APPENDIX C: TABLES

Table 1.1 Drainage areas tabulations for the Big Sunflower River, Little Sunflower River, Deer Creek, and Steele Bayou.

Drainage Area	**Stream (square mile)**
Big Sunflower River	2,832
Little Sunflower River	309
Deer Creek	200
Steele Bayou	752
Total	**4,093**

Table 3.1 Evaluation Criteria.

Type of Criteria	**Description of Criteria**
Public Involvement	Comments or suggestions from the public.
Technical	The existing Yazoo Backwater levee and the Steele Bayou and Little Sunflower drainage structures and connecting channels will continue under current operation.
Technical	The rate of flows from the Steele Bayou and Sunflower River watersheds enter into the Backwater area's ponding area may be changed slightly if the conveyance capacity of the channels is modified by other projects; however, the same volume of flow from a storm event will arrive in the Backwater area.
Technical	During the nonflood season, the Muddy Bayou Control Structure will continue to be operated to provide the water levels in Eagle Lake established in cooperation with MDWFP.
Technical	The objective is to keep flood surfaces below elevation 96.0 feet, NGVD, so as to alleviate the need for opening the gates on the Muddy Bayou Control Structure and allowing Eagle Lake to flood. This would prevent the overtopping of Highway 465 and the inundation of 107 residential and nonresidential structures at Eagle Lake.
Technical	Alternatives developed should be consistent with provisions of the National Flood Insurance Program.
Technical	The Yazoo Backwater Area project (1982) will be reformulated to identify, display, and evaluate alternatives which consider: (1) Greater level of flood protection for the structures located in the Yazoo Backwater Study Area. (2) Reduced level of agricultural intensification. (3) Reduced adverse impacts on the environment.
Technical	The pump-on elevations utilized in the study were initially based on the 5-foot elevation contour intervals on U.S. Geological Survey (USGS) quadrangle maps (80.0, 85.0, and 90.0 feet, NGVD). Refinements to the elevations were later made utilizing satellite imagery and river gage data to depict elevations of environmental significance as determined by FWS, EPA, and the Vicksburg District. The following pump-on elevation criteria were used in the various alternative arrays: (1) Pump on at elevation 80.0 feet, NGVD, was the damage elevation used in the 1982 Reevaluation report. Available contour data from USGS quadrangle maps. Elevation of water to be held during crop season 1 March through 1 December in 1982 Reevaluation Report. (2) Pump on at elevation 85.0 feet, NGVD, was

	based on the available contour data from the USGS quadrangle maps. Also, elevation that water would be allowed to rise to during winter waterfowl season 1 December through 1 March in1982 Reevaluation report. (3) Pump on at elevation 87.0 feet, NGVD, is the base 1-year frequency flood elevation at the Steele Bayou structure. (4) Pump on at elevation 88.5 feet, NGVD, represents the 5 percent duration wetland elevation at the Steele Bayou structure. (5) Pump on at elevation 90.0 feet, NGVD, based on the available contour data from USGS quadrangle maps. (6) Pump on at elevation 91.0 feet, NGVD, is the base 2-year frequency flood elevation at the Steele Bayou structure. (7) Pump on at elevation 100.3 feet, NGVD, is the base 100-year frequency flood elevation at the Steele Bayou structure.
Economic	The benefits and costs should be expressed in comparable terms as fully as possible. All evaluations of alternatives were based on October 2005 prices, an interest rate of 5-1/8 percent, and a 50-year period of analysis for flood control alternatives.
Economic	Each alternative considered in detail must be "justified" as total beneficial effects (monetary and nonmonetary) are equal to or exceed the total adverse effects (monetary and nonmonetary) associated with the objectives.
Economic	The maximization of net benefits should be determined in sizing a project; however, environmental quality and intangible considerations could dictate a project larger or smaller in size.
Economic	Project benefits should be based on analysis of with- and without-project conditions, using methodology described in USACE regulations and policies.
Economic	Benefit categories considered include both structural and nonstructural benefits. The structural benefits include agricultural crop and noncrop, structures, automobiles, roads, flood insurance, and emergency. The nonstructural benefits include the aforementioned crop and noncrop categories, but also include timber values and hunting leases.
Environmental	Alternatives should be formulated to the maximum extent practicable to avoid and minimize impacts to environmental resources.
Environmental	The environmental impacts of any proposed action should be evaluated. Any adverse environmental impacts, which could not be avoided, would be identified for compensation.
Environmental	Unavoidable net environmental impacts will be mitigated concurrently with construction at 100 percent Federal cost.
Environmental	Environmental losses that have remained from construction of the Yazoo Area and Satartia Area Backwater Levee Projects and the previous construction at the pump station site will be included in the Yazoo Backwater reformulation effort.
Environmental	Environmental values are the same whether the land is acquired in fee title or encumbered with a perpetual conservation easement.
Socioeconomic	Laws and regulations require that consideration be given to evaluating and preserving historical, archeological, and other cultural resources.
Socioeconomic	Consideration should be given to safety, health, community cohesion, and social well-being.
Socioeconomic	Displacement of people by the floods and/or the project should be

