact centers.
- Local public events held within Plaquemines Parish will be attended by refuge staff, promoting or identifying the refuge as needed.
- Develop a self-guided boat tour of the refuges and distribute brochures at local marinas.
- Plan and construct new kiosk or information sites with maps at local marinas in Venice, Louisiana.
- Improve visitor contact stations, kiosks, parking areas, and maintain refuge entrance sign quality and appearance.

Project 21 – Improve and enhance hunting and fishing opportunities while minimizing conflicts between consumptive and non-consumptive users.

Quality fishing opportunities may be promoted with initiatives. Fishing opportunities at the Delta Office have been minimal and only opportunistic. The refuge staff will provide:

- Maintain the road to the refuge office.
- The refuge will construct and maintain kiosks at the Venice Office and local marinas to promote safe hunting and fishing opportunities.
- Provide hunting and fishing brochures with maps.

Project 22 – Provide opportunities for wildlife observation and photography.

Wildlife observation and photography opportunities on the refuges will be promoted. Delta NWR provides emergent marsh habitats for viewing waterfowl, shorebirds, wading birds, and a variety of other fauna and flora. Breton NWR offers sandy beach habitats for viewing shore and sea birds.

- Offer occasional birding tours led by refuge staff or volunteers.
- Provide temporary photo blinds in designated areas.
- Provide a viewing area at office with interpretive panels and benches.
- Develop a self-guided boat tour with information for visitors as to what they might expect to see on the refuge.

Project 23 – Increase public outreach and environmental education to emphasize resource management practices.

Marsh and beach restoration, the crevasse program, and other habitat management programs can be a source of information for educating the public about refuge resources and management. Education on refuge management will be focused on first-hand observations where possible. Interpretation of refuge resources will promote understanding, appreciation, and stewardship of refuge resources.

- Develop a formal, curriculum-based environmental education program for students in Plaquemines and surrounding parishes that, through first-hand experiences, promotes understanding, appreciation, and stewardship of refuge resources and support for refuge management practices. Small group tours can be achieved when properly planned.
- To complement on-site programming, provide relevant classroom educational programming with the same goals of promoting understanding and stewardship of refuge resources.
- Maintain liaison contacts with area school systems and curriculum coordinators to continuously upgrade refuge education programs in the classroom and on the refuge to match curriculum needs.
- Establish schedule of tours available for refuge visitors who request tours in advance.
- Develop and distribute general brochures on the refuges.
- Supply refuge brochures, including hunt brochures, bird lists, general brochures, and quarterly events calendars, to parish convention centers, state welcome centers, and other tourist hubs.
- Provide schedules of planned programs to local newspapers and use volunteers, members of local bird groups, interns, and refuge staff.
- Establish times at the facility office to have environmental education programs available for the public or groups upon request to be held at the viewing area. Provide guided outings schedules to local newspapers.
- Recruit full-time volunteer interns to supplement refuge staff in delivering school curriculum-based environmental education programs, refuge interpretive programs, and to assist refuge personnel in refuge management, while providing developmental experiences that allow students to explore future career opportunities with the Service.
- Recruit volunteers and volunteer groups, such as recreational vehicle campers, to supplement and assist refuge staff, and to provide education, visitor services, maintenance, and clerical duties.
- Maintain and develop agreements with the Friends of Louisiana Wildlife Refuges, Inc., to cooperate on projects and provide refuge support.
- Support refuge volunteers of all types by providing recreational vehicle spaces at the office site.
- Issue press releases on important events on the refuge, including public events and changes to public use programs (e.g., hunting and fishing).
- Update and maintain an interactive refuge website with links to hunt brochures, bird lists, trail maps and guides, refuge maps, tear sheets, contacts for refuge assistance, signup for programs, etc.
- Develop refuge education programs for adults through civic groups and for neighborhood groups surrounding the refuge.
- Develop a monitoring plan with schools to evaluate educational program results and effectiveness relative to Grade Learning Expectations.
- Develop a portion of the office in Venice, Louisiana, to a visitor center, featuring information on visitor service opportunities on the refuges, audio-visual interpretive exhibits and displays, and environmental education resources for visiting school groups and teachers.
- Visit school career fairs to promote Student Career Employment and Student Temporary Employment Programs and Youth Conservation Corps Programs to increase the Service’s career awareness within the nearby communities.

FUNDING AND PERSONNEL

The current Complex staffing chart includes staff identified for Delta and Breton NWRs (Figure 8). The proposed staffing chart (Figure 9) will utilize identified staff to accomplish the proposed projects (Table 1).

Figure 8. Current staffing chart for Delta and Breton NWRs and Southeast Louisiana NWR Complex

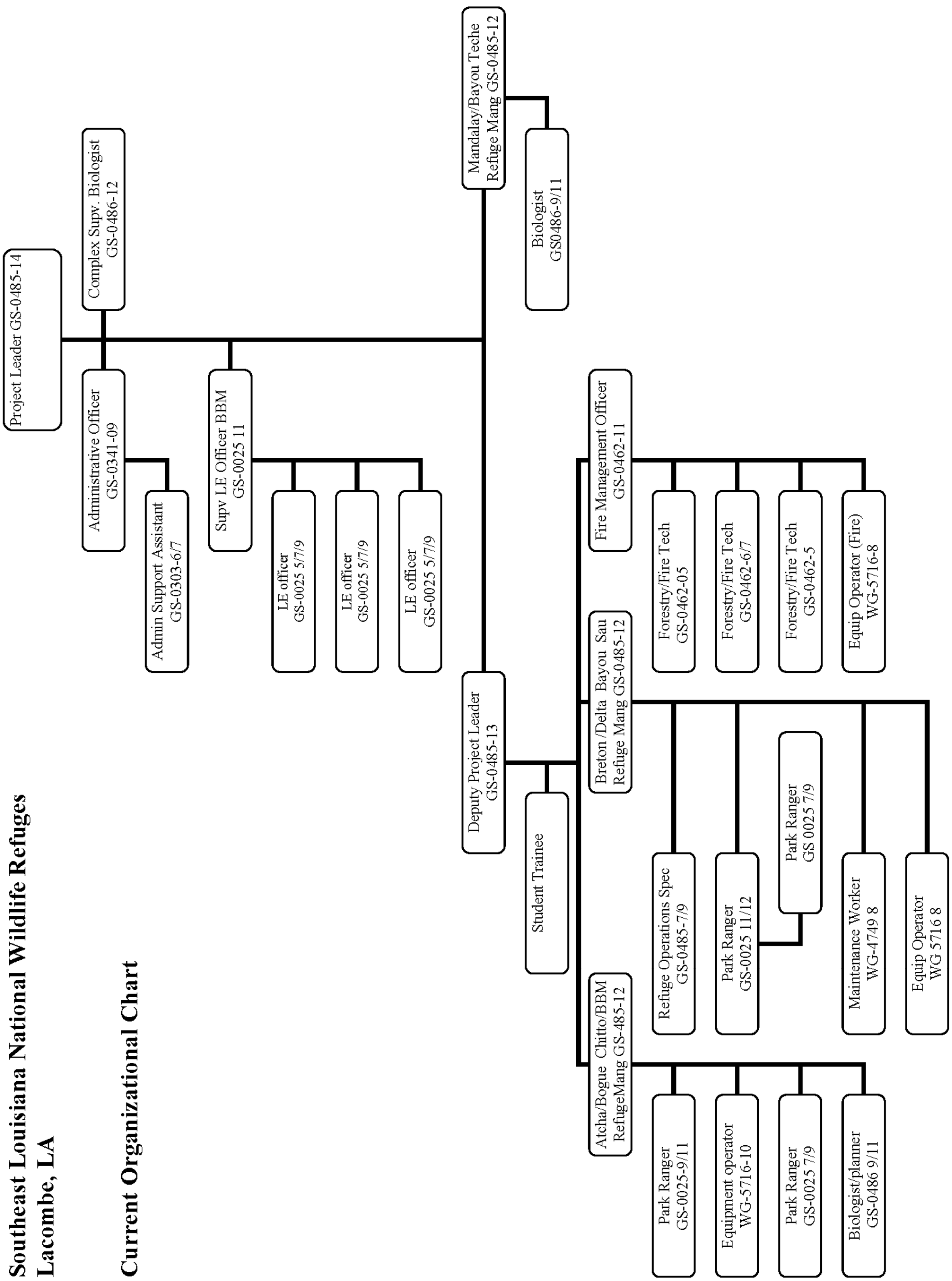


Figure 9. Proposed staffing chart for Delta and Breton NWRs and Southeast Louisiana MWR Complex

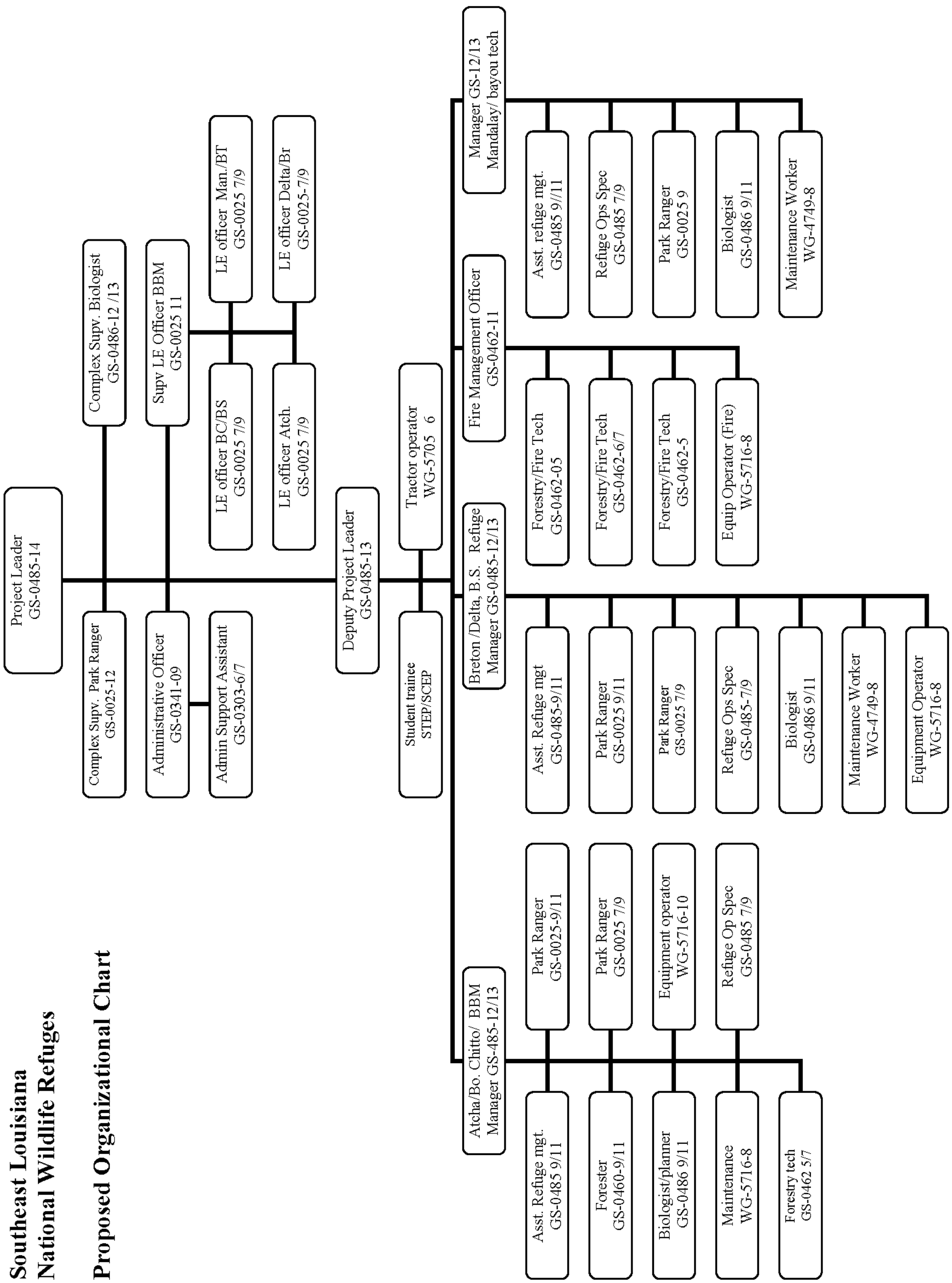


Table 1. Summary of projects (Delta NWR- Breton NWR)

PROJECT NUMBER	REFUGE	PROJECT TITLE	FIRST YEAR COST *	RECURRING ANNUAL COST
1	Delta	Aerial surveys of waterfowl on refuge	$20,000	$20,000
2	Delta	Monitor and manage other trust resource populations	$75,000	$5,000
3	Breton	Banding Brown Pelicans	$5,000	$2,000
4	Breton	Monitor and manage other trust resource populations	$75,000	$5,000
5	Delta	Crevasse construction	$700,000	0
6	Delta	Marsh restoration from beneficial dredge	$20,020,000	$5,000
7	Delta	Main Pass dedicated dredge project	$40,020,000	$5,000
8	Delta	Pass-a-loutre dedicated dredge project	$30,020,000	$5,000
9	Delta	Main Pass dedicated dredge with TVA	$5,000,000	$5,000
10	Delta	Shoreline protection, CWPRA proposal	$75,000,000	$0
11	Delta	Monitoring program for marsh loss	$120,000	$120,000
12	Breton	Plan and coordinate study of island loss and potential restoration	$1,000,000	0
13	Breton	Perform dedicated dredge restoration	$150,000,000	unknown
14	Delta & Breton	Provide adequate LE for refuge resources, species, and visitors	$90,000	$90,000

PROJECT NUMBER	REFUGE	PROJECT TITLE	FIRST YEAR COST *	RECURRING ANNUAL COST
15	Delta & Breton	Maintain marked boundary and signs	$100,000	$5,000
16	Delta & Breton	Wilderness determination	$5,000	$5,000
17	Delta & Breton	Maintain current and expanded infrastructure for public use and management capabilities	$100,000	$100,000
18	Delta & Breton	Administer oil and gas program	$70,000	$70,000
19	Delta & Breton	Maintain facilities at Venice	$90,000	$90,000
20	Delta & Breton	Improve visitor services and interpretation	$60,000	$20,000
21	Delta & Breton	Improve hunting and fishing opportunities	$10,000	$10,000
22	Delta & Breton	Provide opportunities for wildlife observation and photography	$10,000	$10,000
23	Delta & Breton	Increase public outreach and environmental outreach	$60,000	$20,000

** cost estimates are rough undocumented and funding sources would be various and not all FWS funding.*

PARTNERSHIP/VOLUNTEER OPPORTUNITIES

A key element of this CCP is to establish partnerships with local volunteers, landowners, private organizations, and state and federal natural resource agencies. Partnerships are critically important to achieve refuge goals, leverage funds, minimize costs, reduce redundancy, and bridge relationships. In the immediate vicinity of the refuges, opportunities exist to establish and maintain partnerships with LDWF in managing the Pass-a-loutre WMA, local marinas, Plaquemines Parish and St. Bernard Parish organizations, U.S. Customs, and the U.S. Coast Guard.

The refuge staff can work with neighboring private landowners through the Partners program or through agreements for managing neighboring land to compliment the refuge management program.

STEP-DOWN MANAGEMENT PLANS

A CCP is a strategic plan that guides the future direction of the refuges. A step-down management plan provides more specific guidance on activities, such as habitat and visitor services management. Step-down plans (Tables 2 and 3) are developed in accordance with NEPA, which requires the identification and evaluation of alternatives and public review and involvement prior to their implementation.

Table 2. Delta NWR step-down management plans related to the goals and objectives of the CCP

Step-down Plans	Completion Date	Revision Date
Fisheries Management	1994	2009
Visitor Use	1994	2009
Station Safety	2003	2008
Disease Contingency	1993	2008
Hunting Plan	1994	2009
Sign Plan	2015	2030
Law Enforcement	1988	2008
Wildlife Inventory	1996	2011
Habitat Management	2012	2027

Table 3. Breton NWR step-down management plans related to the goals and objectives of the CCP

Step-down Plans	Completion Date	Revision Date
Fisheries Management	1994	2011
Visitor Use	1994	2011
Sign	2015	2030
Law Enforcement	1985	2008
Wildlife Inventory	1996	2011
Habitat Management	2012	2027

MONITORING AND ADAPTIVE MANAGEMENT

Adaptive management is a flexible approach to long-term management of biotic resources that is directed over time by the results of ongoing monitoring activities and other information. More specifically, adaptive management is a process by which projects are implemented within a framework of scientifically driven experiments to test the predictions and assumptions outlined within a plan.

To apply adaptive management, specific survey, inventory, and monitoring protocols will be adopted for the refuges. The habitat management strategies will be systematically evaluated to determine management effects on wildlife populations. This information will be used to refine approaches and determine how effectively the objectives are being accomplished. Evaluations will include ecosystem team and other appropriate partner participation. If monitoring and evaluation indicate undesirable effects for target and non-target species and/or communities, then alterations to the management projects will be made. Subsequently, the CCP will be revised. Specific monitoring and evaluation activities will be described in the step-down management plans.

PLAN REVIEW AND REVISION

The CCP will be reviewed annually in development of refuge annual work plans and budget. It will also be reviewed to determine the need for revision. A revision will occur if and when conditions change or significant information becomes available, such as a change in ecological conditions or a major refuge expansion. The CCP will be augmented by detailed step-down management plans to address the completion of specific strategies in support of goals and objectives. Revisions to the CCP and the step-down management plans will be subject to public review and NEPA compliance.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
(727) 824-5312; FAX (727) 824-5309
http://sero.nmfs.noaa.gov

Measures for Reducing Entrapment Risk to Protected Species

Bottlenose dolphins, sea turtles, and Gulf sturgeon (protected species) are known to inhabit coastal waters of the northern Gulf of Mexico. Bottlenose dolphins are protected under the Marine Mammal Protection Act (MMPA) and sea turtles and Gulf sturgeon are protected under the Endangered Species Act (ESA). Because of the potential for these protected species to become entrapped within coastal waters of construction sites along the northern Gulf coast, projects that enclose shallow open water areas for wetland creation or nourishment will use the following measures to minimize the potential for entrapment:

1. **Pre-construction planning.** During project design, the Federal Action Agency or project proponents must incorporate at least one escape route into the proposed retention structure(s) to allow any protected species to exit the area(s) to be enclosed. Escape routes must lead directly to open water outside the construction site and must have a minimum width of 100 feet. Escape routes should also have a depth as deep as the deepest natural entrance into the enclosure site and must remain open until a thorough survey of the area, conducted immediately prior to complete enclosure, determines no Protected Species are present within the confines of the structure (see item 5 below for details).

2. **Pre-construction compliance meeting.** Prior to construction, the Federal Action Agency, project proponents, the contracting officer representative, and construction personnel should conduct a site visit and meeting to develop a project-specific approach to implementing these preventative measures.

3. **Responsible parties.** The Federal Action Agency will instruct all personnel associated with the project of the potential presence of protected species in the area and the need to prevent entrapment of these animals. All construction personnel will be advised that there are civil and criminal penalties for harming, harassing, or killing protected species. Construction personnel will be held responsible for any protected species harassed or killed as a result of construction activities. All costs associated with monitoring and final clearance surveys are the responsibility of project proponents and must be incorporated in the construction plan.

4. **Monitoring during retention structure construction.** It is the responsibility of construction personnel to monitor the area for protected species during dike or levee construction. If protected species are regularly sighted over a 2 or 3 day period within the enclosure area during retention structure assembly, construction personnel must notify the Federal Action Agency. It is the responsibility of the Federal Action Agency

to then coordinate with the National Marine Fisheries Service (NMFS) Marine Mammal Health and Stranding Response team (1-877-WHALE HELP [1-877-942-5343]) or the appropriate State Coordinator for the Sea Turtle Stranding and Salvage Network (see http://www.sefsc.noaa.gov/species/turtles/stranding_coordinators.htm) to determine what further actions may be required. Construction personnel may not attempt to scare, herd, disturb, or harass the protected species to encourage them to leave the area.

5. **Pre-closure final clearance.** Prior to completing any retention structure by closing the escape route, the Federal Action Agency will insure that the area to be enclosed is observed for protected species. Surveys must be conducted by experienced marine observers during daylight hours beginning the day prior to closure and continuing during closure. This is best accomplished by small vessel or aerial surveys with 2-3 experienced marine observers per vehicle (vessel/helicopter) scanning for protected species. Large areas (e.g. >300 acres) will likely require the use of more than one vessel or aerial survey to insure full coverage of the area. These surveys will occur in a Beaufort sea state (BSS) of 3 feet or less, as protected species are difficult to sight in choppy water. Escape routes may not be closed until the final clearance determines the absence of protected species within the enclosure sight.

6. **Post closure sightings.** If protected species become entrapped in an enclosed area, the Federal Action Agency and NMFS must be immediately notified. If observers note entrapped animals are visually disturbed, stressed, or their health is compromised then the Action Agency may require any pumping activity to cease and the breaching of retention structures so that the animals can either leave on their own or be moved under the direction of NMFS.

   a. In coordination with the local stranding networks and other experts, NMFS will conduct an initial assessment to determine the number of animals, their size, age (in the case of dolphins), body condition, behavior, habitat, environmental parameters, prey availability and overall risk.
   b. If the animal(s) is/are not in imminent danger they will need to be monitored by the Stranding Network for any significant changes in the above variables.
   c. Construction personnel may not attempt to scare, herd, disturb, or harass the protected species to encourage them to leave the area. Coordination by the Federal Action Agency with the NMFS SER Stranding Coordinator may result in authorization for these actions.
   d. NMFS may intervene (catch and release and/or rehabilitate) if the protected species are in a situation that is life threatening and evidence suggests the animal is unlikely to survive in its immediate surroundings.
   e. Surveys will be conducted throughout the area at least twice or more in calm surface conditions (BSS 3 feet or less), with experienced marine observers, to determine whether protected species are no longer present in the area.

Revised: May 22, 2012

While NMFS recommends these best management practices to prevent the future takes of marine mammals by entrapment, use of these measures cannot guarantee a take will not occur. Following these measures does not constitute compliance with the MMPA's Incidental Take requirements and take is not authorized.

The NMFS provided comments to the U.S. Fish and Wildlife Service's (FWS) draft Fish and Wildlife Coordination Act Report (CAR) dated October 11, 2016. These comments were incorporated in the final CAR dated November 8, 2016; however, it does not appear that those comments were incorporated into the draft SEIS. Section 6.9 only acknowledges the draft report and section 6.10 dealing with EFH consultation does not address the comments provide in the final CAR. The NMFS continues to recommend the USACE evaluate options using dredged material to enhance sediment loads of proposed diversion projects or existing breaches in the vicinity of Mardi Gras Pass and Fort St. Phillip. Additionally, NMFS recommends the USACE expand the delineated beneficial use area to include open water adjacent to Spanish Pass.

While NMFS supports the beneficial use of dredged material to create marsh, it should be acknowledged in the Final EIS that placement of sediment could adversely impact EFH if elevations of the dredged material exceed intertidal elevations. To ensure such impacts do not occur, the Record of Decision should commit the USACE to coordinate with NMFS regarding the placement of fill material in each beneficial use area. Additionally, there should be a commitment to undertake appropriate engineering and design assessments to ensure sediment elevations, after compaction and dewatering, would be within tidal range. Section 4.6 acknowledges placement of pipe to pump sediment to the beneficial use sites will temporarily impact salt marsh. The NMFS recommends the final EIS emphasize the need to site pipe and staging areas to avoid salt marsh to the maximum extent practicable. The Final EIS also should include a commitment to breach containment dikes within 3 years.

We appreciate your consideration of our comments and request notification once the final SEIS is published. If you wish to discuss this project further or have questions concerning our recommendations, please contact Brandon Howard at (225) 389-0508, extension 207.

Sincerely,

Virginia M. Fay

Virginia M. Fay
Assistant Regional Administrator
Habitat Conservation Division

c:
FWS, C Breaux
F/SER46, Swafford
F/SER4, Dale, Sramek
Files

Annex 19 Conclusion of MSFCMA Coordination/NMFS letter

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
http://sero.nmfs.noaa.gov

January 4, 2016 F/SER46/BH:jk
225/389-0508

Mr. Steve W. Roberts
Regional Planning and Environment Division South
New Orleans District Environmental Branch
U.S. Army Corps of Engineers
7400 Leake Avenue
New Orleans, Louisiana 70118

Dear Mr. Roberts:

NOAA's National Marine Fisheries Service (NMFS) has received the Draft General Reevaluation Report and draft Supplemental Environmental Impact Statement (SEIS) dated November 30, 2016, on the "**Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project"**. The U.S. Army Corps of Engineers (USACE) proposes to deepen the Mississippi River up to a depth of 50 feet (ft) between Baton Rouge and the Gulf of Mexico, Southwest Pass. The USACE is requesting comments on the SEIS. The following is provided in accordance with provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.) and 600.920 of the Magnuson-Stevens Fishery Conservation and Management Act.

Three alternatives were evaluated by USACE. The Tentatively Selected Plan would deepen the channel to a depth of 50 ft Low Water Reference Plane (LWRP) for the three crossings located within the Port of South Louisiana and a depth of 50 ft Mean Lower Low Water (MLLW) in the Lower Mississippi River from river mile (RM) 13.4 to RM 22. Areas between Venice and the Gulf of Mexico totaling 143,264 acres (ac) are being considered for beneficial use of the dredged material. As estimated in the SEIS, the initial deepening would result in the creation of 1,462 ac of intermediate marsh. An additional 528 ac of intermediate marsh is estimated to be created annually with spoil material from maintenance dredging.

Tidal areas along the corridor and the beneficial use areas are categorized as essential fish habitat (EFH) for postlarval and/or juvenile life stages of white shrimp, brown shrimp, gray snapper, lane snapper, and red drum. The NMFS agrees with the types of EFH and federally managed species identified in Section 2.4.3 of the SEIS. Detailed information on EFH for federally managed fishery species is provided in the 2005 generic amendment of the Fishery Management Plans for the Gulf of Mexico prepared by the Gulf of Mexico Fishery Management Council. The generic amendment was prepared as required by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act; P.L. 104-297).

The NMFS has a "findings" with the New Orleans District that fulfillment of EFH coordination requirements of the Magnuson-Stevens Act for civil works projects will be completed through our review and comment on documents prepared under the requirements of the National Environmental Policy Act. Section 2.4.3 of the SEIS is not a complete EFH Assessment. An EFH Assessment must include: (1) a description of the proposed action, (2) an analysis of the effects, including cumulative effects, of the action on EFH, the managed species, and associated species by life history stage, (3) the Federal agency's views regarding the effects of the action on EFH, and (4) proposed mitigation, if applicable. If appropriate, the assessment should also include the results of an on-site inspection, the views of recognized experts on the habitat or species affected, a literature review, an analysis of alternatives to the proposed action, and any other relevant information. A complete EFH Assessment should be included in the final SEIS.

The NMFS provided comments to the U.S. Fish and Wildlife Service's (FWS) draft Fish and Wildlife Coordination Act Report (CAR) dated October 11, 2016. These comments were incorporated in the final CAR dated November 8, 2016; however, it does not appear that those comments were incorporated into the draft SEIS. Section 6.9 only acknowledges the draft report and section 6.10 dealing with EFH consultation does not address the comments provide in the final CAR. The NMFS continues to recommend the USACE evaluate options using dredged material to enhance sediment loads of proposed diversion projects or existing breaches in the vicinity of Mardi Gras Pass and Fort St. Phillip. Additionally, NMFS recommends the USACE expand the delineated beneficial use area to include open water adjacent to Spanish Pass.

While NMFS supports the beneficial use of dredged material to create marsh, it should be acknowledged in the Final EIS that placement of sediment could adversely impact EFH if elevations of the dredged material exceed intertidal elevations. To ensure such impacts do not occur, the Record of Decision should commit the USACE to coordinate with NMFS regarding the placement of fill material in each beneficial use area. Additionally, there should be a commitment to undertake appropriate engineering and design assessments to ensure sediment elevations, after compaction and dewatering, would be within tidal range. Section 4.6 acknowledges placement of pipe to pump sediment to the beneficial use sites will temporarily impact salt marsh. The NMFS recommends the final EIS emphasize the need to site pipe and staging areas to avoid salt marsh to the maximum extent practicable. The Final EIS also should include a commitment to breach containment dikes within 3 years.

We appreciate your consideration of our comments and request notification once the final SEIS is published. If you wish to discuss this project further or have questions concerning our recommendations, please contact Brandon Howard at (225) 389-0508, extension 207.

Sincerely,

Virginia M. Fay

Virginia M. Fay
Assistant Regional Administrator
Habitat Conservation Division

c:
FWS, C Breaux
F/SER46, Swafford
F/SER4, Dale, Sramek
Files

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
7400 LEAKE AVENUE
NEW ORLEANS, LOUISIANA 70118

REPLY TO
ATTENTION OF

JUL 0 7 2017

Regional Planning and
Environment Division, South
Environmental Planning Branch

Virginia M. Fay
Assistant Regional Administrator
Habitat Conservation Division
263 13th Avenue South
St. Petersburg, Florida 33701-5505

Dear Ms. Fay:

The U.S. Army Corps of Engineers, New Orleans District (USACE) has reviewed your coordination letter dated January 4, 2017 providing comments on the proposed deepening of the Mississippi River to a depth of 50 feet as part of the Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana project. The project was authorized for construction by the 1985 Supplemental Appropriations Act, and the Water Resources and Development Act of 1986 (PL 99-662). Comments were submitted in accordance with provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.) and 600.920 of the Magnuson-Stevens Fishery Conservation and Management Act. Your comments concerned the potential impacts that the project may have on the essential fish habitat (EFH) of white shrimp, brown shrimp, red drum, gray snapper, and lane snapper, and were in regards to information provided in a draft integrated general reevaluation report released for public and agency comment on December 16, 2016 (http://www.mvn.usace.army.mil/About/Mississippi-River-Ship-Channel).

The draft report discussed impacts associated with multiple alternatives involving the deepening of the following different reaches of the Mississippi River navigation channel: 1) river crossings within the Mississippi River between New Orleans and Baton Rouge, Louisiana, 2) the lower river in the vicinity of Southwest Pass and Venice, Louisiana, and 3) the Southwest Pass Bar Channel. A fourth component of the project entails the beneficial use of dredged material to create coastal wetland habitat in shallow open water habitat in lower Plaquemines Parish, Louisiana.

The Tentatively Selected Plan in the draft report was identified as Alternative 3d. This plan specifically included deepening various shoals in the Mississippi River from 48 feet to 50 feet at

Mean Lower Low Water (MLLW), from River Mile (RM) 13.4 Above Head of Passes (AHP) to RM 22 Below Head of Passes (BHP) via Southwest Pass. This plan also included deepening 3 rivers crossings from 45 feet to 50 feet at the Low Water Reference Plane (LWRP). Deepening in this area would also entail beneficial use of dredged material that result in the construction of approximately 1460 acres of coastal marsh habitat. This alternative also included deepening upstream of New Orleans, Louisiana to allow a navigational depth of 50 feet as far upstream as Rich Bend Crossing at RM 160 which would improve deep draft access to the Port of South Louisiana.

As an update on recent project developments, on May 23, 2017, USACE made an agency decision to select Alternative 3 from the report as the final Recommended Plan, in lieu of Alternative 3d. The only difference in the two alternatives concerns the upstream limit of the proposed action. Alternative 3 would deepen all 12 deep draft crossings between New Orleans and Baton Rouge, Louisiana to 50 feet. This expansion of scope was based on the encouraging results of a 2D hydraulic model which indicated that maintenance of the 12 crossings would be considerably less than was previously estimated. This, in turn, decreased the costs of long-term maintenance of the plan and improved the economic benefits to the Nation.

Because EFH is not present within the river crossings, impacts to EFH between by the two alternatives would not differ. USACE has considered the comments provided in your coordination letter and responses are provided below:

Comment 1: "*Section 2.4.3 of the SEIS is not a complete EFH Assessment. An EFH Assessment must include: (1) a description of the proposed action, (2) an analysis of the effects, including cumulative effects, of the action on EFH, the managed species, and associated species by life history stage, (3) the Federal agency's views regarding the effects of the action on EFH, and (4) proposed mitigation, if applicable. If appropriate, the assessment should also include the results of an on-site inspection, the views of recognized experts on the habitat or species affected, a literature review, an analysis of alternatives to the proposed action, and any other relevant information. A complete EFH Assessment should be included in the final SEIS.*"

Response 1: Chapter 2 is entitled "Affected Environment" and is largely focused on existing conditions of various important resources (e.g. EFH, threatened and endangered species, etc.). As such, the discussion of EFH in Section 4.3 of Chapter 2 is not a complete assessment. However, Chapter 4, entitled "Environmental Consequences", discusses project-related impacts. A description of the proposed action, was included in Chapter 4, Section 1 (#1 above). An analysis of the effects, including cumulative effects, of the action on EFH, the managed species, and associated species were discussed in Chapter 4, Sections 4.4. and 4.5 (#2 above).

Per your recommendations (#'s 3 and 4 above), the discussion in Section 4.4 of Chapter 4 has been revised to clarify the position of USACE regarding mitigation and the effects of the action proposed action on EFH. This section now reads: "*Although the beneficial use placement areas contain shallow open water EFH, a conversion from shallow open water EFH to intertidal marsh EFH habitat is environmentally preferred by several natural resource agencies and environmental organizations because shallow open water habitat is widely abundant in the area, and coastal marsh habitat is increasingly scarce. This conversion of EFH types is acceptable, environmentally beneficial, would not warrant EFH mitigation.*"

Comment 2: "*The NMFS provided comments to the U.S. Fish and Wildlife Service's (FWS) draft Fish and Wildlife Coordination Act Report (CAR) dated October 11, 2016. These comments were incorporated in the final CAR dated November 8, 2016; however, it does not appear that those comments were incorporated into the draft SEIS. Section 6.9 only acknowledges the draft report and section 6.10 dealing with EFH consultation does not address the comments provide in the final CAR. The NMFS continues to recommend the USACE evaluate options using dredged material to enhance sediment loads of proposed diversion projects or existing breaches in the vicinity of Mardi Gras Pass and Fort St. Phillip. Additionally, NMFS recommends the USACE expand the delineated beneficial use area to include open water adjacent to Spanish Pass.*"

Response 2: Responses to the recommendations provided by NMFS and USFWS in the CAR were incorporated and appendicized on page 135 within Appendix A of the report as A-13. Our responses to the two recommendations submitted jointly by NMFS and USFWS are also provided below.