	minimized to the extent possible. This includes displacement as a result of a nonstructural land use change.
Socioeconomic	Improvement of leisure activities and public facilities should be evaluated.
Socioeconomic	Effects of a project on regional development, including income, employment, business and industrial activity, population distribution, and desirable community growth, should be considered.
Socioeconomic	Executive Order 12898, 11 February 1994, “Federal Actions to Address Environmental Justice and Minority Populations and Low Income Populations,” requires that Federal agencies consider and address the adverse environmental effects of proposed Federal projects on minority and low-income communities. In response to this directive, an analysis of environmental justice considerations is included in the Environmental Justice Appendix.
Socioeconomic	General public acceptance of potential alternatives should be determined by coordination with interested Federal and non-Federal agencies, various groups, and individuals by means of public meetings, field inspections, informal meetings, letters, and other public involvement procedures.
Socioeconomic	The alternatives should be implementable considering the present and potential constraints of the local sponsoring agency in regard to its structure, function, relationships, and associations in the study area.

Table 3.2 Evaluation Criteria (Proposed Plan).

Type of Criteria	Description of Criteria	Rating
Public Involvement	Comments or suggestions from the public.	
Technical	The existing Yazoo Backwater levee and the Steele Bayou and Little Sunflower drainage structures and connecting channels will continue under current operation.	
Technical	The rate of flows from the Steele Bayou and Sunflower River watersheds enter into the Backwater area's ponding area may be changed slightly if the conveyance capacity of the channels is modified by other projects; however, the same volume of flow from a storm event will arrive in the Backwater area.	
Technical	During the nonflood season, the Muddy Bayou Control Structure will continue to be operated to provide the water levels in Eagle Lake established in cooperation with MDWFP.	
Technical	The objective is to keep flood surfaces below elevation 96.0 feet, NGVD, so as to alleviate the need for opening the gates on the Muddy Bayou Control Structure and allowing Eagle Lake to flood. This would prevent the overtopping of Highway 465 and the inundation of 107 residential and nonresidential structures at Eagle Lake.	
Technical	Alternatives developed should be consistent with provisions of the National Flood Insurance Program.	
Technical	The Yazoo Backwater Area project (1982) will be reformulated to identify, display, and evaluate alternatives which consider: (1) Greater level of flood protection for the structures located in the Yazoo Backwater Study Area. (2) Reduced level of agricultural intensification. (3) Reduced adverse impacts on the environment.	
Technical	The pump-on elevations utilized in the study were initially based on the 5-foot elevation contour intervals on U.S. Geological Survey (USGS) quadrangle maps (80.0, 85.0, and 90.0 feet, NGVD). Refinements to the elevations were later made utilizing satellite imagery and river gage data to depict elevations of environmental significance as determined by FWS, EPA, and the Vicksburg District. The following pump-on elevation criteria were used in the various alternative arrays: (1) Pump on at elevation 80.0 feet, NGVD, was the damage elevation used in the 1982 Reevaluation report. Available contour data from USGS quadrangle maps. Elevation of water to be held during crop season 1 March through 1 December in 1982 Reevaluation Report. (2) Pump on at elevation 85.0 feet, NGVD, was based on the available contour data from the USGS quadrangle maps. Also, elevation that water would be allowed to rise to during winter waterfowl season 1 December through 1 March in1982 Reevaluation report. (3) Pump on at elevation 87.0 feet, NGVD, is the base 1-year frequency flood elevation at the Steele Bayou structure. (4) Pump on at elevation 88.5 feet, NGVD, represents the 5 percent duration wetland elevation at the Steele Bayou structure. (5) Pump on at elevation 90.0 feet, NGVD, based on the available contour data from USGS	