> 2. "*The Service and NMFS recommend the Corps evaluate options to enhance the sediment loads of proposed diversion projects or existing breaches in the vicinity of Mardi Gras Pass and Fort St. Phillip if dredging south of New Orleans is proposed in the future.*"
>
> **Response:** Concur. If dredging south of New Orleans is proposed in the future, to the extent permissible under the USACE determination pursuant to 33 USC Section 408 and Sections 10/404Regulatory determinations, the USACE will consider all reasonable alternatives, including those that could enhance the sediment loads of reasonably foreseeable diversion projects or existing breaches, in the context of adhering to the Federal Standard.
>
> 3. "*The Service and NMFS recommend the Corps expand the beneficial use areas to include areas near Spanish Pass.*"
>
> **Response:** Do not concur. At this time the most appropriate areas available were identified, as the proposed project involves the disposal of beneficial use of dredged materials at locations within the Federal Standard.

As background to this response, shoaling patterns in the vicinity of Venice and Spanish Pass are historically minor when compared to areas downriver from RM 4 above Head of Passes, and dredging is typically not necessary beyond RM 10. As such, hydraulic cutterhead dredges are not cost-practicable for maintenance upriver of RM 4. The cost associated with pumping dredged material upriver 6-23 miles to Spanish Pass is also not cost practicable under the Federal Standard. If ever the shoaling patterns significantly increase in this area, USACE will consider additional beneficial use placement sites in the vicinity of Venice/Spanish Pass at that time.

Comment 3: "*While NMFS supports the beneficial use of dredged material to create marsh, it should be acknowledged in the Final EIS that placement of sediment could adversely impact EFH if elevations of the dredged material exceed intertidal elevations. To ensure such impacts do not occur, the Record of Decision should commit the USACE to coordinate with NMFS regarding the placement of fill material in each beneficial use area. Additionally, there should be a commitment to undertake appropriate engineering and design assessments to ensure sediment elevations, after compaction and dewatering, would be within tidal range. Section 4.6 acknowledges placement of pipe to pump sediment to the beneficial use sites will temporarily impact salt marsh. The NMFS recommends the final EIS emphasize the need to site pipe and staging areas to avoid salt marsh to the maximum extent practicable. The Final EIS also should include a commitment to breach containment dikes within 3 years.*"

Response 3: USACE appreciates the valuable planning expertise provided by the NMFS and concurs with the proposed coordination recommendations in your letter. Section 4.4 of Chapter 4 of the final SEIS (Aquatic Resources) has been updated to read: "*Placement of sediment could adversely impact EFH if elevations of the dredged material exceed intertidal elevations. USACE will begin coordination with NMFS regarding the placement of fill material in each beneficial use area during each annual dredging conference hosted by USACE, where specific design and beneficial use site placement is discussed with the resource agencies. Prior to construction, USACE will also undertake appropriate engineering and design assessments to ensure sediment elevations, after compaction and dewatering, would be within tidal range. Should containment dikes be determined necessary for beneficial use, USACE will breach each dike within 3 years.*"

In order to clarify avoidance and minimization practices, Section 6 of Chapter 4 of the final report (Mitigation Requirements) has additionally been updated to read: "*Implementation of the proposed action in some situations may require some unavoidable, very minor impacts to wetland resources incidental to the preparation for the placement of beneficial use of dredged material. USACE provides dredging contractors with a limited number of mandatory access corridors and staging areas for Southwest Pass cutterhead disposal operations. This is done to limit impacts to existing wetlands as well as to existing oil and gas flowlines that lie on the ground surface all along Southwest Pass. If necessary, these mandatory access corridors and staging areas are backfilled by dredging contractors to match pre-disposal work elevations* *following completion of disposal operations. When determined to be unavoidable, a small amount of wetland habitat (typically < 0.10 acre) may be temporarily impacted during pipeline placement and access to the open water proposed placement areas. However, these minor, incidental impacts are unavoidable, would be temporary, and are necessary to provide construction access to build coastal marsh platforms ranging from 60 acres to 600 acres.*"

USACE appreciates the thoughtful considerations provided by the National Marine Fisheries Service and looks forward to future coordination with the Service to ensure full compliance with the Magnuson-Stevens Fishery Conservation and Management Act. It is our position that the conversion of shallow open water EFH to intertidal coastal marsh EFH will have a beneficial impact on post-larval and juvenile white shrimp, brown shrimp, red drum, gray snapper, lane snapper, and other gulf fisheries in the area. The final report, with the above cited revisions and clarifications, will be available for review and provided to the Service on January 10, 2018. Should you have additional questions or comments, please contact Mr. Steve Roberts at (504) 862-2517.

Sincerely,

Marshall K. Harper

Marshall K. Harper
Chief, Environmental Planning Branch

From:	Richard Hartman - NOAA Federal
To:	Roberts, Steve W CIV CPMS (US)
Subject:	[Non-DoD Source] Re: MR deepening EFH coordination letter
Date:	Wednesday, July 05, 2017 1:23:13 PM

Steve - just some information for you. We did not have EFH Conservation Recommendations in our letter to you. We did may some suggestions, but they did not rise to the level of EFH CRs. We appreciate your explanation of why you could not do some things, and how you are incorporating some of the comments we have provided. Your response is certainly adequate. No response actually was necessary since they had been no official CRs... If confused, give me a call and I will explain, or ask Richard Boe...

Have a great day. I do appreciate your efforts to address our comments...

Rick

On Wed, Jul 5, 2017 at 1:08 PM, Roberts, Steve W CIV CPMS (US) <Steve.W.Roberts@usace.army.mil <mailto:Steve.W.Roberts@usace.army.mil> > wrote:

Rick,

In regards to our conversation this morning, please take a look at our draft response letter (attached) and let me know if you there are any glaring oversights that might warrant additional letter writing or necessary coordination by your staff. As you will see, there has been an expansion of scope via the selection of Alt. 3 (instead of Alt 3d) in the draft. This would mean that we deepen all the way to Baton Rouge. This decision was made at out Agency Decision Milestone in May. Of important note, because it only involves river work well upstream of New Orleans, any discussion of EFH should not really change, as EFH does not exist in those reaches of expanded scope.

I'd love to elevate this letter for signature by early next week if possible. Hopefully I've addressed the comments and recommendations sufficiently. Also attached is the original NMS coordination letter from January 4, 2017. Thanks very much for your help!

Steve Roberts
Environmental Manager
New Orleans District
504-862-2517 <tel:504-862-2517>

Memo to File

Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project

Mississippi River Ship Channel Improvements in St. James, St. Charles, and Plaquemines Parishes, Louisiana.

28 March 2018

The purpose of this memo is to document findings from the 23 March 2017 teleconference with NMFS concerning threatened and endangered species that occur under the purview of NMFS that may be potentially impacted by the third phase of deepening of the Mississippi River between the Gulf of Mexico and Baton Rouge, Louisiana. The teleconference occurred with Biologist Dana Bethea of the NMFS St. Petersburg, Florida office, and Biologists Richard Boe and Steve Roberts of CEMVN.

During the call it was established that threatened and endangered species under the purview of NMFS that may occur in the project vicinity are Kemp's ridley sea turtle (*Lepidochelys kempi*), loggerhead sea turtle (*Caretta caretta*), hawksbill sea turtle *(Eretmochelys imbricata)*, leatherback sea turtle *(Dermochelys coriacea)*, green sea turtle (*Chelonia mydas*).

It was established early in the conversation that critical habitat for these species is not present in the project area and thus, would not be affected. It was also established during the conversation that sea turtle presence in the project area is extremely limited due to multiple factors (e.g. high turbidity, low prey availability, temperature, etc.). In fact, there have been no documented takes of sea turtles in the work area since the original NMFS Biological Opinion of 22 September 1995.

The conversation next discussed the effects of the proposed deepening. It was confirmed that hydraulic cutterhead pipeline dredging operations have not been identified as a source of sea turtle mortality and are not likely to adversely affect the protected turtles.

The teleconference also included a brief review and discussion of the current Gulf of Mexico Regional Biological Opinion (GRBO) dated 19 November 2003, as revised by the first amendment dated 24 June 2005 and the second amendment dated 9 January 2007. In addition to covering other CEMVN activities as well as those from other Gulf of Mexico districts, the GRBO specifically covers hopper dredging activities within the Southwest Pass segment of the Mississippi River from the Gulf of Mexico (bar channel) up to 1 mile inland of the Gulf of Mexico. The channel upstream of this 1 mile inland reach is not covered by the GRBO because NMFS doesn't consider the remainder of the channel to be suitable sea turtle habitat, and therefore O&M activities in that area would not be a threat to sea turtles.

NMFS concurred that the Terms and Conditions 4.c. and 6.c. of the GRBO continue to apply to the proposed deepening; that the Mississippi River Southwest Pass navigation channel is exempt from the requirements to utilize endangered species observers and to employ inflow/overflow screening on hopper dredges working in this channel.

To conclude the teleconference, NMFS confirmed that hopper dredging activities in the Mississippi River Southwest Pass navigation channel are performed in full compliance with the Terms and Conditions contained in the 19 November 2003 National Marine Fisheries Service GRBO and subsequent revision dated 9 January 2007. NMFS confirmed that the impacts of the currently proposed deepening were previously covered in the findings of the GRBO, and further consultation is not necessary. NMFS also confirmed that the authorized project, should it ever be constructed to its authorized depth of 55 feet, would also remain in compliance with the GRBO.

Prepared by: Steve Roberts

From:	Dana Bethea - NOAA Federal
To:	Roberts, Steve W CIV CPMS (US)
Subject:	Re: [Non-DoD Source] Re: Mississippi River Deepening Study
Date:	Wednesday, March 21, 2018 12:09:15 PM

Steve,

I think your path forward is the simplest route.

Thank you,
Dana

On Wed, Mar 21, 2018 at 12:57 PM, Roberts, Steve W CIV CPMS (US) <Steve.W.Roberts@usace.army.mil <mailto:Steve.W.Roberts@usace.army.mil> > wrote:

Hi Dana,

Thanks for the quick reply. We never had an SER # so I assume you must have considered it a technical assist. After speaking with our Planner, we have decided that because Richard has retired, we will try to keep it simple, note the first edit and just include this email conversation in the final report appendix with the memo (as update) and I can confirm now that 55 is the authorized depth, and that we are only going to 50 in this phase. Thanks again.

Steve Roberts
Biologist
New Orleans District
USACE

-----Original Message-----
From: Dana Bethea - NOAA Federal [mailto:dana.bethea@noaa.gov <mailto:dana.bethea@noaa.gov>]
Sent: Wednesday, March 21, 2018 11:32 AM
To: Roberts, Steve W CIV CPMS (US) <Steve.W.Roberts@usace.army.mil <mailto:Steve.W.Roberts@usace.army.mil> >
Subject: [Non-DoD Source] Re: Mississippi River Deepening Study

Good morning, Steve.

Our phones are down right now so that's why you're getting a busy signal.

I searched my emails and no, I did not receive this memo. I honestly had to go back and look at my calendar to remember the project. We get so many! Please help me remember, did this project get a SER number from us (and was withdrawn) or was the call a technical assist? I'm thinking it was a technical assist. I am trying to determine where to file the memo in our system.

As far as edits, I have two:

The conversation next discussed the effects of the proposed deepening. It was confirmed that hydraulic cutterhead pipeline dredging operations have not been identified as a source of sea turtle mortality in the action area and are not likely to adversely affect the protected turtles.

NMFS also confirmed that the authorized project, should it ever be constructed to 55 feet, would also remain in compliance with the GRBO. Help me remember, 55 is the authorized depth of the original channel? I seem to remember that this project is not going to exceed that, but this statement is in the memo in case this project ever wants to dredge up to the authorized depth of 55. If my memory and interpretation are correct, then this sentence is fine as is.

I'm teleworking today so please email if you need to get in touch.

Thank you,

Dana

On Wed, Mar 21, 2018 at 10:39 AM, Roberts, Steve W CIV CPMS (US) <Steve.W.Roberts@usace.army.mil <mailto:Steve.W.Roberts@usace.army.mil> <mailto:Steve.W.Roberts@usace.army.mil > > > wrote:

Hi Dana,

You and I had a productive phone call with Richard Boe of my office (now retired) almost one year ago to the day. The subject was potential impacts associated with deepening the Mississippi River. Please see attached memo to file where I documented our discussion/findings, and Richard and I signed it. I am not sure I ever emailed you the memo or not- I searched my sent items but it may have been deleted since it's been a year. The reason I am writing is the Final report has left our district, wiggled through our division in Vicksburg, and now is at HQ for approval. A commenter, saw the memo in our appendix but asked if you had been provided the final memo to file. I could have sworn I emailed it to you, but I have no proof. Could you please take a second and check your inbox to see if you got an email from me or Richard? If not, could you please review the memo and confirm that everything is documented correctly?

Oh by the way I tried calling but ya'lls lines are busy. Thanks very much!

Steve Roberts
Biologist
New Orleans District
USACE

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Dana M. Bethea
Endangered Species Biologist
Interagency Cooperation Branch

NOAA Fisheries
Southeast Regional Office
Protected Resources Division
263 13th Avenue South
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727-209-5974 <tel:727-209-5974>

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

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JAN - 9 2007 F/SER3:EH

BG Joseph Schroedel, USA
Division Engineer
South Atlantic Division
U.S. Army Corps of Engineers
60 Forsyth Street S.W.
Atlanta, GA 30303-8801

Dear General Schroedel:

This responds to the U.S. Army Corps of Engineers' (COE), South Atlantic Division (SAD) e-mail request dated May 31, 2006, by Mr. Dennis Barnett of your Planning and Policy Division (PPD) to Mr. Eric Hawk of my Protected Resources Division (PRD). Mr. Barnett, acting as spokesperson for the three COE divisions containing the four COE Gulf of Mexico districts, submitted COE-requested changes to the current National Marine Fisheries Service (NMFS) Gulf of Mexico hopper dredging regional biological opinion (GRBO), issued November 19, 2003. Our response also addresses the Endangered Species Act (ESA) section 7(a)(2)/7(d) analysis submitted by e-mail on September 12, 2006, by Mr. Daniel Small of COE PPD in response to a take of a federally-listed smalltooth sawfish on August 12, 2006, by a COE-authorized relocation trawler during Tampa Harbor Entrance Channel maintenance dredging. A June 27, 2006, conference call and numerous subsequent e-mails, phone calls, and sharing of ideas between our respective staffs resulted in Revision 2 to the GRBO, enclosed herein.

NMFS previously amended the GRBO on June 24, 2005 (Revision 1). The COE requested additional changes to address remaining issues of concern, specifically: 1) GRBO-required funding for genetic testing of tissue samples collected from sea turtles taken on COE projects or COE-permitted projects; and 2) the methodology of how applicants on COE permits will be involved in consultation discussions regarding authorized levels of protected species take. Other COE requests included, specifically: 1) A request for a 25-percent annual overage of authorized take under the GRBO for any one calendar year, as long as the total anticipated take for the encompassing 5-year period was not exceeded; and 2) a request that the GRBO be revised to authorize relocation trawling takes of smalltooth sawfish. Currently, the GRBO authorizes takes of federally-listed sea turtles and Gulf sturgeon, but not smalltooth sawfish.

The COE and NMFS agreed during their conference call to hold the COE request for a 25-percent overage in abeyance pending significant additional analysis needed by both the COE and NMFS. Because these analyses will require significant additional effort and time, it was agreed to proceed with resolving those high-priority issues that can be addressed with a simple revision to the Incidental Take Statement (ITS). However, it will be reconsidered during NMFS' reinitiation of formal consultation on the GRBO to analyze the effects of the COE's request for an increase in its currently authorized non-lethal relocation trawling take limits for sea turtles and Gulf sturgeon. At that time, NMFS will also consider the COE's requested increase in its lethal relocation trawling take limit for sea turtles and its request for relocation trawling take authority for smalltooth sawfish. Increased take limits and take authority for species not included in the GRBO's ITS cannot be authorized without a thorough effects assessment and jeopardy analysis.

With respect to the COE's concern about genetic sampling, NMFS agrees that the GRBO requirement for COE funding of genetic sampling be modified because the COE has provided evidence that it cannot, within its current fiscal authority, fund this requirement. The COE, however, agrees to require the collection and shipment to NMFS for genetic analysis of tissue samples from all sea turtles and Gulf sturgeon taken by hopper dredges and relocation trawlers until NMFS, in consultation with COE scientists, determines they are no longer needed. The GRBO has been modified accordingly; this requirement has been included in the reasonable and prudent measures of the ITS.

With respect to applicant participation in the ESA consultation process and input into permitted-project protected species take levels, the COE will coordinate with NMFS prior to permit issuance. The COE will forward draft permit conditions to NMFS that are consonant with the RPMs and terms and conditions of the GRBO, including a proposed amount of authorized take of sea turtles and Gulf sturgeon per project allocated from the overall annual authorized take limit. Currently the COE's sea turtle and Gulf sturgeon take database and NMFS' take records are useful for estimation purposes, but are still too incomplete to support analyses to accurately predict particular dredging project protected species takes levels with any degree of certainty.

As requested by the COE and based on information provided by the COE with input from NMFS, Revision 2 segregates the previously established Gulf-wide protected species take limits into two allotments – one for COE civil works projects and one for COE-permitted projects. The COE retains the authority and flexibility to manage the allotment ratio, initially set at 80:20 (i.e., 80% for civil, 20% for permitted) for the combined Gulf districts, and adjust them yearly as necessary within the established ITS ceiling, according to its operational needs and its own internal hopper dredging protocol, in coordination with NMFS.

At the COE's request, NMFS' partitioning of the GRBO's Gulf-wide authorized take level into fixed allotments for each of the four COE districts has been superseded by the 80:20 ratio allotment take-limit scheme described above. Revision 2 includes NMFS' estimates of *anticipated* take by each district, unchanged from the original GRBO; however, NMFS has eliminated the district-level protected species allocations, where each district formerly held a guaranteed share of the Gulf-wide authorized level of per-fiscal-year take. The COE is developing an internal protocol to handle within-year management and sharing of takes between Gulf of Mexico COE districts. Other minor modifications to the GRBO and noteworthy changes included in Revision 2 are:

1) The COE is no longer required to consult with/notify NMFS whenever it deviates from the recommended hopper dredging windows (T&C 1).
2) Notification to NMFS and transmittal of information on protected species takes by hopper dredge can now occur by electronic mail to **takereport.nmfsser@noaa.gov** (T&C 9).
3) Any strandings or relocation trawler takes of protected species bearing evidence of potential dredge interaction, regardless of type of dredge implicated, shall not be counted against the GRBO's ITS (T&C 10), although the reporting requirement remains unchanged (T&C 11).
4) The minimum dimensions for a seawater holding tank for captured Gulf sturgeon have been eliminated and more flexible, protective standards have been instituted (T&C 15-f).
5) The GRBO is now the permitting authority to conduct PIT tagging; an ESA Section 10 permit is no longer required to conduct PIT tagging (T&C 15-h, T&C 15-i, T&C 16).
6) Submission requirements for PIT tag scan and external tag data, and genetic samples, have been standardized, to within 60 days after project completion (T&C 15-j, T&C 16).
7) The definition of hardgrounds is clarified to exclude navigation channels and jettys (T&C 17).

In addition, there are some minor changes to address inconsistent or unclear language use in the original GRBO: e.g., the terms "NMFS-approved observer," "observer," and "endangered species observer," have been standardized/changed to "NMFS-approved protected species observer." Other minor language changes clarify that weighing/measuring/sampling of protected species is only required when it can be done safely (T&C 15-d, T&C 20), and that NMFS-approved protected species observers are not required to take tissue samples of sea turtle viral fibropapillomas when these are encountered (T&C 15-l). Finally, NMFS encourages the COE to make fuller use of protected species taken during hopper dredging and relocation trawling by allowing and encouraging duly-permitted "piggy-back" research projects on protected species taken during these activities (T&C 15-d, Conservation Recommendation 5).

Revision 2 to the GRBO is enclosed. It replaces and supersedes Revision 1, and replaces and supersedes the corresponding sections of the 2003 GRBO. If you have any questions, please contact Eric Hawk at (727) 551-5773 or by e-mail at Eric.Hawk@noaa.gov.

We sincerely appreciate all the COE's past and ongoing protected species conservation efforts during hopper dredging activities in the Gulf and South Atlantic, and look forward to continued collaborative efforts to preserve our protected species. My compliments to your staff at SAD, in particular Mr. Daniel Small, and in the four Gulf of Mexico COE districts for working assiduously and effectively with NMFS staff, which enabled us to resolve your remaining concerns with the GRBO. We look forward to working closely with the COE to facilitate other activities, including reinitiation of consultation on the South Atlantic Regional Biological Opinion on hopper dredging, while conserving endangered and threatened species.

I would especially like to take this opportunity to applaud and congratulate the U.S. Army Corps of Engineers, and especially Dr. Dena Dickerson and her staff at the Environmental Data Research Center in Vicksburg, Mississippi, for the excellent job they have done developing and maintaining the COE's Sea Turtle Data Warehouse. The wealth of historic and current information contained in this database regarding hopper dredging project/protected species interactions, and the ease of use of the Sea Turtle Data Warehouse Website, has been exceedingly valuable to NMFS, and will continue to be very useful to both our agencies when making management and conservation decisions regarding protected species.

Sincerely,

Roy E. Crabtree

Roy E. Crabtree, Ph.D.
Regional Administrator

Enclosure

cc: COE SAD, Atlanta – Daniel Small, Dennis Barnett
COE MVD, Vicksburg
COE SWD, Dallas
COE, Mobile District – Susan Ivester Rees
COE, Galveston District – Carolyn Murphy
COE, Jacksonville District – Marie Burns, Terri Jordan
COE, New Orleans District – Linda Mathies
F/PR2 – Barbara Schroeder
F/SEC3 – Sheryan Epperly Chester

File: 1514-22.f.1.GOM, SAD
Ref: I/SER/2006/02953; I/SER/2006/01096

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
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Revision 2 to the National Marine Fisheries Service (NMFS) November 19, 2003, Gulf of Mexico Regional Biological Opinion (GRBO) to the U.S. Army Corps of Engineers (COE) on Hopper Dredging of Navigation Channels and Borrow Areas in the U.S. Gulf of Mexico

The followings replaces parts of the original GRBO and supersedes Revision 1 to the GRBO. All replacements/revisions noted below are to be made to the November 19, 2003, biological opinion. Revision 1 should be discarded in its entirety.

REPLACE:
Anticipated Gulf-wide Take of Sea Turtles and Gulf Surgeon by Hopper Dredges (in Section 5, pp. 57-58 of GRBO), with the following:

Anticipated Gulf-wide Take of Sea Turtles and Gulf Sturgeon by Hopper Dredges and Bed-leveling associated with Hopper Dredging Projects:

For the entire Gulf of Mexico from the U.S.-Mexico border to Key West, the annual documented COE incidental take per fiscal year, by injury or mortality, is expected to consist of twenty (20) Kemp's ridley turtles, fourteen (14) green turtles, four (4) hawksbill turtles, forty (40) loggerhead turtles, and four (4) Gulf sturgeon. This take level represents a total take per fiscal year for all channel dredging and sand mining by hopper dredges in the Gulf of Mexico under the purview of the COE's Galveston, New Orleans, Mobile, and Jacksonville Districts collectively. These totals include hopper dredging activities conducted by the COE (for maintenance of civil works and military navigation channels and for construction of federally-authorized hurricane-storm damage reduction projects) and performed by non-federal interests under COE permits (i.e., "regulatory" projects), including any bed-leveling associated with these hopper dredging activities. These totals are based on the following estimates of anticipated take levels in the Gulf of Mexico, by region, which are not allotments or limits per se. Subdivision of the COE's Gulf-wide anticipated incidental take is made later in this opinion, into two distinct and separate levels or allotments: one for COE-conducted ("civil works and national defense") projects, and the other for COE-permitted ("regulatory") projects.

Texas Coastal Area
For this area, the annual documented incidental take, by injury or mortality, is expected to consist of seven (7) Kemp's ridleys, five (5) green turtles, one (1) hawksbill, and fifteen (15) loggerhead turtles.

Louisiana Coastal Area

For this area, the documented annual incidental take, by injury or mortality, is expected to consist of seven (7) Kemp's ridleys, three (3) green turtles, one (1) hawksbill, and fifteen (15) loggerhead turtles, and one (1) Gulf sturgeon.

Florida Panhandle Coastal Area, west of Aucilla River Basin; Alabama Coastal Area; and Mississippi Coastal Area

For these areas, combined, the documented annual incidental take, by injury or mortality, is expected to consist of three (3) Kemp's ridley, three (3) green turtles, one (1) hawksbill, five (5) loggerhead turtles, and two (2) Gulf sturgeon.

West Florida Coastal Area: Aucilla River Basin to, but not including, Key West

For this area, the documented annual incidental take, by injury or mortality, is expected to consist of three (3) Kemp's ridleys, three (3) green turtles, one (1) hawksbill, five (5) loggerhead turtles, and one (1) Gulf sturgeon. Hopper dredging of Key West navigation channels is covered under the September 25, 1997, regional hopper dredging biological opinion (RBO) to the COE's South Atlantic Division (SAD), which includes by reference the reasonable and prudent measures (RPMs) of the August 25, 1995, hopper dredging RBO to the SAD.

REPLACE:

Anticipated Gulf-wide Take by Hopper Dredging Activities (in Section 8, pp. 63-65 of GRBO), with the following:

8.1 Anticipated Gulf-wide Take by Hopper Dredging and Bed-leveling and Relocation Trawling Activities Associated with Hopper Dredging Projects:

For the entire Gulf of Mexico from the U.S.-Mexico border to Key West, the annual documented COE incidental take per fiscal year, by injury or mortality, is expected to consist of forty (40) loggerhead turtles, twenty (20) Kemp's ridley turtles, fourteen (14) green turtles, four (4) hawksbill turtles, and four (4) Gulf sturgeon. This take level represents total take by injury or mortality per fiscal year anticipated for all navigation channel maintenance dredging and sand mining by hopper dredges and any associated bed-leveling activity in the Gulf of Mexico within the COE's Galveston, New Orleans, Mobile, and Jacksonville Districts, by COE-conducted ("civil works and national defense") projects and COE-permitted ("regulatory") projects.

Based upon consultation with the COE, the annual documented lethal or injurious incidental take per fiscal year is allocated as follows:

8.1.1 For COE-*conducted* hopper dredging for federal civil works or national defense activities:

Thirty-two (32) loggerhead turtles, sixteen (16) Kemp's ridley turtles, eleven (11) green turtles, three (3) hawksbill turtles, and three (3) Gulf sturgeon.

8.1.2 For COE-*permitted* hopper dredging performed by others (i.e., non-COE entities):

Eight (8) loggerhead turtles, four (4) Kemp's ridley turtles, three (3) green turtles, one (1) hawksbill turtle, and one (1) Gulf sturgeon.

8.1.3 For relocation trawling:

Zero to two (2) turtles and zero to one (1) Gulf sturgeon. These numbers are <u>in addition to</u> anticipated lethal or injurious takes by hopper dredges noted in 8.1.1 and 8.1.2, above.

8.1.4 For relocation trawling, the following <u>non-lethal</u> take is anticipated/authorized per fiscal year.

Three hundred (300) sea turtles, of any combination of species (Kemp's ridley, green, loggerhead, leatherback, and hawksbill), and eight (8) Gulf sturgeon, across all the COE districts and hopper dredging projects. This take is limited to relocation trawling conducted during the 0-3 days immediately preceding the start of hopper dredging (as a means to determine/reduce the initial abundance of sea turtles in the area and determine if additional trawling efforts are needed), during actual hopper dredging, and during "down" times when the hopper dredging operations may be temporarily suspended due to lethal turtle/sturgeon takes, weather, hopper dredge mechanical problems, etc. Relocation trawling performed to reduce endangered species/hopper dredge interactions is subject to the requirements detailed in the terms and conditions of this opinion.

<u>Regulatory Permits</u>
Each COE district issuing a regulatory permit involving hopper dredging will be responsible for initiating contact with NMFS on behalf of permit applicants, and will forward draft permit conditions to NMFS that are consonant with the RPMs and terms and conditions of this Regional Biological Opinion, including a proposed amount of authorized take of sea turtles and Gulf sturgeon where applicable per project allocated from the overall annual authorized take limit. The COE will coordinate with NMFS prior to permit issuance. This may be done by electronic mail with an electronic response from NMFS. The draft permit conditions and proposed take level allocated may be of standardized content.

<u>COE Gulf of Mexico Hopper Dredging Protocol</u>
The COE will develop internal protocols for managing, documenting, reporting, and coordinating incidental takes for both COE-conducted and COE-permitted activities across Gulf of Mexico Districts to ensure compliance with the provisions of this Regional Biological Opinion. The protocol and any future revisions to it will be shared with the NMFS Southeast Regional Office, Protected Resources Division staff in a timely manner.

<u>Adjustment of Take Allocations</u>
The balance between the basic hopper dredging requirements (quantities, duration, timing, and locations) for COE-conducted dredging for civil works and national defense and for COE-permitted dredging may vary in the future. Based on annual changes in these requirements, the COE may, in coordination with NMFS, adjust the allocation of the authorized Gulf-wide incidental take numbers between COE-conducted hopper dredging and COE-permitted hopper

dredging in advance of any given fiscal year, such that changes could be made to the allotments for the start of the subsequent fiscal year. Such adjustments would not affect the jeopardy analysis of this opinion or the terms and conditions of this ITS and can be made without reinitiation of consultation on this opinion.

New information requiring subsequent reinitation of consultation on this opinion, pursuant to the reinitiation triggers of 50 CFR 402.16, could result in an increase or decrease of the total allocated incidental take numbers for COE-conducted or COE-permitted hopper dredging within the current authorized ITS limit.

REPLACE:
Terms and Conditions (in Section 9, pp. 72-78 in the GRBO), Section 10 (Conservation Recommendations, pp. 78-80 in the GRBO), and Section 11 (Reinitiation of Consultation, pp. 80-81 in the GRBO), with the following:

Terms and Conditions

1. *Hopper Dredging*: Hopper dredging activities in Gulf of Mexico waters from the Mexico-Texas border to Key West, Florida, up to one mile into rivers shall be completed, whenever possible, between December 1 and March 31, when sea turtle abundance is lowest throughout Gulf coastal waters. Hopper dredging of Key West channels is covered by the existing September 25, 1997, RBO to the COE's SAD.

2. *Non-hopper Type Dredging*: Pipeline or hydraulic dredges, because they are not known to take turtles, must be used whenever possible between April 1 and November 30 in Gulf of Mexico waters up to one mile into rivers. This should be considered particularly in channels such as those associated with Galveston Bay and Mississippi River - Gulf Outlet (MR-GO), where lethal takes of endangered Kemp's ridleys have been documented during summer months, and Aransas Pass, where large numbers of loggerheads may be found during summer months. In the MR-GO, incidental takes and sightings of threatened loggerhead sea turtles have historically been highest during April and October.

3. *Annual Reports*: The annual summary report, discussed below (No. 9), must give a complete explanation of why alternative dredges (dredges other than hopper dredges) were not used for maintenance dredging of channels between April and November.

4. *Observers*: The COE shall arrange for NMFS-approved protected species observers to be aboard the hopper dredges to monitor the hopper bin, screening, and dragheads for sea turtles and Gulf sturgeon and their remains.

    a. Brazos Santiago Pass east to Key West, Florida: Observer coverage sufficient for 100% monitoring (i.e., two observers) of hopper dredging operations is required aboard the hopper dredges year-round from Brazos Santiago Pass to (not including) Key West, Florida, between April 1 and November 30, and whenever surface water temperatures are 11°C or greater.

b. Observer coverage of hopper dredging of sand mining areas shall ensure 50% monitoring (i.e., one observer).

c. Observers are not required at any time in Mississippi River - Southwest Pass (MR-SWP).

5. *Operational Procedures*: During periods in which hopper dredges are operating and NMFS-approved protected species observers are *not* required (as delineated in No. 4 above), the appropriate COE District must:

a. Advise inspectors, operators, and vessel captains about the prohibitions on taking, harming, or harassing sea turtles.

b. Instruct the captain of the hopper dredge to avoid any turtles and whales encountered while traveling between the dredge site and offshore disposal area, and to immediately contact the COE if sea turtles or whales are seen in the vicinity.

c. Notify NMFS if sea turtles are observed in the dredging area, to coordinate further precautions to avoid impacts to turtles.

d. Notify NMFS immediately by phone (**727/824-5312**), fax (**727/824-5309**), or electronic mail (**takereport.nmfsser@noaa.gov**) if a sea turtle or Gulf sturgeon or any other threatened or endangered species is taken by the dredge.

6. *Screening*: When sea turtle observers are required on hopper dredges, 100% inflow screening of dredged material is required and 100% overflow screening is recommended. If conditions prevent 100% inflow screening, inflow screening may be reduced gradually, as further detailed in the following paragraph, but 100% overflow screening is then required.

a. Screen Size: The hopper's inflow screens should have 4-inch by 4-inch screening. If the COE, in consultation with observers and the draghead operator, determines that the draghead is clogging and reducing production substantially, the screens may be modified sequentially: mesh size may be increased to 6-inch by 6-inch, then 9-inch by 9-inch, then 12-inch by 12-inch openings. Clogging should be greatly reduced with these flexible options; however, further clogging may compel removal of the screening altogether, in which case effective 100% overflow screening is mandatory. The COE shall notify NMFS beforehand if inflow screening is going to be reduced or eliminated, and provide details of how effective overflow screening will be achieved.

b. Need for Flexible, Graduated Screens: NMFS believes that this flexible, graduated-screen option is necessary, since the need to constantly clear the inflow screens will increase the time it takes to complete the project and therefore increase the exposure of sea turtles to the risk of impingement or entrainment. Additionally, there are increased risks to sea turtles in the water column when the inflow is halted to clear screens, since this results in clogged intake pipes, which may have to be lifted from the bottom to discharge the clay by applying suction.

c. Exemption - MR-SWP: Screening is not required at any time in MR-SWP.

7. *Dredging Pumps*: Standard operating procedure shall be that dredging pumps shall be disengaged by the operator when the dragheads are not firmly on the bottom, to prevent impingement or entrainment of sea turtles within the water column. This precaution is especially important during the cleanup phase of dredging operations when the draghead frequently comes off the bottom and can suck in turtles resting in the shallow depressions between the high spots the draghead is trimming off.

8. *Sea Turtle Deflecting Draghead*: A state-of-the-art rigid deflector draghead must be used on all hopper dredges in all Gulf of Mexico channels and sand mining sites at all times of the year except that the rigid deflector draghead is not required in MR-SWP at any time of the year.

9. *Dredge Take Reporting*: Observer reports of incidental take by hopper dredges must be faxed or e-mailed to NMFS' Southeast Regional Office [**fax: (727) 824-5309; e-mail: takereport.nmfsser@noaa.gov**] by onboard NMFS-approved protected species observers within 24 hours of any sea turtle, Gulf sturgeon, or other listed species take observed.

   A preliminary report summarizing the results of the hopper dredging and any documented sea turtle or Gulf sturgeon takes must be submitted to NMFS within 30 working days of completion of any dredging project. Reports shall contain information on project location (specific channel/area dredged), start-up and completion dates, cubic yards of material dredged, problems encountered, incidental takes and sightings of protected species, mitigative actions taken (if relocation trawling, the number and species of turtles relocated), screening type (inflow, overflow) utilized, daily water temperatures, name of dredge, names of endangered species observers, percent observer coverage, and any other information the COE deems relevant.

   An annual report (based on fiscal year) must be submitted to NMFS summarizing hopper dredging projects and documented incidental takes.

10. *Sea Turtle and Gulf Sturgeon Strandings*: The COE or its designated representative shall notify the Sea Turtle Stranding and Salvage Network (STSSN) state representative (contact information available at: http://www.sefsc.noaa.gov/seaturtleSTSSN.jsp) of the start-up and completion of hopper dredging, bed-leveler dredging, and relocation trawling operations and ask to be notified of any sea turtle strandings in the project area that, in the estimation of STSSN personnel, bear signs of potential draghead impingement or entrainment, or interaction with a bed-leveling type dredge. Similarly, the COE shall notify NMFS SERO PRD of any Gulf sturgeon strandings in the project area that, in the estimation of STSSN personnel, bear signs of potential draghead impingement or entrainment, or interaction with a bed-leveling type dredge.

Information on any such strandings shall be reported in writing within 30 days of project completion to NMFS' Southeast Regional Office. Because the deaths of these turtles, if hopper dredge or bed-leveler dredge related, have already been accounted for in NMFS' jeopardy analysis, these strandings will not be counted against the COE's take limit.

11. *Reporting - Strandings*: Each COE District shall provide NMFS' Southeast Regional Office with an annual report detailing incidents, with photographs when available, of stranded sea turtles and Gulf sturgeon that bear indications of draghead impingement or entrainment or any dredge-type interaction. This reporting requirement may be included in the end-of-year report required in Term and Condition No. 9, above.

12. *District Annual Relocation Trawling Report*: Each COE District shall provide NMFS' Southeast Regional Office with end-of-project reports within 30 days of completion of relocation trawling projects, and an annual report summarizing relocation trawling efforts and results within their District. The annual report requirement may be included in the end-of-year report required in Term and Condition No. 9, above.

13. *Conditions Requiring Relocation Trawling*: Handling of sea turtles and Gulf sturgeon captured during relocation trawling in association with hopper dredging projects in Gulf of Mexico navigation channels and sand mining areas shall be conducted by NMFS-approved protected species observers. Relocation trawling shall be undertaken by the COE at all projects where <u>any</u> of the following conditions are met; however, other ongoing projects not meeting these conditions are not required to conduct relocation trawling:

   a. Two or more turtles are taken in a 24-hour period in the project.

   b. Four or more turtles are taken in the project.

   c. 75% of any of the incidental take limits, including per species limits, specified in Section 8.1, has previously been met.

14. *Relocation Trawling Waiver*: For individual projects the affected COE District may request by letter to NMFS a waiver of part or all of the relocation trawling requirements. NMFS will consider these requests and decide favorably if the evidence is compelling.

15. *Relocation Trawling - Annual Take Limits*: This opinion authorizes, without the need for an ESA section 10 permit: the annual (by fiscal year) non-injurious take of 300 sea turtles (of one species or combination of species including Kemp's ridley, loggerhead, green, leatherback, and hawksbill) and 8 Gulf sturgeon, and annual (by fiscal year) lethal or injurious takes of up to 2 sea turtles and 1 Gulf sturgeon, by trawlers conducting relocation trawling, and handling of those captured threatened or endangered species by NMFS-approved protected species observers, in association with all relocation trawling conducted or contracted by the four Gulf of Mexico COE Districts to temporarily reduce or assess the abundance of these listed species during, and in the 0-3 days immediately

preceding, a hopper dredging or bed-leveling project in order to reduce the possibility of lethal hopper dredge or bed-leveler interactions, subject to the following conditions:

a. *Trawl Time*: Trawl tow-time duration shall not exceed 42 minutes (doors in - doors out) and trawl speeds shall not exceed 3.5 knots.

b. *Handling During Trawling*: Sea turtles and Gulf sturgeon captured pursuant to relocation trawling shall be handled in a manner designed to ensure their safety and viability, and shall be released over the side of the vessel, away from the propeller, and only after ensuring that the vessel's propeller is in the neutral, or disengaged, position (i.e., not rotating). Resuscitation guidelines are attached (Appendix IV).

c. *Captured Turtle and Gulf Sturgeon Holding Conditions*: Turtles and Gulf sturgeon may be held briefly for the collection of important scientific measurements, prior to their release. Captured sea turtles shall be kept moist, and shaded whenever possible, until they are released, according to the requirements of T&C 15-e, below. Captured Gulf sturgeon shall be held in a suitable well-aerated seawater enclosure until they are released, according to the conditions of T&C 15-f, below.

d. *Scientific Measurements*: When safely possible, all turtles shall be measured (standard carapace measurements including body depth), tagged, weighed, and a tissue sample taken prior to release. When safely possible, all Gulf sturgeon shall be measured (fork length and total length), tagged, weighed, and a tissue sample taken prior to release. Any external tags shall be noted and data recorded into the observers log. Only NMFS-approved protected species observers or observer candidates in training under the direct supervision of a NMFS-approved protected species observer shall conduct the tagging/measuring/weighing/tissue sampling operations.

   NMFS-approved protected species observers may conduct more invasive scientific procedures (e.g., blood letting, laparoscopies, anal and gastric lavages, mounting satellite or radio transmitters, etc.) and partake in or assist in "piggy back" research projects but only if the observer holds a valid federal sea turtle or Gulf sturgeon research permit (and any required state permits) authorizing the activities, either as the permit holder, or as designated agent of the permit holder, and has first notified NMFS' Southeast Regional Office, Protected Resources Division.

e. *Take and Release Time During Trawling - Turtles*: Turtles shall be kept no longer than 12 hours prior to release and shall be released not less than 3 (three) nautical miles (nmi) from the dredge site. If two or more released turtles are later recaptured, subsequent turtle captures shall be released not less than 5 (five) nmi away. If it can be done safely and without injury to the turtle, turtles may be transferred onto another vessel for transport to the release area to enable the relocation trawler to keep sweeping the dredge site without interruption.

f. *Take and Release Time During Trawling - Gulf Sturgeon*: Gulf sturgeon shall be released immediately after capture, away from the dredge site or into already dredged areas, unless the trawl vessel is equipped with a suitable well-aerated seawater holding tank, container, trough, or pool where a maximum of one fish may be held for not longer than 30 minutes before it must be released or relocated away from the dredge site.

g. *Injuries and Incidental Take Limits*: Any protected species injured or killed during or as a consequence of relocation trawling shall count toward the Gulf-wide limit for injurious or lethal takes during relocation trawling (0-2 sea turtles and 0-1 Gulf sturgeon per fiscal year). Minor skin abrasions resulting from trawl capture are considered non-injurious. Injured sea turtles shall be immediately transported to the nearest sea turtle rehabilitation facility.

h. *Turtle Flipper External Tagging*: All sea turtles captured by relocation trawling shall be flipper-tagged prior to release with external tags which shall be obtained prior to the project from the University of Florida's Archie Carr Center for Sea Turtle Research. This opinion serves as the permitting authority for any NMFS-approved protected species observer aboard these relocation trawlers to flipper-tag with external-type tags (e.g., Inconel tags) captured sea turtles. Columbus crabs or other organisms living on external sea turtle surfaces may also be sampled and removed under this authority.

i. *PIT Tagging:* This opinion serves as the permitting authority for any NMFS-approved protected species observer aboard a relocation trawler to PIT-tag captured sea turtles and Gulf sturgeon. PIT tagging of sea turtles and Gulf sturgeon is not required to be done, if the NMFS-approved protected species observer does not have prior training or experience in said activity; however, if the observer has received prior training in PIT tagging procedures, then the observer shall PIT tag the animal prior to release (in addition to the standard external tagging):

   Sea turtle PIT tagging must then be performed in accordance with the protocol detailed at NMFS' Southeast Fisheries Science Center's Web page: http://www.sefsc.noaa.gov/seaturtlefisheriesobservers.jsp. (See Appendix C on SEFSC's "Fisheries Observers" Web page);

   Gulf sturgeon PIT tagging must then be performed in accordance with the protocol detailed at the NMFS SERO PRD Web site address: http://sero.nmfs.noaa.gov/pr/protres.htm.

PIT tags used must be sterile, individually-wrapped tags to prevent disease transmission. PIT tags should be 125-kHz, glass-encapsulated tags–the smallest ones made. Note: If scanning reveals a PIT tag and it was not difficult to find, then do not insert another PIT tag; simply record the tag number and location, and frequency, if known. If for some reason the tag is difficult to detect (e.g., tag is embedded deep in muscle, or is a 400-kHz tag), then insert one in the other shoulder.

j. *Other Sampling Procedures*: All other tagging and external or internal sampling procedures (e.g., blood letting, laparoscopies, anal and gastric lavages, mounting satellite or radio transmitters, etc.) performed on live sea turtles or live Gulf sturgeon are not permitted under this opinion unless the observer holds a valid sea turtle sturgeon research permit authorizing the activity, either as the permit holder, designated agent of the permit holder.

k. *PIT-Tag Scanning and Data Submission Requirements*: All sea turtles and Gulf sturgeon captured by relocation trawling or dredges shall be thoroughly scanned for the presence of PIT tags prior to release using a multi-frequency scanner powerful enough to read multiple frequencies (including 125-, 128-, 134-, and 400-kHz tags) and read tags deeply embedded in muscle tissue (e.g., manufactured by Trovan, Biomark, or Avid). Turtles whose scans show they have been previously PIT tagged shall nevertheless be externally flipper tagged. Sea turtle data collected (PIT tag scan data and external tagging data) shall be submitted to NOAA, National Marine Fisheries Service, Southeast Fisheries Science Center, Attn: Lisa Belskis, 75 Virginia Beach Drive, Miami, Florida 33149. All sea turtle data collected shall be submitted in electronic format within 60 days of project completion to Lisa.Belskis@noaa.gov and Sheryan.Epperly@noaa.gov. Sea turtle external flipper tag and PIT tag data generated and collected by relocation trawlers shall also be submitted to the Cooperative Marine Turtle Tagging Program (CMTTP), on the appropriate CMTTP form, at the University of Florida's Archie Carr Center for Sea Turtle Research.

Gulf sturgeon data (PIT tag scan data and external tagging data) shall be submitted within 60 days of project completion to NOAA, National Marine Fisheries Service, Protected Resources Division, 263 13th Avenue South, St. Petersburg, Florida 33701, or by **fax: (727) 824-5309;** or by **e-mail: takereport.nmfsser@noaa.gov**, Attn: Dr. Stephania Bolden.

l. *Handling Fibropapillomatose Turtles*: NMFS-approved protected species observers are not required to handle or sample viral fibropapilloma tumors if they believe there is a health hazard to themselves and choose not to. When handling sea turtles infected with fibropapilloma tumors, observers must either: 1) Clean all equipment that comes in contact with the turtle (tagging equipment, tape measures, etc.) with mild bleach solution, between the processing of each turtle or 2) maintain a separate set of sampling equipment for handling animals displaying fibropapilloma tumors or lesions.

16. *Requirement and Authority to Conduct Tissue Sampling for Genetic Analyses*: This opinion serves as the permitting authority for any NMFS-approved protected species observer aboard a relocation trawler or hopper dredge to tissue-sample live- or dead-captured sea turtles, and live- or dead-captured Gulf sturgeon, without the need for an ESA section 10 permit.

All live or dead sea turtles and Gulf sturgeon captured by relocation trawling and hopper dredging (for both COE-conducted and COE-permitted activities) shall be tissue-sampled prior to release. Sampling shall continue uninterrupted until such time as NMFS determines and notifies the COE in writing that it has sufficient samples from specific areas across the Gulf of Mexico in order to obtain reliable genetic information on the nesting or sub-population identity of sea turtles and Gulf sturgeon being captured or lethally taken, to improve the effectiveness of future consultations.

Sea turtle tissue samples shall be taken in accordance with NMFS' Southeast Fisheries Science Center's (SEFSC) procedures for sea turtle genetic analyses (Appendix II of this opinion). The COE shall ensure that tissue samples taken during a dredging project are collected and stored properly and mailed within 60 days of the completion of their dredging project to: NOAA, National Marine Fisheries Service, Southeast Fisheries Science Center, Attn: Lisa Belskis, 75 Virginia Beach Drive, Miami, Florida 33149.

Gulf sturgeon tissue samples (i.e., fin clips or barbel clips) shall be taken in accordance with NMFS SERO's Protected Resources Division's Gulf Sturgeon Tissue Sampling Protocol found at the NMFS SERO PRD Web site address: http://sero.nmfs.noaa.gov/pr/protres.htm. The COE shall ensure that tissue samples taken during a dredging project are collected and stored properly and mailed to SERO PRD (Attn: Dr. Stephania Bolden) within 60 days of the completion of their dredging project.

17. *Hardground Buffer Zones*: All dredging in sand mining areas will be designed to ensure that dredging will not occur within a minimum of 400 feet from any significant hardground areas or bottom structures that serve as attractants to sea turtles for foraging or shelter. NMFS considers (for the purposes of this opinion only) a significant hardground in a project area to be one that, over a horizontal distance of 150 feet, has an average elevation above the sand of 1.5 feet or greater, and has algae growing on it. The COE Districts shall ensure that sand mining sites within their Districts are adequately mapped to enable the dredge to stay at least 400 feet from these areas. If the COE is uncertain as to what constitutes significance, it shall consult with NMFS SERO's Habitat Conservation Division (727-824-5317) and NMFS' Protected Resources Division (727-824-5312) for clarification and guidance. Walls of federally-maintained navigation channels, and jetties and other such man-made structures, are not considered hardgrounds for the purpose of this opinion.

18. *Training - Personnel on Hopper Dredges*: The respective COE Districts must ensure that all contracted personnel involved in operating hopper dredges (whether privately-funded or federally-funded projects) receive thorough training on measures of dredge operation that will minimize takes of sea turtles. It shall be the goal of each hopper dredging operation to establish operating procedures that are consistent with those that have been used successfully during hopper dredging in other regions of the coastal United States, and which have proven effective in reducing turtle/dredge interactions. Therefore, COE Engineering Research and Development Center experts or other persons with expertise in this matter shall be involved both in dredge operation training, and installation, adjustment, and monitoring of the rigid deflector draghead assembly.

19. *Dredge Lighting*: From May 1 through October 31, sea turtle nesting and emergence season, all lighting aboard hopper dredges and hopper dredge pumpout barges operating within 3 nmi of sea turtle nesting beaches shall be limited to the minimal lighting necessary to comply with U.S. Coast Guard and/or OSHA requirements. All non-essential lighting on the dredge and pumpout barge shall be minimized through reduction, shielding, lowering, and appropriate placement of lights to minimize illumination of the water to reduce potential disorientation effects on female sea turtles approaching the nesting beaches and sea turtle hatchlings making their way seaward from their natal beaches.

10.0 Conservation Recommendations

Pursuant to section 7(a)(1) of the ESA, the following conservation recommendations are made to assist the COE in contributing to the conservation of sea turtles and Gulf sturgeon by further reducing or eliminating adverse impacts that result from hopper dredging.

1. *Channel Conditions and Seasonal Abundance Studies*: Channel-specific studies should be undertaken to identify seasonal relative abundance of sea turtles and Gulf sturgeon within Gulf of Mexico channels. The December 1 through March 31 dredging window and associated observer requirements listed above may be adjusted (after consultation and authorization by NMFS) on a channel-specific basis, if (a) the COE can provide sufficient scientific evidence that sea turtles and Gulf sturgeon are not present or that levels of abundance are extremely low during other months of the year, or (b) the COE can identify seawater temperature regimes that ensure extremely low abundance of sea turtles or Gulf sturgeon in coastal waters, and can monitor water temperatures in a real-time manner. Surveys may indicate that some channels do not support significant turtle populations, and hopper dredging in these channels may be unrestricted on a year-round basis, as in the case of MR-SWP. To date, sea turtle deflector draghead efficiency has not reached the point where seasonal restrictions can be lifted.

2. *Draghead Modifications and Bed Leveling Studies*: The New Orleans, Galveston, Mobile, and Jacksonville Districts should supplement the efforts of SAD and ERDC to develop modifications to existing dredges to reduce or eliminate take of sea turtles, and develop methods to minimize sea turtle take during "cleanup" operations when the draghead maintains only intermittent contact with the bottom. Some method to level the "peaks and valleys" created by dredging would reduce the amount of time dragheads are off the bottom. NMFS is ready to assist the COE in conducting studies to evaluate bed-leveling devices and their potential for interaction with sea turtles, and develop modifications if needed.

3. *Draghead Evaluation Studies and Protocol*: Additional research, development, and improved performance is needed before the V-shaped rigid deflector draghead can replace seasonal restrictions as a method of reducing sea turtle captures during hopper dredging activities. Development of a more effective deflector draghead or other entrainment-deterring device (or combination of devices, including use of acoustic

deterrents) could potentially reduce the need for sea turtle relocation or result in expansion of the winter dredging window. NMFS should be consulted regarding the development of a protocol for draghead evaluation tests. NMFS recommends that the COE's Galveston, New Orleans, Mobile, and Jacksonville Districts coordinate with ERDC, SAD, the Association of Dredge Contractors of America, and dredge operators (Manson, Bean-Stuyvesant, Great Lakes, Natco, etc.) regarding additional reasonable measures they may take to further reduce the likelihood of sea turtle and Gulf sturgeon takes.

4. *Continuous Improvements in Monitoring and Detecting Takes*: The COE should seek continuous improvements in detecting takes and should determine, through research and development, a better method for monitoring and estimating sea turtle and Gulf sturgeon takes by hopper dredge. Observation of overflow and inflow screening is only partially effective and provides only partial estimates of total sea turtle and Gulf sturgeon mortality.

   Overflow Screening: The COE should encourage dredging companies to develop or modify existing overflow screening methods on their company's dredge vessels for maximum effectiveness of screening and monitoring. Horizontal overflow screening is preferable to vertical overflow screening because NMFS considers that horizontal overflow screening is significantly more effective at detecting evidence of protected species entrainment than vertical overflow screening.

   Preferential Consideration for Horizontal Overflow Screening: The COE should give preferential consideration to hopper dredges with horizontal overflow screening when awarding hopper dredging contracts for areas where new materials, large amounts of debris, or clay may be encountered, or have historically been encountered. Excessive inflow screen clogging may in some instances necessitate removal of inflow screening, at which point effective overflow screening becomes more important.

5. *Section 10 Research Permits, Relocation Trawling, and Piggy-Back Research*: NMFS recommends that the COE's Galveston, New Orleans, Mobile, and Jacksonville Districts, either singly or combined, apply to NMFS for an ESA section 10 research permit to conduct endangered species research on species incidentally captured during relocation trawling. For example, satellite tagging of captured turtles could enable the COE Districts to gain important knowledge on sea turtle seasonal distribution and presence in navigation channels and sand mining sites and also, as mandated by section 7(a)(1) of the ESA, to utilize their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of listed species. SERO shall assist the COE Districts with the permit application process. Similarly, NMFS encourages the COE to cooperate with NMFS' scientists, other federal agencies' scientists, and university scientists to make fuller use of turtles and Gulf sturgeon taken pursuant to the authority conferred by this opinion during hopper dredging and relocation trawling, by allowing and encouraging "piggy-back" research projects by duly-permitted individuals or their authorized designees. Piggy-back projects could include *non-lethal* research of many types,

including blood letting, laparoscopies, anal and gastric lavages, mounting satellite or radio transmitters, etc.

6. *Draghead Improvements - Water Ports*: NMFS recommends that the COE's Gulf of Mexico Districts require or at least recommend to dredge operators that all dragheads on hopper dredges contracted by the COE for dredging projects be eventually outfitted with water ports located in the *top* of the dragheads to help prevent the dragheads from becoming plugged with sediments. When the dragheads become plugged with sediments, the dragheads are often raised off the bottom (by the dredge operator) with the suction pumps on in order to take in enough water to help clear clogs in the dragarm pipeline, which increases the likelihood that sea turtles in the vicinity of the draghead will be taken by the dredge. Water ports located in the top of the dragheads would relieve the necessity of raising the draghead off the bottom to perform such an action, and reduce the chance of incidental take of sea turtles.

   NMFS supports and recommends the implementation of proposals by ERDC and SAD personnel for various draghead modifications to address scenarios where turtles may be entrained during hopper dredging (Dickerson and Clausner 2003). These include: a) an adjustable visor; b) water jets for flaps to prevent plugging and thus reduce the requirement to lift the draghead off the bottom; and c) a valve arrangement (which mimics the function of a "Hoffer" valve used on cutterhead type dredges to allow additional water to be brought in when the suction line is plugging) that will provide a very large amount of water into the suction pipe thereby significantly reducing flow through the visor when the draghead is lifted off the bottom, reducing the potential to take a turtle.

7. *Economic Incentives for No Turtle Takes*: The COE should consider devising and implementing some method of significant economic incentives to hopper dredge operators such as financial reimbursement based on their satisfactory completion of dredging operations, or *X* number of cubic yards of material moved, or hours of dredging performed, *without taking turtles*. This may encourage dredging companies to research and develop "turtle friendly" dredging methods; more effective, deflector dragheads; pre-deflectors; top-located water ports on dragarms; etc.

8. *Sedimentation Limits to Protect Resources (Hardbottoms/Reefs)*: NMFS recommends water column sediment load deposition rates of no more than 200 $mg/cm^2/day$, averaged over a 7-day period, to protect coral reefs and hard bottom communities from dredging-associated turbidity impacts to listed species foraging habitat.

9. *Boca Grande Pass - Conditions*: If the COE's Jacksonville District decides to renew dredging permits for the Boca Grande Pass, NMFS recommends that the District conduct or sponsor a Gulf sturgeon study, including gillnetting and tagging utilizing ultrasonic and radio transmitters, and mtDNA sampling, to help determine the genetic origins, relative and seasonal abundance, distribution and utilization of estuarine and marine habitat by Gulf sturgeon within Charlotte Harbor estuary and Charlotte Harbor Entrance

Channel, and shall report to NMFS biannually on the progress and final results of said study.

10. *Relocation Trawling - Guidelines*: Within six months of the issuance of this opinion, the COE's Gulf of Mexico Districts, in coordination with COE's SAD, should develop relocation trawling guidelines to ensure safe handling and standardized data gathering techniques for sea turtles and Gulf sturgeon by COE contractors, and forward copies to NMFS' Protected Resources Division.

11. *Sodium Vapor Lights on Offshore Equipment*: On offshore equipment (i.e., hopper dredges, pumpout barges) shielded low-pressure sodium vapor lights are highly recommended for lights that cannot be eliminated.

11.0 Reinitiation of Consultation

Requirements for Reinitiation of Consultation: Reinitiation of formal consultation is required if (a) the amount or extent of taking specified in the incidental take statement is exceeded (any of the specified limits), (b) new information reveals effects of the action that may affect listed species or critical habitat when designated in a manner or to an extent not previously considered, (c) the identified action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in the opinion, or (d) a new species is listed or critical habitat designated that may be affected by the identified action.

Advance Discussions of Potential Need for Reinitiation: NMFS requests that COE districts initiate discussions with the Southeast Regional Office Protected Resources Division early to identify the potential need for reinitiation of consultation, well in advance of actually exceeding the amount or extent of taking specified in the incidental take statement. NMFS requests notification when a) more than one turtle is taken by a dredge in any 24-hour period; b) four turtles are taken by a dredge during a single project; c) the dredge take reaches 75% of the total take level established for any one species; d) a Gulf sturgeon is taken by a dredge; e) a hawksbill turtle is taken by a dredge; f) a turtle or Gulf sturgeon is injuriously or lethally taken by a relocation trawler; or g) the relocation trawling incidental take limit for turtles or sturgeon is reached. The NMFS Southeast Regional Office will work with the COE to quickly review such incidents, to discuss the need and advisability of further mitigating measures, and to plan for a reinitiation of consultation if it appears that one of the reinitiation triggers is likely to be met.

Dredging/Trawling Operations During Reinitiation of Consultation: Once the need for reinitiation is triggered, the COE is not necessarily required to suspend dredging or relocation trawling operations pending the conclusion of the reinitiated consultation, so long as the continuation of operations (by all districts and all permittees) would not violate section 7(a)(2) or 7(d) of the ESA. In that case, the COE is advised to document its determination that these provisions would not be violated by continuing activities covered by this opinion during the reinitiation period and to notify NMFS of its findings.

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
7400 LEAKE AVENUE
NEW ORLEANS, LOUISIANA 70118

REPLY TO
ATTENTION OF

JUN 2 1 2017

Regional Planning and
Environment Division, South
Environmental Planning Branch

Don Haydel
Interagency Affairs
Office of Coastal Management
Louisiana Department of Natural Resources
P.O. Box 44487
Baton Rouge, Louisiana 70804-4487

Dear Mr. Haydel:

A Louisiana Coastal Zone Consistency Determination prepared by the U.S. Army Corps of Engineers, New Orleans District (CEMVN), is enclosed. The consistency determination examines the potential impacts associated with the proposed deepening of areas within the Mississippi River, Southwest Pass, and Southwest Pass Bar Channel to 50 feet, and establishing additional disposal areas for beneficial use of dredged material. The proposed work is proposed as a joint effort of CEMVN and the Louisiana Department of Transportation and Development as part of the Federally-authorized Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana project.

We request your concurrence with the enclosed consistency determination, which addresses the applicable Coastal Use Guidelines. Based on this enclosed information, we believe that the proposed action is consistent to the maximum extent practicable, with the State of Louisiana's approved Coastal Resources Program.

Please provide any comments within 30 days of the date of this letter. Comments should be mailed to the attention of Mr. Steve Roberts; U.S. Army Corps of Engineers; Regional Planning and Environment Division, South; Environmental Compliance Branch; CEMVN-PDC-CEC; 7400 Leake Avenue; New Orleans, Louisiana 70118.

Comments may also be provided by email to steve.w.roberts@usace.army.mil. Mr. Roberts may be also be contacted at (504) 862-2517.

Sincerely,

Marshall K. Harper

Marshall K. Harper
Chief, Environmental Planning Branch

Enclosure

CONSISTENCY DETERMINATION
(C20170118)

Louisiana Coastal Use Guidelines

Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project
Mississippi River Ship Channel Improvements in St. James, St. Charles, and Plaquemines Parishes, Louisiana.

INTRODUCTION

Section 307 of the Coastal Zone Management Act of 1972, 16 U.S.C. 1451 et. seq. requires that "each federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum extent practicable, consistent with approved state management programs." In accordance with Section 307, a Consistency Determination has been prepared by the US Army Corps of Engineers, New Orleans District (CEMVN) for proposed construction that would occur within the Louisiana coastal zone. This includes deepening within: 1) three river crossings within the Mississippi River, 2) the lower river in the vicinity of Southwest Pass and Venice, Louisiana, and 3) the Southwest Pass Bar Channel. A fourth component of the project entails the beneficial use of material dredged to create coastal wetland habitat in lower Plaquemines Parish, Louisiana. CEMVN operations and maintenance (O&M) within the Louisiana coastal zone is not anticipated to increase after the project has been constructed to 50 feet. Any refinement to the proposed action described below having reasonably foreseeable effect to coastal resources will be addressed in a future modification to this consistency determination.

This work is proposed as a joint effort of CEMVN and the Louisiana Department of Transportation and Development (LDOTD), as part of the Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana project (Figure 1). Although the project is authorized to a depth of 55 feet from the Gulf to Baton Rouge, Louisiana, an integrated general reevaluation report and draft supplemental environmental impact statement (SEIS) were prepared to update changes in conditions of economic development and environmental conditions that have occurred since the original 1981 Feasibility Report. This draft report was released for public and agency comment on December 16, 2016 (http://www.mvn.usace.army.mil/About/Mississippi-River-Ship-Channel). A January 10, 2017 comment letter from your office was received in response to the draft report. A response letter addressing your concerns is under preparation, however, most of the concerns raised in the letter are addressed in the following consistency determination.

Coastal Use Guidelines were written in order to implement the policies and goals of the Louisiana Coastal Resources Program (LCRP), and serve as a set of performance standards for evaluating projects. Compliance with the Louisiana Coastal Resources Program, and therefore, Section 307, requires compliance with applicable Coastal Use Guidelines.

PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the proposed action is to improve the local, regional and national economy by improving the navigational capacity of the Mississippi river ship channel. The project serves the only deep-draft ports on the Mississippi River, including four of the nation's top ten ports. The channel currently handles approximately 450 million tons per year in bulk export and accounts for 18 percent of U.S. waterborne commerce. Forecasts indicate that the U.S. will remain the single largest participant in the global grain trade and U.S. coal producers will continue to hold a marginal position in the global market. Deep draft navigational capabilities at 50 feet would allow deep draft access, reduce transportation costs, and provide economic benefits to Louisiana and the nation.

AUTHORITY FOR THE PROPOSED ACTION

A feasibility report entitled "Deep-Draft Access to the Ports of New Orleans and Baton Rouge, Louisiana" was prepared in 1981, recommending deepening the Mississippi River navigation channel to a 55-foot depth from Baton Rouge to the Gulf of Mexico. The final Chief of Engineers Report for the project was signed in 1983. The project was authorized for construction by the 1985 Supplemental Appropriations Act, and the Water Resources and Development Act of 1986 (PL 99-662). Section 2101(b) of the Water Resources Reform and Development Act 2014 (Pub. Law 113-121) effectively amended the project authorization pursuant to its amendment of Section 101(b)(1) of the Water Resources Development Act of 1986, (Pub. Law 99-662) regarding the requisite non-Federal cost share for the operation, maintenance, repair, rehabilitation and replacement of general navigation features of commercial navigation harbor projects.

During the original pre-construction planning, a construction sequence was developed that would implement the authorized project in three construction phases, to obtain the fully authorized project. Phase I was completed in December of 1987 and provided a depth of 45 feet from Donaldsonville, Louisiana at River Mile (RM) 181.0 to the Gulf of Mexico. Construction of Phase II was completed in December 1994 and involved deepening of the MRSC to a depth of 45 feet between Donaldsonville and Baton Rouge and involved dredging of eight river crossings. Phase III was originally defined as deepening of the MRSC from the Gulf to Baton Rouge from a depth of 45 feet to a depth of 55 feet. LDOTD, as the local sponsor, limited the scope for the third phase to those with a 50-foot depth because a cost-share agreement for project maintenance would be required at deeper depths. To proceed with the evaluation of alternatives for the next phase of construction, Phase III of this General Reevaluation study was initiated with the issuance of Federal funds to initiate a General Reevaluation Report, following execution of the Feasibility and Cost Sharing Agreement (FCSA), signed on April 2, 2015 with LDOTD.

DESCRIPTION OF THE PROPOSED ACTION

Overview

In partnership with the LDOTD, CEMVN proposes to deepen the Mississippi River ship channel to 50 feet, from the Gulf of Mexico to the Port of Baton Rouge (Figures 1-2). A large reach of the ship channel (approximately 185 river miles) occurs within the designated Louisiana coastal zone. However, work in the river would be non-contiguous and work within the Louisiana coastal zone is best summarized by subdividing it into: 1) three river crossings upriver of New Orleans, Louisiana, 2) approximately 32 miles of lower river and Southwest Pass, and 3) three miles of the Southwest Pass bar channel. Deepening would only occur within previously disturbed reaches of the river that are regularly maintained by CEMVN for navigational purposes.

The scope of the effort includes the deepening and maintenance of 12 river crossings from 45 feet to 50 feet at the Low Water Reference Plane (LWRP), between New Orleans and Baton Rouge, Louisiana. However, only the crossings of Fairview, Belmont, and Rich Bend occur in the Louisiana coastal zone (Table 1).

B.R. Front	River Mile 234-229 AHP
Redeye	River Mile 226-221 AHP
Sardine Point	River Mile 221-216 AHP
Medora	River Mile 214-208 AHP
Granada	River Mile 207-202 AHP
Bayou Goula	River Mile 199-196 AHP
Alhambra	River Mile 193-188 AHP
Philadelphia	River Mile 185-181 AHP
Smoke Bend	River Mile 179-172 AHP
Richbend	River Mile 160-155 AHP
Belmont	River Mile 156-151 AHP
Fairview	River Mile 117-111 AHP

Table 1. Names and reaches of the 12 deep draft crossings (crossings in the Louisiana coastal zone are highlighted in green).

The scope also includes deepening various shoals in lower Plaquemines Parish from 48 feet to 50 feet at Mean Lower Low Water (MLLW). This would occur from RM 13.4 above Head of Passes (AHP) to Head of Passes, and from Head of Passes to RM 22 below Head of Passes (BHP). A large portion of this material would be used beneficially to create coastal wetland habitat in designated beneficial use placement areas (Figure 3).