	quadrangle maps. (6) Pump on at elevation 91.0 feet, NGVD, is the base 2-year frequency flood elevation at the Steele Bayou structure. (7) Pump on at elevation 100.3 feet, NGVD, is the base 100-year frequency flood elevation at the Steele Bayou structure.	
Economic	The benefits and costs should be expressed in comparable terms as fully as possible. All evaluations of alternatives were based on October 2005 prices, an interest rate of 5-1/8 percent, and a 50-year period of analysis for flood control alternatives.	
Economic	Each alternative considered in detail must be "justified" as total beneficial effects (monetary and nonmonetary) are equal to or exceed the total adverse effects (monetary and nonmonetary) associated with the objectives.	
Economic	The maximization of net benefits should be determined in sizing a project; however, environmental quality and intangible considerations could dictate a project larger or smaller in size.	
Economic	Project benefits should be based on analysis of with- and without-project conditions, using methodology described in USACE regulations and policies.	
Economic	Benefit categories considered include both structural and nonstructural benefits. The structural benefits include agricultural crop and noncrop, structures, automobiles, roads, flood insurance, and emergency. The nonstructural benefits include the aforementioned crop and noncrop categories, but also include timber values and hunting leases.	
Environmental	Alternatives should be formulated to the maximum extent practicable to avoid and minimize impacts to environmental resources.	
Environmental	The environmental impacts of any proposed action should be evaluated. Any adverse environmental impacts, which could not be avoided, would be identified for compensation.	
Environmental	Unavoidable net environmental impacts will be mitigated concurrently with construction at 100 percent Federal cost.	
Environmental	Environmental losses that have remained from construction of the Yazoo Area and Satartia Area Backwater Levee Projects and the previous construction at the pump station site will be included in the Yazoo Backwater reformulation effort.	
Environmental	Environmental values are the same whether the land is acquired in fee title or encumbered with a perpetual conservation easement.	
Socioeconomic	Laws and regulations require that consideration be given to evaluating and preserving historical, archeological, and other cultural resources.	
Socioeconomic	Consideration should be given to safety, health, community cohesion, and social well-being.	
Socioeconomic	Displacement of people by the floods and/or the project should be minimized to the extent possible. This includes displacement as a result of a nonstructural land use change.	
Socioeconomic	Improvement of leisure activities and public facilities should be evaluated.	
Socioeconomic	Effects of a project on regional development, including income, employment, business and industrial activity, population distribution,	

	and desirable community growth, should be considered.	
Socioeconomic	Executive Order 12898, 11 February 1994, “Federal Actions to Address Environmental Justice and Minority Populations and Low Income Populations,” requires that Federal agencies consider and address the adverse environmental effects of proposed Federal projects on minority and low-income communities. In response to this directive, an analysis of environmental justice considerations is included in the Environmental Justice Appendix.	
Socioeconomic	General public acceptance of potential alternatives should be determined by coordination with interested Federal and non-Federal agencies, various groups, and individuals by means of public meetings, field inspections, informal meetings, letters, and other public involvement procedures.	
Socioeconomic	The alternatives should be implementable considering the present and potential constraints of the local sponsoring agency in regard to its structure, function, relationships, and associations in the study area.	

Table 4.1 Relevant Resources and Their Institutional, Technical, and Public Importance.