Based on the findings of 2D hydraulic modeling of the river, the magnitude of material dredged within the Louisiana coastal zone under O&M is not anticipated to change after construction, nor would the logistics of current O&M practices. Dredging quantities are summarized in Table 2 as the incremental dredging quantities beyond existing O&M practices (i.e., what the reevaluation study defines as the No-Action Alternative) in the Louisiana coastal zone.

	Construction of 3 CZ Crossings	Lower River Construction (RM 13.4 AHP-19 BHP)	Bar Channel Construction RM (19BHP-22BHP)	Annual O&M- 3 Crossings	Annual O&M- Lower River/Bar Channel
Proposed Action	1,617,000 cy	19,900,000 cy	1,620,000 cy	0 cy	0 cy

Table 2. Incremental dredging requirements beyond current O&M practices (i.e., the No Action Alternative) that occur in the Louisiana coastal zone, represented in cubic yards (cy).

Construction of Crossings

As a result of deepening the three crossings from 45 to 50 feet at the LWRP, approximately 617,000 cubic yards of material would be dredged and placed in open water adjacent to the navigation channel. Construction of these crossings would occur with dustpan dredges. Construction windows would be non-continuous, however construction of the crossings in the Louisiana coastal zone would occur within 1 year. Dustpans are typically utilized at crossings during falling water and low water conditions. The suction head of the dustpan, approximately the width of the dredge, is lowered to the face of the material to be removed. High velocity water jets loosen the material, which is then drawn by pump as slurry through the dredge pipe and floating pipeline where the material is deposited outside of and adjacent to the navigation channel. As the discharge pipe is limited on dustpans, this dictates that the material be deposited no farther than 1000 feet from the dredge.

Although not considered beneficial use, this type of disposal offers some environmental benefits by maintaining sediment within the channel to build sandbars, reduce erosion, and providing material to build or replenish island habitats and, eventually, coastal wetlands. There are currently no feasible opportunities for beneficial use of the dredged material at the crossings due to the location of the dredging areas (densely populated areas with no onshore disposal sites), the rapid shoaling conditions in this segment of the project and the unacceptable time & costs to either perform hopper pump out or barging of material over 125 river miles to beneficial use sites in coastal Louisiana.

Future geotechnical analyses of the river crossings will be required during detailed project design to determine if dredging the channel will negatively impact the existing conditions of the channel slopes. In order to ensure slope stability during detailed project design, bank grading and revetment (i.e., sub-aqueous rock and/or articulated concrete mattress) may be determined necessary. Stabilization of the bank is essential to ensure that bank failure and land loss do not occur within these areas. Currently, it is anticipated that all three crossings within the coastal zone may warrant some level of stabilization measures. If determined necessary, vegetation would be cleared along the sections of riverbank proposed for revetment. Upon completion, each site will be left in a condition comparable to its current state. Vegetation will reclaim the cleared land and forested habitat is expected to return within a relatively short period of time. Should these features become a requirement, their implementation would be addressed in a future modification to this consistency determination.

Construction of lower river and Southwest Pass (RM 13.4 AHP –Head of Passes, Head of Passes-RM 19 BHP)

Material dredged during construction in the lower river and Southwest Pass would total approximately 19,900,000 cubic yards. Construction would be non-continuous, but is anticipated to be completed within 3 years for this reach. Construction would occur via cutterhead dredge, and material dredged during construction would be used beneficially to create approximately 1,460 acres of coastal wetland habitat. As such, the Hopper Dredge Disposal Area (HDDA) will not be utilized for open water disposal.

Material dredged from this reach would be placed unconfined in targeted areas of open water within the designated beneficial use placement areas (Figure 3). Although no retention features are planned for any of these wetland creation disposal areas, should retention/closure features become necessary to prevent dredged material from entering property or waterways located adjacent to disposal sites, exact locations and dimensions of these features are determined in the field. The beneficial use material would be deposited as uniformly as practicable to achieve an expected final elevation of about +2.0 feet NAVD88. The exact site placement for beneficial use is largely dependent upon river conditions, dredging need, and determination of the Federal Standard by CEMVN. According to USFWS, the construction of approximately 1,460 acres of coastal wetland habitat would net of approximately 576 average annualized habitat units (AAHUs) after 50 years (Appendix A-7 of the report).

Implementation of the proposed action in some situations may require some unavoidable, very minor impacts to wetland resources incidental to the preparation for the placement of beneficial use of dredged material. CEMVN provides dredging contractors with a limited number of mandatory access corridors and staging areas for Southwest Pass cutterhead disposal operations. This is done to limit impacts to existing wetlands as well as to existing oil and gas flowlines that lie on the ground surface all along Southwest Pass. If necessary, these mandatory access corridors and staging areas are backfilled by dredging contractors to match pre-disposal work elevations following completion of disposal operations. When determined to be unavoidable, a small amount of wetland habitat (typically < 1 acre) may be temporarily impacted during pipeline placement and access to the open water proposed placement areas. However, these impacts would be unavoidable, temporary in duration, minor in extent, and necessary for access to construct coastal marsh habitat.

Construction of the Bar Channel (RM 19 BHP-RM 22 BHP)

In order to deepen the bar channel from 48 feet MLLW to 50 feet MLLW, approximately 1,620,000 cubic yards of material will be dredged using hopper dredges. Hopper dredges operate by storing dredged material and transporting it to an open water disposal site downstream. Hopper dredges are typically operated in situations where dredged material must be moved greater distances. Hoppers will dredge-and-haul to the 2,975 acre EPA-designated ocean dredged material placement site (ODMDS) located adjacent to, and west of, the bar channel (Figure 3). If river currents are sufficiently strong, hopper dredges working in the bar channel may also perform work in the agitation dredging mode. Agitation dredging in this case involves filling a hopper dredge to capacity and allowing it to overflow. Fine sediments released into surface waters are carried out of the mouth of river to the Gulf of Mexico. Coarser/heavier sediments collect in the hopper and are ultimately hauled to the ODMDS for placement. Between 2009 through 2015, hopper dredges have only performed agitation dredging in this reach during 2015. Construction would be non-continuous, but is anticipated to be conclude within 2 years for this reach.

The ODMDS site is regulated under Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. This disposal area will not be expanded as part of this plan. As part of CEMVN's annual coordination with EPA Region 6 regarding MVN use of the ODMDS, CEMVN provides EPA Region 6 with a determination on the acceptability of Southwest Pass dredged material for placement into the ODMDS. The following information, required for evaluation of dredged materials proposed for ocean disposal, is provided to EPA Region 6, by the MVN: 1) dredging project information; 2) dredged material characterization/evaluation; and 3) regulatory compliance evaluation. EPA Region 6 reviews the MVN determination to evaluate the environmental effects of dredged material disposal and to ensure that compliance with the ocean dumping criteria at 40 CFR 220-228 has been demonstrated. EPA Region 6 then informs the MVN whether or not it concurs with MVN's determination. The most recent Section 103 EPA Concurrence decision for placement of shoal material from Southwest Pass in the Southwest ODMDS was received on 06 February 2017.

Operations and Maintenance

The average annual O&M at the three crossings, a combined 2,142,000 cubic yards, is not anticipated increase beyond current practice. The average annual maintenance quantities from RM 13.4 AHP to Head of Passes and from Head of Passes to RM 22 BHP (a combined 22,250,000 cubic yards) are also not anticipated to increase after deepening. The O&M program of CEMVN will continue to be coordinated during each fiscal year via future consistency determinations in accordance with the June 14, 1995, Memorandum of Understanding between CEMVN and the Louisiana Department of Natural Resources.

Exact placement of dredged material removed from the Miss River Southwest Pass channel cannot be planned with any certainty until the specific dredging assignments for each cutterhead dredge contract are determined by the Miss River operations manager. During the Southwest Pass dredging season, channel surveys are performed on a near daily basis in order to track shoaling dynamics, which are prone to rapid changes for any given channel segment. Based on these channel surveys, dredges are then directed to those channel reaches where each particular dredge is most needed in order to maintain authorized navigation channel dimensions to the maximum extent possible. As dredging assignments are allocated, dredged material placement sites are then determined in a coordinated effort between the dredging contractor and MVN Operations Division and Construction Division personnel.

In order to facilitate this flexibility for beneficially placing dredged material in Southwest Pass, contractors are provided a disposal plan that mostly identifies large placement areas (usually coincident with current NEPA-cleared disposal area boundaries) along with a few specific placement sites that have been pre-determined based on the beneficial use monitoring program (BUMP) aerial photography and suggestions/recommendations from other parties (such as local landowners, natural resource agencies, etc.). Which placement sites to be used are, therefore, determined at the time of dredging contract assignments. Design of these dredged material placement sites typically tends to be simplistic (typically involves unconfined discharge of dredged material). Dike construction is rarely necessary, and never used to completely confine a placement site, and only used to prevent dredged material from entering areas where such placement would have adverse impacts (such as waterways, oil/gas structures, etc.). Where dikes are necessary, dike design is developed by the dredging contractor and Construction Division personnel with oversight from Engineering Division and Operations Division personnel.

During the planning of the current reevaluation study, environmental baseline conditions were evaluated and projected forward over a 50-year period of analysis. In evaluating the existing beneficial use placement options, it was determined that previously cleared disposal areas would near capacity within approximately 20 years. This was due to the forecasting of the cumulative impacts of the beneficial use practices, and also due to the real estate challenges posed by existing infrastructure. It was also determined that future sites would generally be located at greater distances after each maintenance event, requiring significant cost increases for their utilization. In order to facilitate continued beneficial use of material under the Federal Standard in this area, additional areas adjacent to existing disposal areas were designated as part of the study. The beneficial use area now includes 143,264 acres that were previously cleared under the National Environmental Policy Act, and an additional 24,054 acres of predominantly shallow open water identified in the reevaluation report and SEIS (Figure 3). These additional areas would not be utilized for construction purposes, and were identified for potential maintenance purposes as a result of the 50-year period of analysis of the study.

GUIDELINES APPLICABLE TO ALL USES

These guidelines are acknowledged and have been addressed through the preparation of responses to the guidelines contained within the specific use categories.

Guidelines 1.1 – 1.6: The guidelines have been read in their entirety, and all applicable guidelines would be complied with. The proposed project would be in conformance with all applicable water and air quality laws, standards and regulations, and with those other laws, standards and regulations which have been incorporated into LCRP, and is deemed in conformance with the program except to the extent that these guidelines would impose additional requirements. The proposed activity shall not be carried out or conducted in such a manner as to constitute a violation of the terms of a grant or donation of any lands or water-bottoms to the State or any subdivision thereof. Information regarding potential impacts of the proposed action is provided herein and in the Draft Supplemental Environmental Impact Statement (http://www.mvn.usace.army.mil/About/Mississippi-River-Ship-Channel).

Guideline 1.7: The proposed action is not expected to result in significant or persistent water quality impacts in the vicinity of dredge and disposal activities. There would be minor temporary and localized increases in suspended sediment and turbidity levels during dredging and disposal of dredged material. No significant discharges of inorganic nutrients, pathogens, or toxic substances are anticipated. Minor reductions in dissolved oxygen levels during placement events are expected to be temporary. Salinities, temperature regimes, and water flow patterns will not be adversely affected. Sediment, nutrient, and littoral transport processes will not be affected.

Adverse alteration or destruction of unique or valuable habitats, critical habitat for endangered species, important wildlife or fishery breeding or nursery areas, designated wildlife management or sanctuary areas, or forestlands is not anticipated. The proposed action would restore and positively increase the quantity and quality of habitat in the proposed project area. Existing shallow open water and fragmented marsh would be converted into more continuous emergent wetlands increasing the quality of habitat for terrestrial and aquatic animals in the Mississippi

River Delta. The proposed action would help offset coastal erosion and provide a low cost method of creating intertidal intermediate marsh. No adverse cumulative or secondary impacts to the biological productivity of wetland ecosystems are anticipated.

Because access corridors and staging areas are backfilled by dredging contractors to match pre-project elevations, the cumulative impacts to wetlands from staging and access dredging are anticipated to be temporal and minimal over the 50-year period of analysis. Over the 50 year period of analysis, it is reasonable to anticipate that up to 200 acres of emergent marsh would be temporarily impacted by staging and access activities. Once topographical restoration is complete, the backfilled areas would experience a temporal loss of function until vegetation reestablishes and matures (1-3 years). These impacts would be necessary to provide construction access to build coastal marsh platforms ranging from 60 acres to 600 acres. Over the 50-year period of analysis for study, USFWS anticipates that the proposed work would result in 23,200 acres of coastal marsh habitat.

The use of dredged material to create emergent marsh would result in greater habitat diversity, additional estuarine habitat for economically important species, and improved recreation. Because marsh has been shown to provide a greater reduction in hurricane storm surge than open water, restored marsh would offer an incremental benefit in reducing hurricane damage. Significant adverse disruptions of coastal wildlife and fishery migratory patterns are not anticipated. Short-term, minor disruptions to coastal wildlife would occur during disposal operations; however, these impacts would be minimally disruptive since most wildlife species in the area are mobile and would move to adjacent undisturbed areas during construction activities. Creation and restoration of emergent marsh and other coastal habitat would provide additional resting areas for many migratory neotropical birds, seabirds, waterfowl, and other organisms.

Adverse alteration or destruction of public parks, shoreline access points, public works, designated recreation areas, scenic rivers, or other areas of public use and concern is not anticipated.

Significant economic impacts on the locality or adverse disruptions of existing social patterns would not occur due to the proposed action. No cultural, historical, or recreational resource sites would be impacted by construction. No proximal areas of special concern exist. No land loss, erosion, or subsidence would occur, and no significant, secondary, or cumulative impacts of the proposed action would occur. This project would not result in reduced long-term biological productivity of the coastal ecosystem. Long-term biological productivity in the ecosystem will be enhanced through the beneficial use of dredged material for marsh creation.

<u>Guideline 1.8:</u> Acknowledged.

<u>Guideline 1.9</u>: The proposed action will provide for multiple, concurrent uses where appropriate and avoid unnecessary conflicts of other uses in the vicinity.

<u>Guideline 1.10:</u> Acknowledged.

GUIDELINES FOR LEVEES

Guidelines 2.1 – 2.6. For wetland creation, dredged material will typically be placed unconfined at elevations suitable for wetlands development in shallow, open water areas located on either side of the channel. Although retention features are not planned for wetland creation areas, should retention/closure features become necessary to prevent dredged material from entering property or waterways located adjacent to disposal sites, exact locations and dimensions of these features will be determined in the field. Earthen retention/closure material would be obtained from and placed within the disposal site. In those infrequent instances, wetlands would not be affected. The material would deposited as uniformly as practicable at an elevation to achieve a final target elevation of +2.0 feet NAVD88 to allow for intertidal flow and natural hydrologic patterns.

GUIDELINES FOR LINEAR FACILITIES

Guidelines 3.1-3.3. Acknowledged.

Guideline 3.4. N/A

Guidelines 3.5-3.12. Acknowledged

Guidelines 3.13. N/A

Guidelines 3.14-3.15. Acknowledged

Guideline 3.16. N/A

GUIDELINES FOR DREDGED MATERIAL DEPOSITION

Guideline 4.1: Dredged materials would be deposited in a manner that would avoid disruptions of water movement, flow, circulation and quality. Deposition is not expected to result in significant or persistent water quality impacts in the vicinity of construction activities. Any minor increases in suspended sediment and turbidity levels during material deposition would be temporary and highly localized. Minor reductions in dissolved oxygen levels associated with material deposition would be temporary. Specific disposal alignments would be developed prior to each placement event through coordination with the appropriate state and Federal natural resource agencies. Controlled and monitored deposition of dredged material would ensure placement to proper heights for desired habitat creation.

Guideline 4.2: Construction of the lower river would occur at various shoals from RM 13.4 AHP to Head of Passes, and from Head of Passes to RM 19.5 BHP with cutterhead dredges over 1-3 years and material would be used beneficially to construct coastal wetland habitat. It is anticipated that construction would result in approximately 1460 acres of fresh marsh habitat during the construction period. Because cutterhead dredges are too large for the bar channel construction of the bar channel would occur at shoals from RM 19.5 BHP to RM 22 BHP with hopper dredges utilizing the Ocean Dredge Material Placement Site (ODMDS). Maintenance of the lower river (RM 13.4 AHP to RM 22 BHP) is not anticipated to increase from current practice and would continue to include a combination of cutterhead and hopper dredges.

Current Hopper dredge disposal area (HDDA) placement practices are driven primarily by the availability of O&M funding for the Miss River project. The Federal Standard for placement of HDDA dredged material is identified as being the nearest available beneficial use placement site. As these nearby beneficial use sites are filled to capacity, the HDDA Federal Standard will change over time as new beneficial use sites will need to be utilized at greater and greater distances from the HDDA. With the availability of the West Bay, Delta National Wildlife Refuge, and Pass a Loutre Wildlife Management beneficial use sites located within a few miles of the HDDA, we estimate that there should be sufficient beneficial use capacity for HDDA maintenance purposes over the next 20 years.

Guideline 4.3: Acknowledged.

Guideline 4.4: Dredged material would be placed unconfined in shallow open water to elevations conducive to the production of intermediate marsh. Dredged material would not be placed directly onto any existing marsh to the maximum extent possible. Some submerged aquatic vegetation currently in the disposal area would be covered with dredged material during the placement events. This is not expected to be detrimental as material would be placed at elevations to create additional emergent marsh interspersed with areas of shallow open water that would be supportive of submerged aquatic vegetation. Thus, an adequate amount of submerged aquatic vegetation is expected to remain in the open water areas within the proposed disposal areas after material placement.

Guideline 4.5: Dredged material would not be disposed of in a manner as to create a hindrance to navigation. Operating dredging equipment at the dredging areas within the navigation channel could potentially cause some interference or slowdown of Mississippi River navigation. However, CEMVN has many years of experience in dredging activities along the Mississippi River and passes and has developed dredging operation and management techniques to avoid, minimize, and reduce the potential of interference or slowdown of river navigation traffic. Existing navigation channels and access bayous would not be obstructed by placement of dredged material. The proposed action would not create a hindrance to fishing or hinder timber growth. Portions of the project area would be unavailable for fishing activities during construction activities. However, alternative fishing areas in vicinity of the project area would be available during construction and fishing access to the area would be restored after the completion of construction activities. The anticipated increase in wetland acreage would provide additional habitat for fishery resources, including improved quality and quantity of essential fish habitat, increasing the opportunities for commercial and recreational fishing activities in the project area.

Guideline 4.6: Dredged material would be deposited unconfined as uniformly as practicable to achieve an expected final elevation of about +2.0 feet NAVD88. Temporary access dredging may be required to allow construction equipment and pipeline to reach designated beneficial use placement areas. Excavation and discharge of flotation access channel material and access corridor material would be performed by a mechanical dredge. Any adverse impacts to existing emergent marsh would be avoided to the maximum extent practicable, temporary in duration, and minor in extent. Flotation access channels would be limited to a maximum bottom width of about 80 feet and a maximum depth of about 8.0 feet (MLLW). These access corridors may be backfilled with dredged material to a maximum elevation of about three feet above adjacent marsh upon completion of dredging and placement activities to restore these corridors to pre-project marsh elevations after settlement.

Open water retention dikes would only be constructed as necessary to reduce erosion and prevent dredged material from entering adjacent property, navigation channels, and adjacent waterways following placement. Borrow material for closure/dike construction would be excavated from adjacent water bottom from within the disposal area. Earthen closures/dikes would be allowed to degrade naturally or, if such degradation does not occur, these structures would be mechanically degraded after the dredged material has compacted and dewatered sufficiently to prevent it from entering the navigation channel and adjacent waterways. Placement of material is expected to create emergent marsh which would reduce the rates of shoreline erosion within the vicinity of the project area.

Guideline 4.7: The proposed action would not result in the alienation of state owned property.

GUIDELINES FOR SHORELINE MODIFICATIONS

Guidelines 5.1 - 5.4: Acknowledged.

Guidelines 5.5 - 5.7: N/A

Guidelines 5.8 – 5.9: Acknowledged.

GUIDELINES FOR SURFACE ALTERATIONS

Guidelines 6.1 – 6.5: Acknowledged.

Guideline 6.6: Flotation access channels, if needed, would be backfilled when disposal operations have been completed.

Guidelines 6.7 – 6.9: Acknowledged.

Guideline 6.10: The occurrence of low dissolved oxygen conditions in the proposed project area waters would be temporary and minor. No heavy metal traps would be created.

Guidelines 6.11 – 6.13: Acknowledged.

Guideline 6.14: Fill materials used for the creation of wetland and upland habitat would be, to the maximum extent practicable, free of known contaminants and compatible with the environmental setting.

GUIDELINES FOR HYDROLOGIC AND SEDIMENT TRANSPORT MODIFICATIONS

Guidelines 7.1 – 7.9: Placement of dredged material into the proposed disposal would occur after coordination with state and Federal natural resource agencies using the best practical techniques to permit tidal exchange in tidal areas and minimize the obstruction of the migration of aquatic organisms. Specific disposal alignments would be developed prior to each disposal event through close coordination with state and Federal natural resource agencies. It is anticipated that once material settles to desired elevations, the area would naturally vegetate and become supportive of suitable habitat for a variety of aquatic, terrestrial, and avian wildlife species. Best preventative techniques would be utilized to avoid undesirable deposition of sediments into sensitive habitat or navigation areas.

GUIDELINES FOR DISPOSAL OF WASTES

Guidelines 8.1 – 8.9: The proposed action would not involve the disposal of wastes; therefore, these guidelines are not applicable.

GUIDELINES FOR USES THAT RESULT IN THE ALTERATION OF WATERS DRAINING INTO COASTAL WATERS

Guideline 9.1: N/A

Guideline 9.2: Dredged material would be deposited as uniformly as practicable to achieve a final target elevation +2.0 feet NAVD88 and allow for intertidal water circulation patterns.

Guideline 9.3: N/A

GUIDELINES FOR OIL, GAS, AND OTHER MINERAL ACTIVITIES

Guidelines 10.1 – 10.14: N/A

CONSISTENCY DETERMINATION

The beneficial use-placement of dredged material associated with deepening the lower river to 50 feet would be net beneficial to the Louisiana coastal zone and would result in the net creation of approximately 1082 acres of emergent marsh after 50 years, and a net 1082 AAHUs. Over the 50 year period analysis, the project would create 23,200 acres and result in 6,160 AAHs. The beneficial use of material from the construction and O&M of the river crossings is not practicable. As previously highlighted, the designation of 24,054 acres of additional disposal areas would improve the beneficial use capacity for future maintenance dredging for the Federally-maintained Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana, project, over the next 50 years. The coastal marsh habitat created from beneficial use would provide new and improved habitat for use by economically-important fish and wildlife species for shelter, nesting, feeding, roosting, cover, nursery grounds, and other life requirements. The proposed action would help to offset the significant land loss and coastal habitat erosion that has occurred in the area over the last century.

The O&M program of CEMVN will continue to be coordinated during each fiscal year via future consistency determinations. Any refinement to the proposed action described below having reasonably foreseeable effect to coastal resources will be addressed in a future modification to this consistency determination. Based on this evaluation, the CEMVN has determined that the proposed actions are consistent, to the maximum extent practicable, with the State of Louisiana's Coastal Resources Program.

Figure 1. Existing features of the Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana project extend from the Port of Baton Rouge, Louisiana to Head of Passes, and from Head of Passes to RM 22 below Head of Passes.

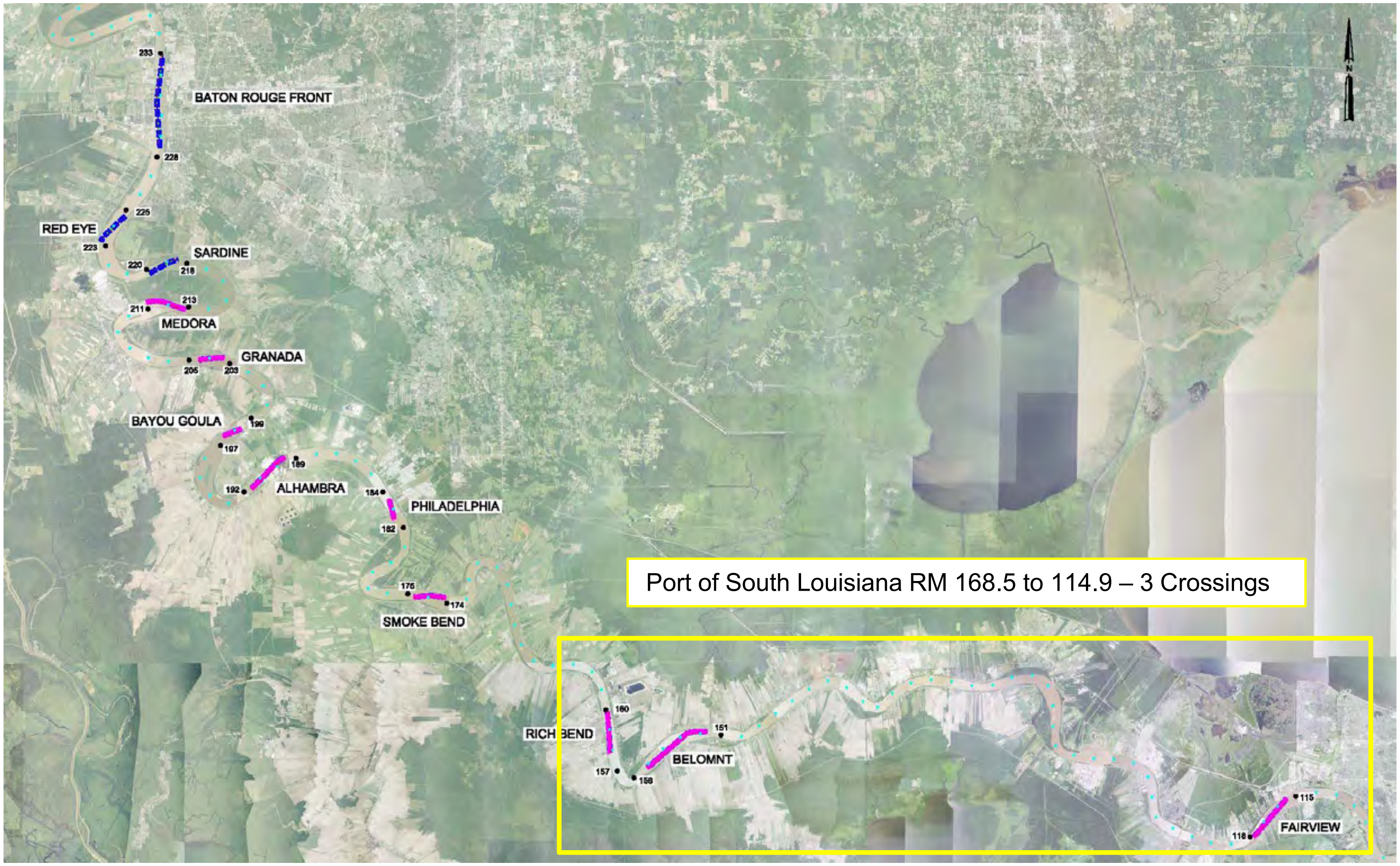

Figure 2. There are 12 actively maintained crossings that are maintained at 45 feet (LWRP) between New Orleans and Baton Rouge, Louisiana. The proposed plan includes deepening all 12 crossings to 50 feet (LWRP), three of which occur in the Louisiana coastal zone.

Figure 3. The long term plan includes 143,264 acres that were previously cleared under the National Environmental Policy Act (red), and 24,054 acres of additional beneficial use areas (black).

JOHN BEL EDWARDS
GOVERNOR

THOMAS F. HARRIS
SECRETARY

State of Louisiana

DEPARTMENT OF NATURAL RESOURCES

OFFICE OF COASTAL MANAGEMENT

January 10, 2017

Steve Roberts
U.S. Army Corps of Engineers
New Orleans District
P.O. Box 60267
New Orleans, LA 70160-0267

Via e-mail: steve.w.roberts@usace.army.mil

RE: **C20160208,** Coastal Zone Consistency
U.S. Army Corps of Engineers, New Orleans District
Direct Federal Action
Draft General Reevaluation Report and Supplemental Environmental Impact Statement (draft Report) for the Mississippi River Ship Channel, Gulf to Baton Rouge

Dear Mr. Roberts:

The Louisiana Department of Natural Resources, Office of Coastal Management (OCM), has reviewed the referenced report and offers the following comments regarding the proposed deepening of the Mississippi River Ship Channel:

Tentatively Selected Plan

Louisiana ports are beneficiaries of deep draft navigation, and the nation as a whole benefits from deep water access to Louisiana ports. Improvements for access of deeper-draft vessels to the lower Mississippi River ports, including the Port of Baton Rouge, will significantly add to that value. OCM encourages the Corps to reconsider Alternative 3 as the Selected Plan, with a 50 ft. depth maintained from the Gulf of Mexico to Baton Rouge.

Cumulative and Secondary Impacts

The draft Report does not adequately address cumulative and secondary impacts that have and continue to result from the maintenance of the Mississippi River for navigation, but instead only considers those secondary and cumulative impacts from the proposed deepening. OCM views this as an oversight in the long term management of the Mississippi River as a navigation channel. The presence of this navigation channel has over many decades had dramatic adverse effects on the Louisiana coast, which have not been adequately discussed in any National Environmental Policy document to date. The narrow focus of this Report ignores the greater environmental context of the Mississippi River Ship Channel, Gulf to Baton Rouge, LA, project. OCM urges the Corps to take a more holistic approach towards designing and implementing new construction projects for sustainability and to minimize adverse impacts.

Beneficial Use of Dredged Material and the Federal Standard

The Louisiana Coastal Resources Program (LCRP) is this state's federally-approved coastal management plan, and federal agency activities must be consistent to the maximum extent practicable with approved coastal management plans. Federal regulations at 15 CFR §930.32(a)(1) state:

> The term "consistent to the maximum extent practicable" means fully consistent with the enforceable policies of management programs unless full consistency is prohibited by existing law applicable to the Federal agency.

The enforceable policies of LCRP require beneficial use of dredged material to the maximum extent practicable. The draft Report does not propose to meet this requirement, but instead makes repeated reference to dredged material disposal according to the Federal Standard. This is a significant misapplication of the Federal Standard regulations: the proposed deepening project is new construction rather than an operations and maintenance activity. 33 CFR §§335-338 make it clear that the Federal Standard applies only to operations and maintenance (O&M). For example, §335.3 Applicability states:

> This regulation (33 CFR parts 335 through 338) is applicable to the Corps of Engineers when undertaking <u>operation and maintenance activities</u> at Army Civil Works projects. [emphasis added]

Regulations on federal coastal zone consistency at 15 CFR §930.32(a)(2) state:

> … whenever legally permissible, Federal agencies shall consider the enforceable policies of management programs as requirements to be adhered to in addition to existing Federal agency statutory mandates.

Thus, as this project is not operations and maintenance, full consistency with the LCRP is not prohibited by the Federal Standard. Therefore, beneficial use in this case is a legal requirement which must be met by this project to the same extent as compliance with other federal requirements.

OCM is aware that beneficial use is not economically justified in every circumstance, and the discussion above should not be taken to mean that this office seeks to impose unreasonable constraints on the project. However, OCM does expect that the planning and budget processes going forward will provide for beneficial use of dredged material to a greater extent.

Further, a rigid adherence to the least costly disposal options during the new construction phase ignores the future needs for maintenance dredging disposal, and the budget issues which have been, and will likely remain, problematic for many years. Because this project will be funded by direct appropriation, it should incorporate more alternatives for disposal sites and other project features that facilitate future O&M options to the extent possible.

We hope that the New Orleans District will collaborate with OCM and other state and federal resource agencies, to identify ways to optimize beneficial use and to plan for future disposal requirements, without increasing costs to the point of threatening the project's viability. As always, OCM appreciates the opportunity to review and comment on the proposed deepening. We feel that the state will benefit greatly when the project is successfully completed. As planning proceeds, OCM looks forward to working with the New Orleans District to ensure full compliance with the LCRP. Questions about these comments should be addressed to Jeff Harris of the Consistency Section at (225) 342-7949.

Sincerely,

/S/ Don Haydel

Acting Administrator
Interagency Affairs/Field Services Division

DH/SK/jdh

cc: Joan Exnicios, Corps of Engineers-New Orleans District

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
7400 LEAKE AVENUE
NEW ORLEANS, LOUISIANA 70118

REPLY TO
ATTENTION OF

JUN 23 2017

Regional Planning and
Environment Division, South
Environmental Planning Branch

Don Haydel
Interagency Affairs
Office of Coastal Management
Louisiana Department of Natural Resources
P.O. Box 44487
Baton Rouge, Louisiana 70804-4487

Dear Mr. Haydel:

The U.S. Army Corps of Engineers, New Orleans District (CEMVN) has reviewed your letter dated January 10, 2017 providing comments on the proposed deepening of the Mississippi River to a depth of 50 feet within the Louisiana coastal zone as part of the Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana project. The project was authorized for construction by the 1985 Supplemental Appropriations Act, and the Water Resources and Development Act of 1986 (PL 99-662). Your concerns were based on a draft integrated general reevaluation released for public and agency comment on December 16, 2016 (http://www.mvn.usace.army.mil/About/Mississippi-River-Ship-Channel).

This draft report discussed impacts from deepening different reaches of the Mississippi River in the Louisiana coastal zone including: 1) three river crossings within the Mississippi River, 2) the lower river in the vicinity of Southwest Pass and Venice, Louisiana, and 3) the Southwest Pass Bar Channel. A fourth component of the project entails the beneficial use of material dredged to create coastal wetland habitat in lower Plaquemines Parish, Louisiana. CEMVN has considered your comments and responses are provided below:

Comment 1: *Louisiana ports are beneficiaries of deep draft navigation, and the Nation as a whole benefits from deep water access to Louisiana ports. Improvements for access of deeper-draft vessels to the lower Mississippi River ports, including the Port of Baton Rouge, will significantly add to that value. OCM encourages the Corps to reconsider Alternative 3 as the Selected Plan, with a 50 ft. depth maintained from the Gulf of Mexico to Baton Rouge.*

Response 1: On May 23, 2017, USACE made an agency decision to select Alternative 3 from the SEIS as the agency's Recommended Plan, in lieu of Alternative 3d, described as the tentatively selected plan in the Draft SEIS. The change in alternative selection was made based on encouraging results of a hydraulic 2D model which indicated maintenance of the 12 crossings would be significantly less than originally estimated, thus improving the Benefits/Cost ratio of Alternative 3. Of important note, the 2D model results indicate that operations and maintenance activities are not anticipated to increase within the Louisiana Coastal Zone.

Comment 2: *The draft Report does not adequately address cumulative and secondary impacts that have and continued to result from the maintenance of the Mississippi River for navigation, but instead only considers those secondary and cumulative impacts from the proposed deepening. OCM views this as an oversight in the long term management of the Mississippi River as a navigation channel. The presence of this navigation channel has over many decades had dramatic adverse effects on the Louisiana coast, which have not been adequately discussed in any National Environmental Policy document to date. The narrow focus of this Report ignores the greater environmental context of the Mississippi River Ship Channel, Gulf to Baton Rouge, LA, project. OCM urges the Corps to take a more holistic approach towards designing and implementing new construction projects for sustainability and to minimize adverse impacts.*

Response 2: Cumulative impacts resulting from the maintenance of the Mississippi River for navigation were highlighted in the draft report in Chapter 4, Section 5, in a subsection entitled "USACE Navigation projects, Beneficial Use of Dredged Material Program". Secondary effects of the project were discussed per resource in Chapter 4, Sections 2-4. The scope of the report adequately identifies the 100% beneficial use of material with cutterhead dredge during construction of the lower river from River Mile 13.4 Above Head of Passes to Head of Passes, and from Head of Passes to River Mile 19 Below Head of Passes. The report also adequately addresses beneficial use of material during future operations and maintenance via the limitations of the Federal Standard in Chapter 4, Sections 2.1 and 2.3.

The presence of the Mississippi River navigation channel has occurred over centuries, even prior to the founding of our Nation. Because the project is currently authorized to a depth of 55 feet, and because deepening the river to 50 feet will not actually affect the future operations and maintenance of the channel within the Louisiana coastal zone (i.e., what the study identifies as the no-action alternative), CEMVN has determined that an in-depth historical and hypothetical analysis of the impacts of the navigation channel on the Louisiana coast are largely beyond the scope of the general reevaluation report and SEIS. Most recently, the Louisiana Department of Natural Resources, Office of Coastal Management, determined that the operations and maintenance for the Mississippi River Gulf to Baton Rouge project was conditionally consistent with the Louisiana Coastal Resources Program in accordance with Section 307 (c) of the Coastal Zone Management Act of 1972 on November 4, 2016 (C20160172).

CEMVN took a proactive and holistic approach towards future maintenance and beneficial use placement in the study. In order to facilitate continued beneficial use of material under the Federal Standard in this area after construction, additional areas adjacent to existing disposal areas are being designated as part of the study. The beneficial use area now includes 143,264 acres that were previously cleared under the National Environmental Policy Act, and an additional 24,054 acres of predominantly shallow open water identified in the reevaluation report and SEIS. These areas would not be necessary for beneficial placement during construction, but were identified for potential maintenance purposes as a result of the 50-year period of analysis of the study. Without their official designation under NEPA, many future maintenance events would result in open water disposal under the Federal Standard. More information concerning the nature of beneficial use is described in the June 21, 2017 coastal zone consistency determination for this effort.

Comment 3: *The Louisiana Coastal Resources Program (LCRP) is this state's federally-approved coastal management plan, and federal agency activities must be consistent to the maximum extent practicable with approved coastal management plans. Federal regulations at 15 CFR §930.32(a)(1) state:*

> *The term "consistent to the maximum extent practicable" means fully consistent with the enforceable policies of management programs unless full consistency is prohibited by existing law applicable to the Federal agency.*

The enforceable policies of LCRP require beneficial use of dredged material to the maximum extent practicable. The draft Report does not propose to meet this requirement, but instead makes repeated reference to dredged material disposal according to the Federal Standard. This is a significant misapplication of the Federal Standard regulations: the proposed deepening project is new construction rather than an operations and maintenance activity. 33 CFR §§335-338 make it clear that the Federal Standard applies only to operations and maintenance (O&M). For example, §335.3 Applicability states:

> *This regulation (33 CFR parts 335 through 338) is applicable to the Corps of Engineers when undertaking operation and maintenance activities at Army Civil Works projects. [emphasis added]*

Regulations on federal coastal zone consistency at 15 CFR §930.32(a)(2) state:

> *... whenever legally permissible, Federal agencies shall consider the enforceable policies of management programs as requirements to be adhered to in addition to existing Federal agency statutory mandates.*

Thus, as this project is not operations and maintenance, full consistency with the LCRP is not prohibited by the Federal Standard. Therefore, beneficial use in this case is a legal requirement which must be met by this project to the same extent as compliance with other federal requirements.

OCM is aware that beneficial use is not economically justified in every circumstance, and the discussion above should not be taken to mean that this office seeks to impose unreasonable constraints on the project.

Further, a rigid adherence to the least costly disposal options during the new construction phase ignores the future needs for maintenance dredging disposal, and the budget issues which have been, and will likely remain, problematic for many years. Because this project will be funded by direct appropriation, it should incorporate more alternatives for disposal sites and other project features that facilitate future O&M options to the extent possible

Response 3: The Federal Standard process applies to both new construction and operations and maintenance activities. The Code of Federal Regulations (CFR) implementing the CZMA specifically state that "consistent to the maximum extent practicable" means fully consistent with the enforceable policies of state coastal management programs unless full consistency is prohibited by existing law applicable to the Federal agency, 15 CFR §930.32(a)(1). On November 8, 2007, Congress reaffirmed the long-standing federal position that the costs associated with dredging for construction, operation, or maintenance of an authorized federal water resources project are limited to the most cost-effective means, consistent with economic, engineering, and environmental criteria, Water Resources Development Act of 2007(WRDA of 2007), P.L. 101-114, 121 Stat. 1041, Section 2037(c)(A). This means that the Corps of Engineers will develop a Federal Standard disposal plan for the Mississippi River deepening project while adhering to the above criteria for both the new construction and routine operations and maintenance work.

While the Corps will consider disposal alternatives proposed by the State of Louisiana during this process, this does not mean that state-proposed disposal alternatives will automatically become part of the Federal Standard disposal plan for the project. Evaluation of state-proposed disposal alternatives must also adhere to examination under the aforementioned criteria before a decision can be made to either incorporate such alternatives into the disposal plan, or remove them from further consideration.

It should be noted that the majority of new construction dredging work for this project will be performed by cutterhead dredges with beneficial use placement in open water sites. Hopper dredge use (in the bar channel) and dustpan dredge use (in the crossings) will only be utilized for construction dredging where cutterhead dredges cannot be utilized due to reasons of navigation safety. Additional alternatives for beneficial use of dredged material were incorporated into the report and were addressed in the previous response.

CEMVN appreciates the thoughtful considerations provided by the Louisiana Department of Natural Resources, Office of Coastal Management. We feel the state and Nation will benefit both economically and environmentally when the project is successfully completed. CEMVN looks forward to working with the Office of Coastal Management to ensure full compliance with the Louisiana Coastal Resources Program, and our future collaborations on optimizing beneficial use of dredged material in the Mississippi delta. Questions about these responses should be addressed to Mr. Steve Roberts via email at steve.w.roberts@usace.army.mil. Mr. Roberts may be also be contacted at (504) 862-2517.

Sincerely,

Marshall K. Harper

Marshall K. Harper
Chief, Environmental Planning Branch

JOHN BEL EDWARDS
GOVERNOR

THOMAS F. HARRIS
SECRETARY

State of Louisiana
DEPARTMENT OF NATURAL RESOURCES
OFFICE OF COASTAL MANAGEMENT

August 28, 2017

Steve Roberts
U.S. Army Corps of Engineers
New Orleans District
P.O. Box 60267
New Orleans, LA 70160-0267
Via e-mail: steve.w.roberts@usace.army.mil

RE: **C20170118,** Coastal Zone Consistency
U.S. Army Corps of Engineers, New Orleans District
Direct Federal Action
Deepen the Mississippi River navigation channel to 50 ft., from Baton Rouge to the Gulf of Mexico. Plaquemines, St. Charles, and St. John the Baptist Parishes

Dear Mr. Roberts:

The above referenced project has been reviewed for consistency with the approved Louisiana Coastal Resource Program (LCRP) as required by Section 307 of the Coastal Zone Management Act of 1972, as amended.

The Louisiana Department of Natural Resources, Office of Coastal Management (OCM) recognizes that beneficial use of material is proposed for much of the dredged material produced during the deepening project. Further, OCM understands the challenges of maintaining the navigation channel in the lower Mississippi River, both from the rapidly changing channel conditions and navigation concerns due to heavy vessel traffic, and that these factors constrain the beneficial use of all dredged material. Nevertheless, OCM again urges the New Orleans District to utilize this opportunity to obtain sufficient Construction General funds to improve the proportion of beneficial use over that of the annual Operations and Maintenance (O&M) dredging cycle.

As discussed in detail in OCM's comment letter of January 10, 2017, regarding the Draft General Reevaluation Report and Supplemental Environmental Impact Statement for the Mississippi River deepening project, because the proposed deepening project is new construction rather than an operations and maintenance activity, the Federal Standard does not apply. The Coastal Zone Management Act requires the Corps of Engineers to budget for full consistency with the enforceable policies of the LCRP unless full consistency is prohibited by existing federal law.

OCM realizes that beneficial use cannot be accomplished throughout the lower Mississippi River. Nevertheless, OCM believes that the funding request to Congress should provide for beneficial use of dredged material to a much greater extent than is typical for the annual O & M dredging.

After careful review and consideration, OCM finds that the project, as proposed in the application, is consistent with the LCRP. Please call Jeff Harris of the Consistency Section at (225) 342-7949 if you have any questions.

Sincerely,

/S/ Don Haydel

Acting Administrator
Interagency Affairs/Field Services Division

DH/SK/jdh

Cc: Dave Butler, LDWF
Frank Cole, OCM/FI
Robert Spears, Plaquemines Parish

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVENUE
NEW ORLEANS, LOUISIANA 70118

REPLY TO
ATTENTION OF

JUL 0 7 2017

Regional Planning and
Environment Division, South
Environmental Planning Branch

Joseph Ranson
Field Supervisor
US Fish and Wildlife Service
646 Cajundome Boulevard, Suite 400
Lafayette, Louisiana 70506

Dear Mr. Ranson:

A Biological Assessment prepared by the U.S. Army Corps of Engineers, New Orleans District (CEMVN), is enclosed. This Assessment examines the potential impacts associated with the proposed deepening and maintenance of areas within the Mississippi River, Southwest Pass, and Southwest Pass Bar Channel to a depth of 50 feet. The proposed work is part of the Federally-authorized Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana project, and is a joint effort of CEMVN and the Louisiana Department of Transportation and Development.

We request your concurrence with the enclosed determinations, which address impacts to Threatened and Endangered species and their critical habitat under the purview of USFWS. Based on the determination enclosed within, we believe that the proposed action may affect, but is not likely to adversely affect species or critical habitat currently afforded protection under the Endangered Species Act.

Please provide your response to the attention of Mr. Steve Roberts; U.S. Army Corps of Engineers; Regional Planning and Environment Division, South; Environmental Compliance Branch; CEMVN-PDC-CEC; 7400 Leake Avenue; New Orleans, Louisiana 70118.

Comments may also be provided by email to steve.w.roberts@usace.army.mil. Mr. Roberts may be also be contacted at (504) 862-2517.

Sincerely,

Marshall K. Harper

Marshall K. Harper
Chief, Environmental Planning Branch

Enclosure

Biological Assessment of Impacts to Threatened and Endangered Species

Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project
Mississippi River Ship Channel Improvements

US Army Corps of Engineers, New Orleans District

July 2017

Introduction

Under the current authority granted to the Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project, the U.S. Army Corps of Engineers New Orleans District (CEMVN) proposes to deepen and maintain the Mississippi River between Baton Rouge, Louisiana and the Gulf of Mexico to 50 feet. This would include twelve deep draft river crossings; situated between River Mile (RM) 115 (at Fairview) and RM 233 (at Baton Rouge Front). The Project would also deepen and maintain shoals in lower Mississippi River south of New Orleans, Louisiana between RM 22 at Below Head of Passes (BHP) to RM 13.4 Above Head of Passes (AHP). Work in this lower reach of the river also contains a component of beneficial use of dredged material.

Although the project is authorized to a depth of 55 feet, a draft general reevaluation report and supplemental environmental impact statement (SEIS) entitled "*Mississippi River Ship Channel, Gulf to Baton Rouge, LA, Draft Integrated General Reevaluation Report and Supplemental Environmental Impact Statement*" were prepared to update any changes in conditions of economic development and environmental conditions that have occurred since the original 1981 Feasibility Report entitled "*Deep-Draft Access to the Ports of New Orleans and Baton Rouge, Louisiana*." This integrated report which provided responses to the U.S. Fish and Wildlife Service (USFWS) recommendations was released for public and agency comment on December 16, 2016. (http://www.mvn.usace.army.mil/About/Mississippi-River-Ship-Channel). A draft Fish and Wildlife Coordination Act Report (CAR) for the study was received on November 8, 2016, providing combined guidance from USFWS, the National Marine Fisheries Service (NMFS) and the Louisiana Department of Wildlife and Fisheries. Information from this draft CAR was processed and, in turn, incorporated into the draft SEIS and appendices (Appendix A-8).

On May 23, 2017, USACE made an agency decision to select Alternative 3 from the SEIS as the agency's Recommended Plan, in lieu of Alternative 3d, described as the tentatively selected plan in the draft SEIS. Of note, Alternative 3d was a scaled-down version of Alternative 3 which selected to deepen 3 crossings to the Port of South Louisiana. The change in alternative selection was made based on encouraging results of a hydraulic 2D model which indicated maintenance of the 12 crossings as originally reported would be significantly less than estimated, thus improving the Benefits/Cost ratio of Alternative 3.

This biological assessment (BA) is provided to fulfill requirements of Section 7 (50 CFR Part 402) of the Endangered Species Act of 1973 (ESA), as amended for this study. This BA presents an overview of pertinent biological, ecological, and behavioral characteristics, followed by a summary of potential impacts to listed threatened and endangered species and designated critical habitat (when applicable) that may result from the proposed navigation channel improvements to the Mississippi River and Southwest Pass. Determinations of the impacts have been based partially on review of scientific, technical, and commercial data. Conclusions are also drawn from information in the aforementioned 2016 draft CAR, the May 23, 2016 USFWS coordination letter that addressed CEMVN's proposed fiscal year 2017 Operations and Maintenance dredging and disposal plans for federally-maintained navigation channels in the New Orleans District, as well as the 2013 Biological Opinion for the Channel Improvement Program of the Mississippi River and Tributaries Project for the lower Mississippi River.

Threatened and endangered species under the purview of the USFWS that may occur in the project vicinity are piping plover *(Charadrius melodus)* and its critical habitat, red knot *(Calidris canutus rufa)*, pallid sturgeon *(Scaphirhynchus albus)*, West Indian manatee *(Trichechus manatus),* and several species of sea turtles when found on land; Kemps ridley sea turtle (*Lepidochelys kempii*), loggerhead sea turtle (*Caretta caretta*), and green sea turtle (*Chelonia mydas,* Table 1).

Species	**Status**
West Indian Manatee (*Trichechus manatus*)	Threatened
piping plover (*Charadrius melodus*)	Threatened
rufa red knot (*Calidris canutus rufa*)	Threatened
green sea turtle (*Chelonia mydas*)	Threatened
Kemps ridley sea turtle (*Lepidochelys kempii*)	Endangered
loggerhead sea turtle (*Caretta caretta*)	Threatened
pallid sturgeon (*Scaphirhynchus albus*)	Endangered

Table 1. Status of Federally threatened and endangered species potentially impacted by the proposed project.

Project Purpose

The purpose of the proposed action is to improve the local, regional and national economy by improving the navigational capacity of the Mississippi River ship channel (currently authorized to a depth of 55 feet). The project serves the only deep-draft ports on the Mississippi River, including four of the nation's top ten ports. The channel currently handles 450 million tons per year in bulk export and accounts for 18 percent of U.S. waterborne commerce. Deepening the ship channel will improve national economic benefits associated with these markets.

Project Description

Overview

CEMVN proposes to deepen and maintain multiple reaches of the Mississippi River ship channel from the Gulf of Mexico to the Port of Baton Rouge (Figures 1-2). This includes deepening 12 river crossings from 45 feet to 50 feet at the Low Water Reference Plane (LWRP, Table 2). This would also entail deepening and maintaining various shoals from 48 feet to 50 feet at Mean Lower Low Water (MLLW), from RM 13.4 Above Head of Passes (AHP) to RM 22 Below Head of Passes (BHP) via Southwest Pass, and using a portion of that material beneficially to create coastal wetland habitat. Deepening would only occur within previously disturbed reaches that are actively maintained for navigation purposes. As such, CEMVN dredging quantities of the proposed action are summarized in Table 3 as the incremental quantities above existing navigational maintenance practices (i.e., what the study defines as the No-Action Alternative).

B.R. Front	**River Mile 234-229 AHP**
Redeye	**River Mile 226-221 AHP**
Sardine Point	**River Mile 221-216 AHP**
Medora	**River Mile 214-208 AHP**
Granada	**River Mile 207-202 AHP**
Bayou Goula	**River Mile 199-196 AHP**
Alhambra	**River Mile 193-188 AHP**
Philadelphia	**River Mile 185-181 AHP**
Smoke Bend	**River Mile 179-172 AHP**
Richbend	**River Mile 160-155 AHP**
Belmont	**River Mile 156-151 AHP**
Fairview	**River Mile 117-111 AHP**

Table 2. Names and reaches of the 12 deep draft crossings.

	Crossings Construction	Lower River Construction (RM 13.4 AHP-19 BHP)	Bar Channel Construction RM (19BHP-22BHP)	Annual O&M- 12 Crossings	Annual O&M- Lower River/Bar Channel
Proposed Action	8,600,000 cy	19,900,000 cy	1,620,000 cy	1,600,000 cy	0 cy

Table 3. Incremental dredging requirements beyond existing conditions (i.e., current Operations & Maintenance (O&M) practices), in cubic yards (cy).

Construction

Approximately 8,600,600 cubic yards of material would be dredged by deepening the twelve crossings from 45 to 50 feet at the LWRP. Assuming adequate funding, construction would occur over a 3-5 year period. Because of this phased approach to construction, it is anticipated that dustpan dredges will be readily available and it is unlikely that hopper dredges would be utilized for construction. Dustpans are typically utilized at crossings during falling water and low water conditions. The suction head of the dustpan, approximately the width of the dredge, is lowered to the face of the material to be removed. High velocity water jets loosen the material, which is then drawn by pump as slurry through the dredge pipe and floating pipeline where the material is deposited outside of and adjacent to the navigation channel. As the discharge pipe is limited on dustpans, this dictates that the material be deposited no farther than 1000 feet from the dredge. This type of disposal offers some environmental benefits by maintaining sediment within the channel to build sandbars, reduce erosion, and provide material to build or replenish island habitats and, eventually, coastal wetlands.

Future geotechnical analyses of the river crossings will be required during detailed design to determine if dredging the channel will negatively impact the existing conditions of the channel slopes. In order to ensure slope stability during detailed project design, bank grading and revetment (i.e., sub-aqueous rock and/or articulated concrete mattress) may be determined necessary. Stabilization of the bank is essential to ensure that bank failure and land loss do not occur within these areas. Currently, it is anticipated that nine of the twelve crossings (Fairview, Belmont, Rich Bend, Philadelphia, Alhambra, Grenada, Sardine Point, Red Eye and Baton Rouge Front) may warrant some level of stabilization measures. If determined necessary, vegetation would be cleared along the sections of riverbank proposed for revetment. Upon completion, each site will be left in a condition comparable to its current state. Vegetation will reclaim the cleared land and forested habitat is expected to return within a relatively short period of time.

The material dredged during construction in the vicinity of Southwest Pass (RM 13.4 AHP – RM 19 BHP) would be via cutterhead dredge, and would total approximately 19,900,000 cubic yards. For efficient cutterhead dredging, a continuous reach (miles in length) of the channel must shoal to depths that provide a cut of at least 6 feet. Cutterhead dredges are equipped with a rotating cutter apparatus surrounding the intake end of the suction pipe. Cutterheads can efficiently dig and pump up to a mile of all types of alluvial materials and compacted deposits, such as clay and hardpan. Using booster pumps, cutterhead dredges have the capability of pumping dredged material longer distances, but can be cost-prohibitive and limited by available lengths of discharge pipe. Material from Southwest Pass vicinity construction would be placed unconfined in targeted areas of open water within the 167,318 acres of designated beneficial use placement areas (Figure 3). The material would be deposited as uniformly as practicable to achieve an expected final elevation of about +2.0 feet NAVD88 to create approximately 1,460 acres of intertidal coastal wetland habitat, resulting in a net of approximately 576 AAHUs after 50 years (USFWS 2016).

Temporary access dredging may be required to allow construction equipment and pipeline to reach designated beneficial use placement areas. Excavation of flotation access channel material and access corridor material would be performed by a mechanical dredge only when there are no less damaging practicable access alternatives. The resulting impacts to emergent marsh would be temporary in duration, minor in extent, and would be incidental to beneficial placement. Flotation access channels would be limited to a maximum bottom width of about 80 feet and a maximum depth of approximately 8 feet (MLLW). These access corridors may be backfilled with dredged material to a maximum elevation of about three feet above adjacent marsh upon completion of dredging and placement activities to restore these corridors to pre-project marsh elevations after settlement.

In order to deepen the bar channel (RM 19 BHP-RM 22 BHP) from 48 feet MLLW to 50 feet MLLW, approximately 1,620,000 cubic yards of material will be dredged using hopper dredges. Hopper dredges operate by storing dredged material onboard and transporting it to an open water disposal site downstream. Hopper dredges are typically operated in situations where dredged material must be moved greater distances. Hoppers will dredge-and-haul to the 2,975 acre EPA-designated ocean dredged material placement site (ODMDS) located adjacent to, and west of, the bar channel (Figure 3). If river currents are sufficiently strong, hopper dredges working in the bar channel may also perform work in the agitation dredging mode. Agitation dredging in this case involves filling a hopper dredge to capacity and allowing it to overflow. Fine sediments released into surface waters are carried out of the mouth of river to the Gulf of Mexico. Coarser/heavier sediments collect in the hopper and are ultimately hauled to the ODMDS for placement. Between 2009 through 2015, hopper dredges have only performed agitation dredging in this reach during 2015.

The ODMDS site is regulated under Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. This disposal area will not be expanded as part of this plan. As part of CEMVN's annual coordination with EPA Region 6 regarding CEMVN use of the ODMDS, CEMVN provides EPA Region 6 with a determination on the acceptability of Southwest Pass dredged material for placement into the ODMDS. The following information, required for evaluation of dredged materials proposed for ocean disposal, is provided to EPA Region 6, by the CEMVN: 1) dredging project information; 2) dredged material characterization/evaluation; and 3) regulatory compliance evaluation. EPA Region 6 reviews the CEMVN determination to evaluate the environmental effects of dredged material disposal and to ensure that compliance with the ocean dumping criteria at 40 CFR 220-228 has been demonstrated. EPA Region 6 then informs the CEMVN whether or not it concurs with CEMVN's determination. The most recent Section 103 EPA Concurrence decision for placement of shoal material from Southwest Pass in the Southwest ODMDS was received on 06 February 2017.

Operations and Maintenance

After construction, the average annual O&M of the twelve crossings would increase by approximately 1,600,000 cubic yards, from 16,400,000 cubic yards to 18,000,000 cubic yards. As with current practice, shoal material would be released adjacent to the channel and/or in deeper open water areas downstream of the crossings. Current practice dictates that hopper dredges are only utilized at crossings if dustpan dredges are unavailable, or if shoaling is greater than what the available dustpans can handle. When activated, hopper dredges operate at crossings by storing dredged material onboard and transporting it to a disposal site downstream that is greater than 50 feet depth at the LWRP. Hopper dredges are more costly than dustpan dredges and are typically operated in situations where dredged material must be moved greater distances (e.g. Southwest Pass). Because dustpans are usually available and are more economical to operate, hoppers are used sparingly and not utilized at crossings every year. Over the last 20 years hopper dredges have accounted for less than 10% of all material handled in the crossings.

Annual maintenance of the lower river (RM 13.4 AHP to RM 22 BHP) currently averages 22,250,000 cubic yards, and maintenance quantities are not anticipated to increase after deepening. Maintenance would continue to include a combination of cutterhead and hopper dredges for these shoals. Approximately 6,600,000 cubic yards of shoal material would be used via cutterhead to create approximately 530 acres of coastal marsh each year, resulting in a net of approximately 6,161 AAHUs after 50 years. Additional shallow mud flats and emergent vegetation are expected to accumulate after material placement thereby creating suitable habitat for wetland vegetation and wildlife species that could occur within the proposed disposal area. It is anticipated the placement areas will naturally vegetate through colonization of species from adjacent vegetated areas, as evidenced with previous CEMVN beneficial use-placement areas in the delta. The loss of shallow open water habitat would be offset by the creation of productive coastal wetland habitat. The remainder of the shoal material will be disposed of in the Hopper Dredged Disposal Area at the Head of Passes (to be used beneficially at a later date) or in the EPA-designated ODMDS in the Gulf of Mexico (Figure 3).

Sediment Analysis

In order to better assess the potential impacts of deepening on water quality and biota within the river crossings, dredge slurry was collected directly from the discharge lines of dustpan dredges performing maintenance on 11 deep draft crossings during Fiscal Year 2016 (all but Fairview which was not dredged in 2016. The solid and liquid fractions of the slurry were analyzed individually for the presence of priority pollutants including metals, pesticides, polychlorinated biphenyls, and semi-volatile organic compounds (Appendix A-14 of the aforementioned SEIS). Metals were common to both fractions, and were detected at or below background levels in the Mississippi River. Chlordane pesticides and hydrocarbon exhaust products were detected infrequently in the solid samples, but at levels generally at or below 1 part per billion. All detected contaminants were below regulatory water quality criteria and ecological screening values, and dredging of the crossings is not expected to have a negative impact on water quality or biota.

Project Effects on Threatened and Endangered Species

Piping Plover and its Designated Critical Habitat (LA-6)

The piping plover was federally listed as a threatened species in December 1985, and its critical habitat was designated in July 2001. Individuals, as well as their designated critical habitat, occur along the Louisiana coast. Critical Habitat unit LA-6 consists of approximately 259 acres and occurs within the proposed beneficial use placement areas (Figure 4).

Piping plovers winter in Louisiana, and may be present for 8 to 10 months annually. They normally arrive from their breeding grounds as early as late July and remain until late March or

April. Piping plovers feed extensively on invertebrates in intertidal beaches, mudflats, sand flats, algal flats, and wash-over passes with no or very sparse emergent vegetation; they also require un-vegetated or sparsely vegetated areas for roosting. Roosting areas may have debris, detritus, or micro-topographic relief offering refuge to plovers from high winds and cold weather. In most areas, wintering piping plovers are dependent on a mosaic of sites distributed throughout the landscape, because the suitability of a particular site for foraging or roosting is dependent on local weather and tidal conditions. Plovers move among sites as environmental conditions change, and studies have indicated that they generally remain within a 2-mile area.

Major threats to this species include the loss and degradation of habitat due to development, disturbance by humans and pets, and predation. Hunting in the early 1900s resulted in a drastic reduction of piping plover populations. A further detrimental impact to the population is attributed to the reduction of wintering habitat along the Gulf Coast, largely due to recreational and commercial development and dune stabilization. Recreational activities in areas along the Gulf Coast have been shown to decrease piping plover presence in those areas.

Impacts due to project – "May affect-not likely to adversely affect"

Construction activities involving beneficial use would target open water environments for material placement, and would not place material on existing islands or wetlands. Piping plovers could occur along shorelines and in the intertidal and shallow waters of the beneficial use placement area during winter months; however, plovers are not permanent residents of the area. Should plovers occur in adjacent areas during construction of intermediate marsh, they may be temporarily displaced to nearby areas for foraging and loafing due to nuisance noises from dredging/placement operations. Overall, the creation of coastal habitat is anticipated to be beneficial to the plover, primarily as a result of the temporary increase of available habitat between the periods of construction and natural revegetation.

Although critical habitat LA-6 occurs within the boundaries of the designated beneficial use placement area, negative impacts to LA-6 are not anticipated. Due to the abundance of available open water in the near vicinity of Southwest Pass, a need to place dredged material in the vicinity of LA-6 is not anticipated for at least 20-25 years, at which time LA-6 is expected to be largely diminished due to erosion and subsidence. However, beneficial impacts to LA-6 may eventually occur because it is plausible, that upon concluding coordination with the resource agencies, dredged material could be used beneficially to nourish portions of LA-6 that may erode during the project's 50-year period of analysis should CEMVN partner with an agency for the incremental cost beyond the Federal Standard.

Rufa Red Knot

The rufa subspecies of red knot is a medium-sized migratory shorebird which breeds in the Canadian Arctic and winters in parts of the United States, the Caribbean, and South America. It primarily uses well-known spring and fall stopover areas on the Atlantic coast of the United States, although some birds follow a mid-continental migratory route. The rufa red knot was listed as a threatened species effective January of 2015. No critical habitat for this subspecies has been designated. The species was listed due to loss of both breeding and non-breeding habitat, likely effects related to disruption of natural predator cycles on the breeding grounds, reduced prey availability throughout its non-breeding range, and increasing frequency and severity of mismatches in the timing of the birds' annual migratory cycle relative to favorable food and weather conditions (possibly related to climate change).

During the non-breeding season, red knots generally utilize coastal marine and estuarine habitats with large areas of exposed intertidal sediments. They are commonly found along sandy, gravel, or cobble beaches, tidal mudflats, salt marshes, shallow coastal impoundments and lagoons, and peat banks. In many wintering areas, quality high-tide roosting habitat that is close to feeding areas, protected from predators, with sufficient space during the highest tides, and free from excessive human disturbance. The supra-tidal (above the high tide) sandy habitats of inlets provide important areas for roosting, especially at higher tides when intertidal habitats are inundated. The primary prey of the rufa red knot in non-breeding habitats include blue mussel (*Mytilus edulis*) spat (juveniles); *Donax* and *Darina* clams; snails (*Littorina spp*.), and other mollusks, with polycheate worms, insect larvae, and crustaceans also eaten in some locations.

Impacts due to Project – "May affect-not likely to adversely affect"

The waters within the project area are not typical of the high salinity waters around typical red knot wintering habitats in Louisiana, which are sandy/silty coastal shorelines, barrier islands and associated over-wash fans. Construction activities involving beneficial use would target open water environments for material placement, and would not place material on existing islands or wetlands. Construction noises may cause any bird occurring in nearby areas to be temporarily displaced to comparable habitat in the general vicinity.

West Indian Manatee

The West Indian manatee is listed under the Endangered Species Act as a threatened species, and it is also protected under the Marine Mammal Protection Act of 1972. The manatee has declined in numbers due to collisions with boats and barges, entrapment in flood control structures, poaching, habitat loss, and pollution. Today, collision with boats and loss of fresh water habitat represent the biggest threats. Boat collisions are especially dangerous to manatees because they often rest just below the surface of the water with only their snouts breaking the surface. Manatees live in moderate temperature waters, no colder than 20° C. They can travel long distances and migrate along the coast with seasonal changes, but are never found far from shore. Manatees will occasionally feed in brackish or salt water but require fresh water for drinking. They also prefer waters near shore, large rivers, river mouths, and shallow coastal areas, such as coves and bays; areas that are abundant with sea grasses for grazing (LDWF 2012). While manatees have previously been sighted in the river, their occurrence is extremely rare since the main river has no adequate food source (i.e., aquatic vegetation).

Impacts due to Project – "May affect-not likely to adversely affect"

All of the proposed work, including crossings, occurs in the USFWS designated manatee consultation zone in Louisiana. Manatees are occasionally seen in Louisiana, especially in and around the north shore of Lake Pontchartrain where there are fresh water sources and abundant grass beds for feeding. Manatees have been reported during the warmer months of most, if not all recent years. Very few manatees have been reported from Plaquemines Parish. However, due to large areas of aquatic vegetation in the active Mississippi River delta, which could provide adequate foraging habitat, occasional manatee occurrence in the general area is likely.

All contracts awarded by the New Orleans District for dredging in coastal channels contain requirements for the contractor to comply with procedures to avoid and minimize impacts to manatees. The following requirements and conditions are included in applicable dredging contracts, including the ongoing maintenance dredging contracts for the project, and would be included in contracts awarded for deepening the channel and maintaining the deeper channel.

> During in-water work in areas that potentially support manatees all personnel associated with the project need to be instructed about the potential presence of manatees, manatee speed zones, and the need to avoid collisions with, and injury to manatees. All personnel need to be advised that there are civil and criminal penalties for harming, harassing or killing manatees which are protected under the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973. Additionally, personnel need to be instructed not to attempt to feed or otherwise interact with the animal, although passively taking pictures or video would be acceptable.
>
> All on-site personnel are responsible for observing water-related activities for the presence of manatee(s). To minimize potential impacts to manatees in areas of their potential presence, the following procedures will be followed:
>
> • All work, equipment, and vessel operation must cease if a manatee is spotted within a 50-foot radius (buffer zone) of the active work area. Once the manatee has left the buffer zone on its own accord (manatees must not be herded or harassed into leaving), or after 30 minutes have passed without additional sightings of manatee(s) in the buffer zone, in-water work can resume under careful observation for manatee(s).
>
> • If a manatee(s) is sighted in or near the project area, all vessels associated with the project must be operated at "no wake/idle" speeds within the construction area and at all times while in waters where the draft of the vessel provides less than a four-foot clearance from the bottom. Vessels should follow routes of deep water whenever possible.
>
> • If used, siltation or turbidity barriers need to be properly secured, made of material in which manatees cannot become entangled, and be monitored to avoid manatee entrapment or impeding their movement. (Note: Siltation barriers are not anticipated for the project.)
>
> • Temporary signs concerning manatees must be posted prior to and during all in-water project activities and removed upon completion. Each vessel involved in construction activities must display, at the vessel control station or in a prominent location, visible to all employees operating the vessel, a temporary sign at least 8½" X 11" reading language similar to the following: "CAUTION BOATERS: MANATEE AREA/ IDLE SPEED IS REQUIRED IN CONSTRUCTION AREA AND WHERE THERE IS LESS THAN FOUR FOOT BOTTOM CLEARANCE WHEN MANATEE IS PRESENT". A second temporary sign measuring 8" X 11" should be posted at a location prominently visible to all personnel engaged in water-related activities and should read language similar to the following: "CAUTION: MANATEE AREA / EQUIPMENT MUST BE SHUTDOWN IMMEDIATELY IF A MANATEE COMES WITHIN 50 FEET OF OPERATION".