Resource	Institutionally Important	Technically Important	Publicly Important
Wetlands	Clean Water Act of 1977, as amended; Executive Order 11990 of 1977, Protection of Wetlands; Coastal Zone Management Act of 1972, as amended; and the Estuary Protection Act of 1968., EO 11988, and Fish and Wildlife Coordination Act.	They provide necessary habitat for various species of plants, fish, and wildlife; they serve as ground water recharge areas; they provide storage areas for storm and flood waters; they serve as natural water filtration areas; they provide protection from wave action, erosion, and storm damage; and they provide various consumptive and non-consumptive recreational opportunities.	The high value the public places on the functions and values that wetlands provide. Environmental organizations and the public support the preservation of marshes.
Bottomland Hardwood Forest	Section 906 of the Water resources Development Act of 1986 and the Fish and Wildlife Coordination Act of 1958, as amended.	Provides necessary habitat for a variety of plant, fish, and wildlife species; it often provides a variety of wetland functions and values; it is an important source of lumber and other commercial forest products; and it provides various consumptive and non-consumptive recreational opportunities.	The high priority that the public places on its esthetic, recreational, and commercial value.
Aquatic Resources/ Fisheries	Fish and Wildlife Coordination Act of 1958, as amended; Clean Water Act of 1977, as amended; Coastal Zone Management Act of 1972, as amended; and the Estuary Protection Act of 1968.	They are a critical element of many valuable freshwater and marine habitats; they are an indicator of the health of the various freshwater and marine habitats; and many species are important commercial resources.	The high priority that the public places on their esthetic, recreational, and commercial value.
Soils and Water Bottoms	Fish and Wildlife Coordination Act, Marine Protection, Research, and Sanctuaries Act of 1990	State and Federal agencies recognize the value of water bottoms for the production of benthic organisms.	Environmental organizations and the public support the preservation of water quality and fishery resources.
Essential Fish Habitat (EFH)	Magnuson-Stevens Fishery Conservation and Management Act of 1996, Public Law 104-297	Federal and state agencies recognize the value of EFH. The Act states, EFH is "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity."	Public places a high value on seafood and the recreational and commercial opportunities EFH provides.
Wildlife	Fish and Wildlife Coordination Act of 1958, as amended and the Migratory Bird Treaty Act of 1918	They are a critical element of many valuable aquatic and terrestrial habitats; they are an indicator of the health of various aquatic and terrestrial habitats; and many species are important commercial resources.	The high priority that the public places on their esthetic, recreational, and commercial value.
Threatened and Endangered Species	The Endangered Species Act of 1973, as amended; the Marine Mammal Protection Act of 1972; and the Bald Eagle Protection Act of 1940.	USACE, USFWS, NMFS, NRCS, EPA, and MDWFP cooperate to protect these species. The status of such species provides an indication of the overall health of an ecosystem.	The public supports the preservation of rare or declining species and their habitats.
Cultural Resources	National Historic Preservation Act of 1966, as amended; the Native American Graves Protection and Repatriation Act of 1990; and the Archeological Resources Protection Act of 1979	State and Federal agencies document and protect sites. Their association or linkage to past events, to historically important persons, and to design and construction values; and for their ability to yield important information about prehistory and history.	Preservation groups and private individuals support protection and enhancement of historical resources.
Recreation Resources	Federal Water Project Recreation Act of 1965 as amended and Land and Water Conservation Fund Act of 1965 as amended	Provide high economic value of the local, state, and national economies.	Public makes high demands on recreational areas. There is a high value that the public places on fishing, hunting, and boating, as measured by the large number of fishing and hunting licenses sold in Mississippi; and the large per-capita number of recreational boat registrations in Mississippi.
Aesthetics	USACE ER 1105-2-100, and National Environmental Policy Act of 1969, the Coastal Barrier Resources Act of 1990, Louisiana's National and Scenic Rivers Act of 1988, and the National and Local Scenic Byway Program.	Visual accessibility to unique combinations of geological, botanical, and cultural features that may be an asset to a study area. State and Federal agencies recognize the value of beaches and shore dunes.	Environmental organizations and the public support the preservation of natural pleasing vistas.
Air Quality	Clean Air Act of 1963, Louisiana Environmental Quality Act of 1983.	State and Federal agencies recognize the status of ambient air quality in relation to the NAAQS.	Virtually all citizens express a desire for clean air.