- Collisions with, injury to, or sightings of manatees should be immediately reported to the USFWS Louisiana Ecological Services Office (337/291-3100) and the LDWF, Natural Heritage Program (225/765-2821). Information to be provided includes the nature of the call (i.e., report of an incident, manatee sighting, etc.); time of incident/sighting; and the approximate location, including the latitude and longitude coordinates, if possible.

  Cutterhead dredging contracts in the New Orleans District sometimes include a requirement for a survey of the area where dredged material is to be placed, prior to project construction, to determine if manatees are in the area. The requirement applies to confined disposal areas. It would not be necessary to include this requirement for dredging and disposal at because all dredged material disposal is anticipated to be unconfined.

The requirements and conditions above are designed to minimize and avoid adverse impacts to manatees from dredging and disposal operations. Any encounter with manatees at would be an extremely rare event, but even if it would occur during channel dredging, the above conditions would reduce the likelihood of an adverse effect to the point where the proposed project may effect, but would not likely adverse effect this species.

Pallid Sturgeon

The pallid sturgeon was listed as an endangered species in 1990, and was the first fish in the Mississippi River drainage area to be listed as endangered. The areas impacted by project activities in the lower river are not designated as critical habitat for the pallid sturgeon. Habitat loss through river channelization and dams, as well as commercial harvests have adversely affected the pallid sturgeon (USFWS 1990, 2013). The pallid sturgeon is adapted to large, free-flowing, turbid rivers with a diverse assemblage of physical characteristics. They prefer moderate to swift currents and turbid water and is most commonly found near sandy substrates, but also lives in waterways that are predominately rocky.

The historical population baseline of pallid sturgeon in the lower Mississippi River is unknown; however, records continue to increase proportionately with collecting efforts. They have been collected in all reaches of the lower river sampled (Killgore *et al*. 2007), and sonic detections of tagged pallid sturgeon show extensive use of multiple habitats (Kroboth *et al*. 2013). Current information indicates that the pallid sturgeon is widely distributed throughout the lower river, habitat is abundant and of high quality, and the species is reproducing and recruiting (USFWS 2013).

Sturgeon have been documented in the river crossings upstream of New Orleans, Louisiana for approximately 20 years and populations appear relatively stable. In fact, pallid sturgeon are widely distributed throughout the entire lower river, habitat is abundant and of high quality, and the species is reproducing and recruiting (USFWS 2013). The positive findings of previous pallid sturgeon population studies coincided with normal O&M of the deep draft river crossings to 45 feet, which occurred at an annual average of 16,400,000 cubic yards. The success of pallid sturgeon populations in these areas in light of routine O&M are at least partially attributable to: 1) the sheer magnitude of the refuge provided by channel in the project area, 2) the large volume of water within the channel, and 3) the requisite mobility necessary for the sturgeon to avoid the areas during routine O&M.

Hybridization with shovelnose sturgeon (protected by similarity of appearance in this area) has been identified as a threat to pallid sturgeon in the lower Mississippi River. This hybridization was initially believed to be caused by a loss of species isolating mechanisms due to river engineering and habitat modifications. However, neither the mechanisms nor the essential habitat features have been identified. There is morphological and genetic evidence that some proportion of these “hybrids” are morphological variants of both species and have been misidentified due to allometric growth of PS (Murphy *et al.* 2007). There is also evidence that morphological and genetic variation interpreted as hybridization existed in sturgeon populations prior to, and are unrelated to, engineered modification of the lower Mississippi River (Hartfield and Kuhajda 2009, Schrey *et al.* 2011).

Scientists from the USACE's Engineer Research and Development Center in Vicksburg, Mississippi have been studying pallid sturgeon since the 1990’s. They found that pallid sturgeon can be captured fairly regularly in the lower Mississippi River, when water temperatures are moderate, on trotlines baited with earthworms. In fact, pallid sturgeon are the 3rd most common species collected on trotlines, with blue catfish and shovelnose sturgeon being the top two most commonly captured species. As noted in the November 2013 Entrainment Studies of Pallid Sturgeon Associated with Water Diversions in the Lower Mississippi River Study, field sampling of sturgeon in the lowermost reach of the Mississippi River between river miles 0 and 320 has been ongoing since 2001. Results of that study indicated that a total of 51 pallid sturgeon, 319 shovelnose sturgeon, and 84 young-of-year sturgeon were collected between 2001 and 2010 below river mile 320 (ERDC-EL, 2013).

While the researchers have captured hundreds of pallid sturgeon in the Mississippi River upstream from New Orleans, Louisiana, adult pallid sturgeon have not been formally documented downstream from New Orleans. This may be attributable to changes in river morphology south of New Orleans, Louisiana, where habitat suitability for this species is generally thought to also gradually decrease towards the river mouth. The most downstream capture of a confirmed pallid sturgeon occurred in New Orleans at RM 95.7 in December of 2008.

In December of 2016, two young-of-year *Scaphirhynchus sp.* were captured at RM 33, however these specimens were not genetically tested as pallid sturgeon and may well have been hybridized with shovelnose sturgeon. The surprising occurrence of these two young-of year *Scaphirhynchus sp.* is likely attributable an extended drift and dispersal period during ontogenetic development, where downstream dispersal of embryos may persist for 8–14 days (Braaten *et al.* 2012). However, it should be noted this lower reach of the river is also very difficult to sample and there will likely always be some level of uncertainty on the true abundance of pallid sturgeon below New Orleans, Louisiana.

Impacts due to Project – “May affect-not likely to adversely affect”

For reasons highlighted above, the pallid sturgeon are believed to be extremely rare, if not absent in the area of work in the vicinity of Venice, Louisiana and south (RM 13.4 AHP – RM 22 BHP). However, based on recommendations from the USFWS coordination letter, dated May 23, 2016, entitled “*CEMVN Fiscal Year 2017 Operations and Maintenance Dredging and Disposal*

Plans for federally-maintained navigation channels in the New Orleans District", CEMVN proposes to incorporate two measures that would minimize potential impacts to the pallid sturgeon that could occur from hydraulic cutterhead dredging in this reach: (1) the cutterhead should remain completely buried in the bottom material during dredging operations. If pumping water through the cutterhead is necessary to dislodge material or to clean the pumps or cutterhead, etc., the pumping rate should be reduced to the lowest rate possible until the cutterhead is at mid-depth, where the pumping rate can then be increase; (2) during dredging, the pumping rates should be reduced to the slowest speed feasible while the cutterhead is descending to the channel bottom. Because of their low occurrence and these proposed conservation measures, impacts to the sturgeon are not anticipated in this reach.

Should revetment armoring at the crossings be determined during final design, it is expected that revetment work and/or the placement of articulated concrete mattress (ACM) would not likely result in a take on the pallid sturgeon or adversely modify its essential habitat. If present, it is assumed that the pallid sturgeon will be temporarily displaced from the work zones where stone and ACM revetment is being placed. While it is noted that revetment construction may result in some changes in composition and abundance of forage species for pallid sturgeon, best management practices such as longitudinal grooves constructed into revetment blocks to provide surface area and increase abundance of attached aquatic invertebrates, spaces between blocks and folds of the mat to provide velocity shelters for forage fish species, and placement of woody debris removed from the bank during revetment construction and maintenance activities back into the channel in order to provide habitat for attached macro invertebrates, as well as shelter for forage fish, would continue to be implemented.

Disturbances to the river bottoms that would occur during construction and during O&M at the deep draft crossings would be temporary in duration and river bottom conditions would return to comparable conditions soon after dredging. Populations in this area have remained stable in light of current maintenance practices. It is believed that the pallid sturgeon populations would continue to remain stable after the 10% increase in the annual O&M dredging volume across the all crossings. As with current practice, CEMVN will continue to coordinate ESA compliance with USFWS with each "plans and specifications" for each contract award for river maintenance. CEMVN acknowledges that because of their presence and relative abundance in the areas of the crossings, that deepening and maintaining the deep draft river crossings may affect pallid sturgeon, but is not likely to adversely affect the species.

Sea Turtles

The endangered Kemp's ridley sea turtle was listed under the Endangered Species Conservation Act of 1970, and subsequently under the ESA. The major factors causing the population decline of this small sea turtle include the predation of eggs by humans, other mammals, birds, and crabs, as well as the capture of diurnal nesting females. Accidental capture in shrimp trawls also represents a significant threat to the Kemp's ridley. Off the coast of Texas and in the bays and nearshore waters of Louisiana and Alabama are the most common areas for accidental captures in shrimp trawls according to several researchers. Inshore areas of the Gulf of Mexico appear to be important habitat for the Kemp's ridley sea turtle. They are characteristically found in waters of low salinity, high turbidity, high organic, content, and where shrimp and crabs are abundant. Kemp's ridley sea turtles in the Gulf of Mexico tend to be concentrated around major river mouths. Although Kemp's ridley sea turtles are likely to occur in the Mississippi River Delta area, they are not likely to be found in the Southwest Pass navigation channel.

The threatened loggerhead sea turtle was listed under the ESA as threatened throughout its range in 1978. The southeast US is within the northwest Atlantic Ocean distinct population unit, and Louisiana is within the northern Gulf of Mexico recovery unit for nesting subpopulations. The initial decline in loggerhead populations is attributed to nesting and egg predation by humans, other mammals, and birds. Nesting on the Gulf Coast occurs between the months of April and August, with 90 percent of nesting effort located on the south-central Gulf Coast of Florida. Loggerheads have been documented as nesting on the Chandeleur Islands in 1962, and Grand Isle in the 1930s; however, no recent documentation suggests that they are currently nesting in Louisiana. The most important factor for the lack of nesting may be the loss of suitable nesting habitat on the Louisiana coast. Although loggerhead sea turtles may occur in the Mississippi River delta area, they are not likely to be found in the Southwest Pass navigation channel.

The threatened green turtle was originally protected under the ESA in 1978. The species is found worldwide in oceans and gulfs with water temperatures greater than 20°C, though their distribution can be correlated to grass beds, nesting beaches, and associated ocean currents. During their first year of life, green sea turtles are primarily carnivores, feeding mostly on invertebrates. As adults they feed almost exclusively on sea grasses (i.e. turtle grass *Thalassia testudium)* growing in shallow water flats. Green sea turtles make long migrations between nesting and feeding grounds. Historically, they were fished off the Louisiana coast, but exploitation and incidental drowning in shrimp trawls have led to the decline in this population. Sightings of green sea turtles are rare in Louisiana, but do occur.

The most seriously endangered of the sea turtles, Kemp's Ridley turtles (*Lepidochelys kempii*) occur mainly in bays and coastal waters of the Atlantic Ocean and Gulf of Mexico. Nesting occurs on the northeastern coast of Mexico and occasionally on Texas Gulf Coast beaches from April to July. No Kemp's Ridley sea turtle nesting habitat occurs near the project site, and nesting has not been known to occur in the area for the aforementioned reasons of turbidity, depressed salinity, etc. Elsewhere along the Louisiana coast, turtles are generally found in shallow nearshore and inshore areas, and especially in salt marsh habitats, from May through October.

The hawksbill (*Eretmochelys imbricate*) is a small sea turtle, generally spending most of its life in tropical waters such as the warmer portions of the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea. Hawksbills frequent rocky areas, coral reefs, shallow coastal areas, lagoons, narrow creeks, and passes. Nesting may occur on almost any undisturbed deep-sand beach in the tropics—in North America, the Caribbean coast of Mexico is a major nesting area. In the continental United States, nesting sites are restricted to Florida where nesting is sporadic at best (NMFS/USFWS, 1993). Due to the lack of suitable foraging and nesting habitats, there is a low probability of this species occurring within the project area.

The leatherback sea turtle (*Dermochelys coriacea*) is the largest, deepest diving, and most migratory and wide ranging of all the sea turtles. Leatherbacks are mainly pelagic, inhabiting the open ocean and seldom entering coastal waters except for nesting purposes. Nesting in the United States is mainly confined to the Florida coast, and no nesting has been reported from Louisiana.

Impacts due to Project – "No effect"

Sea turtle sightings in the project area are rare due to a combination factors including turbid waters, depressed salinity, a lack of seagrasses and coral reefs, and shallow waters in the delta. This is supported by recent findings of the National Marine Fisheries Service for sea turtles falling under their purview.

The NMFS Gulf of Mexico Regional Biological Opinion (GRBO) dated November 19, 2003, as revised by the first amendment dated June 24, 2005 and the second amendment dated January 9, 2007 specifically covered hopper dredging activities within the Southwest Pass segment of the Mississippi River from the Gulf of Mexico (bar channel) up to 1 mile inland of the Gulf of Mexico. The channel upstream of this 1 mile inland reach is not covered by the GRBO because NMFS doesn't consider the remainder of the channel to be suitable sea turtle habitat, and therefore O&M activities in that area would not be a threat to sea turtles. On March 24, 2017 NMFS concurred that the that the Mississippi River Southwest Pass navigation channel is exempt from the requirements to utilize endangered species observers and to employ inflow/overflow screening on hopper dredges working in this channel.

Further, sea turtle nesting habitat (e.g. barrier islands) for turtles within the project area is extremely limited and increasingly limited. The placement of dredged material would avoid placement onto such islands, however rare, and would instead target shallow open water. Therefore, CEMVN has determined that there would be no effect on sea turtles that fall under the purview of USFWS.

Other Protected Species Considered

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) was removed from the list of Threatened and Endangered species on August 8, 2007. However, the bald eagle continues to be protected under the Migratory Bird Treaty Act of 1918 and the Bald and Golden Eagle Protection Act. Active nests have not been located near project features, although it is very possible that eagles may nest near project features at any point in the future. If an eagle's nest is found, a no-work zone of 660 feet from the nest will be implemented and CEMVN will immediately notify the USFWS Lafayette Office.

Colonial Nesting Birds

Colonial nesting wading birds (including but not limited to, herons, egrets, and Ibis) and seabirds/water-birds (including, but not limited to terns, gulls, black Skimmers, and brown pelicans) are known to nest in the project area. Since 2002, three nesting bird incidents (2002, 2008, and 2015) have been reported on Southwest Pass hopper dredge disposal area (HDDA) contracts and best management practices were successfully initiated.

Should this occur in the future, the nesting birds and their nests would not be disturbed or destroyed during dredging activities. The nesting activity period extends from 15 February through 15 September. Dredging activity during this period is subject to additional requirements as stated below.

Reporting

The presence of nesting wading birds and/or seabirds/water-birds within the minimum distances from the work area, as specified in the Specification shall be immediately reported to Mr. Ed Creef of the U.S. Army Corps of Engineers at (504) 862-2521.

No-work distance restrictions are as follows:

Terns, gulls, and Black Skimmers - 650 feet;

Colonial nesting wading birds - 1000 feet; and,

Brown Pelicans - 2000 feet.

Coordination by the CEMVN personnel with the USFWS may result in a reduction or relaxing of these no-work distances depending on the species of birds found nesting at the work site and specific site conditions.

Bird Nesting Prevention and Avoidance Measures

The Contractor shall prepare and submit to the Contracting Officer's Representative, for approval, a plan, detailing the efforts that will be undertaken to prevent birds from nesting within the minimum distances, as specified in paragraph "No Work Distances", from any work activity. The plan shall be submitted in accordance with paragraph "IMPLEMENTATION".

Nest prevention measures, if exercised, shall be intended to deter birds from nesting on the disposal area(s) and access corridor(s) without physically harming birds during the nesting activity period, as specified in paragraph "Nesting Birds". Nest prevention measures may be used in combination and/or or adjusted to be most effective. The use of any harassment measures shall be in accordance with EM 385-1-1 (Safety and Health Requirements). At a minimum, nest prevention measures shall include the following:

Flagging/Streamers - Flagging and or streamers at least two feet in length and which consist of reflective plastic/mylar type material shall be attached to the top of stakes at least three feet in height. The stakes shall be driven into the ground at approximately 20-foot intervals. Flagging and or streamers shall be placed such that the flags/streamers move in a light wind.

Vehicular/Pedestrian Traffic/Air Cannons - At a minimum, one all-terrain vehicle (ATV) and/or one person shall travel throughout the entire disposal area at least once per hour from dawn to dusk. In lieu of vehicular or pedestrian traffic, the Contractor has the option of using air cannons.

Upon the exercise of Option Item "Bird Nesting Prevention and Avoidance Measures", the Contractor shall begin work within 24 hours. Specific nest prevention measures used during the work shall be monitored for effectiveness and may require adjustment and/or modification. All equipment/supplies used for nest prevention shall be removed from the work site upon the completion of work and as directed by the Contracting Officer.

Discovery of Bird Nests at the Work Site

If bird nests are discovered at the work site, immediate notification shall be made in accordance with the Specifications. The Contractor shall immediately mark the bird nests with flagging on stakes 3-feet above the ground surface and no closer than 3 feet from the nest. The Contractor shall immediately implement safe work distances from the nest(s) as specified in the specifications, place flagging to create exclusion zone(s) around the nest(s), and advise all equipment operators of the bird nest(s) and exclusion zone(s).

Conclusion

The deepening and maintenance of the Mississippi River ship channel to 50 feet, and the associated discharge of dredged materials, may affect but would not adversely affect designated critical habitat of the piping plover, and the project may affect but is not likely to adversely affect threatened or endangered species under USFWS purview, including piping plover, rufa red knot, West Indian manatee, pallid sturgeon, Kemp’s ridley sea turtle, loggerhead sea turtle, and green sea turtle. As previously highlighted, the findings are based on review of scientific, technical, commercial data, and recent Section 7 ESA coordination.

We respectfully request your concurrence with our determination. If you have any questions about the project or need additional information please contact Mr. Steve Roberts at (504) 862-2517 or via email at steve.w.roberts@usace.army.mil.

Figure 1. Prominent features of the Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana project extend from the Port of Baton Rouge, Louisiana to RM 22 Below Head of Passes.

Figure 2. There are 12 actively maintained crossings that are maintained at 45 feet (LWRP) between New Orleans and Baton Rouge, Louisiana. The proposed plan includes deepening and maintaining twelve crossings to 50 feet (LWRP) allow deep draft access to the Port of Baton Rouge.

Figure 3. The beneficial use placement area includes 143,264 acres that were previously cleared (red) under the National Environmental Policy Act, and 24,054 acres (black) of additional beneficial use areas.

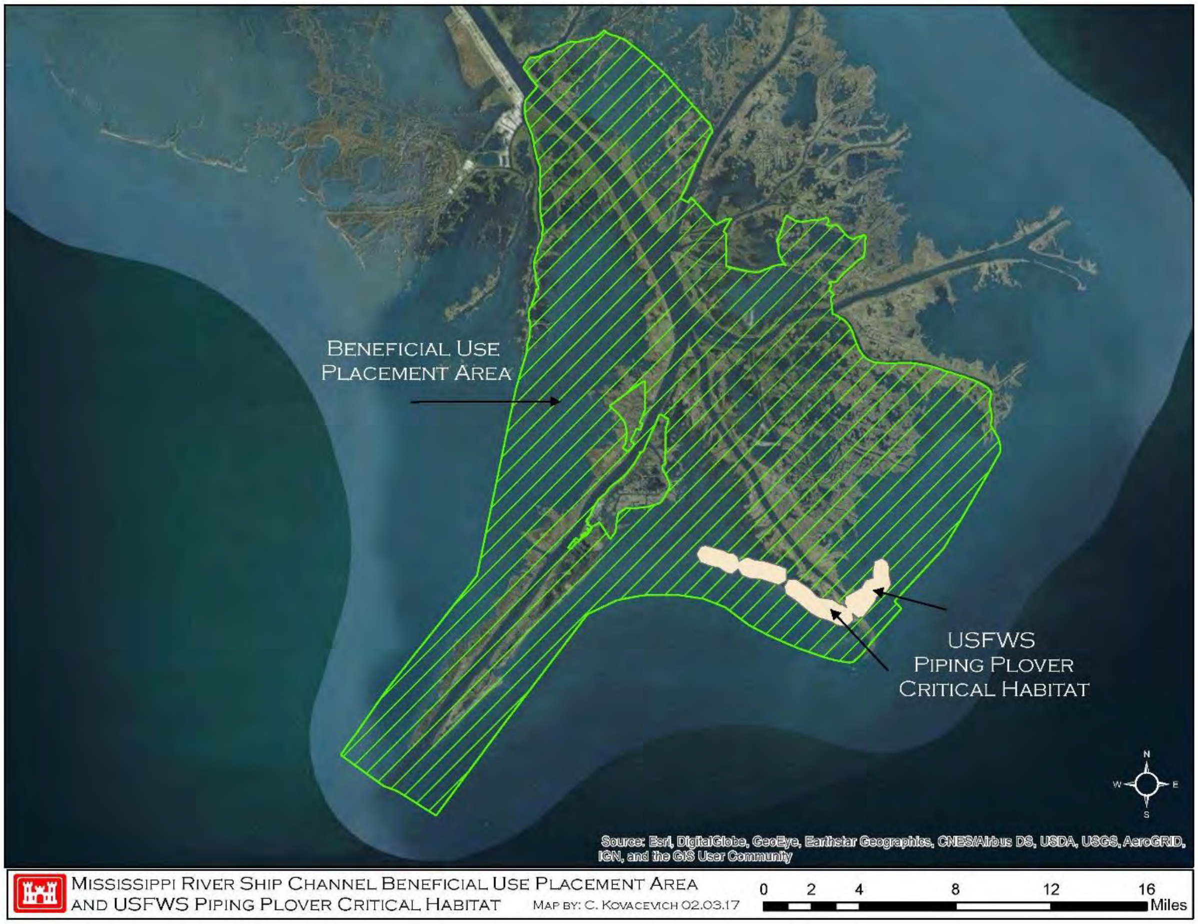

Figure 4. Piping Plover critical habitat Unit LA-6 location within the project area is 259 acres.

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DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVENUE
NEW ORLEANS, LOUISIANA 70118

REPLY TO
ATTENTION OF

JUL 0 7 2017

Regional Planning and
Environment Division, South
Environmental Planning Branch

This project has been reviewed for effects to Federal trust resources under our jurisdiction and currently protected by the Endangered Species Act of 1973 (Act). The project, as proposed,
( ) Will have no effect on those resources
(✓) Is not likely to adversely affect those resources

Joseph A. R[illegible] 25Aug17
Supervisor Date
Louisiana Ecological Services Office
U.S. Fish and Wildlife Service

Joseph Ranson
Field Supervisor
US Fish and Wildlife Service
646 Cajundome Boulevard, Suite 400
Lafayette, Louisiana 70506

Dear Mr. Ranson:

A Biological Assessment prepared by the U.S. Army Corps of Engineers, New Orleans District (CEMVN), is enclosed. This Assessment examines the potential impacts associated with the proposed deepening and maintenance of areas within the Mississippi River, Southwest Pass, and Southwest Pass Bar Channel to a depth of 50 feet. The proposed work is part of the Federally-authorized Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana project, and is a joint effort of CEMVN and the Louisiana Department of Transportation and Development.

We request your concurrence with the enclosed determinations, which address impacts to Threatened and Endangered species and their critical habitat under the purview of USFWS. Based on the determination enclosed within, we believe that the proposed action may affect, but is not likely to adversely affect species or critical habitat currently afforded protection under the Endangered Species Act.

Please provide your response to the attention of Mr. Steve Roberts; U.S. Army Corps of Engineers; Regional Planning and Environment Division, South; Environmental Compliance Branch; CEMVN-PDC-CEC; 7400 Leake Avenue; New Orleans, Louisiana 70118.

Comments may also be provided by email to steve.w.roberts@usace.army.mil. Mr. Roberts may be also be contacted at (504) 862-2517.

Sincerely,

Marshall K. Harper

Marshall K. Harper
Chief, Environmental Planning Branch

Enclosure

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS TX 75202-2733

January 30, 2017

Sandra Stiles
U.S. Army Corps of Engineers
New Orleans District
P.O. Box 60267
New Orleans, LA 70160-0267

Subject: Scoping Comments on the Draft Integrated General Reevaluation Report and Supplemental Environmental Impact Statement (SEIS) for the Mississippi River Ship Channel (MRSC), Gulf to Baton Rouge, Louisiana Project

Dear Ms. Stiles:

The Region 6 office of the U.S. Environmental Protection Agency (EPA) has reviewed the November 2016, Draft Integrated General Reevaluation Report and Supplemental Environmental Impact Statement (Integrated GRR & SEIS) for the MRSC, Gulf to Baton Rouge, Louisiana Project. The draft Integrated GRR & SEIS is being prepared to evaluate alternative plans (including the no-action plan) to examine whether navigation improvements to deepen the existing MRSC from the current depth of 45 feet up to depth of 55 feet for Deep-Draft Access are warranted and meet Federal standards.

We completed our review of the Draft Integrated GRR & SEIS and EPA would like to provide additional Air Quality comments and Environmental Justice/Tribal International affairs requirements to consider.

Air Quality

Section 2.3.11 – Air Quality (pg. 2-52):

EPA recommends language to clarify the Baton Rouge area's attainment status of the current applicable ozone National Ambient Air Quality Standard. This section mentions the 5-parish Baton Rouge area's June 15, 2004 marginal nonattainment designation under the 1997 8-hour ozone standard. The Baton Rouge area was redesignated to maintenance of the 1997 standard December 30, 2011, and was designated marginal nonattainment of the currently applicable 2008 8-hour ozone standard on July 20, 2012.

Section 4.3.11 – Air Quality:

EPA recommends in the Evaluation of construction emissions of NOx and VOCs from Alternatives 2, 3, and 3d appears to have been conducted incorrectly. Although the document correctly identifies the applicable 40 CFR 93.153(b)(1) de minimis levels (100 tpy for NOx & VOC) for marginal areas, the included evaluation compares construction emissions per each parish against these area-wide de minimis levels. This represents project impacts as artificially low, because the evaluation should compare total cumulative construction emissions across the 4-parish project area against the 100 tpy de minimis levels. Ozone is a regional pollutant, nonattainment area designations are made on this basis, and State Implementation Plans (SIPs) are developed to address ozone concerns for an entire nonattainment/maintenance area. Therefore, when a project is evaluated for conformity to the SIP, total project emissions are evaluated for impacts across the entire nonattainment/ maintenance area, not on a county-by-county basis.

Environmental Justice and Tribal International Affairs

We recommend that the USACE describe the process and outcome of government-to-government consultation between USACE and each of the tribal governments within the project area, issues that were raised (if any), and how those issues were addressed in the selection of the proposed alternative. EPA recommends that USACE include discussions on Tribal (Executive Order 13175) impacts and an in-depth explanation for a no impact determination in the Integrated GRR and SEIS.

We recommend the Integrated GRR and SEIS include an evaluation of environmental justice populations within the geographic scope of the projects. Assessment of the projects impact on minority and low-income populations should reflect coordination with those affected populations. EPA recommends, the Integrated GRR and SEIS include the approaches used to foster public participation by the minority and low-income populations and describe outreach conducted to all other communities that could be affected by the project, since rural communities may be among the most vulnerable to health risks associated with the project. We recommend the EIS include discussions on the actual Environmental Justice impacts, the proposed mitigation and an in-depth brief explanation for a no impact determination.

In addition to identifying any and all impacts to minority or low-income population, including impact related to livelihood and recreational, EPA recommends the Integrated GRR and SEIS include concise, but brief explanations of the actual direct, indirect and cumulative impact in its totality. EPA recommends that USACE utilized the Promising Practice Report (https://www.epa.gov/sites/production/files/2016-08/documents/nepa_promising_practices document_2016.pdf) to supplement the applicable requirements for considering and analyzing Environmental Justice population for this project.

We appreciate the opportunity to review the Draft Integrated GRR & SEIS and are available to discuss our comments. Please send one hard copy of the Final Integrated GRR & SEIS and four CD ROM copies to this office when completed and submitted for public comment. If you have any questions, please contact me or Gabe Gruta of my staff at (214) 665-8565 or (214) 665-2174; or by e-mail at houston.robert@epa.gov or gruta.gabriel@epa.gov, respectively.

Sincerely,

Robert Houston

Robert Houston
Chief, Special Projects Section
6EN-WS

Roberts, Steve W CIV CPMS (US)

From: Perez, Andrew R CIV USARMY CEMVN (US)
Sent: Friday, July 07, 2017 4:42 PM
To: Roberts, Steve W CIV CPMS (US)
Cc: Williams, Eric M CIV USARMY CEMVN (US)
Subject: RE: EPA EJ comment on the USACE Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project
Attachments: EPA EJ comment on the USACE Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project

My phone conversation with Ms. Benjamin of EPA in March of 2017 was successful in explaining that we did an EJ analysis. EPA wants us to add text (as you did in Chpt. 2) explaining how we looked at EJ and the findings. Just saying that EJ is not an impacted resource was not enough. They want more details which I believe are captured in Chpt 2, and of which I conveyed to her in the attached email. She said that the approach we took to the analysis and the findings are adequate. So, yes, I believe we are good to go. I just hope they see it in the early part of Chpt 2. Andrew

-----Original Message-----
From: Roberts, Steve W CIV CPMS (US)
Sent: Friday, July 07, 2017 1:14 PM
To: Perez, Andrew R CIV USARMY CEMVN (US) <Andrew.R.Perez@usace.army.mil>
Cc: Williams, Eric M CIV USARMY CEMVN (US) <Eric.M.Williams@usace.army.mil>
Subject: RE: EPA EJ comment on the USACE Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project

Andrew,

Did we ever get any final word from EPA that the revised EJ discussion is good?

Steve Roberts
Environmental Manager
New Orleans District
504-862-2517

-----Original Message-----
From: Perez, Andrew R CIV USARMY CEMVN (US)
Sent: Wednesday, March 22, 2017 10:32 AM
To: Roberts, Steve W CIV CPMS (US) <Steve.W.Roberts@usace.army.mil>
Cc: Williams, Eric M CIV USARMY CEMVN (US) <Eric.M.Williams@usace.army.mil>
Subject: RE: EPA EJ comment on the USACE Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project

Thanks Steve, all looks good in Chpt 2, re EJ.

-----Original Message-----
From: Roberts, Steve W CIV CPMS (US)
Sent: Wednesday, March 22, 2017 8:22 AM
To: Perez, Andrew R CIV USARMY CEMVN (US) <Andrew.R.Perez@usace.army.mil>
Cc: Williams, Eric M CIV USARMY CEMVN (US) <Eric.M.Williams@usace.army.mil>
Subject: RE: EPA EJ comment on the USACE Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project

Andrew,

I updated per the suggestions. Available for your review in the 08 IEPR folder in the Miss River Deepening folder.

Steve Roberts
Environmental Manager
New Orleans District
504-862-2517

-----Original Message-----
From: Perez, Andrew R CIV USARMY CEMVN (US)
Sent: Thursday, March 16, 2017 4:14 PM
To: Roberts, Steve W CIV CPMS (US) <Steve.W.Roberts@usace.army.mil>
Cc: Williams, Eric M CIV USARMY CEMVN (US) <Eric.M.Williams@usace.army.mil>
Subject: RE: EPA EJ comment on the USACE Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project

Thanks, first, please change second sentence in EJ paragraph pg 1, "We focused ...." to "The team focused.....".
Second make change to last sentence at bottom of pg 1:
Therefore, we stated that further Environmental Justice analysis is not warranted should read,
Therefore, further Environmental Justice analysis is not warranted. Just remove "we stated that". And in very last sentence on EJ, or top of pg 2, I believe the EO says to determine if communities are "adversely affected", not effected.
A

-----Original Message-----
From: Roberts, Steve W CIV CPMS (US)
Sent: Thursday, March 16, 2017 1:48 PM
To: Perez, Andrew R CIV USARMY CEMVN (US) <Andrew.R.Perez@usace.army.mil>
Cc: Williams, Eric M CIV USARMY CEMVN (US) <Eric.M.Williams@usace.army.mil>
Subject: RE: EPA EJ comment on the USACE Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project

Andrew, done.

\\mvd\mvn\data\pm\MthruZ\Miss River Ship Channel Deepening\07-Review of Draft Report (TSP)\Policy Review

Ch 2, do a word search for "justice". Thanks.

Steve Roberts
Environmental Manager
New Orleans District
504-862-2517

-----Original Message-----
From: Perez, Andrew R CIV USARMY CEMVN (US)
Sent: Wednesday, March 15, 2017 11:25 AM
To: Boe, Richard E CIV USARMY CEMVN (US) <Richard.E.Boe@usace.army.mil>; Roberts, Steve W CIV CPMS (US) <Steve.W.Roberts@usace.army.mil>
Cc: Stiles, Sandra E CIV USARMY CEMVN (US) <Sandra.E.Stiles@usace.army.mil>; Williams, Eric M CIV USARMY CEMVN (US) <Eric.M.Williams@usace.army.mil>
Subject: FW: EPA EJ comment on the USACE Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project

I just spoke with our EPA contact in Fort Worth, Ms. Agatha Benjamin, concerning subject EPA comment. Ms. Benjamin said they could not find any reference in the General Revaluation Report nor in the SEIS section any discussion concerning EJ including why it was being considered "Not Impacted". Of course, I expected our reasoning for this finding to be put into our report and it was not. She requests that we add the following information into the SEIS under the resource heading Environmental Justice with the other resource write ups. Ms. Benjamin agreed that the following paragraph was sufficient in answering their concerns:

The Environmental Justice team analyzed the study area of the Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project. We focused on the two areas of the study, the River itself near Baton Rouge where dredging would take place (and would be put back into the River), and the lower part of the River, south of New Orleans, where dredging would occur and be placed into marsh and open water areas. There are no EJ impacts from the dredging of the River near Baton Rouge since the material will be put back into the river south of where it was dredged; housing nor population would be impacted. The dredge material placement into surrounding marsh and open water south of New Orleans would not cause any adverse impacts to any community, housing or population because of the undeveloped nature of the dredge material placement areas--most of it is open water or marsh. The Census data confirmed that there is no housing/population in or near the vicinity of the project areas. Therefore, we stated that further Environmental Justice analysis is not warranted. Based on the available Census data, we determined that there is no population in the study area that could be adversely affected by the project action.