Resource	Institutionally Important	Technically Important	Publicly Important
Water Quality	Clean Water Act of 1977, Fish and Wildlife Coordination Act, Coastal Zone Mgt Act of 1972, and Louisiana State & Local Coastal Resources Act of 1978.	USACE, USFWS, NMFS, NRCS, EPA, and State DNR and wildlife/fishery offices recognize value of fisheries and good water quality and the national and state standards established to assess water quality.	Environmental organizations and the public support the preservation of water quality and fishery resources and the desire for clean drinking water.
Prime and unique Farmland	Farmland Protection Policy Act	State and Federal agencies recognize the value of farmland for the production of food, feed and forage.	Public places a high value on food and feed production.
Noise Quality	USACE ER 1105-2-100, and National Environmental Policy Act of 1969, Noise Control Act of 1972, Quiet Communities Act of 1978	Unwanted noise has an adverse effect on human beings and their environment, including land, structures, and domestic animals and can also disturb natural wildlife and ecological systems.	The EPA must promote an environment for all Americans free from noise that jeopardizes their health and welfare.
Socio-economics	USACE ER 1105-2-100, and National Environmental Policy Act of 1969	When an environmental document is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental document will discuss all of these effects on the human environment.	Government programs, policies and projects can cause potentially significant changes in many features of the socioeconomic environment.
Navigation	Rivers and Harbors Act of 1899 and River and Harbor Flood Control Act of 1970 (PL 91-611).	The Corps provides safe, reliable, efficient, and environmentally sustainable waterborne transportation systems (channels, harbors, and waterways) for movement of commerce, national security needs, and recreation.	Navigation concerns affect area economy and are of significant interest to community.

Table 4.2 Cultural Timeline for the Yazoo Study Area.

Historic	Modern Era (post A.D. 1941)	
	Pre World War II (A.D. 1900-1941)	
	Reconstruction and Recovery (A.D. 1865-1900)	
	Civil War (A.D. 1861-1865)	
	Antebellum (A.D. 1818-1860)	
	Colonial/Territorial (A.D. 1680-1817)	
	Protohistoric (A.D. 1550-1680)	*Plaquemine (A.D. 1200-1700)*
Prehistoric	Mississippian (A.D. 1000-1550)	*Plaquemine (A.D. 1200-1700)*
	Late Woodland (A.D. 500-1000)	*Miller III Culture (A.D. 700-1100)*
		Coles Creek Culture (A.D. 600-1050)
		Plum Bayou Culture (A.D. 600-1000)
		Troyville Culture (A.D. 400-1100)
		Baytown Culture (A.D. 300-700)
		Miller II Culture (A.D. 300-700)
	Middle Woodland (100 B.C.-A.D. 400/450)	*Miller I Culture (A.D. 100 B.C.-A.D. 200)*
		Marksville Culture (200 B.C.-A.D. 400)
	Early Woodland (500-0 B.C.)	*Tchefuncte Culture (600-200 B.C.)*
	Late Archaic (2000-500 B.C.)	*Poverty Point Culture (1730-1250 B.C.)*
		Jaketown Culture (1800-1000 B.C.)
	Middle Archaic (6000-2000 B.C.)	
	Early Archaic (8000-6000 B.C.)	
	PaleoIndian (10,000-8000 B.C.)	

Table 4.3 Summary of Archaeological Sites within the Yazoo Study Area.

Yazoo Backwater Study Area			
County	**Eligible/Register-Listed Sites**	**Unevaluated Sites**	**No. Sites At/Below 87-Ft. Elevation**
Humphreys	26	52	0
Issaquena	29	28	5
Sharkey	39	38	1
Warren	2	2	0
Washington	23	102	1
Yazoo	5	40	1
TOTALS	**124**	**262**	**8**
County	**Ineligible Sites**	**Total No. Sites**	**Average Site Elevation**
Humphreys	44	122	104.6
Issaquena	53	110	98.8
Sharkey	108	185	99.0
Warren	2	6	95.5
Washington	105	230	107.5
Yazoo	51	96	96.4
TOTALS	**363**	**749**	**100.3**

Table 4.4 Summary of Archaeological Sites within the Background Search Radius of the Borrow Area, Pump, and Supplemental Low Flow Groundwater Well Locations.

Borrow Area, Pump, and Supplemental Low Flow Relief Wells			
County	**No. Sites At/Below 87-Ft. Elevation**	**Eligible/Register-Listed Sites**	**Unevaluated Sites**
Bolivar	0	24	10
Coahoma	0	11	6
Issaquena	1	1	0
Warren	0	4	7
Washington	0	5	4
TOTALS	**1**	**45**	**27**
County	**Average Site Elevation**	**Ineligible Sites**	**Total No. Sites**
Bolivar	130.0	28	62
Coahoma	170.0	4	21
Issaquena	85.0	0	1
Warren	99.8	0	11
Washington	105.0	15	24
TOTALS	**118.0**	**47**	**119**

Table 4.5 Summary of Historic Properties within the Yazoo Study Area.

Yazoo Backwater Study Area			
County	**Historic Districts**	**Register-Listed Properties**	**Mississippi Landmarks**
Humphreys	0	1	3
Issaquena	0	0	0
Sharkey	0	1	1
Warren	0	0	0
Washington	1	17	0
Yazoo	0	0	0
TOTALS	**1**	**19**	**4**
County	**Unevaluated Properties**	**Non-Extant**	**Total No. Properties**
Humphreys	16	15	35
Issaquena	27	5	32
Sharkey	109	27	138
Warren	1	6	7
Washington	61	41	120
Yazoo	16	10	26
TOTALS	**230**	**104**	**358**

Table 4.6 Summary of Historic Properties within the Background Search Radius of the Borrow Area, Pump, and Supplemental Low Flow Groundwater Well Locations.

Borrow Area, Pump, and Supplemental Low Flow Relief Wells			
County	**Historic Districts**	**Register-Listed Properties**	**Mississippi Landmarks**
Bolivar	0	1	0
Coahoma	0	1	0
Issaquena	0	0	0
Warren	0	2	0
Washington	0	1	0
TOTALS	**0**	**5**	**0**
County	**Unevaluated Properties**	**Non-Extant**	**Total No. Properties**
Bolivar	19	6	26
Coahoma	2	8	11
Issaquena	0	0	0
Warren	4	3	9
Washington	12	1	14
TOTALS	**37**	**18**	**60**

Table 4.7 Listing of Known Archaeological Sites Impacted by 1-, 2-, 5-, 10-, 20-, 50-, and 100-Year Flood Events Based Upon No Action ("Without") and Proposed Plan ("With").

Flood Frequency	Total No. Sites	Eligible/Listed Sites	Unevaluated Sites	Ineligible Sites
1-Year Without	312 (41.5% of total)	41 (36.9% of total)	114 (43.5% of total)	153 (42.2% of total)
1-Year With	305 (40.5% of total)	39 (35.1% of total)	111 (42.4% of total)	151 (41.6% of total)
2-Year Without	314 (41.8% of total)	43 (38.7% of total)	114 (43.5% of total)	153 (42.2% of total)
2-Year With	305 (40.5% of total)	39 (35.1% of total)	111 (42.4% of total)	151 (41.6% of total)
5-Year Without	336 (44.7% of total)	50 (45.1% of total)	119 (45.4% of total)	167 (46.0% of total)
5-Year With	325 (43.3 % of total)	46 (41.4% of total)	113 (43.1% of total)	166 (45.7% of total)
10-Year Without	371 (49.4% of total)	52 (46.9% of total)	124 (47.3% of total)	195 (53.7% of total)
10-Year With	329 (43.8% of total)	48 (43.2% of total)	118 (45.0% of total)	163 (44.9% of total)
20-Year Without	371 (49.4% of total)	52 (46.9% of total)	124 (47.3% of total)	195 (53.7% of total)
20-Year With	324 (43.1% of total)	46 (41.4% of total)	115 (43.9% of total)	163 (44.9% of total)
50-Year Without	371 (49.4% of total)	52 (46.9% of total)	124 (47.3% of total)	195 (53.7% of total)
50-Year With	323 (43.0% of total)	46 (41.4% of total)	115 (43.9% of total)	162 (44.6% of total)
100-Year Without	371 (49.4% of total)	52 (46.9% of total)	124 (47.3% of total)	195 (53.7% of total)
100-Year With	323 (43.0% of total)	46 (41.4% of total)	115 (43.9% of total)	162 (44.6% of total)