Please, I would like to see the insertion when completed. And our comment response would be we concur and have added text describing what we looked at and our findings.

-----Original Message-----
From: Perez, Andrew R CIV USARMY CEMVN (US)
Sent: Friday, March 10, 2017 10:09 AM
To: 'benjamin.agatha@epa.gov' <benjamin.agatha@epa.gov>
Cc: Williams, Eric M CIV USARMY CEMVN (US) <Eric.M.Williams@usace.army.mil>
Subject: FW: EPA EJ comment on the USACE Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project

Ms. Benjamin,

Mr. Gabe Gruta asked that I correspond with you regarding EPA EJ comment on subject study. I am assuming you have reviewed the comments and will explain what we analyzed.

Our EJ team looked at the study area of the Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project. We focused on the two areas of the study, the River itself near Baton Rouge where dredging would take place (and would be put back into the River), and the lower part of the River, south of New Orleans, where dredging would occur and be placed into marsh and open water areas. There are no EJ impacts from the dredging of the River near Baton Rouge since the material will be put back into the river south of where it was dredged; housing nor population would be impacted. The dredge material placement into surrounding marsh and open water south of New Orleans would not cause any adverse impacts to any community, housing or population because of the undeveloped nature of the dredge material placement areas--most of it is open water or marsh. The Census data confirmed that there is no housing/population in or near the vicinity of the project areas. Therefore, we stated that further Environmental Justice analysis is not warranted. Based on the available Census data, we determined that there is no population in the study area that could be adversely affected by the project action.

The project delivery team made the call to simply state in the SEIS that the EJ resource, among a few others, is not impacted. We did not provide any explanation of how we arrived at that finding. We can, if you would like, include a short write up in the Draft Integrated General Reevaluation Report & Supplemental Environmental Impact Statement (SEIS) report so the reader will understand why we came to that conclusion.

If there are other concerns or issues you would like addressed, we believe a phone call might be best to discuss. Thanks,

Andrew Perez
EJ Analyst
USACE, MVN
504.261.4674

From:	Musso, Joseph R CIV USARMY CEMVN (US)
To:	Roberts, Steve W CIV CPMS (US)
Subject:	FW: revised air quality section-final (UNCLASSIFIED)
Date:	Wednesday, March 29, 2017 11:36:08 AM

CLASSIFICATION: UNCLASSIFIED

From EPA

-----Original Message-----
From: Riley, Jeffrey [mailto:Riley.Jeffrey@epa.gov]
Sent: Wednesday, March 29, 2017 7:17 AM
To: Musso, Joseph R CIV USARMY CEMVN (US) <Joseph.R.Musso@usace.army.mil>
Subject: [Non-DoD Source] RE: revised air quality section-final (UNCLASSIFIED)

Good Morning Joe,

Thanks very much for the opportunity to review & comment. I think this language looks very good, and explains how Alternative 3d differs from Alternatives 1, 2 & 3.

I've made a couple of suggested edits below (in red) to simply restate that 3d would maintain the 45 ft depth in the Baton Rouge maintenance area, and therefore not result in project emissions within the area.

Note: EPA’s final action to redesignate the Baton Rouge 2008 ozone nonattainment area and approve the plan to maintain the standard was published in the Federal Register on 12/27/2016, and became effective 1/26/2017. The area is still subject to the 100 tpy de minimis levels described in the language below.

Jeffrey Riley
US EPA - Region 6
State Implementation Section 6MM-AA
Multimedia Division
(214)665-8542
riley.jeffrey@epa.gov

-----Original Message-----
From: Musso, Joseph R CIV USARMY CEMVN (US) [mailto:Joseph.R.Musso@usace.army.mil]
Sent: Tuesday, March 28, 2017 9:35 AM
To: Riley, Jeffrey <Riley.Jeffrey@epa.gov>
Subject: FW: revised air quality section-final (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Jeff,

There are a couple of sections in this e-mail. Please read all the way through.

The following paragraph explains the Tentatively Selected Plan (TSP) in a bit more detail:

"The TSP for the next phase of construction is to provide deep draft navigation to a depth of 50 ft from the Gulf beginning at RM 22 Below Head Passes through the Port of South Louisiana ending at RM 168.3 AHP, and providing deep draft navigation to a depth of 45 ft from RM 168.3 AHP through Baton Rouge ending at RM 232.4AHP. This would be accomplished by constructing and maintaining the MRSC to a depth of 50 ft in the lower Mississippi from river mile (RM) 13.4, above head of passes (AHP), to RM 22, below head of passes (BHP), and by deepening the three crossings, Rich Bend, Belmont, and Fairview located within the Port of South Louisiana to a depth of 50 ft. The crossings located within the footprint of the Port of Baton Rouge would be maintained at the current depth of 45 ft. The material dredged during construction of RM 13.4 AHP to 22 BHP would be placed in locations designated for beneficial use placement. The material would be deposited as uniformly as practicable to create intertidal coastal wetland habitat."

****

Here is the revised AQ wording for our supplemental EIS for the Mississippi River Deepening project. Please note that the TSP is Alternative 3d. The other alternatives have been rejected.

4.3.10 Air Quality

Alternative 3

Direct and Indirect Impacts: St. James, St. Charles, and Plaquemines Parishes are currently in attainment of all NAAQS and are operating under attainment status. Calculations previously performed on fairly large construction projects indicate that volatile organic compound emissions from typical CEMVN construction projects would be well below the 100-ton per year de minimis limit; therefore, it is expected that there would be no adverse impacts to air quality with the implementation of the proposed action. The status of attainment for St. James, St. Charles, and Plaquemines Parish would not be altered from current conditions, and there would be no lasting direct or indirect impacts resulting from the associated construction activities.

With implementation of the proposed action in the Baton Rouge 5-parish non-attainment maintenance area for ozone, on-site construction activities would be expected to produce approximately 16 tons of VOC emissions and approximately 350 tons of NOx emissions during the construction period.

The total VOC emissions are less than the de minimis level of 100 tons per year; however, the total NOx emissions substantially exceed the de minimis level of 100 tons per year of NOx emissions approved by the State Implementation Plan. As such, in order to avoid exceeding the de minimis level for NOx, the construction of the crossings would require taking a phased approach to complete the project, and would limit construction to 2-3 crossings per year within these non-attainment parishes.

Alternative 2

Direct and Indirect Impacts: Ambient air quality in East Baton Rouge, West Baton Rouge, and Ascension Parishes would not noticeably change from current conditions, and the status of attainment for the parishes would not be altered. However, as explained for Alternative 3, on-site construction activities are expected to produce approximately 16 tons per year of VOC emissions and approximately 350 tons of NOx emissions in 5-parish non-attainment area for ozone. The 350 tons of NOx emissions exceeds the de minimis level of 100 tons per year of NOx emissions approved by the State Implementation Plan. As such, in order to avoid exceeding the de minimis level for NOx, construction of the crossings within the non-attainment area would take a phased approach and would need to be staged at a rate of two or three crossings per year.

Alternative 3d

Direct and Indirect Impacts: Because Alternative 3d would deepen and maintain the river to 50 feet up to the Port of South Louisiana, direct and indirect associated with this alternative would be less in scope, but similar in extent and duration than the minor impacts previously described under Alternative 3. Under alternative 3d work would occur only in St. James, St. Charles, and Plaquemines Parishes, which are currently in attainment of all NAAQS and are operating under attainment status. Calculations previously performed on fairly large construction projects indicate that volatile organic compound emissions from typical CEMVN construction projects would be well below the 100-ton per year de minimis limit; therefore, it is expected that there would be no adverse impacts to air quality with the implementation of the proposed action. The status of attainment for St. James, St. Charles, and Plaquemines Parish would not be altered from current conditions, and there would be no lasting direct or indirect impacts resulting from the associated construction activities. Similar to Alternative 1, Alternative 3d would maintain the existing 45 ft river depth in the Baton Rouge 5-parish ozone maintenance area, and therefore would not result in increased project emissions within the Baton Rouge area.

Future without Project Conditions (Alternative 1)

Direct and Indirect Impacts: O&M activities within the river would continue, however, there would be no direct impacts under the no action alternative. Without implementation of the proposed project the status of attainment of air quality for East Baton Rouge, West Baton Rouge, Iberville, and Ascension Parishes would not change from current conditions, and there would be no direct, indirect, or cumulative impacts.

****

If you have any questions please contact me at your convenience.

Joe Musso
Environmental Resource Specialist
US Army Corps of Engineers
New Orleans District
(504) 862-2280

CLASSIFICATION: UNCLASSIFIED

CLASSIFICATION: UNCLASSIFIED

Annex 24. NHPA 106

From:	Hughbanks, Paul J CIV USARMY CEMVN (US)
To:	DCRT Section 106
Subject:	no historic properties affected - deepening of crossings in Mississippi River (UNCLASSIFIED)
Date:	Wednesday, August 02, 2017 3:10:50 PM
Attachments:	Mississippi River Ship Channel no historic properties affected - SHPO.pdf Mississippi River Crossings.pdf

CLASSIFICATION: UNCLASSIFIED

Please find attached a letter and figure showing ship crossings.

Thank you,
Paul Hughbanks
Archaeologist, Natural/Cultural Resources Analysis RPEDS, New Orleans District
Office: 504-862-1100

CLASSIFICATION: UNCLASSIFIED

No known historic properties will be affected by this undertaking. Therefore, our office has no objection to the implementation of this project. This effect determination could change should new information come to our attention.

Kristin P. Sanders

Kristin P. Sanders
Deputy State Historic Preservation Officer

Date 8/25/2017

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

AUG 02 2017

Regional Planning and
Environment Division, South
Environmental Planning Branch

Ms. Kristin P. Saunders
State Historic Preservation Officer
Department of Culture, Recreation and Tourism
Office of Cultural Development
P.O. Box 44247
Baton Rouge, Louisiana 70804

Re: Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana.

Dear Ms. Saunders:

The United States Army Corps of Engineers (USACE) is preparing a General Reevaluation Study (GRR) and a draft Supplemental Environmental Impact Statement (SEIS) for the Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana (MRSC) project to evaluate the impacts of dredging to an increased channel depth. A letter of initiation and invitation to respond dated April 19, 2015 were sent to your office.

Project Area and Proposed Activity

In 1981, a Feasibility Report, entitled "Deep-Draft Access to the Ports of New Orleans and Baton Rouge, Louisiana", was prepared to recommend that the Mississippi River navigation channel be deepened to 55 feet from Baton Rouge to the Gulf of Mexico. At the current time, the navigation channel is maintained at 45 feet depth plus authorized overdepth.

In November 2016, USACE offered a conclusion of no effect on historic resources for the proposal to deepen three existing river crossings (Belmont, Rich Bend, Fairview), and to deepen the Mississippi River above Head of Passes (AHP) and below Head of Passes including Southwest Pass (BHP) from RM 13.4 AHP to RM 22 BHP. Your office concurred with this conclusion in letter dated December 7, 2016.

After further study of needs and benefit:cost ratios, USACE now proposes to deepen within all 12 defined river crossings between Baton Rouge and New Orleans. In the past, these crossings have been maintained at an authorized depth of 45 feet, and authorized overdepth and advance maintenance of an additional 5 feet. The proposed plan would increase the authorized depth of these crossings to 50 feet, with overdepth and advanced maintenance continuing at 5 additional feet. The nine additional crossings are:

B.R. Front	**River Mile 234-229 AHP**
Redeye	**River Mile 226-221 AHP**
Sardine Point	**River Mile 221-216 AHP**
Medora	**River Mile 214-208 AHP**
Granada	**River Mile 207-202 AHP**
Bayou Goula	**River Mile 199-196 AHP**
Alhambra	**River Mile 193-188 AHP**
Philadelphia	**River Mile 185-181 AHP**
Smoke Bend	**River Mile 179-172 AHP**

The same conditions apply to the 9 additional crossings that are now proposed, as those that were presented in the 2016 correspondence for the initial three crossings. It is considered very unlikely that any cultural resources that may exist within those crossings remains intact or preserved at this time, due to the regular maintenance and dredging that has occurred. Ship crossings are generally located at meanders of the river, because of the difficulty of navigating close to bank lines and because of the same dynamic nature of the river that creates point bar and cut bank. This dynamic nature of meanders results that the path of the river channel has moved greatly in its history, including the very recent history of the river recorded on historic maps and visible for crossings such as Philadephia, Rich Bend, and Belmont.

Section 106

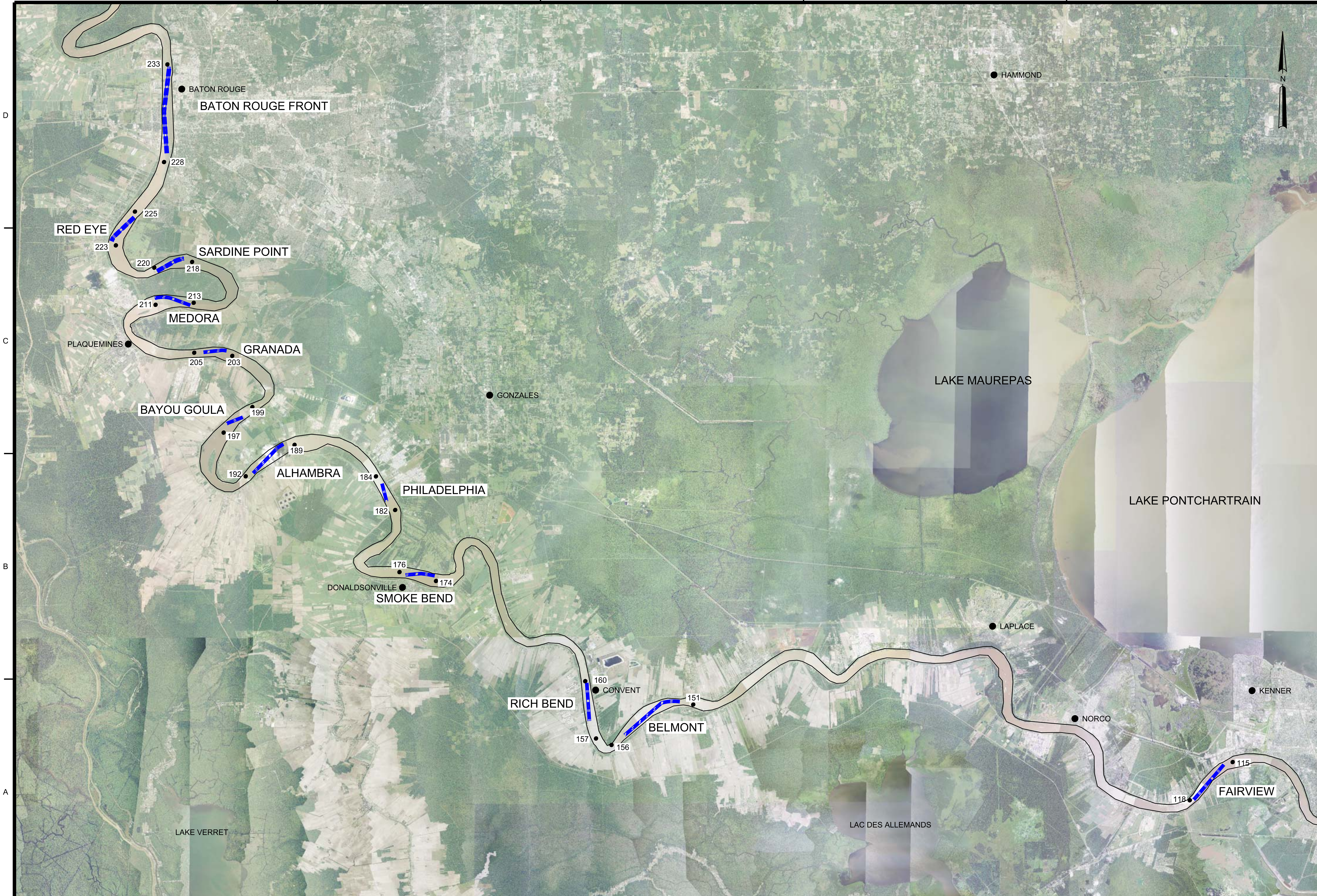
Based upon the information above and the anticipated activities of the project, the USACE concludes that the proposed actions will have no effect to historic properties. We ask that you provide comments to this conclusion within 30 days. Please contact Dr. Paul Hughbanks at (504) 862-1100 if you have any questions.

Sincerely,

Marshall K. Harper

Marshall K. Harper
Chief, Environmental Planning Branch

Enclosures



US Army Corps of Engineers®
NEW ORLEANS DISTRICT

MARK	DESCRIPTION	DATE	APPR

MARK	DESCRIPTION	DATE	APPR

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS DISTRICT
NEW ORLEANS, LOUISIANA

DESIGNED BY: PATRICK R. GREY
DATE:
DWN BY: PRG
CKD BY: PRG
SOLICITATION NO.:
SUBMITTED BY: KEITH O'CAIN
CONTRACT NO.:
PLOT SCALE: 144000:1
PLOT DATE: 26 SEP 2016
FILE NUMBER:
SIZE: ANSI D
FILE NAME:

MISSISSIPPI RIVER SHIP CHANNEL, DEEPENING STUDY, MISSISSIPPI RIVER CROSSINGS, CONSTRUCTION DREDGING

PROJECT LOCATION AND VICINITY MAP

SHEET IDENTIFICATION
G-02

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVENUE
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

AUGUST 26, 2017

Regional Planning and
Environment Division, South
New Orleans Environmental Branch

Re: "No Historic Properties Affected" Determination: Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana

Mikko Colabe III Clem Sylestine, Principal Chief
Alabama-Coushatta Tribe of Texas
571 State Park Rd 56
Livingston, TX 77351

Dear Principal Chief Sylestine:

In partial fulfillment of responsibilities under Executive Order 13175, the National Environmental Policy Act, and Section 106 of the National Historic Preservation Act, the U.S. Army Corps of Engineers, New Orleans District (CEMVN), offers you the opportunity to review and comment on the potential of the proposed action described in this letter to significantly affect protected tribal resources, tribal rights, or Indian lands.

The United States Army Corps of Engineers (USACE) is preparing a General Reevaluation Study (GRR) and a draft Supplemental Environmental Impact Statement (SEIS) for the Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana (MRSC) project to evaluate the impacts of dredging to an increased channel depth.

Project Area and Proposed Activity

In 1981, a Feasibility Report was prepared to recommend that the Mississippi River navigation channel be deepened to 55 feet from Baton Rouge to the Gulf of Mexico. At the current time, the navigation channel is maintained at 45 feet depth plus authorized overdepth.

In December 2016, USACE offered a conclusion of no effect on historic resources for the proposal to deepen three existing river crossings (Belmont, Rich Bend, Fairview), and to deepen the Mississippi River above Head of Passes (AHP) and below Head of Passes including Southwest Pass (BHP) from RM 13.4 AHP to RM 22 BHP. SHPO concurred with this conclusion in letter dated December 7, 2016.

After further study of needs and benefit:cost ratios, USACE now proposes to deepen within all 12 defined river crossings between Baton Rouge and New Orleans. In the past, these crossings have been maintained at an authorized depth of 45 feet, and authorized overdepth and advance maintenance of an additional 5 feet. The proposed plan would increase the authorized depth of these crossings to 50 feet, with overdepth and advanced maintenance continuing at 5 additional feet. The nine additional crossings are:

B.R. Front	**River Mile 234-229 AHP**
Redeye	**River Mile 226-221 AHP**
Sardine Point	**River Mile 221-216 AHP**
Medora	**River Mile 214-208 AHP**
Granada	**River Mile 207-202 AHP**
Bayou Goula	**River Mile 199-196 AHP**
Alhambra	**River Mile 193-188 AHP**
Philadelphia	**River Mile 185-181 AHP**
Smoke Bend	**River Mile 179-172 AHP**

The same conditions apply to the 9 additional crossings that are now proposed, as those that were presented in the 2016 correspondence for the initial three crossings. It is considered very unlikely that any cultural resources that may exist within those crossings remains intact or preserved at this time, due to the regular maintenance and dredging that has occurred. Ship crossings are generally located at meanders of the river, because of the difficulty of navigating close to bank lines and because of the same dynamic nature of the river that creates point bar and cut bank. This dynamic nature of meanders results that the path of the river channel has moved greatly in its history, including the very recent history of the river recorded on historic maps and visible for crossings such as Philadephia, Rich Bend, and Belmont.

Section 106

Based upon the information above and the anticipated activities of the project, no additional cultural resources investigations are recommended for the proposed undertaking, and we request that your office review the enclosed documentation and provide your opinion on the Section 106 finding of "no historic properties affected." This conclusion has already been coordinated in agreement with the Louisiana State Historic Preservation Officer (SHPO) in letter dated August 2, 2017 and response of August 25, 2017. If you have any questions about the proposed undertaking or require additional information, please contact Paul Hughbanks at 504-862-1100 or by email at paul.j.hughbanks@usace.army.mil. You also may contact Trent Stockton, Archeologist and Tribal Liaison; U.S. Army Corps of Engineers, New Orleans District; (504) 862-2550; trent.c.stockton@usace.army.mil.

An electronic copy of this letter with enclosures will be provided to Mr. Bryant J. Celestine, Historic Preservation Officer, Alabama Coushatta Tribe of Texas, celestine.bryant@actribe.org.

Sincerely,

Paul Hughbanks
Archaeologist, Environmental Branch

Enclosures

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVENUE
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

AUGUST 26, 2017

Regional Planning and
Environment Division, South
New Orleans Environmental Branch

Re: "No Historic Properties Affected" Determination: Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana

Tamara Francis-Fourkiller, Chairman/THPO
Caddo Nation of Oklahoma
117 Memorial Lane
P.O. Box 487
Binger, OK 73009

Dear Chairman Francis-Fourkiller:

In partial fulfillment of responsibilities under Executive Order 13175, the National Environmental Policy Act, and Section 106 of the National Historic Preservation Act, the U.S. Army Corps of Engineers, New Orleans District (CEMVN), offers you the opportunity to review and comment on the potential of the proposed action described in this letter to significantly affect protected tribal resources, tribal rights, or Indian lands.

The United States Army Corps of Engineers (USACE) is preparing a General Reevaluation Study (GRR) and a draft Supplemental Environmental Impact Statement (SEIS) for the Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana (MRSC) project to evaluate the impacts of dredging to an increased channel depth.

Project Area and Proposed Activity

In 1981, a Feasibility Report was prepared to recommend that the Mississippi River navigation channel be deepened to 55 feet from Baton Rouge to the Gulf of Mexico. At the current time, the navigation channel is maintained at 45 feet depth plus authorized overdepth.

In December 2016, USACE offered a conclusion of no effect on historic resources for the proposal to deepen three existing river crossings (Belmont, Rich Bend, Fairview), and to deepen the Mississippi River above Head of Passes (AHP) and below Head of Passes including Southwest Pass (BHP) from RM 13.4 AHP to RM 22 BHP. SHPO concurred with this conclusion in letter dated December 7, 2016.

After further study of needs and benefit:cost ratios, USACE now proposes to deepen within all 12 defined river crossings between Baton Rouge and New Orleans. In the past, these crossings have been maintained at an authorized depth of 45 feet, and authorized overdepth and advance maintenance of an additional 5 feet. The proposed plan would increase the authorized depth of these crossings to 50 feet, with overdepth and advanced maintenance continuing at 5 additional feet. The nine additional crossings are:

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Smoke Bend	**River Mile 179-172 AHP**

The same conditions apply to the 9 additional crossings that are now proposed, as those that were presented in the 2016 correspondence for the initial three crossings. It is considered very unlikely that any cultural resources that may exist within those crossings remains intact or preserved at this time, due to the regular maintenance and dredging that has occurred. Ship crossings are generally located at meanders of the river, because of the difficulty of navigating close to bank lines and because of the same dynamic nature of the river that creates point bar and cut bank. This dynamic nature of meanders results that the path of the river channel has moved greatly in its history, including the very recent history of the river recorded on historic maps and visible for crossings such as Philadephia, Rich Bend, and Belmont.

Section 106

Based upon the information above and the anticipated activities of the project, no additional cultural resources investigations are recommended for the proposed undertaking, and we request that your office review the enclosed documentation and provide your opinion on the Section 106 finding of "no historic properties affected." This conclusion has already been coordinated in agreement with the Louisiana State Historic Preservation Officer (SHPO) in letter dated August 2, 2017 and response of August 25, 2017. If you have any questions about the proposed undertaking or require additional information, please contact Paul Hughbanks at 504-862-1100 or by email at paul.j.hughbanks@usace.army.mil. You also may contact Trent Stockton, Archeologist and Tribal Liaison; U.S. Army Corps of Engineers, New Orleans District; (504) 862-2550; trent.c.stockton@usace.army.mil.

An electronic copy of this letter will be provided to Mr. Michael Attocknie, Tribal Administrator, Caddo Nation of Oklahoma, mattocknie@caddonation.org.

Sincerely,

Paul Hughbanks
Archaeologist, Environmental Branch

Enclosures

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVENUE
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

AUGUST 26, 2017

Regional Planning and
Environment Division, South
New Orleans Environmental Branch

Re: "No Historic Properties Affected" Determination: Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana

April Wyatt, Vice-Chairman
Chitimacha Tribe of Louisiana
P.O. Box 661
Charenton, LA 70523

Dear Vice-Chairman Wyatt:

In partial fulfillment of responsibilities under Executive Order 13175, the National Environmental Policy Act, and Section 106 of the National Historic Preservation Act, the U.S. Army Corps of Engineers, New Orleans District (CEMVN), offers you the opportunity to review and comment on the potential of the proposed action described in this letter to significantly affect protected tribal resources, tribal rights, or Indian lands.

The United States Army Corps of Engineers (USACE) is preparing a General Reevaluation Study (GRR) and a draft Supplemental Environmental Impact Statement (SEIS) for the Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana (MRSC) project to evaluate the impacts of dredging to an increased channel depth.

<u>Project Area and Proposed Activity</u>

In 1981, a Feasibility Report was prepared to recommend that the Mississippi River navigation channel be deepened to 55 feet from Baton Rouge to the Gulf of Mexico. At the current time, the navigation channel is maintained at 45 feet depth plus authorized overdepth.

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An electronic copy of this letter with enclosures will be provided to Mrs. Kimberly Walden, M. Ed., Cultural Director/Tribal Historic Preservation Officer, Chitimacha Tribe of Louisiana, kswalden@chitimacha.gov.

Sincerely,

Paul Hughbanks
Archaeologist, Environmental Branch

Enclosures

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVENUE
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

AUGUST 26, 2017

Regional Planning and
Environment Division, South
New Orleans Environmental Branch

Re: "No Historic Properties Affected" Determination: Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana

Gary Batton, Chief
Attn: Choctaw Nation Historic Preservation Department
Choctaw Nation of Oklahoma
P.O. Box 1210
Durant, OK 74702-1210

Dear Chief Batton:

In partial fulfillment of responsibilities under Executive Order 13175, the National Environmental Policy Act, and Section 106 of the National Historic Preservation Act, the U.S. Army Corps of Engineers, New Orleans District (CEMVN), offers you the opportunity to review and comment on the potential of the proposed action described in this letter to significantly affect protected tribal resources, tribal rights, or Indian lands.

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After further study of needs and benefit:cost ratios, USACE now proposes to deepen within all 12 defined river crossings between Baton Rouge and New Orleans. In the past, these crossings have been maintained at an authorized depth of 45 feet, and authorized overdepth and advance maintenance of an additional 5 feet. The proposed plan would increase the authorized depth of these crossings to 50 feet, with overdepth and advanced maintenance continuing at 5 additional feet. The nine additional crossings are:

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An electronic copy of this letter with enclosures will be provided to Dr. Ian Thompson, Director/Tribal Historic Preservation Officer, Choctaw Nation of Oklahoma, ithompson@choctawnation.com and Ms. Lindsey Bilyeu, NHPA Section 106 Reviewer, Choctaw Nation of Oklahoma, lbilyeu@choctawnation.com.

Sincerely,

Paul Hughbanks
Archaeologist, Environmental Branch

Enclosures

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVENUE
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

AUGUST 26, 2017

Regional Planning and
Environment Division, South
New Orleans Environmental Branch

Re: "No Historic Properties Affected" Determination: Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana

Lovelin Poncho, Chief
Coushatta Tribe of Louisiana
P.O. Box 818
Elton, LA 70532

Dear Chief Poncho:

In partial fulfillment of responsibilities under Executive Order 13175, the National Environmental Policy Act, and Section 106 of the National Historic Preservation Act, the U.S. Army Corps of Engineers, New Orleans District (CEMVN), offers you the opportunity to review and comment on the potential of the proposed action described in this letter to significantly affect protected tribal resources, tribal rights, or Indian lands.

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An electronic copy of this letter with enclosures will be provided to Dr. Linda Langley, Tribal Historic Preservation Officer, Coushatta Tribe of Louisiana, llangley@mcneese.edu, and Mr. Michael Tarpley, Deputy Tribal Historic Preservation Officer, Coushatta Tribe of Louisiana, kokua.aina57@gmail.com.

Sincerely,

Paul Hughbanks
Archaeologist, Environmental Branch

Enclosures

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVENUE
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

AUGUST 26, 2017

Regional Planning and
Environment Division, South
New Orleans Environmental Branch

Re: "No Historic Properties Affected" Determination: Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana

B. Cheryl Smith, Principal Chief
Jena Band of Choctaw Indians
P.O. Box 14
Jena, LA 71342

Dear Principal Chief Smith:

In partial fulfillment of responsibilities under Executive Order 13175, the National Environmental Policy Act, and Section 106 of the National Historic Preservation Act, the U.S. Army Corps of Engineers, New Orleans District (CEMVN), offers you the opportunity to review and comment on the potential of the proposed action described in this letter to significantly affect protected tribal resources, tribal rights, or Indian lands.

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An electronic copy of this letter with enclosures will be provided to Mrs. Alina Shively, Tribal Historic Preservation Officer, Jena Band of Choctaw Indians, ashively@jenachoctaw.org.

Sincerely,

Paul Hughbanks
Archaeologist, Environmental Branch

Enclosures

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVENUE
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

AUGUST 26, 2017

Regional Planning and
Environment Division, South
New Orleans Environmental Branch

Re: "No Historic Properties Affected" Determination: Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana

Phyliss J. Anderson, Chief
Mississippi Band of Choctaw Indians
P.O. Box 6257
Choctaw, MS 39350

Dear Chief Anderson:

In partial fulfillment of responsibilities under Executive Order 13175, the National Environmental Policy Act, and Section 106 of the National Historic Preservation Act, the U.S. Army Corps of Engineers, New Orleans District (CEMVN), offers you the opportunity to review and comment on the potential of the proposed action described in this letter to significantly affect protected tribal resources, tribal rights, or Indian lands.

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An electronic copy of this letter with enclosures will be provided to Mr. Kenneth H. Carleton, Tribal Historic Preservation Officer/Archaeologist, Mississippi Band of Choctaw Indians, kcarleton@choctaw.org.

Sincerely,

Paul Hughbanks
Archaeologist, Environmental Branch

Enclosures

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVENUE
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

AUGUST 26, 2017

Regional Planning and
Environment Division, South
New Orleans Environmental Branch

Re: "No Historic Properties Affected" Determination: Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana

James Floyd, Principal Chief
Attn: Historic and Cultural Preservation Office
Muscogee (Creek) Nation
P.O. Box 580
Okmulgee, OK 74447

Dear Principal Chief Floyd:

In partial fulfillment of responsibilities under Executive Order 13175, the National Environmental Policy Act, and Section 106 of the National Historic Preservation Act, the U.S. Army Corps of Engineers, New Orleans District (CEMVN), offers you the opportunity to review and comment on the potential of the proposed action described in this letter to significantly affect protected tribal resources, tribal rights, or Indian lands.

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An electronic copy of this letter with enclosures will be provided to Ms. RaeLynn Butler, Tribal Historic Preservation Officer, section106@mcn.nsn.gov.

Sincerely,

Paul Hughbanks
Archaeologist, Environmental Branch

Enclosures

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVENUE
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

AUGUST 26, 2017

Regional Planning and
Environment Division, South
New Orleans Environmental Branch

Re: "No Historic Properties Affected" Determination: Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana

James Billie, Chairman
Seminole Tribe of Florida
6300 Stirling Road
Hollywood, FL 33024

Dear Chairman Billie:

In partial fulfillment of responsibilities under Executive Order 13175, the National Environmental Policy Act, and Section 106 of the National Historic Preservation Act, the U.S. Army Corps of Engineers, New Orleans District (CEMVN), offers you the opportunity to review and comment on the potential of the proposed action described in this letter to significantly affect protected tribal resources, tribal rights, or Indian lands.

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<u>Project Area and Proposed Activity</u>

In 1981, a Feasibility Report was prepared to recommend that the Mississippi River navigation channel be deepened to 55 feet from Baton Rouge to the Gulf of Mexico. At the current time, the navigation channel is maintained at 45 feet depth plus authorized overdepth.

In December 2016, USACE offered a conclusion of no effect on historic resources for the proposal to deepen three existing river crossings (Belmont, Rich Bend, Fairview), and to deepen the Mississippi River above Head of Passes (AHP) and below Head of Passes including Southwest Pass (BHP) from RM 13.4 AHP to RM 22 BHP. SHPO concurred with this conclusion in letter dated December 7, 2016.