Flood Frequency	Total No. Sites	Eligible/Listed Sites	Unevaluated Sites	Ineligible Sites
1-Year Without	312	41	114	153
1-Year With	305 (down 2.24%)	39 (down 4.88%)	111 (down 2.63%)	151 (down 1.31%)
2-Year Without	314	43	114	153
2-Year With	305 (down 2.87%)	39 (down 9.3%)	111 (down 2.63%)	151 (down 1.31%)
5-Year Without	336	50	119	167
5-Year With	325 (down 3.27%)	46 (down 8.0%)	113 (down 5.04%)	166 (down 0.6%)
10-Year Without	371	52	124	195
10-Year With	329 (down 11.32%)	48 (down 7.69%)	118 (down 4.84%)	163 (down 16.41%)
20-Year Without	371	52	124	195
20-Year With	324 (down 12.67%)	46 (down 11.54%)	115 (down 7.26%)	163 (down 16.41%)
50-Year Without	371	52	124	195
50-Year With	323 (down 12.94%)	46 (down 11.54%)	115 (down 7.26%)	162 (down 16.92%)
100-Year Without	371	52	124	195
100-Year With	323 (down 12.94%)	46 (down 11.54%)	115 (down 7.26%)	162 (down 16.92%)

Table 4.8 Listing of Known Historic Properties Impacted by 1-, 2-, 5-, 10-, 20-, 50-, and 100-Year Flood Events Based Upon No Action ("Without") and Proposed Plan ("With").

Flood Frequency	Total No. Properties	Eligible/Listed Properties	Unevaluated Properties	Non-Extant Properties
1-Year Without	33 (9.2% of total)	1 (4.4% of total)	20 (8.7% of total)	12 (11.5% of total)
1-Year With	19 (5.3% of total)	0	15 (5.5% of total)	4 (3.9% of total)
2-Year Without	33 (9.2% of total)	1 (4.4% of total)	20 (8.7% of total)	12 (11.5% of total)
2-Year With	19 (5.3% of total)	0	15 (5.5% of total)	4 (3.9% of total)
5-Year Without	34 (9.5% of total)	1 (4.4% of total)	21 (9.1% of total)	12 (11.5% of total)
5-Year With	20 (5.6% of total)	0	15 (5.5% of total)	5 (4.8% of total)
10-Year Without	37 (10.3 % of total)	1 (4.4% of total)	21 (9.1% of total)	15 (14.4% of total)
10-Year With	20 (5.6% of total)	0	16 (7.0% of total)	4 (3.9% of total)
20-Year Without	40 (11.2% of total)	1 (4.4% of total)	22 (9.6% of total)	17 (16.3% of total)
20-Year With	20 (5.6% of total)	0	16 (7.0% of total)	14 (13.5% of total)
50-Year Without	45 (12.6% of total)	5 (21.7% of total)	23 (10% of total)	17 (16.3% of total)
50-Year With	34 (9.5% of total)	1 (4.4% of total)	18 (7.8% of total)	15 (14.4% of total)
100-Year Without	51 (14.2% of total)	5 (21.7% of total)	25 (10.9% of total)	21 (20.2% of total)
100-Year With	34 (9.5% of total)	1 (4.4% of total)	18 (7.8% of total)	15 (14.4% of total)

Flood Frequency	Total No. Properties	Eligible/Listed Properties	Unevaluated Properties	Non-Extant Properties
1-Year Without	33	1	20	12
1-Year With	19 (down 42.42%)	0 (down 100%)	15 (down 25%)	4 (down 66.67%)
2-Year Without	33	1	20	12
2-Year With	19 (down 42.42%)	0 (down 100%)	15 (down 25%)	4 (down 66.67%)
5-Year Without	34	1	21	12
5-Year With	20 (down 41.18%)	0 (down 100%)	15 (down 28.57%)	5 (down 58.33%)
10-Year Without	37	1	21	15
10-Year With	20 (down 45.95%)	0 (down 100%)	16 (down 23.81%)	4 (down 73.33%)
20-Year Without	40	1	22	17
20-Year With	20 (down 50%)	0 (down 100%)	16 (down 27.27%)	14 (down 17.65%)
50-Year Without	45	5	23	17
50-Year With	34 (down 24.44%)	1 (down 80%)	18 (down 21.74%)	15 (down 11.76%)
100-Year Without	51	5	25	21
100-Year With	34 (down 33.33%)	1 (down 80%)	18 (down 28%)	15 (down 28.57%)

Table 4.9 Economic impact of recreation to the states in the project area.