After further study of needs and benefit:cost ratios, USACE now proposes to deepen within all 12 defined river crossings between Baton Rouge and New Orleans. In the past, these crossings have been maintained at an authorized depth of 45 feet, and authorized overdepth and advance maintenance of an additional 5 feet. The proposed plan would increase the authorized depth of these crossings to 50 feet, with overdepth and advanced maintenance continuing at 5 additional feet. The nine additional crossings are:

B.R. Front	**River Mile 234-229 AHP**
Redeye	**River Mile 226-221 AHP**
Sardine Point	**River Mile 221-216 AHP**
Medora	**River Mile 214-208 AHP**
Granada	**River Mile 207-202 AHP**
Bayou Goula	**River Mile 199-196 AHP**
Alhambra	**River Mile 193-188 AHP**
Philadelphia	**River Mile 185-181 AHP**
Smoke Bend	**River Mile 179-172 AHP**

The same conditions apply to the 9 additional crossings that are now proposed, as those that were presented in the 2016 correspondence for the initial three crossings. It is considered very unlikely that any cultural resources that may exist within those crossings remains intact or preserved at this time, due to the regular maintenance and dredging that has occurred. Ship crossings are generally located at meanders of the river, because of the difficulty of navigating close to bank lines and because of the same dynamic nature of the river that creates point bar and cut bank. This dynamic nature of meanders results that the path of the river channel has moved greatly in its history, including the very recent history of the river recorded on historic maps and visible for crossings such as Philadephia, Rich Bend, and Belmont.

Section 106

Based upon the information above and the anticipated activities of the project, no additional cultural resources investigations are recommended for the proposed undertaking, and we request that your office review the enclosed documentation and provide your opinion on the Section 106 finding of "no historic properties affected." This conclusion has already been coordinated in agreement with the Louisiana State Historic Preservation Officer (SHPO) in letter dated August 2, 2017 and response of August 25, 2017. If you have any questions about the proposed undertaking or require additional information, please contact Paul Hughbanks at 504-862-1100 or by email at paul.j.hughbanks@usace.army.mil. You also may contact Trent Stockton, Archeologist and Tribal Liaison; U.S. Army Corps of Engineers, New Orleans District; (504) 862-2550; trent.c.stockton@usace.army.mil.

An electronic copy of this letter with enclosures will be provided to Dr. Paul N. Backhouse, Tribal Historic Preservation Officer, Seminole Tribe of Florida, paulbackhouse@semtribe.com; Ms. Anne Mullins, Deputy Tribal Historic Preservation Officer, annemullins@semtribe.com; Mr. Bradley Mueller, Compliance Review Supervisor, bradleymueller@semtribe.com; and Mr. Andrew Weidman, Compliance Review Data Analyst, andrewweidman@semtribe.com.

Sincerely,

Paul Hughbanks
Archaeologist, Environmental Branch

Enclosures

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVENUE
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

AUGUST 26, 2017

Regional Planning and
Environment Division, South
New Orleans Environmental Branch

Re: "No Historic Properties Affected" Determination: Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana

Leonard M. Harjo, Principal Chief
Seminole Nation of Oklahoma
P.O. Box 1498
Wewoka, OK 74884

Dear Principal Chief Harjo:

In partial fulfillment of responsibilities under Executive Order 13175, the National Environmental Policy Act, and Section 106 of the National Historic Preservation Act, the U.S. Army Corps of Engineers, New Orleans District (CEMVN), offers you the opportunity to review and comment on the potential of the proposed action described in this letter to significantly affect protected tribal resources, tribal rights, or Indian lands.

The United States Army Corps of Engineers (USACE) is preparing a General Reevaluation Study (GRR) and a draft Supplemental Environmental Impact Statement (SEIS) for the Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana (MRSC) project to evaluate the impacts of dredging to an increased channel depth.

Project Area and Proposed Activity

In 1981, a Feasibility Report was prepared to recommend that the Mississippi River navigation channel be deepened to 55 feet from Baton Rouge to the Gulf of Mexico. At the current time, the navigation channel is maintained at 45 feet depth plus authorized overdepth.

In December 2016, USACE offered a conclusion of no effect on historic resources for the proposal to deepen three existing river crossings (Belmont, Rich Bend, Fairview), and to deepen the Mississippi River above Head of Passes (AHP) and below Head of Passes including Southwest Pass (BHP) from RM 13.4 AHP to RM 22 BHP. Your office concurred with this conclusion in email dated January 25, 2017.

After further study of needs and benefit:cost ratios, USACE now proposes to deepen within all 12 defined river crossings between Baton Rouge and New Orleans. In the past, these crossings have been maintained at an authorized depth of 45 feet, and authorized overdepth and advance maintenance of an additional 5 feet. The proposed plan would increase the authorized depth of these crossings to 50 feet, with overdepth and advanced maintenance continuing at 5 additional feet. The nine additional crossings are:

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The same conditions apply to the 9 additional crossings that are now proposed, as those that were presented in the 2016 correspondence for the initial three crossings. It is considered very unlikely that any cultural resources that may exist within those crossings remains intact or preserved at this time, due to the regular maintenance and dredging that has occurred. Ship crossings are generally located at meanders of the river, because of the difficulty of navigating close to bank lines and because of the same dynamic nature of the river that creates point bar and cut bank. This dynamic nature of meanders results that the path of the river channel has moved greatly in its history, including the very recent history of the river recorded on historic maps and visible for crossings such as Philadephia, Rich Bend, and Belmont.

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An electronic copy of this letter with enclosures will be provided to Ms. Natalie Harjo, Tribal Historic Preservation Officer, Seminole Nation of Oklahoma, harjo.n@sno-nsn.gov and Mr. Mickey Douglas, Environmental Protection Office, Seminole Nation of Oklahoma, douglas.m@sno-nsn.gov.

Sincerely,

Paul Hughbanks
Archaeologist, Environmental Branch

Enclosures

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVENUE
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

AUGUST 26, 2017

Regional Planning and
Environment Division, South
New Orleans Environmental Branch

Re: "No Historic Properties Affected" Determination: Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana

Joey Barbry, Chairman
Tunica-Biloxi Tribe of Louisiana
P.O. Box 1589
Marksville, LA 71351

Dear Chairman Barbry:

In partial fulfillment of responsibilities under Executive Order 13175, the National Environmental Policy Act, and Section 106 of the National Historic Preservation Act, the U.S. Army Corps of Engineers, New Orleans District (CEMVN), offers you the opportunity to review and comment on the potential of the proposed action described in this letter to significantly affect protected tribal resources, tribal rights, or Indian lands.

The United States Army Corps of Engineers (USACE) is preparing a General Reevaluation Study (GRR) and a draft Supplemental Environmental Impact Statement (SEIS) for the Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana (MRSC) project to evaluate the impacts of dredging to an increased channel depth.

<u>Project Area and Proposed Activity</u>

In 1981, a Feasibility Report was prepared to recommend that the Mississippi River navigation channel be deepened to 55 feet from Baton Rouge to the Gulf of Mexico. At the current time, the navigation channel is maintained at 45 feet depth plus authorized overdepth.

In December 2016, USACE offered a conclusion of no effect on historic resources for the proposal to deepen three existing river crossings (Belmont, Rich Bend, Fairview), and to deepen the Mississippi River above Head of Passes (AHP) and below Head of Passes including Southwest Pass (BHP) from RM 13.4 AHP to RM 22 BHP. SHPO concurred with this conclusion in letter dated December 7, 2016.

After further study of needs and benefit:cost ratios, USACE now proposes to deepen within all 12 defined river crossings between Baton Rouge and New Orleans. In the past, these crossings have been maintained at an authorized depth of 45 feet, and authorized overdepth and advance maintenance of an additional 5 feet. The proposed plan would increase the authorized depth of these crossings to 50 feet, with overdepth and advanced maintenance continuing at 5 additional feet. The nine additional crossings are:

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The same conditions apply to the 9 additional crossings that are now proposed, as those that were presented in the 2016 correspondence for the initial three crossings. It is considered very unlikely that any cultural resources that may exist within those crossings remains intact or preserved at this time, due to the regular maintenance and dredging that has occurred. Ship crossings are generally located at meanders of the river, because of the difficulty of navigating close to bank lines and because of the same dynamic nature of the river that creates point bar and cut bank. This dynamic nature of meanders results that the path of the river channel has moved greatly in its history, including the very recent history of the river recorded on historic maps and visible for crossings such as Philadephia, Rich Bend, and Belmont.

Section 106

Based upon the information above and the anticipated activities of the project, no additional cultural resources investigations are recommended for the proposed undertaking, and we request that your office review the enclosed documentation and provide your opinion on the Section 106 finding of "no historic properties affected." This conclusion has already been coordinated in agreement with the Louisiana State Historic Preservation Officer (SHPO) in letter dated August 2, 2017 and response of August 25, 2017. If you have any questions about the proposed undertaking or require additional information, please contact Paul Hughbanks at 504-862-1100 or by email at paul.j.hughbanks@usace.army.mil. You also may contact Trent Stockton, Archeologist and Tribal Liaison; U.S. Army Corps of Engineers, New Orleans District; (504) 862-2550; trent.c.stockton@usace.army.mil.

An electronic copy of this letter with enclosures will be provided to Mr. Earl J. Barbry, Jr., Cultural Director, Tunica-Biloxi Tribe of Louisiana, earlii@tunica.org.

Sincerely,

Paul Hughbanks
Archaeologist, Environmental Branch

Enclosures

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
1001 Indian School Road NW, Suite 348
Albuquerque, New Mexico 87104

ER 16/0709
File 9043.1

January 30, 2017

VIA ELECTRONIC MAIL ONLY

Sandra Stiles
U.S. Army Corps of Engineers
New Orleans District
P.O. Box 60267
New Orleans, LA 70160-0267

Dear Ms. Stiles:

The U.S. Department of the Interior (Department) has reviewed the Draft Supplemental Environmental Impact Statement (DEIS) and General Reevaluation Report (GRR) prepared by the U.S. Army Corps of Engineers for the Mississippi River Ship Channel from the Gulf to Baton Rouge – Louisiana. In this regard, we are providing the following comments from the U. S. Fish and Wildlife Service (FWS) and the U.S. Geological Survey (USGS) for your use as you prepare the final document.

General Comments – Fish and Wildlife Service

The FWS submits the following comments in accordance with provisions of the Fish and Wildlife Coordination Act (FWCA), the National Environmental Policy Act (NEPA) of 1969, as amended, and the Endangered Species Act of 1973, as amended. The subject project recommends deepening the Mississippi River's navigation channel to a 50-foot depth from the current depth of 45 feet from Baton Rouge to the Gulf of Mexico and to beneficially use the dredged material to create emergent wetland habitat. Construction of the Mississippi River Deepening would result in the addition of approximately 24,291 acres of fresh-intermediate marsh habitat over the 50-year project life (compared to the future without the project) in areas around the birds foot delta including the Delta National Wildlife Refuge and the Louisiana Department of Wildlife and Fisheries (LDWF) Pass a Loutre Wildlife Management Area. The GRR provides a generally adequate description of affected fish and wildlife resources and project impacts on those resources. Specific comments are provided in the following section.

Specific Comments

Page 2-57, Section 2.4.3 Aquatic and Fisheries Resources – This section describes the historic, existing, and future without conditions of the aquatic and fisheries resources. The FWS agrees with and supports NOAA's National Marine Fisheries Service (NMFS) comment that the SEIS does not provide a complete essential fish habitat (EFH) assessment as required by the Magnuson-Stevens Act for civil works projects. Please refer to the NMFS comment letter (attached) for further details.

Page 4-25, Section 4.4.3 Wildlife - This section includes the FWCA report recommendations and the US Army Corps of Engineers (USACE) responses to those recommendations as well as a brief discussion of alternative related impacts to wildlife including colonial nesting birds. USACE did not concur with four of our recommendations in the GRR; below, the FWS, in some instances, clarifies our recommendation, or after coordinating with USACE, their response, or provides additional information regarding why our recommendations should be accepted.

1. FWS Recommendation 5. The FWS recommends avoiding and/or minimizing impacts to coastal restoration efforts in the study area and continued coordination with those efforts to avoid or minimize impacts to their effectiveness. USACE responded that they do not concur because "any coastal restoration effort that is constructed outside of a partnership with USACE for the construction of an authorized federal project, is subject to the 408 (33 USC Section 408) process and must avoid impacts to existing Corps water resources projects, including this project." The FWS clarifies our recommendation in that we were referring to restoration projects completed prior to USACE use of an area for this project; especially if it is a CWPPRA project (*i.e.*, another Federal agency's project). The FWS, therefore, recommends USACE coordinate with any project's constructing agency to minimize impacts to complete or near completed Federal and State projects.

2. FWS Recommendation 8. The FWS recommended USACE monitor created wetlands over the project life. USACE did not concur saying that beneficial use of dredged material will not be monitored under this project but may be monitored under the Beneficial Use Monitoring Plan contingent upon funding. The FWS would like to reiterate and specifically recommend that the cost for minimal monitoring be included within the construction budget request. Such monitoring could ensure better beneficial use of disposed dredged material. Previous beneficial use in the Mississippi Delta has resulted in some areas failing to provide vegetated wetlands for a significant time or at all, thus possibly invalidating the FWS's and USACE's agreement on the amount of beneficial acreage to be constructed by the proposed project. The FWS is willing to work with USACE to develop cost-effective and efficient methods to monitor wetland creation sites for an appropriate length of time.

3. FWS Recommendation 9. The FWS and other resource agencies (specifically NMFS and LDWF) shall be provided an opportunity to review and submit recommendations on future detailed planning reports (e.g., Design Document Report, Engineering Document Report, *etc*.) and the draft plans and specifications on the Mississippi River Deepening Project addressed in this report. The USACE does not concur and stated

they would not provide maintenance dredging plans and specifications to non-Corps agencies for outside review other than to coordinate and consult with regard to the Endangered Species Act. The FWS would like to refer USACE to the FWCA Sections 2a, 2e, and 2f (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq*.) which states that any water resource development project with a federal nexus will coordinate with the FWS (and through the Act NMFS and the state equivalent, in this case LDWF) during all levels of planning, engineering and construction.

4. FWS recommendation 11. The FWS recommends USACE coordinate with LDWF when performing work on their Pass a Loutre Wildlife Management Area (WMA). USACE did not concur for the areas of Pass a Loutre WMA that fall within the Federal Navigation Servitude. After meeting with the USACE the FWS understands the non-federal sponsor will notify LDWF prior to work on LDWF lands, thus achieving the intent of our recommendation. We respectfully request that information be provided in the response.

The FWS supports the Mississippi River Ship Channel Gulf to Baton Rouge, LA, Project, provided the above fish and wildlife conservation recommendations are implemented concurrently with project implementation. Creating marsh through beneficial use of dredged material will provide important habitat for a variety of birds, fishes, and shellfishes. Thank you for the opportunity to provide comments on the draft GRR. If you have questions regarding FWS comments, please contact Catherine Breaux at 504-862-2689.

Comments – USGS

USGS & U. S. Army Corps of Engineers (USACE) Streamgages on the Mississippi River

The USGS operates streamgages along streams throughout the U.S. to collect water quantity and quality data for a variety of purposes. Continuous operation of USGS streamgages is essential for our stakeholders. These streamgages have permanent infrastructure and are vulnerable to disruption when nearby construction or dredging occurs in the vicinity of them. The USGS maintains 2 active streamgages within the Mississippi River Ship Channel project area in addition to 3 active streamgages maintained by the USACE.

Site Number	Station Name
07374000	Mississippi River at Baton Rouge, LA (USGS)
07374525	Mississippi River at Belle Chase, LA (USGS)
07374370	Mississippi River at Bonnet Carre Spillway (USACE)
07374510	Mississippi River at New Orleans, LA (USACE)
07374550	Mississippi River at Venice, LA (USACE)

The DEIS should list these structures as sites to be safeguarded. The USGS Louisiana Water Science Center (WSC) should be contacted and given sufficient advance notice before dredging at areas near active USGS streamgages. Efforts should be made to both preserve the streamgages and minimize impacts to the data integrity collected at those sites. If you have any questions concerning USGS comments, please contact J. Michael Norris, USGS Coordinator for Environmental Assessment Reviews, at (603) 226-7847, or at mnorris@usgs.gov.

Thank you for the opportunity to review and comment on this DEIS.

Sincerely,

Stephen R. Spencer, PhD
Regional Environmental Officer

Attachment

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
http://sero.nmfs.noaa.gov

January 4, 2016 F/SER46/BH:jk
225/389-0508

Mr. Steve W. Roberts
Regional Planning and Environment Division South
New Orleans District Environmental Branch
U.S. Army Corps of Engineers
7400 Leake Avenue
New Orleans, Louisiana 70118

Dear Mr. Roberts:

NOAA's National Marine Fisheries Service (NMFS) has received the Draft General Reevaluation Report and draft Supplemental Environmental Impact Statement (SEIS) dated November 30, 2016, on the **"Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana Project"**. The U.S. Army Corps of Engineers (USACE) proposes to deepen the Mississippi River up to a depth of 50 feet (ft) between Baton Rouge and the Gulf of Mexico, Southwest Pass. The USACE is requesting comments on the SEIS. The following is provided in accordance with provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.) and 600.920 of the Magnuson-Stevens Fishery Conservation and Management Act.

Three alternatives were evaluated by USACE. The Tentatively Selected Plan would deepen the channel to a depth of 50 ft Low Water Reference Plane (LWRP) for the three crossings located within the Port of South Louisiana and a depth of 50 ft Mean Lower Low Water (MLLW) in the Lower Mississippi River from river mile (RM) 13.4 to RM 22. Areas between Venice and the Gulf of Mexico totaling 143,264 acres (ac) are being considered for beneficial use of the dredged material. As estimated in the SEIS, the initial deepening would result in the creation of 1,462 ac of intermediate marsh. An additional 528 ac of intermediate marsh is estimated to be created annually with spoil material from maintenance dredging.

Tidal areas along the corridor and the beneficial use areas are categorized as essential fish habitat (EFH) for postlarval and/or juvenile life stages of white shrimp, brown shrimp, gray snapper, lane snapper, and red drum. The NMFS agrees with the types of EFH and federally managed species identified in Section 2.4.3 of the SEIS. Detailed information on EFH for federally managed fishery species is provided in the 2005 generic amendment of the Fishery Management Plans for the Gulf of Mexico prepared by the Gulf of Mexico Fishery Management Council. The generic amendment was prepared as required by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act; P.L. 104-297).

The NMFS has a "findings" with the New Orleans District that fulfillment of EFH coordination requirements of the Magnuson-Stevens Act for civil works projects will be completed through our review and comment on documents prepared under the requirements of the National Environmental Policy Act. Section 2.4.3 of the SEIS is not a complete EFH Assessment. An EFH Assessment must include: (1) a description of the proposed action, (2) an analysis of the effects, including cumulative effects, of the action on EFH, the managed species, and associated species by life history stage, (3) the Federal agency's views regarding the effects of the action on EFH, and (4) proposed mitigation, if applicable. If appropriate, the assessment should also include the results of an on-site inspection, the views of recognized experts on the habitat or species affected, a literature review, an analysis of alternatives to the proposed action, and any other relevant information. A complete EFH Assessment should be included in the final SEIS.

The NMFS provided comments to the U.S. Fish and Wildlife Service's (FWS) draft Fish and Wildlife Coordination Act Report (CAR) dated October 11, 2016. These comments were incorporated in the final CAR dated November 8, 2016; however, it does not appear that those comments were incorporated into the draft SEIS. Section 6.9 only acknowledges the draft report and section 6.10 dealing with EFH consultation does not address the comments provide in the final CAR. The NMFS continues to recommend the USACE evaluate options using dredged material to enhance sediment loads of proposed diversion projects or existing breaches in the vicinity of Mardi Gras Pass and Fort St. Phillip. Additionally, NMFS recommends the USACE expand the delineated beneficial use area to include open water adjacent to Spanish Pass.

While NMFS supports the beneficial use of dredged material to create marsh, it should be acknowledged in the Final EIS that placement of sediment could adversely impact EFH if elevations of the dredged material exceed intertidal elevations. To ensure such impacts do not occur, the Record of Decision should commit the USACE to coordinate with NMFS regarding the placement of fill material in each beneficial use area. Additionally, there should be a commitment to undertake appropriate engineering and design assessments to ensure sediment elevations, after compaction and dewatering, would be within tidal range. Section 4.6 acknowledges placement of pipe to pump sediment to the beneficial use sites will temporarily impact salt marsh. The NMFS recommends the final EIS emphasize the need to site pipe and staging areas to avoid salt marsh to the maximum extent practicable. The Final EIS also should include a commitment to breach containment dikes within 3 years.

We appreciate your consideration of our comments and request notification once the final SEIS is published. If you wish to discuss this project further or have questions concerning our recommendations, please contact Brandon Howard at (225) 389-0508, extension 207.

Sincerely,

Virginia M. Fay

Virginia M. Fay
Assistant Regional Administrator
Habitat Conservation Division

c:
FWS, C Breaux
F/SER46, Swafford
F/SER4, Dale, Sramek
Files

Annex 26. Clean Air Act Air Quality Conformity Coordination.

Mississippi River, Baton Rouge To The Gulf
Deep Draft Crossings
Smoke Bend
Ascension Parish, LA

Table 1
Combustible Emissions

Assumptions for Combustible Emissions					
Type of Construction Equipment	Number of Units	HP Rated	Hrs/day	Days/yr	Total hp-hrs
Dredge Hurley	3	3334	21	3	630126

Table 2
Emission Factors

Type of Construction Equipment	VOC g/hp-hr	NOx g/hp-hr	VOC lbs/hp-hr	NOx lbs/hp-hr
Dredge Hurley	0.286	6.153	0.0006	0.0135

Convert grams to pounds: (g)x(.0022) = lbs

Emission Factors derived from the EPA's Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling -- Compression-Ignition, July 2010

Table 3
Annual VOC and NOx Emissions Totals

Total Calculated Emissions		
Type of Construction Equipment	VOC tons/yr	NOx tons/yr
Dredge Hurley	0.189	4.253
TOTALS	0.189	4.253

Emissions Formula: (lbs/hp-hr)x(hp)x(hr)x(days)x(# of units)/2000 = Tons/yr

NOTE: The listed equipment is the type and number of equipment that may typically be used at a river dredging project.

Mississippi River, Baton Rouge To The Gulf
Deep Draft Crossings
Philadelphia
Ascension Parish, LA

Table 1
Combustible Emissions

Assumptions for Combustible Emissions					
Type of Construction Equipment	Number of Units	HP Rated	Hrs/day	Days/yr	Total hp-hrs
Dredge Hurley	3	3334	21	8	1680336

Table 2
Emission Factors

Type of Construction Equipment	VOC g/hp-hr	NOx g/hp-hr	VOC lbs/hp-hr	NOx lbs/hp-hr
Dredge Hurley	0.286	6.153	0.0006	0.0135

Convert grams to pounds: (g)x(.0022) = lbs

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Table 3
Annual VOC and NOx Emissions Totals

Total Calculated Emissions		
Type of Construction Equipment	VOC tons/yr	NOx tons/yr
Dredge Hurley	0.504	11.342
TOTALS	0.504	11.342

Emissions Formula: (lbs/hp-hr)x(hp)x(hr)x(days)x(# of units)/2000 = Tons/yr

NOTE: The listed equipment is the type and number of equipment that may typically be used at a river dredging project.

Mississippi River, Baton Rouge To The Gulf
Deep Draft Crossings
Alhambra
Iberville Parish, LA

Table 1
Combustible Emissions

Assumptions for Combustible Emissions					
Type of Construction Equipment	Number of Units	HP Rated	Hrs/day	Days/yr	Total hp-hrs
Dredge Hurley	3	3334	21	10	2100420

Table 2
Emission Factors

Type of Construction Equipment	VOC g/hp-hr	NOx g/hp-hr	VOC lbs/hp-hr	NOx lbs/hp-hr
Dredge Hurley	0.286	6.153	0.0006	0.0135

Convert grams to pounds: (g)x(.0022) = lbs

Emission Factors derived from the EPA's Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling -- Compression-Ignition, July 2010

Table 3
Annual VOC and NOx Emissions Totals

Total Calculated Emissions		
Type of Construction Equipment	VOC tons/yr	NOx tons/yr
Dredge Hurley	0.63	14.178
TOTALS	0.630	14.178

Emissions Formula: (lbs/hp-hr)x(hp)x(hr)x(days)x(# of units)/2000 = Tons/yr

NOTE: The listed equipment is the type and number of equipment that may typically be used at a river dredging project.

Mississippi River, Baton Rouge To The Gulf
Deep Draft Crossings
Bayou Goula
Iberville Parish, LA

Table 1
Combustible Emissions

Assumptions for Combustible Emissions					
Type of Construction Equipment	Number of Units	HP Rated	Hrs/day	Days/yr	Total hp-hrs
Dredge Hurley	3	3334	21	3	630126

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Emission Factors

Type of Construction Equipment	VOC g/hp-hr	NOx g/hp-hr	VOC lbs/hp-hr	NOx lbs/hp-hr
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Table 3
Annual VOC and NOx Emissions Totals

Total Calculated Emissions		
Type of Construction Equipment	VOC tons/yr	NOx tons/yr
Dredge Hurley	0.189	4.253
TOTALS	0.189	4.253

Emissions Formula: (lbs/hp-hr)x(hp)x(hr)x(days)x(# of units)/2000 = Tons/yr

NOTE: The listed equipment is the type and number of equipment that may typically be used at a river dredging project.

Mississippi River, Baton Rouge To The Gulf
Deep Draft Crossings
Granada
Iberville Parish, LA

Table 1

Combustible Emissions

Assumptions for Combustible Emissions					
Type of Construction Equipment	Number of Units	HP Rated	Hrs/day	Days/yr	Total hp-hrs
Dredge Hurley	3	3334	21	6	1260252

Table 2

Emission Factors

Type of Construction Equipment	VOC g/hp-hr	NOx g/hp-hr	VOC lbs/hp-hr	NOx lbs/hp-hr
Dredge Hurley	0.286	6.153	0.0006	0.0135

Convert grams to pounds: (g)x(.0022) = lbs

Emission Factors derived from the EPA's Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling -- Compression-Ignition, July 2010

Table 3

Annual VOC and NOx Emissions Totals

Total Calculated Emissions		
Type of Construction Equipment	VOC tons/yr	NOx tons/yr
Dredge Hurley	0.378	8.507
TOTALS	0.378	8.507

Emissions Formula: (lbs/hp-hr)x(hp)x(hr)x(days)x(# of units)/2000 = Tons/yr

NOTE: The listed equipment is the type and number of equipment that may typically be used at a river dredging project.

Mississippi River, Baton Rouge To The Gulf
Deep Draft Crossings
Medora
Iberville Parish, LA

Table 1
Combustible Emissions

Assumptions for Combustible Emissions					
Type of Construction Equipment	Number of Units	HP Rated	Hrs/day	Days/yr	Total hp-hrs
Dredge Hurley	3	3334	21	23	4830966

Table 2
Emission Factors

Type of Construction Equipment	VOC g/hp-hr	NOx g/hp-hr	VOC lbs/hp-hr	NOx lbs/hp-hr
Dredge Hurley	0.286	6.153	0.0006	0.0135

Convert grams to pounds: (g)x(.0022) = lbs

Emission Factors derived from the EPA's Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling -- Compression-Ignition, July 2010

Table 3
Annual VOC and NOx Emissions Totals

Total Calculated Emissions		
Type of Construction Equipment	VOC tons/yr	NOx tons/yr
Dredge Hurley	1.449	32.609
TOTALS	1.449	32.609

Emissions Formula: (lbs/hp-hr)x(hp)x(hr)x(days)x(# of units)/2000 = Tons/yr

NOTE: The listed equipment is the type and number of equipment that may typically be used at a river dredging project.

Mississippi River, Baton Rouge To The Gulf
Deep Draft Crossings
Sardine
East and West Baton Rouge Parishes

Table 1
Combustible Emissions

Assumptions for Combustible Emissions					
Type of Construction Equipment	Number of Units	HP Rated	Hrs/day	Days/yr	Total hp-hrs
Dredge Hurley	3	3334	21	10	2100420

Table 2
Emission Factors

Type of Construction Equipment	VOC g/hp-hr	NOx g/hp-hr	VOC lbs/hp-hr	NOx lbs/hp-hr
Dredge Hurley	0.286	6.153	0.0006	0.0135

Convert grams to pounds: (g)x(.0022) = lbs

Emission Factors derived from the EPA's Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling -- Compression-Ignition, July 2010

Table 3
Annual VOC and NOx Emissions Totals

Total Calculated Emissions		
Type of Construction Equipment	VOC tons/yr	NOx tons/yr
Dredge Hurley	0.630	14.178
TOTALS	0.630	14.178

Emissions Formula: (lbs/hp-hr)x(hp)x(hr)x(days)x(# of units)/2000 = Tons/yr

NOTE: The listed equipment is the type and number of equipment that may typically be used at a river dredging project.

Mississippi River, Baton Rouge To The Gulf
Deep Draft Crossings
Red Eye
East and West Baton Rouge Parishes, LA

Table 1
Combustible Emissions

Assumptions for Combustible Emissions					
Type of Construction Equipment	Number of Units	HP Rated	Hrs/day	Days/yr	Total hp-hrs
Dredge Hurley	3	3334	21	51	10712142

Table 2
Emission Factors

Type of Construction Equipment	VOC g/hp-hr	NOx g/hp-hr	VOC lbs/hp-hr	NOx lbs/hp-hr
Dredge Hurley	0.286	6.153	0.0006	0.0135

Convert grams to pounds: (g)x(.0022) = lbs

Emission Factors derived from the EPA's Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling -- Compression-Ignition, July 2010

Table 3
Annual VOC and NOx Emissions Totals

Total Calculated Emissions		
Type of Construction Equipment	VOC tons/yr	NOx tons/yr
Dredge Hurley	3.214	72.307
TOTALS	3.214	72.307

Emissions Formula: (lbs/hp-hr)x(hp)x(hr)x(days)x(# of units)/2000 = Tons/yr

NOTE: The listed equipment is the type and number of equipment that may typically be used at a river dredging project.

Mississippi River, Baton Rouge To The Gulf
Deep Draft Crossings
Baton Rouge Front
East and West Baton Rouge Parishes, LA

Table 1
Combustible Emissions

Assumptions for Combustible Emissions					
Type of Construction Equipment	Number of Units	HP Rated	Hrs/day	Days/yr	Total hp-hrs
Dredge Hurley	3	3334	21	44	9241848

Table 2
Emission Factors

Type of Construction Equipment	VOC g/hp-hr	NOx g/hp-hr	VOC lbs/hp-hr	NOx lbs/hp-hr
Dredge Hurley	0.286	6.153	0.0006	0.0135

Convert grams to pounds: (g)x(.0022) = lbs

Emission Factors derived from the EPA's Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling -- Compression-Ignition, July 2010

Table 3
Annual VOC and NOx Emissions Totals

Total Calculated Emissions		
Type of Construction Equipment	VOC tons/yr	NOx tons/yr
Dredge Hurley	2.773	62.382
TOTALS	2.773	62.382

Emissions Formula: (lbs/hp-hr)x(hp)x(hr)x(days)x(# of units)/2000 = Tons/yr

NOTE: The listed equipment is the type and number of equipment that may typically be used at a river dredging project.

Vititoe, Jennifer M CIV USARMY CEMVN (US)

From: Musso, Joseph R CIV USARMY CEMVN (US)
Sent: Monday, December 11, 2017 9:19 AM
To: Vititoe, Jennifer M CIV USARMY CEMVN (US)
Subject: FW: AQ Conform Determ for Mississippi River Dredging project (UNCLASSIFIED)

Classification: UNCLASSIFIED

CLASSIFICATION: UNCLASSIFIED

FYI

-----Original Message-----
From: Yasoob Zia [mailto:Yasoob.Zia@LA.GOV]
Sent: Wednesday, August 23, 2017 1:32 PM
To: Musso, Joseph R CIV USARMY CEMVN (US) <Joseph.R.Musso@usace.army.mil>
Cc: Linda (Brown) Hardy <Linda.Hardy@la.gov>
Subject: [Non-DoD Source] RE: AQ Conform Determ for Mississippi River Dredging project (UNCLASSIFIED)

As per our conversation, I cannot approve this proposal as presented because it may result in exceedances of the de minimis levels of 100 tons per year of NOx and VOC. I would need a more specific schedule on what projects and when they will be conducted to make sure that are under the de minimis levels requirements. If you need additional information, please let me know. Thanks

-----Original Message-----
From: Yasoob Zia
Sent: Friday, August 18, 2017 1:32 PM
To: 'Musso, Joseph R CIV USARMY CEMVN (US)' <Joseph.R.Musso@usace.army.mil>
Cc: Linda (Brown) Hardy <Linda.Hardy@la.gov>
Subject: RE: AQ Conform Determ for Mississippi River Dredging project (UNCLASSIFIED)

Mr. Musso,

Please call me at 225 219-3586 to discuss these projects. I tried calling but did not get an answer.

Thanks

-----Original Message-----
From: Musso, Joseph R CIV USARMY CEMVN (US) [mailto:Joseph.R.Musso@usace.army.mil]
Sent: Thursday, August 10, 2017 8:47 AM
To: Linda (Brown) Hardy <Linda.Hardy@la.gov>
Cc: Yasoob Zia <Yasoob.Zia@LA.GOV>
Subject: AQ Conform Determ for Mississippi River Dredging project (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Ms. Hardy,

Please see the attached conformity determination for the Mississippi River Deep Draft dredging project that the Corps of Engineers is proposing construct the Baton Rouge non-attainment/maintenance area. The project basically consists of deepening the existing crossings from 45 feet to 50 feet.

Please note that this entire project will not built in one year but will be done over several years. The emissions data that is attached is what would be generated by the time the project is completed. It has not yet been determined in what order the crossing/dredging areas will be constructed/dredged, however, the Corps will dredge only two or three crossings per year in a phased approach in order to keep the emissions from the project below the de minimis levels of 100 tons per year of NOx and VOC.

A hard copy of the conformity determination will be mailed today.

Thank you for your assistance. If you have any questions, please contact me at your convenience.

Joseph Musso
Environmental Resource Specialist
Regional Planning And Environmental Division, South U.S. Army Corps of Engineers New Orleans District New Orleans, LA
(504) 862-2280
CLASSIFICATION: UNCLASSIFIED

CLASSIFICATION: UNCLASSIFIED