State	Consumer Spending (Billions)	Jobs	Wages / Salaries (Billions)	Tax Revenue Annually (Billions)	Recreation Participants (Millions)	Contribution to State Economy (Billions)
Louisiana	$ 12.2	103,000	$ 3.4	$ 0.893	1.2	$ 2.0
Mississippi	$ 8.0	79,000	$ 2.1	$ 0.620	1.3	$ 1.1
Total	$ 20.2	182,000	$ 5.5	$ 1.513	2.5	$ 3.1

Source: State Fact Sheets May 2019 - www.lwcfcoalition.org

Table 5.1 Noise Emission Levels Typical for Construction Equipment.

Equipment	Typical Noise Level (dBA) 50 feet from the Sources
Pumps	81
Generator	81
Compressor	81
Pile Drivers	96
Jackhammer	88
Concrete Saw	90
Crane	81
Drill Rig Trucks	79
Drum Mixer	80
Impact Pile Driver	101
Pneumatic Tools	85
Welder/Torches	74
Warning Horn	83
Vibratory Pile Driver	101
Bulldozer	70-95
Scraper	76-98
Grader	72-92
Concrete Mixer Truck	79
Compactor	83
Concrete Pump Truck	81
Backhoe	78
Dump Truck	76
Excavator	81
Flatbed Truck	74
Front End Loader	79
Horizontal Boring Hydraulic Jacks	82
Pavement Scarifier	90
Pickup Truck	75

Table 5.2 Stage reductions due to pump operation by gage.

Stage reductions due to pump operation by gage						
Return Period	**Little Callao**	**Anguilla**	**Holly Bluff**	**Little Sunflower**	**Grace**	**Steele Bayou**
100	0	0.53	2.14	2.73	0.32	3.12
50	0.02	0.46	1.83	2.9	0.35	3.3
20	0.04	0.38	1.45	2.91	0.37	3.34
10	0.07	0.31	1.16	2.71	0.39	3.17
5	0.09	0.25	0.89	2.34	0.39	2.78
2	0.11	0.15	0.56	1.52	0.37	1.81
1	0.1	0.09	0.33	0.61	0.3	0.67

Table 5.3 Flooded acres with a sloped pool.

Flood frequency elevations, acres flooded, and protected acres with sloped pool								
	Base Condition			With Pump Condtion			Changes	
Return Period	Little Sunflower	Steele Bayou	Acres Flooded	Little Sunflower	Steele Bayou	Acres Flooded	Protected Acres	% Change
100	98.63	98.35	533,794.30	95.9	95.23	468,967.40	64,826.90	12.14%
50	97.6	97.47	504,372.10	94.7	94.17	430,487.20	73,884.90	14.65%
20	96	96.01	448,483.50	93.09	92.67	377,520.10	70,963.40	15.82%
10	94.58	94.63	394,055.10	91.87	91.46	328,581.00	65,474.10	16.62%
5	92.97	92.96	327,512.90	90.63	90.18	272,714.40	54,798.50	16.73%
2	90.49	90.2	218,056.70	88.97	88.39	179,066.40	38,990.30	17.88%
1	88.33	87.63	135,141.50	87.72	86.96	119,914.00	15,227.50	11.27%

Table 5.4 Flood acres with a flat pool.

Flood frequency elevations, acres flooded, and protected acres with flat pool								
	Base Condition			With Pump Condition			Changes	
Return Period	Little Sunflower	Steele Bayou	Acres Flooded	Little Sunflower	Steele Bayou	Acres Flooded	Protected Acres	% Change
100	98.63	98.35	438,056.52	95.9	95.23	298,049.58	140,006.94	31.96%
50	97.6	97.47	398,069.50	94.7	94.17	262,703.71	135,365.79	34.01%
20	96	96.01	329,362.87	93.09	92.67	213,836.69	115,526.18	35.08%
10	94.58	94.63	276,462.48	91.87	91.46	180,394.82	96,067.67	34.75%
5	92.97	92.96	222,545.42	90.63	90.18	142,238.28	80,307.14	36.09%
2	90.49	90.2	151,626.41	88.97	88.39	91,475.83	60,150.58	39.67%
1	88.33	87.63	72,999.96	87.72	86.96	60321.5	12,678.50	17.37%